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*Summary of Archaeological Studies,
Historic Properties, and Hawai'i State
Historic Preservation Reviews*

(Cultural Surveys Hawai'i, Inc.)

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November 2, 2017

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IN REPLY REFER TO:
Log No. 2017.02075
2017.02076
Doc. No. 1710SL10
Archaeology

Dear Mr. Eadie:

**SUBJECT: Chapter 6E-42 Historic Preservation Review –
Archaeological Inventory for a 113.5-acre Portion [TMK: (1) 6-8-003:005 por.] of the
878.3-acre Proposed Dillingham Ranch Agricultural Subdivision Project
Mokulē'ia 2, Auku'u, Kikahi, and Kawaihāpai Ahupua'a, Waialua District, O'ahu
TMK: (1) 6-8-002:006 por.; 6-8-003:005 por., 006 por., 015, 019, 030, 031, 033, 035, and 040**

Thank you for the opportunity to review the two revised reports titled *Archaeological Inventory Survey Report for a Portion of the Dillingham Ranch Agricultural Subdivision Project Mokulē'ia Ahupua'a, Waialua District, O'ahu* TMK: (1) 6-8- 003:005 (Belluomini et al., October 2017) [Log No. 2017.02075]; and *Summary of Archaeological Studies, Historic Properties, and Hawai'i State Historic Preservation Division Review for the Dillingham Ranch Agricultural Subdivision Project, Mokulē'ia 2, Auku'u, Kikahi, and Kawaihāpai Ahupua'a, Waialua District, O'ahu* TMK: (1) 6-8-002:006 por.; 6-8-003:005 por., 006 por., 015, 019, 030, 031, 033, 035, and 040 (Belluomini et al., October 2017) [Log No. 2017.02076]. The State Historic Preservation Division (SHPD) Kapolei office received these revised reports on October 23, 2017.

Dillingham Ranch totals 2,721 acres and the Dillingham Ranch Agricultural Subdivision project area comprises 878.3 acres in the northeast portion of the Ranch. The project area is bounded on the north by Farrington Highway, and across the highway Makaleha Beach Park, Mokulē'ia Polo Field, and the ocean. It is bounded on the south by undeveloped Mokulē'ia Forest Reserve lands. The residential community of Mokulē'ia is approximately 0.25 kilometer (km) east, Dillingham Airfield and Gliderport, approximately 1 km west.

Approximately half of the project area, the *mauka* (toward the mountains; here, south) portion, occupies low foothill lands in the Wai'anae Range. The *mauka* portion is largely undeveloped, except for limited cattle pasturelands and ranch facilities including fences, walls, troughs, and a corral. The *makai* (toward the sea) half of the project area, on relatively level Mokulē'ia coastal plain lands, contains polo and horseback-riding facilities, ranch employee offices and residences, a coconut-palm nursery, and Dillingham Ranch Lodge, which is rented for weddings and other events. Cattle ranching will cease when the proposed project is completed. The other activities will continue. The project will add four primary development components, including a subdivision of 70 agricultural lots with farm dwellings, farm-to-table agricultural facilities, an expanded equestrian facility, employee dwellings, offices, polo fields, barns and trails, and road network.

The Belluomini et al. (October 2017) *Archaeological Inventory Survey Report for a Portion of the Dillingham Ranch Agricultural Subdivision Project...* is the final of five archaeological inventory survey (AIS) studies conducted in support of the proposed Dillingham Ranch Agricultural Subdivision (subdivision). The AIS included a pedestrian survey of 100 percent of the 113.5-acre project area and GPS mapping of all identified historic properties.

It also included re-locating and documenting three previously identified historic properties in locations outside the current 113.5-acre AIS project area, but within the overall subdivision project area. The AIS did not include test excavation or collection of cultural materials.

Five historic properties (or portions) were documented during this AIS. Historic properties within the current AIS project boundaries are: Site 50-80-03-7653 Feature 1 (wall), Site 50-80-03-7976 (wall), and Site 50-80-03-7977 (terrace complex). Also documented were Site 50-80-03-4777 Feature C (wall segment), and Site 50-80-03-7978 (platform), which were previously observed during archaeological monitoring in 2008, located to the west, outside the current AIS project-area boundaries. Portions of Site 7653 Feature 1, a wall, were newly recorded. A portion of Site 7653 Feature 1 had been discovered by Drolet and Schilz (1992) and documented as Site 4439; Lauer and Rieth (2015) described additional segments of Feature 1, and identified and documented Site 7653 Features 2-4. The Feature 1 portion newly documented during the current AIS is located outside the Lauer and Rieth (2015) project area.

Table 1 summarizes the historic properties documented in this AIS report, including an assessment of site significance, evaluation of Hawaii Register eligibility, and proposed mitigation. Of the five historic properties, four are recommended for preservation (Sites 4777, 7653, 7977, and 7978). Site 7976 livestock wall is identified as having been adequately documented and unlikely to provide additional significant information, and thus is recommended for no further work. The previously documented portions of Site 4777 and Site 7653 are included in the SHPD-approved Tulchin and Hammatt (2008) preservation plan for Sites 50-80-03-416, 4772 to 4780, 4782, 4786, and 6885 to 6888. A new preservation plan will be prepared for the Dillingham Ranch Agricultural Subdivision project that includes all recommended preservation sites (or portions of sites), both those recommended during the current AIS and those previously recommended and included in the Tulchin and Hammatt (2008) preservation plan. SHPD agrees to the site significance assessments, Hawaii Register eligibility evaluations, and the proposed mitigation. SHPD also agrees to the development of a new preservation plan for all recommended preserve sites within the subdivision project area, and to archaeological monitoring during ground disturbing activities associated with the subdivision development.

Table 1.

Site No. 50-80-03-	Former Site No. 50-80-03-	Site Form / Interpretation	Site Significance Criteria	Hawaii Register Criteria	Proposed Mitigation
4777 (Feature C newly documented)	4429	U-shaped wall / property boundary	c, d	C, D	Preservation
7653 (Feature 1 newly expanded)	Feature 1 was 4439	Walls / Ranching	d	D	Preservation
7976	--	Wall / Ranching	d	--	No further work
7977	--	Rock-faced terraces / Agriculture and Ranching	d, e	D	Preservation
7978	--	Platform / Habitation and Ceremonial	d, e	D	Preservation

As the site table indicates, previous mitigation plans have recommended preservation for Site 4777 Features A and B. A preservation plan covering Site 4777 Features A and B was accepted by SHPD in 2008 (see document list, above). In consultation (October 12, 2017 meeting) involving Scott Ezer [Helber Hastert & Fee Planners], Scott Belluomini and David Shideler [Cultural Surveys Hawai'i, Inc.], and Susan A. Lebo and Jane Allen [SHPD], it was agreed that Site 4777 Feature C also will be preserved, as it is part of the U-shaped boundary wall for Land Grant 457 Lot 2, to J. T. Gulick, and includes at least a 119-m segment in good to intact condition. Additionally, four breaches were agreed to, which were described and illustrated on a project map, of which the details were summarized in an email dated October 23, 2017 (David Shideler to Jane Allen and Susan Lebo). A new preservation plan shall be submitted to SHPD for review and acceptance that includes all sites or portions of sites covered in the Tulchin and Hammatt (2008) preservation plan and four sites or portions of sites newly documented in the

Belluomini et al. (October 2017) AIS, specifically Site 4777 Feature C, Site 7653, Site 7977, and Site 7978. The new preservation plan will supersede the Tulchin and Hammatt (2008) preservation plan. Site 7976 does not warrant preservation, because of its poor to fair condition and an assessment that it is unlikely to yield additional information important to prior land use. Additionally, the metes and bounds of the archaeological site preserves shall be recorded with the Bureau of Conveyances.

The Belluomini et al. (October 2017) *Summary of Archaeological Studies, Historic Properties, and Hawai'i State Historic Preservation Division Review for the Dillingham Ranch Agricultural Subdivision Project....* that provides an administrative record of the completion of the following five of the six historic preservation review procedural steps:

- (1) Identification and inventory to determine if historic properties are present and, if so, to identify and document them;
- (2) Evaluation of significance;
- (3) Effect determination;
- (4) Mitigation commitments; and
- (5) Detailed mitigation plan(s).

(1) Identification and inventory. Pursuant to HAR §13-284-3(b)(1):

The following surveys have been completed for the for the Dillingham Ranch Agricultural Subdivision project.

- 1987 – Reconnaissance survey by horseback. Sites identified but not assigned site numbers (no SHPD review information located);
- 1992 – AIS report and AIS report addendum for 840-acre portion (783 acres [1992a], 55 acres [1992b]), TMK: (1) 6-8-002:006 por., 015, 019, 021, 030, 031, 033, 034, 035, and 040 (Drolet and Schilz 1992a and 1992b). AIS report accepted April 24, 1992 (Log No. 5155, Doc. No. 0682t); no correspondence located for addendum;
- 2007 – AIS report for 75-acre (*mauka*) area, TMK: (1) 6-8-002:006 por., 6-8-003:006 por. (Tulchin and Hammatt 2007), accepted December 19, 2007 (Log No. 2007.2421, Doc. No. 0712LM03);
- 2015 – AIS report for 85.3-acre (*mauka*) area, TMK: (1) 6-8-002:006 por., 6-8-003:005 por., 006 por. (Lauer and Rieth 2015), accepted on July 17, 2015 (Log No. 2014.02945, Doc. No. 1507SL07); and
- 2017 - Current AIS for 113.-5-acre (*makai*) area, TMK: (1) 6-8-003:005 por. (Belluomini et al., October 2017), accepted on November 2, 2017 (Log No. 2017.02075, Doc. No. 1710SL10).

(2) Evaluation of Significance. Historic properties were assessed as significant per HAR §13-284-6 based on the following criteria: (a) Historic property reflects major trends or events in the history of the state of nation, (b) Historic property is associated with the lives of persons significant in our past, (c) Historic property is an excellent example of a site type, (d) Historic property has yielded or may be likely to yield information important in prehistory or history, and (e) Historic property has cultural significance to an ethnic group, including, but not limited to, religious structures, burials, and traditional cultural properties.

The historic properties were also evaluated for eligibility for inclusion in the Hawaii Register of Historic Places per HAR 13-198-8 based on the following criteria: (A) Historic property reflects major trends or events in the history of the state of nation, (B) Historic property is associated with the lives of persons significant in our past, (C) Historic property is an excellent example of a site type, and (D) Historic property has yielded or may be likely to yield information important in prehistory or history. The Belluomini et al. (October 2017) revised previous eligibility evaluation only where new information indicated revision was warranted.

Sixteen archaeological historic properties were documented within the Dillingham Ranch Agricultural Subdivision project area. Table 2 summarizes the site function, site significance assessment, Hawaii Register eligibility, and

proposed mitigation for the 16 historic properties based on the five AIS reports. This information is summarized in Table 5 of the Belluomini et al. (October 2017) document titled *Summary of Archaeological Studies, Historic Properties, and Hawai'i State Historic Preservation Division Review for the Dillingham Ranch Agricultural Subdivision Project...*

Table 2.

Site No. (50-80-03-)	Former Site No. (50-80-03-)	Interpreted Function	Site Significance Criteria	Hawaii Register Criteria	Proposed Mitigation
4772	194, 4424	Heiau or house site	c, d, e	C, D	Preservation
4773	4425	Habitation/agriculture	c, d	C, D	Preservation
4774	4426	Habitation	c, d	C, D	Preservation
4775	4427	Habitation	c, d	C, D	Preservation
4776	4428	Habitation/gardening/religion	c, d, e	C, D	Preservation
4777	4429	Boundary delineation	d	D	Preservation
4782	4434	Habitation/agriculture	d	D	Preservation
4783	4435	Agriculture	Not significant	--	No further work
4784	4436	Irrigation (agriculture)	Not significant	--	No further work
4785	4437	Ranching	d	D	Preservation
4786	4438	Habitation or religion	d, e	D	Preservation
6884	--	Agriculture	--	D	No further work
7653	4439	Animal husbandry	d	D	Preservation
7976	--	Animal husbandry	d	--	No further work
7977	--	Agriculture	d, e	D	Preservation
7978	--	Habitation/religion	d, e	D	Preservation

(3) Effect Determination. Pursuant to HAR §13-284-3(b)(3), the Dillingham Ranch Agricultural Subdivision project effect determination is as follows:

“Effect, with agreed upon mitigation commitments.”

(4) Mitigation Commitments. Pursuant to HAR §13-284-3(b)(4), the agreed upon mitigation commitments for the Dillingham Ranch Agricultural Subdivision project are:

- (1) No further work – Four sites, a post-Contact agricultural complex (Site 4783) and an agricultural ditch of unidentified association (Site 4784), both assessed as not significant historic properties; post-Contact agricultural walls (Site 6884) and livestock walls (Site 7976). These sites have been identified as having been adequately documented, and thus requiring no further archaeological documentation;
- (2) Preservation – Twelve sites were recommended for preservation. Of these, nine sites (or portions of them) are included in the SHPD-accepted Tulchin et al. (2008) preservation plan. These nine sites are: 4772 (habitation or ceremonial), 4773 (habitation/agricultural complex), 4774 (habitation platform), 4775 (habitation enclosure), 4776 (habitation/agricultural/ceremonial complex), 4777 (U-shaped land grant wall), 4782 (habitation/agricultural complex), 7977 (agricultural terraces), and 7978 (habitation/ceremonial platform). The newly recommended for preservation during the most-recent AIS (Belluomini et al., October 2017) are: Sites 4785 (ranch enclosure/land grant wall), 4786 (habitation or ceremonial platform), and 7653 (livestock walls).
- (3) Data recovery in the form of archaeological monitoring of all ground disturbance related to proposed subdivision development.

(5) Mitigation Plans. Pursuant to HAR §13-284-3(b)(5), SHPD has reviewed and accepted the following agreed-upon mitigation plans:

2008 – Preservation plan for SIHP #s 50-80-03-416, 4772-4780, 4782, 4786, and 6885-6888, TMK: (1) 6-8-002:006 por., 6-8-003:006 por., 015, 019, 030, 031, 033, 035, and 040 (Tulchin and Hammatt 2008a), accepted on September 29, 2008 (Log No. 2008.2963, Doc. No. 0809LM07) (Eight of these sites [Sites 4772-4777, 4782, and 4786] are in the Dillingham Ranch Agricultural Subdivision project area);

2008 – Archaeological monitoring plan (AMP) for 820-acre portion, TMK: (1) 6-8-002:006 por., 6-8-003:006 por., 015, 019, 030, 031, 033, 035, and 040 (Tulchin and Hammatt 2008b), accepted October 30, 2008 (Log No. 2008.4774, Doc. No. 0810LM42);

SHPD agrees with the recommendation to the submittal of the following two mitigation plans:

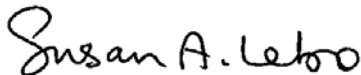
- (1) Preservation plan for all recommended preservation sites within the Dillingham Ranch Agricultural Subdivision project. This plan will incorporate sites and provisions documented in the Tulchin and Hammatt 2008a) preservation plan; and
- (2) Archaeological monitoring plan for the entirety of the Dillingham Ranch Agricultural Subdivision project. This plan will incorporate sites and provisions documented in the Tulchin and Hammatt 2008b) mitigation plan.

The revisions adequately address the issues and concerns identified in our earlier review of the AIS (September 19, 2017; Log No. 2017.02119, Doc. No. 1709JA09); the Summary document serves to facilitate project planning and supports the historic preservation review process. The report AIS meets the minimum requirements of Hawaii Administrative Rules (HAR) §13-276-5. **It is accepted.** Please send one hardcopy each of the AIS and the Summary, clearly marked FINAL, along with a text-searchable PDF version to the Kapolei SHPD office, attention SHPD Library.

SHPD looks forward to receiving a preservation plan (PP) meeting the requirements of HAR §13-277 for all preservation sites within the subdivision project and an archaeological monitoring plan (AMP) that meets the requirements of Hawaii Administrative Rules (HAR) §13-279-4. SHPD will notify you when these plans have been reviewed and accepted and project initiation may occur.

Please contact Jane Allen at jane.allen@hawaii.gov if you have any questions or concerns regarding this letter.

Aloha



Susan A. Lebo, PhD
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**Summary of Archaeological Studies, Historic Properties,
and Hawai‘i State Historic Preservation Division Review
for the
Dillingham Ranch Agricultural Subdivision Project,
Mokulē‘ia 2, Auku‘u, Kikahi, and Kawaihāpai Ahupua‘a,
Waialua District, O‘ahu
TMKs: [1] 6-8-002:006 por.; 6-8-003:005 por., 006 por.,
015, 019, 030, 031, 033, 035, and 040**

**Prepared for
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Section 1 Introduction

1.1 Project Background

At the request of Dillingham Ranch Aina, LLC (landowner), Cultural Surveys Hawai'i, Inc. (CSH) has prepared this *Summary of Archaeological Studies, Historic Properties, and Hawai'i State Historic Preservation Division Review for the Dillingham Ranch Agricultural Subdivision Project, Mokulē'ia 2, Auku'u, Kikahi, and Kawaihāpai Ahupua'a, Waialua District, O'ahu, TMKs: [1] 6-8-002:006 por.; 6-8-003:005 por., 006 por., 015, 019,030, 031, 033, 035, and 040. The 878.3-acre (355.4-hectare) Dillingham Ranch Agricultural Subdivision project area*, which includes existing infrastructure, is depicted on the 1998 Kaena U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (Figure 1), tax map plats (Figure 2 and Figure 3), and a 2014 aerial photograph (Figure 4).

The 2,721-acre (1,101-hectare) Dillingham Ranch currently operates as a coconut plantation, equestrian boarding and recreational facility (utilized by recreational riders and polo participants), and pasture for limited cattle grazing. The Dillingham Ranch Lodge is also rented for weddings and other celebrations or events. The proposed Dillingham Ranch Agricultural Subdivision project is owned by Dillingham Ranch Aina, LLC based in California. The proposed Dillingham Ranch Agricultural Subdivision project will continue with the existing ranch operations described above (excluding cattle grazing) with the addition of four primary development components consistent with the current equestrian and agricultural use including a subdivision of 70 agricultural lots with farm dwellings, farm-to-table agricultural activities, expansion of the equestrian facility, employee dwellings, offices, polo fields, barns and trails, and a road network (Figure 5). The Dillingham Ranch Agricultural Subdivision project area includes only Dillingham Ranch Aina, LLC-owned property. The Department of Land and Natural Resources (DLNR) road (providing access to the Wai'anae Range) and various parcels owned by other private entities are “out” of the project area.

1.2 Historic Preservation Regulatory Context and Document Purpose

This document is intended to be incorporated into the proposed Dillingham Ranch Subdivision project environmental impact statement (EIS). Five project-specific archaeological inventory surveys (AIS) were conducted for Dillingham Ranch (Drolet and Schilz 1992a and 1992b; Lauer and Rieth 2015; Tulchin and Hammatt 2007, Belluomini et al. 2017—draft in various portions of the Dillingham Ranch Agricultural Subdivision project area. The combination of these five AIS studies cover the entire Dillingham Ranch Agricultural Subdivision project area. This document is intended to be a summary of the previous studies and mitigation plans for the Dillingham Ranch Agricultural Subdivision project, a summary of previously identified historic properties and their significance, and a summary of the overall historic preservation review process to date.

Tulchin and Hammatt (2008a) completed a long-term preservation plan for all historic properties identified and recommended for preservation by Drolet and Schilz (1992a and 1992b) and Tulchin and Hammatt (2007). Lauer and Rieth (2015) and Belluomini et al. (2017—draft) also identified and recommended five combined historic properties for preservation. An archaeological monitoring plan (Tulchin and Hammatt 2008b) was also prepared and accepted by the State Historic Preservation Division (SHPD). All of the previously mentioned reports have been reviewed and accepted by the SHPD except for Belluomini et al. (2017-draft) (Appendix A).

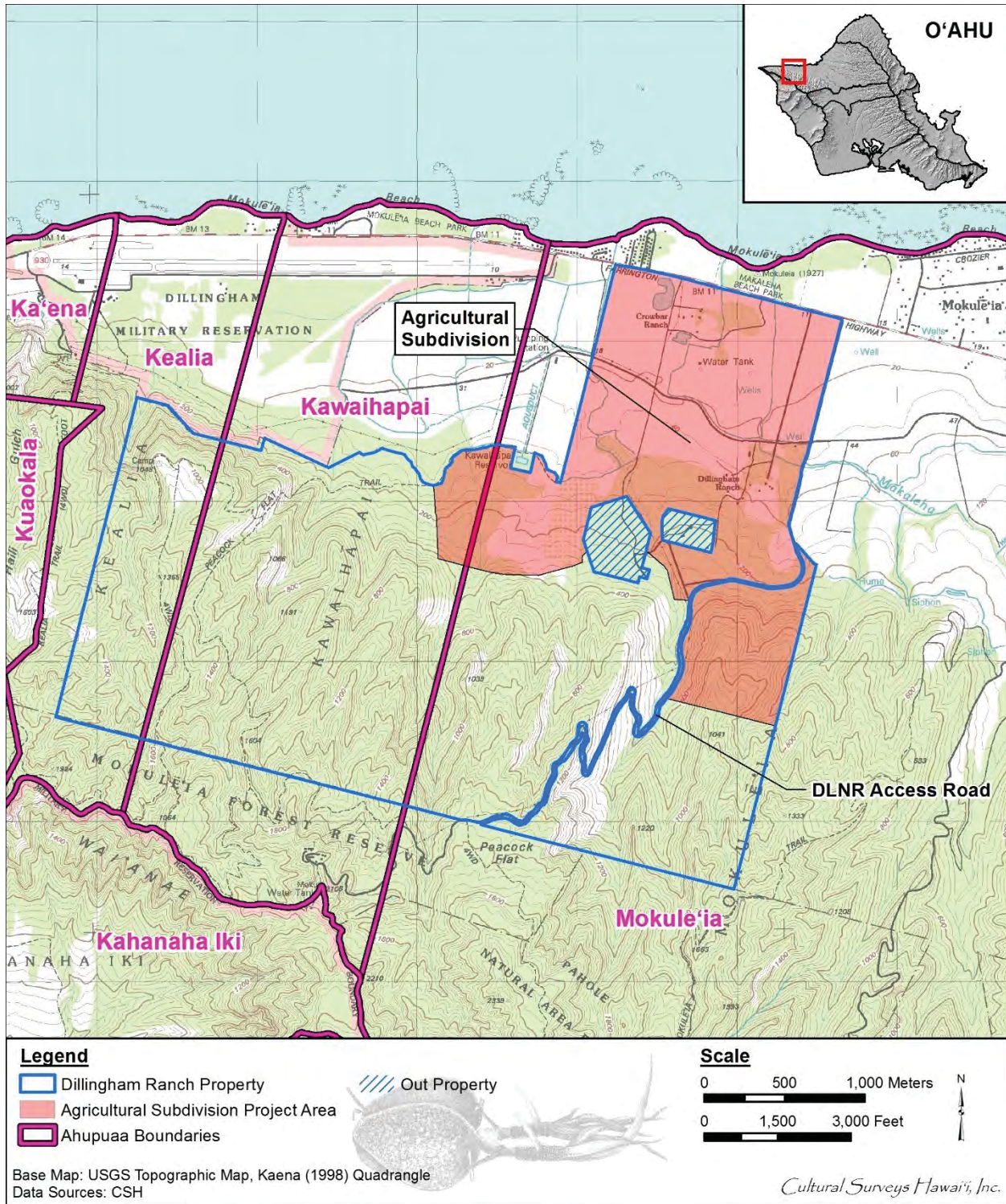
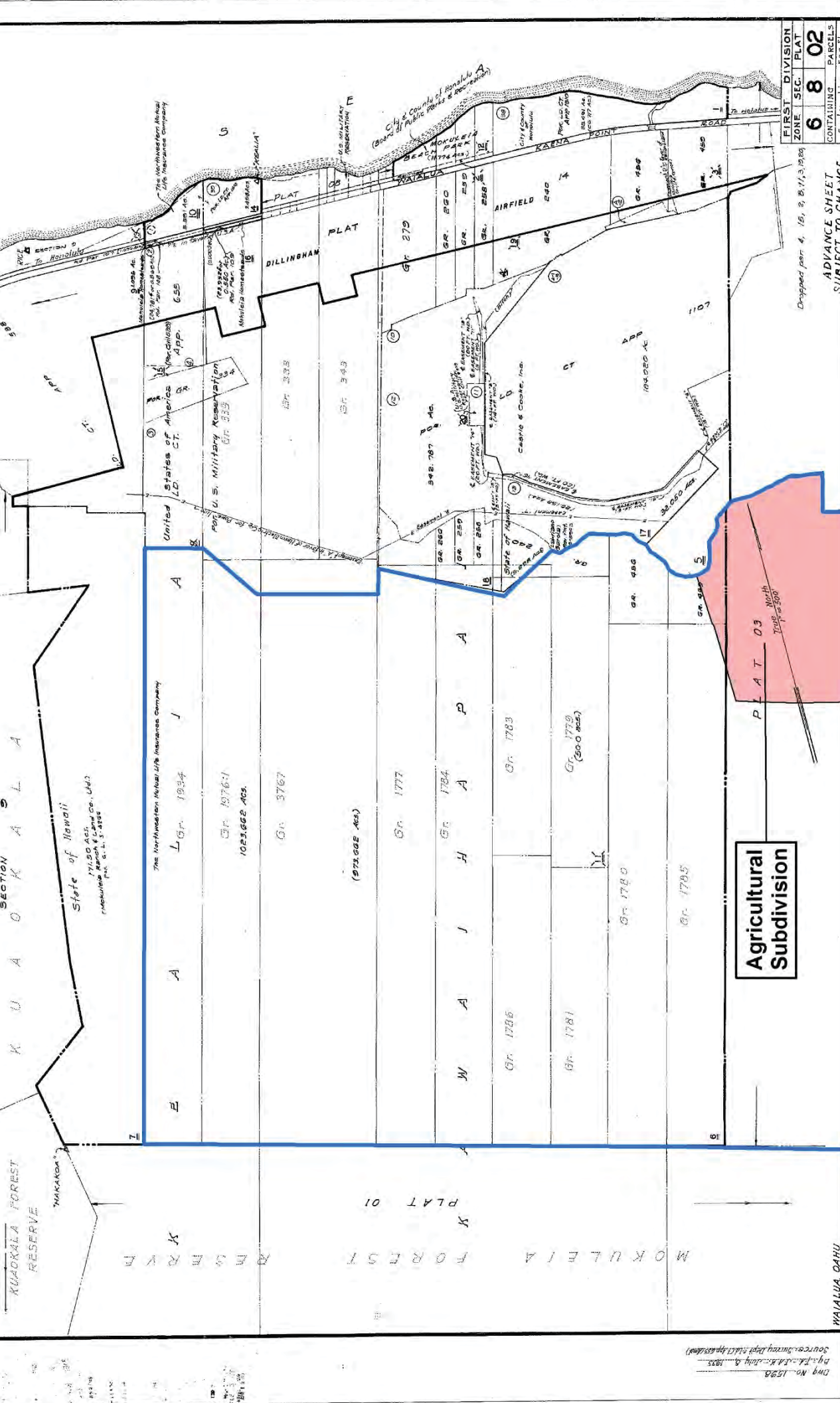


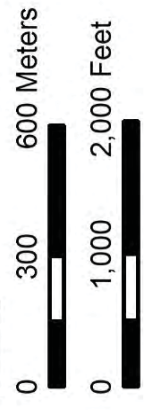
Figure 1. Portion of the 1998 Kaena USGS 7.5-minute topographic quadrangle showing the location of the Dillingham Ranch Agricultural Subdivision project area



Legend

- Dillingham Ranch Property
- Agricultural Subdivision Project Area

Scale



Use Map: Tax Map Key [1] 6-8-02
 Data Sources: CSH

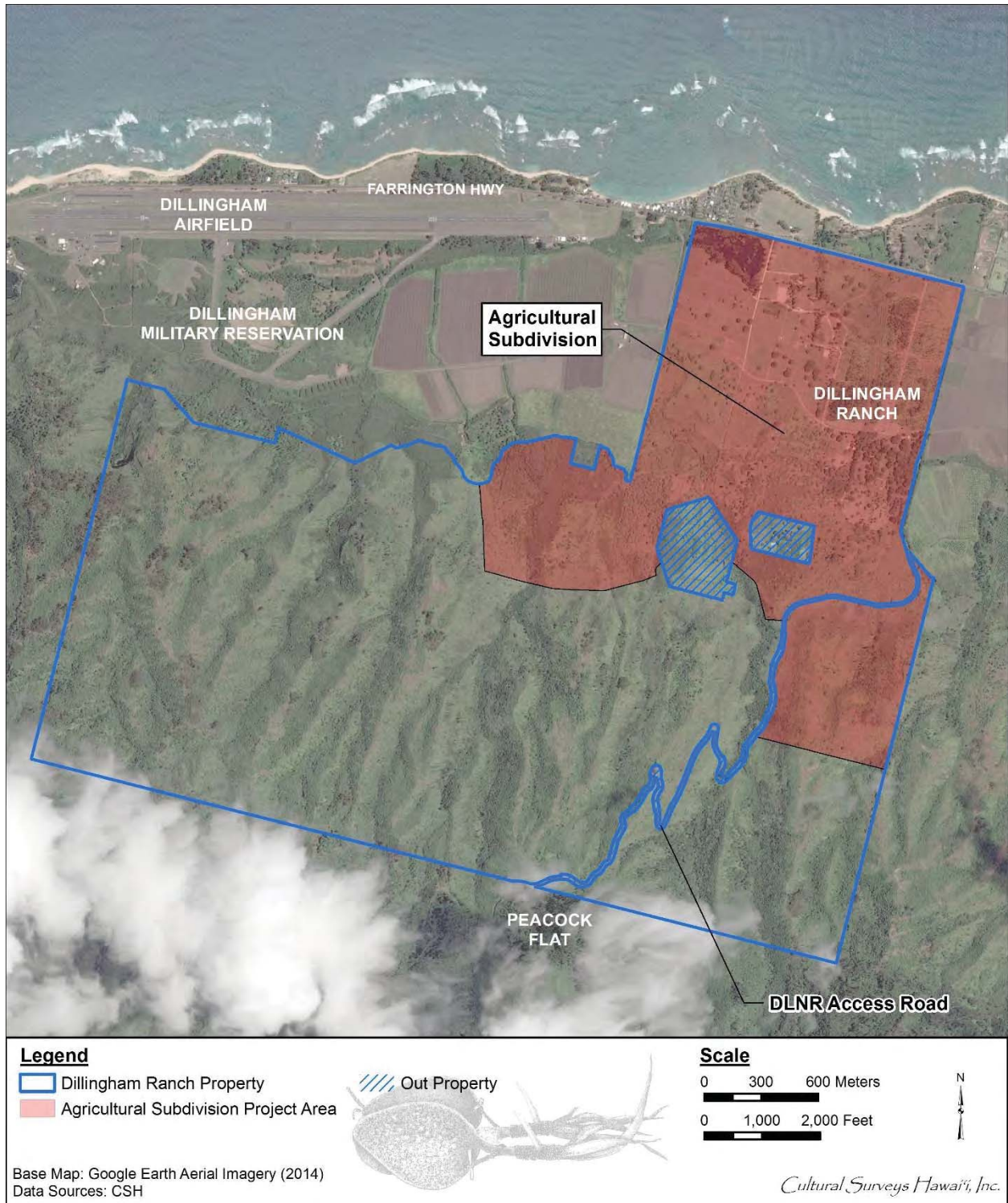


Figure 4. Aerial photograph showing the location of the Dillingham Ranch Agricultural Subdivision project area and the Dillingham Ranch property boundaries (Google Earth 2014)



Figure 5. Preliminary site plan for the Dillingham Ranch Agricultural Subdivision project (client-supplied)

CSH conducted archaeological monitoring for a brief period in 2008 for the clearance of access pathways for geotechnical boring equipment. The fieldwork was primarily conducted in the steep hillsides, to the southwest and outside the Dillingham Ranch Agricultural Subdivision project area. However, some of the fieldwork was conducted within the Dillingham Ranch Agricultural Subdivision project area. The project that required archaeological monitoring has been on hold and no formal documentation of the results of monitoring has been provided to the SHPD to date.

1.3 Environmental Setting

1.3.1 Natural Environment

The 2,721-acre Dillingham Ranch Agricultural Subdivision project area includes lands within the level coastal plain of Mokulē'ia and the lower foothills of the Wai'anae Range. The foothills consist of gently to moderately sloping lands dissected by multiple seasonal drainage gullies. Vertical exposed basalt cliffs are also common on the *mauka* (toward the mountains) or southern boundary of the Dillingham Ranch Agricultural Subdivision project area. Elevations within the Dillingham Ranch Agricultural Subdivision project area range from approximately 1-200 m (3-650 feet [ft]) above mean sea level. The annual average air temperature is between 23.2°C (73.8°F) and 23.6°C (74.5°F) (Giambelluca et al. 2014).

According to Foote et al (1972) and the U.S. Department of Agriculture (USDA) Soils Survey Geographic Database (SSURGO) (2001), soils within the *makai* (toward the sea) or northern portion of the Dillingham Ranch Agricultural Subdivision project area consist of Pulehu Clay Loam, 0 to 3 percent slopes (PsA), Pearl Harbor Clay (Ph), and Mokuleia Clay Loam (Mt).

Soils within the *mauka* portion of the Dillingham Ranch Agricultural Subdivision project area include Ewa Silty Clay Loam, 6 to 12 percent slopes (EaC), Ewa Stony Silty Clay, 6 to 12 percent slopes (EwC), Helemano Silty Clay, 30 to 90 percent slopes (HLMG), Kaena Clay, 2 to 6 percent slopes (KaB), Kaena Stony Clay, 2 to 6 percent slopes (KaeB), Kaena Stony Clay, 6 to 12 percent slopes (KaeC), Kaena Stony Clay, 12 to 20 percent slopes KaeD), Kaena Very Stony Clay, 10 to 35 percent slopes (KanE), Kawaihapai Clay Loam, 0 to 2 percent slopes (KIA), Kawaihapai Stony Clay Loam, 0 to 2 percent slopes (KIaA), Kawaihapai Stony Clay Loam, 0 to 2 percent slopes (KIaB), Kemoo Silty Clay, 35 to 70 percent slopes (KpF), Pulehu Stony Clay Loam, 2 to 6 percent slopes (PuB), Rock Land (rRK), and Stony Step land (rSY) (Figure 6).

Soils of the Pulehu Series consist of “well-drained soils on alluvial fans and stream terraces and in basins . . . developed in alluvium washed from basic igneous rock” (Foote et al. 1972). Soils of the Pearl Harbor Series consist of “very poorly drained soils on nearly level coastal plains on the island of Oahu . . . developed in alluvium overlying organic material” (Foote et al. 1972). Soils of the Mokuleia Series consist of “well-drained soils along the coastal plains . . . formed in recent alluvium deposited over coral sand” (Foote et al. 1972). Soils of the Ewa Series consist of “well-drained soils in basins and on alluvial fans . . . developed in alluvium derived from basic igneous rock” (Foote et al. 1972). Soils of the Helemano Series consist of “well-drained soils on alluvial fans and colluvial slopes on the sides of gulches . . . developed in alluvium and colluvium derived from basic igneous rock” (Foote et al. 1972). Soils of the Kaena Series consist of “very deep, poorly drained soils on alluvial fans and talus slopes . . . developed in alluvium and colluvium from basic igneous material” (Foote et al. 1972). Soils of the Kawaihapai Series consist of “well-drained soils in drainage ways and on alluvial fans on the coastal plains . . . formed in alluvium

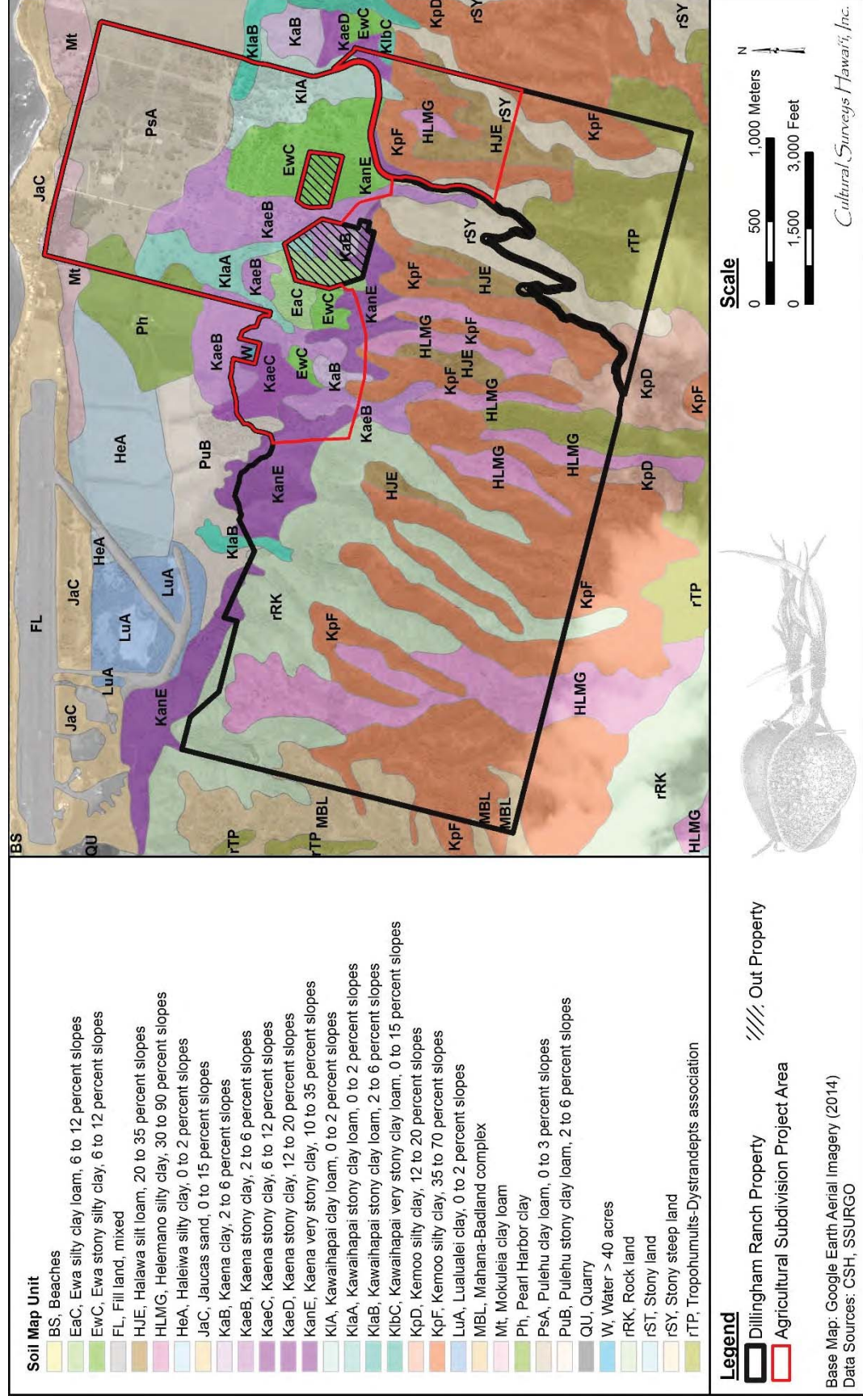


Figure 6. Overlay of Soil Survey of the State of Hawaii (Foote et al. 1972) on a 2014 Google Earth aerial photograph, indicating soil types within and surrounding the Dillingham Ranch Agricultural Subdivision project area (USDA SSURGO 2001)

derived from basic igneous rock in humid uplands” (Foote et al. 1972). Soils of the Kemoo Series consist of “well-drained soils on uplands . . . developed in material weathered from basic igneous rock” (Foote et al. 1972).

The Dillingham Ranch Agricultural Subdivision project area receives on average 904.5 mm (35 inches) of annual rainfall (Giambelluca et al. 2013). Vegetation in the Dillingham Ranch Agricultural Subdivision project area generally consists of exotic grasses, ironwood (*Casuarina* spp.), monkeypod (*Samanea saman*), coconut (*niu*, *Cocos nucifera*), koa haole (*Leucaena leucocephala*), kiawe (*Prosopis pallida*), Java plum (*Syzygium cumini*), and klu (*Acacia farnesiana*). Additional species include wiliwili (*Erythrina sandwicensis*), ‘a‘ali‘i (*Dodonaea viscosa*), ‘ilie‘e (*Plumbago zeylanica*), naio (*Myoporum sandwicense*), silk oak (*Grevillea robusta*), guava (*Psidium guajava*), strawberry guava (*Psidium cattleianum*), Christmas berry (*Schinus terebinthifolius*), and kukui (*Aleurites moluccana*).

1.3.2 Built Environment

The *makai* portion of the Dillingham Ranch Agricultural Subdivision project area, along the level coastal plain, is currently used for equestrian activities. Existing ranch components include stables, fenced activity areas, ranch office structures, ranch employee residences, and the Dillingham Ranch Lodge. A commercial plant nursery for palm trees is also located in the *makai* portion of the Dillingham Ranch Agricultural Subdivision project area. The *mauka* portion of the Dillingham Ranch Agricultural Subdivision project area is largely undeveloped, with limited ranch-related infrastructure including fences, walls, water troughs, and a corral. A DLNR access road to the Waianae Mountain Range cuts through the Dillingham Ranch property.

The surrounding area is rural, primarily consisting of cultivated diversified agricultural lands. The Dillingham Airfield and Gliderport is approximately 1 km (0.6 miles) west of the Dillingham Ranch Agricultural Subdivision project area. The residential community of Mokulē‘ia is approximately 0.25 km (0.15 miles) east of the Dillingham Ranch Agricultural Subdivision project area. *Mauka* of the Dillingham Ranch Agricultural Subdivision project area is the undeveloped Mokulē‘ia Forest Reserve. *Makai* of the Dillingham Ranch Agricultural Subdivision project area are Farrington Highway, the Mokulē‘ia Polo Field, and the shoreline.

Section 2 Traditional and Historical Background

The district of Waialua is rich in legends, stories, proverbs, and myths. Waialua, literally translated as “two waters” (Clark 2002) may refer to the two large stream drainages (Anahulu and Helemano-Poamoho-Kaukonahua) once used to irrigate extensive taro fields in the *ahupua'a* of Kamananui, Pa'ala'a, and Kawailoa, the more populous *ahupua'a* (traditional land division) on the eastern side of the district. The *ahupua'a* of Keālia, Kawaihāpai, and Mokulē'ia, on the western side of the district, were not as well-watered as the three eastern *ahupua'a*. However, these western lands were famed for their warm climate, cooling breezes, plant resources, and especially marine resources.

2.1 References to the Environment

Kūali'i was a legendary eighteenth century chief of O'ahu (Cordy 2002:32). A *mele* (chant) on his genealogy includes a description of his lands on O'ahu and Kaua'i:

Kaena is a point,	<i>He lae Kaena,</i>
Kahuku is hala-wreathed, covered with dew Is the back of Kaala;	<i>He hala o Kahuku He kuamauna hono i kehau Kaala</i>
There below doth Waialua sit, That is Waialua.	<i>Noho mai ana Waialua i lalo-e– O Waialua ia.</i>
Mokuleia with its dish of Kahala; A fish-pond, like cooked shark,	<i>O Mokuleia, Kahala ka ipu Ka loko ia mano lalawalu,</i>
The tail of the hammer-headed shark is Kaena, The shark that travels at the bottom of Kauai,	<i>Hiu lalakea o Kaena, Mano hele lalo o Kauai-e–</i>
At the bottom of Kauai my land . . .	<i>Olalo o Kauai, kuu aina . . .</i>

[Fornander 1986:4(2):374]

In this chant, the general aspect of the land in Waialua and the vicinity is illustrated. Ka'ala is the tallest peak in the Wai'anae Range, and its sharp ridgeline resembles the tail of a shark, running down to the sea. The sloping tablelands at the foothills of the mountains in Mokulē'ia resemble a bowl or pond.

In the legend of Pele and Hi'iaka, the sister of the volcano goddess Pele, Hi'iaka, travels around the islands (Emerson 1993). In one instance, Hi'iaka's canoe is beached on the sands of Mokulē'ia. Hi'iaka leaves her companions to pay her respects to her ancestor, Pōhaku-o-Kaua'i, and to her ancestral divinity Ka'ena. She passes Ka'ena Point on O'ahu and enters the hot and arid region of Waialua. As she climbs up into the Wai'anae Mountains above the lands of Keālia and Kawaihāpai, she offers the following chant:

Ka'ena's profile fleets through the calm,	<i>Kunihi Kaena, holo i ka malie:</i>
With flanks ablaze in the sunlight –	<i>Wela i ka La ke alo o ka pali;</i>
A furnace heat like Kilauea;	<i>Auamo mai i ka La o Kilauea;</i>

Research on the meaning of Mokolē'ia produced two different translations concerning cultivation. According to *Place Names of Hawaii*, Mokolē'ia means “isle [of] abundance” (Pukui et al. 1974:155). The second translation, which may be of relatively modern origin, has the name as *moku-leia*, from the saying “*Moena pāwehe o Mokolē'ia*”—the patterned map of Mokolē'ia. This refers to the pattern of agricultural fields on the lowlands of Mokolē'ia in the early post-Contact period (Pukui 1983:161).

Although wetland cultivation in Keālia is not mentioned, several legends refer to specific plants in the area. Keālia means “the salt bed” (Clark 1977:105). There is no known salt pond at Keālia, but an association with salt is mentioned in a legend concerning Pele and another of her sisters, Ka'ōhelo. Ka'ōhelo told her son that when she died, she wanted him to take her body to the top of Kīlauea, the home of her sister Pele. When he took her body to Kīlauea, her flesh became the creeping vine portion of the 'ōhelo plant (*Vaccinium reticulatum*), and the bones became the bush-plant portion of the 'ōhelo. Pele “retained Ka'ōhelo's head, which became the smoldering fire in the volcano; the rest of the body was thrown over to Haleakalā, Maui and to salty Keālia, O'ahu; some of it was thrown on Kaua'i, and some of it was left on Hawaii” (Fornander 1985:576). The 'ōhelo plant grows at high elevations and was considered a sacred offering to Pele.

In the legend of Kalelealuaka (Thrum 1998:94–100), the hero uses his miraculous powers to fly to different parts of the island of O'ahu and wreathes himself in plants particular to those regions. At the start of one battle, he flies to Wai'anae and covers himself with the fine-leaved *maile* (*Maile lauli'i*). Before the second battle, he flies to Waialua to array himself “in the rough and shaggy wreaths of *uki* (native sedges) from the lagoons of 'U'koa (a fishpond in eastern Waialua) and of *hinahina* (*Heliotropium anomalum*) from Keālia” (Thrum 1998:98). Before the third battle, he flies to Kahuku and adorns himself in a wreath of the pandanus fruit and flowers of the sugarcane. The heliotrope from Keālia is a low, spreading beach plant with small, white fragrant flowers.

2.3 References to Marine Resources

Several legends about Mokolē'ia concern marine resources, fishing practices, and ceremonial rites related to fishing. In an archaeological survey of the Mokolē'ia area conducted in the 1920s and 1930s, four surviving *ko'a* (shrine) were recorded (McAllister 1933). *Ko'a* are usually natural boulders or rock mounds, used as shrines where fishermen could beseech the gods for a good catch or place offerings to thank the gods. One of the gods honored by the Hawaiians was Kāne'aukai, who first revealed himself to the people in Waialua. The following passage describes the appearance of Kāne'aukai to two fisherman, who were tasked with praying to him for a plentiful supply of fish:

One morning on going out upon the seashore they found a log of wood, somewhat resembling the human form, which they took home and set in a corner of their lowly hut, and continued their habit of praying to Kaneaukai. One evening, after having prepared a scanty supper of poi and salt, with perhaps a few roasted kukui-nuts, as a relish, and a couple of cocoanut cups of awa as their usual drink, they saw a handsome young man approaching, who entered their hut and saluted them. He introduced himself by saying, 'I am Kaneaukai to whom you have been praying, and that which you have set up is my image; you have done well in caring for it.'

He sat down, after the Hawaiian custom, as if to share their evening meal, which the two old men invited him to partake of with them, but regretted the scanty supply of awa. He said: 'Pour the awa back into the bowl and divide into three.' This they did and at once shared their meal with their guest.

After supper Kaneaukai said to the two old men, 'Go to Keawanui and you will get fish enough for the present.' He then disappeared, and the fishermen went as instructed and obtained three fishes; one they gave to an old sorceress who lived nearby, and the other two they kept for themselves.

Soon after this there was a large school of fish secured by the fishermen of Mokuleia. So abundant were the fish that after salting all they could, there was enough to give away to the neighbors; and even the dogs had more than they desired. [Thrum 1998:251]

The two fishermen also described the variety of marine resources found at Mokulē'ia:

The fish that frequented the waters of Mokuleia are the aweoweo [bigeyes; *Priacanthus* sp.], kala [surgeonfish; *Naso* sp.], manini, [surgeonfish; *Acanthurus* sp.] and many other varieties that find their habitat inside the coral reefs. Crabs of the white variety burrowed in the sand near the seashore and were dug out by the people, young and old. The squid also were speared by the skillful fishermen, and were eaten stewed, or salted and sun-dried and roasted on the coals. [Thrum 1998:250]

The wooden idol was eventually moved to Waimea Valley, O'ahu and placed next to a stone idol also representing the god Kāne'aukai. The stone idol was still in place when Thrum recorded this tale in 1907, but the wooden idol had disappeared. Thrum speculated that it may have been destroyed on one of Ka'ahumanu's trips around the island, when she spread the word of Christianity and ordered all idols of the Hawaiian gods to be burned (Thrum 1998:253).

In the legend of Māikoha, the types of fish resources associated with certain *ahupua'a* are mentioned (Fornander 1974:5[2]). This legend concerns a man named Māikoha and his four sisters. Māikoha was sent away by his father for breaking several *kapu* (taboos). He left his family and settled in Kaupō, Maui. His four sisters later went in search of him, and found that he had changed into a *wauke* (paper mulberry; *Broussonetia papyrifera*) plant. After they had found him, they left again on a journey to O'ahu. The first sister, Kaihuopala'āina, met a man named Kapapa'apuhi in Honouliuli, 'Ewa. She married him, settled down, and eventually changed into a fishpond still present in the area. As the remaining three sisters traveled on, the second sister, Kaihukoa, met a man named Ka'ena in Wai'anae, and decided to marry him. She settled in the area and changed into a fishing ground directly out from Ka'ena Point, famous for its *ulua* (trevally or jack), *kahala* (amberjack, *Seriola* sp.), and the *mahimahi* (dolphin fish; *Coryphaena hippurus*). The remaining two sisters traveled on to Waialua, where Ihukoko met a man named Kawailoa. They married and settled in the area, and Ihukoko was accompanied to the area by the fish *āholehole* (Hawaiian flagtail; *Kuhlia malo*). The final sister traveled to Lā'ie where she married a man named Laniloa. She brought with her the 'ama'ama (mullet; Mugilidae) (Fornander 1974:5[2]:270–272).

A continuation of the legend of Māikoha contains another variation on the legend of the fishing god, Kāneʻaukai:

After the sisters were all married and had been living with their husbands on Oahu for some time, Kaneaukai their oldest brother came in search of them. This man's body was in the shape of a log of wood, and after he had floated on the surface of the ocean for several days, it drifted to the seashore at Kealia in Mokuleia, Kawaihapai, Waialua, where it was carried in and out by the tide. After being in this form for some time it changed into a human being and journeyed to Kapaeloa, where two old men were living.

When he approached the home of the two old men, he saw them watching an imu (oven), and after it was covered up they set out to the beach to do some fishing. After fishing for some time without success Kaneaukai called out to them: 'Say, you old men, which god do you worship and keep?' The old men replied: 'We are worshipping a god, but we do not know his name.' Kaneaukai then said: 'You will now hear and know his name. When you let down your net again, call out, 'Here is the food and fish, Kaneaukai, that is the name of the god.' The old men assented to this, saying: 'Yes, this is the first time that we have learned his name.' Because of this fact, Kaneaukai is the fish god worshiped by many to this day, for Kaneaukai became their fish god, and from them others, if they so desired. [Fornander 1974:5(2):272]

The *kahala* (amberjack; *Seriola* sp.) of Mokulēʻia are mentioned often in stories, such as the Legend of Kūaliʻi and the Legend of Māikoha, presented above. According to the *Hawaiian Dictionary*, the word *mokulēʻia* itself is a rarely used alternate name for this fish (Pukui and Elbert 1986:252). This species, the amberjack, is a deep water species that was caught on a hooked line at depths of 400-500 ft. It is a large, meaty fish that can reach a length of 6 ft (Tinker 1978:256–257). *Kahala* were commonly cooked in the *imu* (earth oven) or cubed and eaten raw with salt by Native Hawaiians (Titcomb 1972:83).

The legend of the Hinalea Fish Basket also takes place in Mokulēʻia, which attests to the abundance of marine resources in the area (Kamakau 1870 in Sterling and Summers 1978:101–103). In this legend, Kalamainuʻu, a *moʻo* or goddess, resides in a cave in the Waileʻa valley, west of the valley of Makaleha in Mokulēʻia. Kalamainuʻu, in search of a husband, lures Punaʻaikoaʻe, a chief of Kapaʻa, Kauaʻi, out to sea while he is surfing. Punaʻaikoaʻe is taken by Kalamainuʻu from Kauaʻi to her cave in Mokulēʻia. The following passage describes the abundance of both land and marine resources at Makaleha:

They went to her home in Makaleha where sweet potatoes and both the kiki and lapa varieties of taro grew abundantly and there was plenty of poi, ʻawa and bananas. The woman supplied the fish of that land that was usually caught by torching, the kumu, the uhu (lobster), and all kinds of fish. [Kamakau 1870 in Sterling and Summers 1978:101]

The legend continues with Punaʻaikoaʻe observing the breaking surf along the Waialua shoreline. Longing for the surf of his homeland, Punaʻaikoaʻe asks the permission of Kalamainuʻu to surf. Kalamainuʻu granted him permission, as long as he did not speak to anyone on the way to the shoreline. Punaʻaikoaʻe is then caught speaking to two farmers, which leads Kalamainuʻu to

attempt to kill the two men. The men escape to a crack in the sea floor, where Kalamainu'u is unable to reach them.

Kalamainu'u, exhausted and lying on the beach, is approached by two women who teach her how to trap the two men:

. . . They like the sand crabs on this beach to eat with the sweet potatoes which they cultivate in Kanoa, Keone'ae, and the uplands of Makaloha, but they are unskilled in torch fishing. This how you can catch them. Go gather some 'inalua vines under tapu and on your return weave (them into a trap), beginning at the opening. When the part that goes inward is formed, bend (the 'inalua) back to shape the basket. Add some 'inalua to increase the size of the basket as you work downward, and when you see that it is large enough then decrease the 'inalua that are standing upright and keep on decreasing. In that way the bottom of the basket is shaped and finished. When the weaving of the basket is finished the tapu is freed. Then dig sand crabs; carry the basket into the sea, weighted down with pebbles from the sea pools, and set it up in a favorable place where there is a depression so that the sea runs in and out, and remove the stones until it is properly balanced. Then go to a rock in the sea and chew the sand crabs, dive into the sea and place them in the basket, then return to some distance. After an interval, dive again. Hinale and Akilolo will have come to eat their favorite food, and when you come you will find your enemies in the basket." Kalamainu'u heard and heeded these words. All went as they had said. She killed her enemies and tore them into pieces, and the pieces into which she tore them became hinalea fish. From that time down to the overthrow of the tapus those who wove baskets to trap hinalea fish observed these tapu rules; and there were always plenty of hinalea caught in the baskets during that period, so many that a stench arose from the frames where they were drying, from the water of Kumalaekawa to the cape of Ka'ena. Kalamainu'u became an 'aumakua for basket fishing in these places. [Kamakau 1870 in Sterling and Summers 1978:102–103]

2.4 Other Legendary References

The plains of Mokulē'ia were said to have once been inhabited by cannibal chiefs, as told in "The Legend of Oahunui" (Thrum 1998). These cannibal chiefs from the South Seas were

. . . driven from the plains of Mokuleia and Waialua by the inhabitants of those districts; for the people had been exasperated by the frequent requisitions on the *kama'ainas* (original inhabitants) by the stranger chiefs to furnish material for their cannibal feasts. [Thrum 1998:140]

Kawaihāpai was also known to be one of the places that the lights of the *menehune* (legendary little people) could be seen. These lights have been described as follows:

Here in the arm of Haleiwa Bay, strange things can be seen at night. Looking over toward the point to the right, when the night is dark, rows of twinkling light show upon the water. It is the menehunes at their fishing, working fast against the coming of the dawn. [Raphaelson 1925 in Sterling and Summers 1978:100]

2.5 Early Descriptions

A picture of pre-Contact Hawai'i is painted by the recorded accounts of early foreign explorers. After the death of Captain James Cook on the island of Hawai'i, the crew of the *Resolution* continued to sail toward O'ahu under the leadership of Captain Charles Clerke. Clerke, after anchoring in Waimea Bay, describes the highly populated and lush northwest coast of O'ahu:

I stood into a Bay just to the Wtward [Westward] of this point the Eastern Shore of which was by far the most beautifull Country we have yet seen among these Isles, here was a fine expanse of Low Land bounteously cloath'd with Verdure, on which were situate many large Villages and extensive plantations; at the Water side it terminated in a fine sloping, sand Beach . . . This Bay, its Geographical situation consider'd is by no means a bad Roadsted, being sheltered from the NEbN [Northeast by North] SEterly [Southeasterly] to SWbW [Southwest by West] with a good depth of Water and a fine firm sandy Bottom; it lays on the NW [Northwest] side of this Island of Wouahoo [O'ahu] . . . surrounded by a fine pleasant fertile Country. [Beaglehole 1967:569]

In 1813, Waialua was described by John Whitman, an early missionary visitor, as follows:

. . . a large district on the N.E. extremity of the island, embracing a large quantity of taro land, many excellent fishing grounds and several large fish ponds one of which deserves particular notice for its size and the labour bestowed in building the wall which encloses it. [Holt 1979:78]

Another missionary, Levi Chamberlain, described the vicinity of Kawaihāpai in 1826:

At 11 o'ck [*sic*] we set out and walked along a path leading over an extended plain covered with high grass. After walking about 3 miles we took a path leading over a marshy tract to the mountains which we were designing to cross in order that we might avoid a bad piece of traveling along the western shore. The mountains here run in nearly a N.W. and N.E. direction being somewhat circular. We ascended by a rough & difficult path, shrubs, long grass, wild plants and bushes sprung up grew luxuriantly among the rocks being plentifully moistened by little streams which trickled down the steep sides of the mountains. After ascending several hundred feet, we came to a beautiful little run of water conducted by sprouts [*sic*] furnishing sufficient moisture for a number of taro patches below. I was told that the water never failed and the district into which it passes is called Kawaihapai (Water lifted Up) on account of the water's being conducted from such an elevation.

The prospect from the acclivity is very fine. The whole district of Waialua is spread out before the eye with its cluster of settlements, straggling houses, scattering trees, cultivated plats & growing in broad perspectives the wide extending ocean tossing its restless waves and throwing in its white foaming billows fringing the shores all along the whole extent of the district. [Chamberlain 1823-1827 in Alameida 1993:14-15]

2.6 Economic Changes

About AD 1720-1740, the island of O'ahu was united under the high chief Kūali'i after a series of battles with the chiefs of Kona and 'Ewa. Kūali'i continued his wars of conquest by carrying out raids on the islands of Moloka'i and Hawai'i. This began a period of intra-island and inter-island wars referred to as the Conquest Period that culminated in the conquest of O'ahu by the Hawai'i Island chief, Kamehameha, in AD 1795 (Sahlins 1992:36). In 1804, the Hawai'i chiefs who supported Kamehameha occupied O'ahu, taking control of the lands of the former ruling chiefs. In 1806, Kamehameha traveled around the island of O'ahu to encourage people to rebuild their war-ravaged agricultural fields and fishponds by his own example.

Kamehameha stayed for only one day to farm at Wai'anae, then went to Waialua. He stayed at least 3 or 4 days with the chiefs and people of Waialua working in the lo'i [irrigated fields] which extended from the famous pawehe (geometric patterns) mats [of Mokule'ia] to the waters of Waimea. From Waialua he went to Laie and farmed there. [*Ka Nai Aupini*, newspaper article, in Alameida 1993:39]

Kamehameha not only encouraged his people to rebuild areas devastated by the wars, but also to expand into new areas. "He cleared the land at Waikiki, Honolulu, Kapalama, Kapa'auki, Keone'ula, Kapa'eli, and all the other places, and when all the lands were under cultivation he cultivated mauka in Nu'uaniu as far as Keawewawapu'ahanui" (Kamakau 1961:192). This passage indicates there may have been an intensification of agriculture after 1804, which included expanding the irrigation system into new lands upland (*mauka*) of the former pre-Contact fields (Sahlins 1992:52). Some of these agricultural endeavors may be connected to the new trade that developed with visiting foreign ships. During the Conquest Period, food and other provisions were sold to visiting ships involved in the Canton trade. Ships would travel to the Northwest Coast for furs, stop in Hawai'i for provisions, and journey on to Canton, China to trade the furs for luxury goods such as fine ceramics and silk (Sahlins 1992).

Kamehameha died in 1819, and his son Liholiho and wife Ka'ahumanu shared the duties of ruling the new kingdom. In 1823, Liholiho addressed a gathering of chiefs at Maui and told them that he wished to visit England. He selected his younger brother Kauikeaouli to be his chief during his absence and heir in the event that he did not return. Both Liholiho and his wife died in 1824 while in England, and Kauikeaouli, later known as Kamehameha III, became king at the age of nine, with a guardian Kahalai'a as his *kahu* (personal attendant). This took place during the Sandalwood Period (AD 1812-1830), when the *ali'i* (high chiefs) made enormous demands upon the common people to gather sandalwood in the upland forests. The wood was sold to foreigners in trade for western luxury goods (Sahlins 1992:82).

Kau-i-ke-aouli's assumption of control was marked by the selection of a group of young chiefs and children of important persons, of resident foreigners, and of commoners, to become his favorites, friends, members of his household, and soldiers and sailors to form his bodyguard. After Kahala'ia's death all repaired to the uplands of Waialua adjoining Waimea, to upper Kolokini, Wao'ala, 'Aikanaka, Kaloka in upper Makaleha, and to upper Mokule'ia to cut sandalwood. Kau-i-ke-aouli was but a boy in his thirteenth year while cutting at upper Wao'ala and lower Maeaea, but he attended to the work himself and when he sailed in his two-masted boat to Mokule'ia or other places after sugarcane, sweet potatoes, melons, pigs, and

fowl, he handled the boat in true sailor fashion, dressed in his sailor blouse and cap.
[Kamakau 1992:278–279]

This period ended in the exhaustion of sandalwood on the Islands. Trade continued with visiting whaling ships during the Whaling Period (AD 1830-1848) for provisions, but this did not generate the same profits for the *ali'i* as did the early sandalwood trade. The *ali'i* became greatly indebted to western merchants, and made increasing demands upon the common people for goods and work to pay off these debts and to buy yet more goods (Sahlins 1992:108).

Between 1830 and 1850, the demands of the *ali'i* on the *maka 'āinana* (common people) were severe. The missionary John Emerson, commenting on the burdensome taxes on the people, wrote that the ruling chiefs “get hungry often and send a vessel to Waialua for food quite as often as it is welcomed by the people” (MsL: 10 Feb 1834 in Sahlins 1992:145). The chiefs also demanded food be brought to them:

Last Sat some 2 or 300 men went from this place to H[onolulu] to carry food for the chiefs and this [is] often done . . . Each man carried enough food to maintain 4 persons one week & will cost each man beside the time spent in [indecipherable] and cooking it 4 days time and 70 miles travel to get it to H[onolulu], and yet each man's load would only bring 50 cts. [Locke, journal, 26 June 1837; cf. MsL: Emerson, 11 Jan 1835 in Sahlins 1992:145]

John Emerson also began growing sugarcane on his land in Waialua as early as 1836. He “made his own molasses, grinding a few bundles of cane in a little wooden mill turned by oxen, and boiling down the juice in an old whaler trypot” (*The Friend* in Condé and Best 1973:340). This early sugarcane plantation later passed through several hands, including the Levi and Warren Chamberlain Sugar Company, established 1865, Halstead & Gordon, and the Halstead Brothers.

2.7 Population Decline

In the pre-Contact period, villages in the Waialua District were concentrated along the coast and the well-watered valleys of the *ahupua'a* on the eastern side of the district. The population of these *ahupua'a* has been estimated at 6,000 to 8,000 people before Western Contact (Sahlins 1992:20).

In 1832, the missionary Ephraim Walter Clark reported that:

Waialua on the eastern part of the island is a populous region. A mission can be located at a central point in this vicinity, [and] by preaching at different places that are within 5 or 6 miles of each other & of easy access, [we] would probably have 3,000 or 4,000 bearers [followers]. [Letter from E.W. Clark 1932 in Alameida 1993:4]

A small school was also established at Kawaihāpai in 1839, near Kawaihāpai Stream.

The first missionary census of the district in 1831-1832 recorded 2,640 people in Waialua, probably down 20-30% from the first decade of the century. The population continued to decline in the first part of the nineteenth century and by 1848, the population was down to 1,616 persons. Much of this decline was due to a high death rate from newly introduced diseases such as smallpox, typhus, and venereal diseases.

In 1850, the missionary Emerson wrote the following:

I went to Kawaihapai, distant about 6 miles to preach to a small congregation. Found many sick on the road calling for medicine; & when [I] arrived at the place of meeting I found two unburned corpses, but a few steps from the schoolhouse & other sick-apparently nigh unto death . . . The past epidemic has been of a very strange character. Many were taken with violent pains in the head or stomach, which would soon spread over the whole system; & some times in one or two days the patient would die, but more frequently he would linger along six or ten days. [Emerson 1850 in Alameida 1993:84; Letter, Emerson to Anderson, May 22, 1850, Hawaiian Mission Children's Society Library]

The adult to child ratio in 1831-1832 was three to one (Schmitt 1977:9). This is not only a reflection of the low birth rate during these years, but also indicates many young people were moving out of the district. They left to escape the increasing demands of the *ali'i* during the Sandalwood Period and to seek a better life in the new urban centers of the Islands. This trend in population decline continued until 1866, when the population reached a low of 851 persons (Schmitt 1977:13-14).

2.8 Mid- to Late 1800s

Following the death of Ka'ahumanu's father, Ke'eaumoku, in 1804, Ka'ahumanu's brother Kahekili Ke'eaumoku, also known as George Cox, became the *ali'i 'ai moku* (governing high chief) of Waialua. In 1824, Kahekili Ke'eaumoku died and his sister, Lydia Kekuapi'ia Nāmāhana, also known as Pi'ia, inherited the entire *moku* (district) of Waialua. When she died, her husband La'anui was confirmed as the *luna* (landlord or supervisor) by Ka'ahumanu, who was again considered the owner. Ka'ahumanu, who died in 1832, willed all of her lands to her niece, Kīna'u. After Kīna'u's death in 1839, the *kalana* (land division smaller than a *moku*) within Waialua was inherited by her daughter, Victoria Kamāmalu, along with many other lands in the Islands (Kame'eleihiwa 1992:106, 120-124).

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established "for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property" (Chinen 1958:8). This led to the Māhele, the division of lands among the king of Hawai'i, the *ali'i*, and the common people, which introduced the concept of private property into Hawaiian society. In 1848, Kamehameha III divided the land into four divisions: Crown Lands to be reserved for himself and the royal house; Government Lands set aside to generate revenue for the government; Konohiki Lands claimed by *ali'i* and their *konohiki* (supervisors); and *kuleana*, habitation and agricultural plots claimed by the common people (Chinen 1958:8-15).

Upon the confirmation of a land claim, the *ali'i* were required to pay a commutation to the government. This commutation (meaning a substitution of one form of payment or charge for another) could be satisfied with a cash payment or the return of land of equal value. This payment was usually one-third of the value of the unimproved land at the date of the award (Chinen 1958:9-12). Victoria Kamāmalu gave up all of her lands in Kamananui, Mokolē'ia, Kawaihāpai, Keālia, and Ka'ena, all within the Waialua District, to the Government to satisfy the one-third-commutation requirement in order to claim all of her other extensive land titles. These *ahupua'a*

then became Government Lands. In 1848, Government Lands became available for purchase, “in lots of from one to fifty acres in fee simple, to residents only, at a minimum price of fifty cents per acre” (Chamberlain n.d.). These costs did not include the survey fee, which was to be paid by the interested buyer.

Many of the Native Hawaiians living in the area bought the lands they lived and worked on through the Waialua land agent, the missionary John Emerson. Emerson had encouraged the natives of these five *ahupua'a* in western Waialua to withdraw from the Māhele and not prosecute their claims through the Kuleana Act of 1850. Instead, he encouraged them to buy the lands they worked. In this way they could not only obtain house and agricultural lots, but also pasturage and upper forest lands, which were usually not awarded as *kuleana* claims (Sahlins 1992:168).

A total of 27 land grants were purchased in the *ahupua'a* of Mokulē'ia and 16 in the *ahupua'a* of Kawaihāpai (Figure 7). Portions of 17 land grant lots are located within the Dillingham Ranch Agricultural Subdivision project area, granted from 1850 to 1855 (Table 1). The land grants in the vicinity generally consisted of long, narrow rectangular pieces of land with the long axis running *mauka-makai*. There were also two rows of land grants extending from the shoreline to the forest reserve line. The *makai* row included the coastal plains and lower foothills. The *mauka* row consisted of the upper mountainous areas. No land use information was provided in the land grant documentation.

In 1850, a law passed that allowed foreigners to buy land fee-simple. Two descendants of missionaries, William Emerson and John T. Gulick, were the first foreigners to buy land in Mokulē'ia and Kawaihāpai. Over the next few years, Emerson continued to buy land from the original grantees or later owners until he owned a total of 2,605 acres in Waialua (Alameida 1993:xii).

In 1852, the first Chinese were brought to the Islands to work in the sugarcane fields. Some of these Chinese later moved to Waialua to begin rice cultivation. A market for rice in California had developed as increasing numbers of Chinese laborers immigrated there since the mid-nineteenth century. Similarly, as Chinese immigration to the Islands also accelerated, a domestic market for rice developed:

By 1876 there was still a considerable amount of former taro land available for rice farming. The great demand for rice land brought disused taro patches into requisition—especially because water rights attached to them . . .

As the demand for rice continued, it became profitable to bring into use land hitherto unused. The land most easily rendered fit for rice cultivation was swamp or marsh land of which there was a large amount in the islands. At Waialua on Oahu, about three hundred acres of swamp land were reclaimed for rice farming. [Coulter and Chun 1937:11]

In 1892, there were 180 acres of land under cultivation for rice in the Waialua District; these rice fields were located in the *ahupua'a* of Mokulē'ia, Kamanai, and Kawaihoa (Coulter and Chun 1937:12, 21). The immigrant Chinese may account for the rise in the Waialua District population during the last quarter of the nineteenth century. In 1866, the population of Waialua had reached a low of 851 persons. This trend reversed in 1878, with a small increase to 939 people and a count of 1,349 in 1886 (Schmitt 1977:13–14).

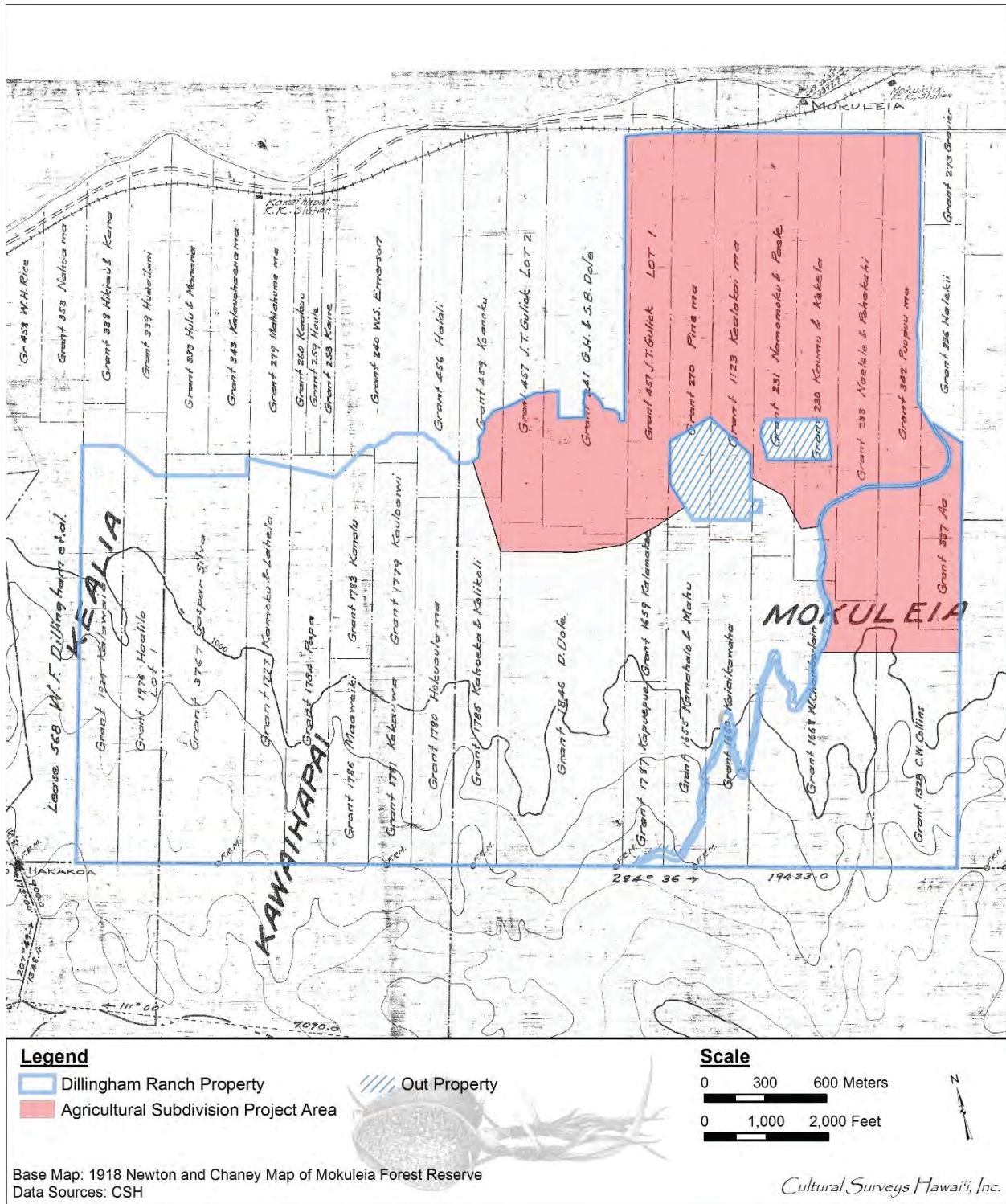


Figure 7. Portion of the 1918 Newton and Chaney map of the Mokuleia Forest Reserve, showing the distribution of land grants in the vicinity of the Dillingham Ranch Agricultural Subdivision project area

Table 1. Land Grants within the Dillingham Ranch Agricultural Subdivision project area

Grant #	Grantee	Year	Acreage	Location
230	Kaumu and Kekela	1850	120	Mokulē'ia
231	Namomoku and Paele	1850	114	Mokulē'ia
233	Pohakahi and Naelele	1850	130	Mokulē'ia
241	George H. Dole and Sanford B. Dole	1850	195	Mokulē'ia
270	Pine Pao and Mahiai	1850	108	Mokulē'ia
336	Haleki	1850	50	Mokulē'ia
337	Aa	1850	49	Mokulē'ia
342	Puupuu, Ao, Kalaikao, and Malehine	1850	141	Mokulē'ia
457 (2 lots)	John T. Gulick	1850	197	Mokulē'ia and Kawaihapai
459	Koanaku, Palau, and Kaweawe	1850	90	Kawaihapai
1123	Makahi, Kealakai, Poli and Keoahu	1853	112	Mokulē'ia
1328	Charles W. Collins	1854	136	Mokulē'ia
1659	Kalamaku (Kalamakee)	1855	40	Mokulē'ia
1668	Warren Chamberlain	1855	211	Mokulē'ia
1785	Kahoeka C. and Kolikoli	1855	90	Kawaihapai
1846	Daniel Dole	1855	248	Mokulē'ia and Kawaihapai

2.9 1900s

By the early 1900s, sugarcane plantations and large ranches came to dominate the lands of western Waialua. Cattle were known to have grazed on the lowlands of Waialua as early as the 1840s (Sahlins 1992:148). In 1897, B.F. Dillingham purchased the Kawailoa Ranch in Mokulē'ia. The ranch included over 2,000 head of cattle and over 100 horses and mules on 10,000 acres of land (Yardley 1981:193). Dillingham also leased additional property in Mokulē'ia, including the Gaspar Silva Ranch, the James Gay Estate, and other lands in the area that he could secure. Dillingham's plan was to later sublease or sell the land at a profit as the lands had potential for being developed into large-scale sugar plantations. He anticipated the land would become valuable once extensive irrigation systems were in place, and when the O'ahu Railway and Land Company (OR&L) railroad was constructed around Ka'ena Point and along the north shore to Kahuku.

By 1898, the OR&L railroad was constructed through Waialua District, with stations in both Kawaihāpai and Mokulē'ia. Soon thereafter, Dillingham began selling off or subleasing much of his lands in western Waialua. However, Dillingham retained as his personal ranch "a great strip of mountainside and beaches with flat land in between and a homestead in the middle" (Yardley 1981:206). This land would remain ranch land, with sugar plantations located to the east and west. The Dillingham Ranch was developed into a horse ranch including stables, pastures, equestrian areas, and a polo field, along with a large, wood-framed house for the Dillingham family (Yardley 1981:193–194).

Also in 1898, the Halstead Brothers had a small sugarcane plantation and mill at Waialua town. B.F. Dillingham believed the Halstead Brothers' land could be turned into a profitable sugar plantation, especially since there was now a rail line to Honolulu. The Waialua Agricultural Company was established in 1898 by J.B. Atherton, E.D. Tenney, B.F. Dillingham, W.A. Bowen, H. Waterhouse, and M.R. Robinson (Moblo 1991:4), and was incorporated by the company Castle & Cooke (Dorrance and Morgan 2000:47). They bought the Halstead Brothers' land and mill and began to buy or lease the adjacent lands, many owned by Native Hawaiians. They acquired many of the former irrigated taro lands in order to control the water rights of the region.

Ditches to control water flow began to be built around 1902 in Waialua. The Ito Ditch, built after 1911, diverted water from Kaukonahua Stream to the Mokulē'ia sugarcane fields. The Waialua Agricultural Company was famous for its system of flume irrigation. The portable concrete flumes were set around the fields in a herringbone pattern and water was released to the field by small tin gates (Wilcox 1996:110). In addition, various artesian wells, pumping stations, reservoirs, and associated water control infrastructure were constructed to support the growing sugar plantations.

Land for a new railroad that would carry cane from the fields to the mill began to be surveyed in 1898 and by 1908 the new railroad connected the plantation lands in Waialua, Helemano, and Kawailoa. In 1910, it was reported in the *Louisiana Planter*:

Waialua is reached either by railroad, a distance from Honolulu of 58 miles, or wagon road, 28 miles. The plantation lands extend along the seacoast 15 miles and 10 miles back toward the mountains. The plantation has a good railway system.

There are nearly 600 cane cars and five locomotives: with 30 miles of permanent track and eight of portable track. One stretch of road is nine miles long. [Condé and Best 1973:341]

A 1919 U.S. Army War Department fire control map (Figure 8) illustrates the extent of plantation development in the vicinity of the Dillingham Ranch Agricultural Subdivision project area. In general, cane lands extend from the OR&L/Government Road that parallels the shoreline, to the base of the foothills of the Wai'anae Range. The *mauka* extent of plantation cultivation appears to be the Ito Ditch, indicated crossing east-west through the *mauka* portion of the Dillingham Ranch Agricultural Subdivision project area, along the base of the foothills. Various fence lines are indicated *mauka* of the ditch, as these areas remained pasture for grazing livestock.

There are several structures indicated on the 1919 map, most of which are regularly spaced around the railroad tracks. These may be worker's houses and camps, or other structures associated with the sugar plantation. Structures are also clustered near the coast at Kawaihāpai. These possible houses and walls are adjacent to three delineated areas of marsh, bounded by stone walls and fencing. These may be fields used to grow taro or rice, which may have been irrigated. The 1919 map also indicates the extent of Dillingham's personal ranch (labeled "Dillingham Ranch"), which was not cultivated in cane. The narrow strip of land extends from the Government Road up into the foothills and is bordered by fence lines. Cattle walls are also indicated near the *mauka* end of the Dillingham Ranch.

In 1918, the Waialua plantation railroad lines were connected to the main OR&L lines. In 1927, the rail line was extended to the upper levels of the cane fields. Water flumes had been used to transport the cane in these upper fields to the lower tracks, but the use of these flumes caused a serious depletion of the water supply and it was considered more economical to build more tracks.

The 1929 series USGS map (Figure 9) continues to show the various plantation ditches, railroad lines, and various other plantation-related structures in the vicinity of the Dillingham Ranch Agricultural Subdivision project area. The Kawaihāpai Reservoir is now indicated, suggesting a need for additional irrigation infrastructure for the expanding sugar plantation lands. Also of note are two large cattle paddocks located in the western portion of the Dillingham Ranch Agricultural Subdivision project area. These rectangular paddocks are indicated to be bordered on three sides by stone walls—which must have been fairly large structures to be indicated on the topographic map—that extend from the foothills down to the plantation ditch fed by the Kawaihāpai Reservoir. The locations of these paddocks correspond to the *mauka* boundaries of Land Grant 457, Lots 1 and 2 to J.T. Gulick (see Figure 7). At this time, Dillingham's personal ranch lands appear to remain confined to the strip of land along the eastern end of the Dillingham Ranch Agricultural Subdivision project area, bordered by cattle walls and fence lines.

Major land use changes occurred in western Waialua when the U.S. military began development in the area. Kawaihāpai Military Reservation was established ca. 1927 at the site of the present Dillingham Airfield. Following the entrance of the U.S. into World War II, Kawaihāpai Military Reservation was expanded and became known as Mokuleia Airfield (Payette 2003). A small sand and grass runway was built and in use within a week after the attack on Pearl Harbor. The airfield was a training base for fighter planes, P-38s, and later, P-51s. The continuation of the war required the expansion of the airfield and by April 1942, the airfield had become an 8,000-ft runway, later expanded to 9,500 ft. It was the longest runway in the Hawaiian Islands at that time (Allen

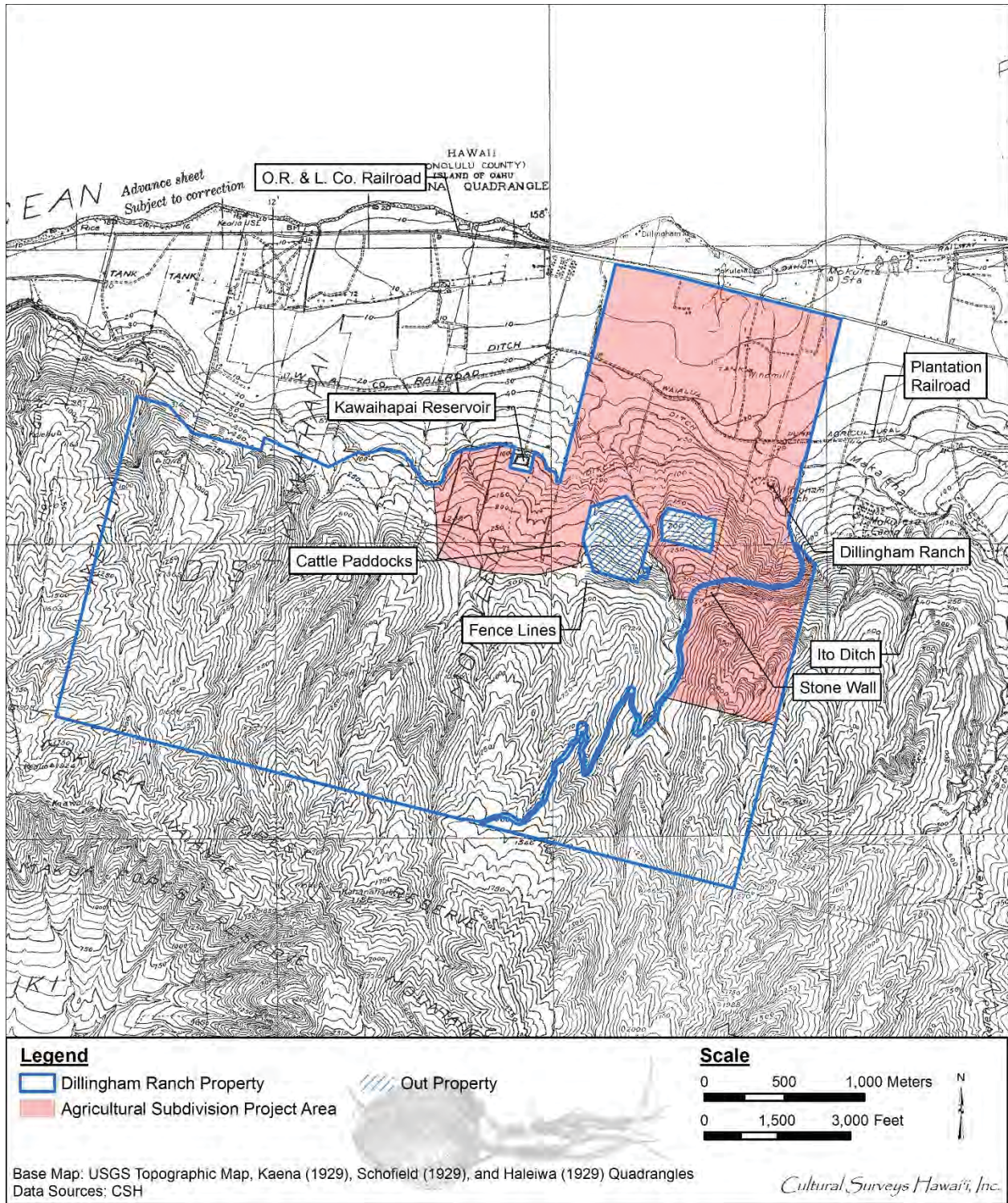


Figure 9. Portion of the 1929 Kaena, Schofield, and Haleiwa USGS topographic quadrangles map, showing development in the vicinity of the Dillingham Ranch Agricultural Subdivision project area

1971:226–227). Also located at Mokuleia Airfield was Battery Dillingham, in use from 1942–1944. Battery Dillingham included a series of naval gun emplacements located both along the beach and further inland, and served as a field artillery training range (Payette 2003). Mokuleia Airfield was renamed Dillingham Air Force Base when the U.S. Air Force was formed in 1947. In 1948, the base was deactivated but continued to be used for training activities by the U.S. Army. The site was also used as a NIKE missile base during the 1950s (Payette 2003).

Mokuleia Military Reservation, including Battery Mokuleia, was also established in 1942 and consisted of four gun emplacements located 2 miles inland (Payette 2003). The extent of military development in the vicinity of the Dillingham Ranch Agricultural Subdivision project area is shown on the 1943 U.S. Army War Department map (Figure 10). Dillingham Airfield is shown to dominate the landscape of coastal Kawaihāpai, though ranching and plantation agriculture remain throughout the vicinity of the Dillingham Ranch Agricultural Subdivision project area.

In 1946, Robert P. Patterson, Secretary of War of the United States, executed a “Declaration of Taking,” which stated that the land of Mokulē‘ia, Auku‘u, Kawaihāpai, Keālia, and Ka‘ena, Waialua, O‘ahu, Territory of Hawaii; Mokuleia Ranch and Land Company, Limited, et al. “is taken . . . to provide for a military airfield, an ordnance storage area, and related military purposes incident thereto. The said land has been selected by me for acquisition by the United States for use in connection with such purposes, and for such other uses as may be authorized by Congress or by Executive Order, and is [r]equired for immediate use.” Several of the Native Hawaiian families, who had retained their small plots of land through the nineteenth and early twentieth centuries, now lost the lands through this confiscation (Alameida 1993:113).

2.10 Modern Land Use

With the announcement of the Oahu Railway and Land Company’s decision to discontinue service in 1947, the Waialua Agricultural Company began to switch to truck transportation. The change was made slowly, until the last railroad line was closed in 1952. Subsequent historic maps and aerial photographs indicate a general lack of development in the area through the 1970s. The 1964 USGS map (Figure 11) indicates the Crowbar and Campbell ranches in the coastal portion of the Dillingham Ranch Agricultural Subdivision project area, north of the Dillingham Ranch. The railroad lines have been replaced by roads, though much of the plantation infrastructure remains in use. A 1977 aerial photograph (Figure 12) clearly depicts the various land use areas within and in the vicinity of the Dillingham Ranch Agricultural Subdivision project area. Lands in the *makai* portion of the Dillingham Ranch Agricultural Subdivision project area consist of improved pasture and ranch activity areas, including the Dillingham family residence and other smaller residences. Lands in the *mauka* foothills portion of the Dillingham Ranch Agricultural Subdivision project area generally appear to be unimproved pasture areas. To the east and west of the Dillingham Ranch Agricultural Subdivision project area are extensive sugar plantation fields.

The lands occupied by the Crowbar Ranch, Campbell Ranch, and Dillingham Ranch were later consolidated under the control of the Mokuleia Land Company. At present, the Dillingham Ranch Agricultural Subdivision project area, again known as the Dillingham Ranch, is an active horse and cattle ranch. Much of the level coastal plain portion of the Dillingham Ranch Agricultural Subdivision project area is used for equestrian stables and activity areas. The sloping foothills of the Dillingham Ranch Agricultural Subdivision project area are used as pasture for grazing cattle. The Dillingham residence remains on the property, as well as a coconut and palm tree farm.

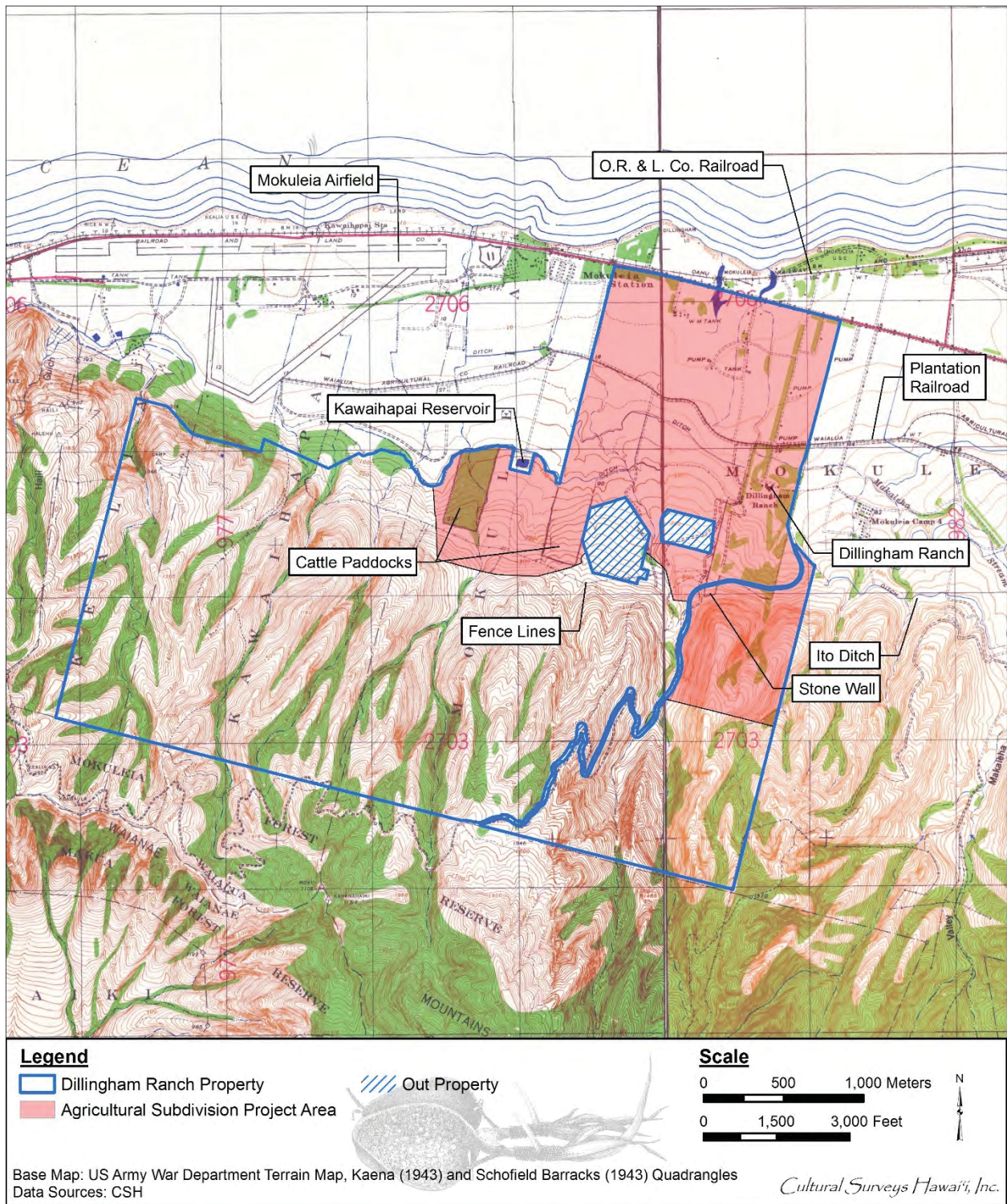


Figure 10. Portions of the 1943 U.S. Army War Department Terrain Maps, Kaena and Schofield Barracks Quadrangles, showing development in the vicinity of the Dillingham Ranch Agricultural Subdivision project area

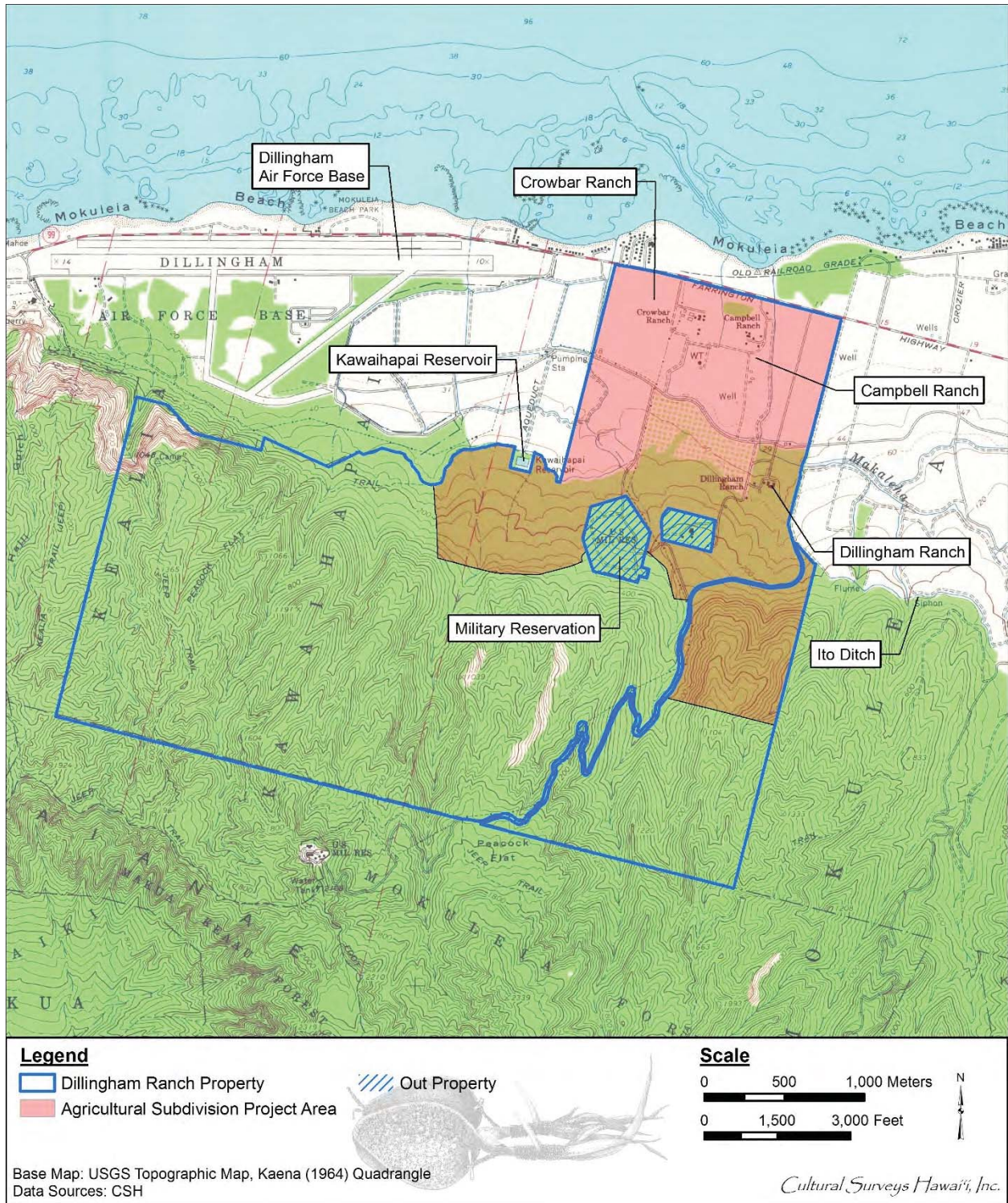


Figure 11. Portion of the 1964 Kaena USGS topographic quadrangle map, showing development in the vicinity of the Dillingham Ranch Agricultural Subdivision project area

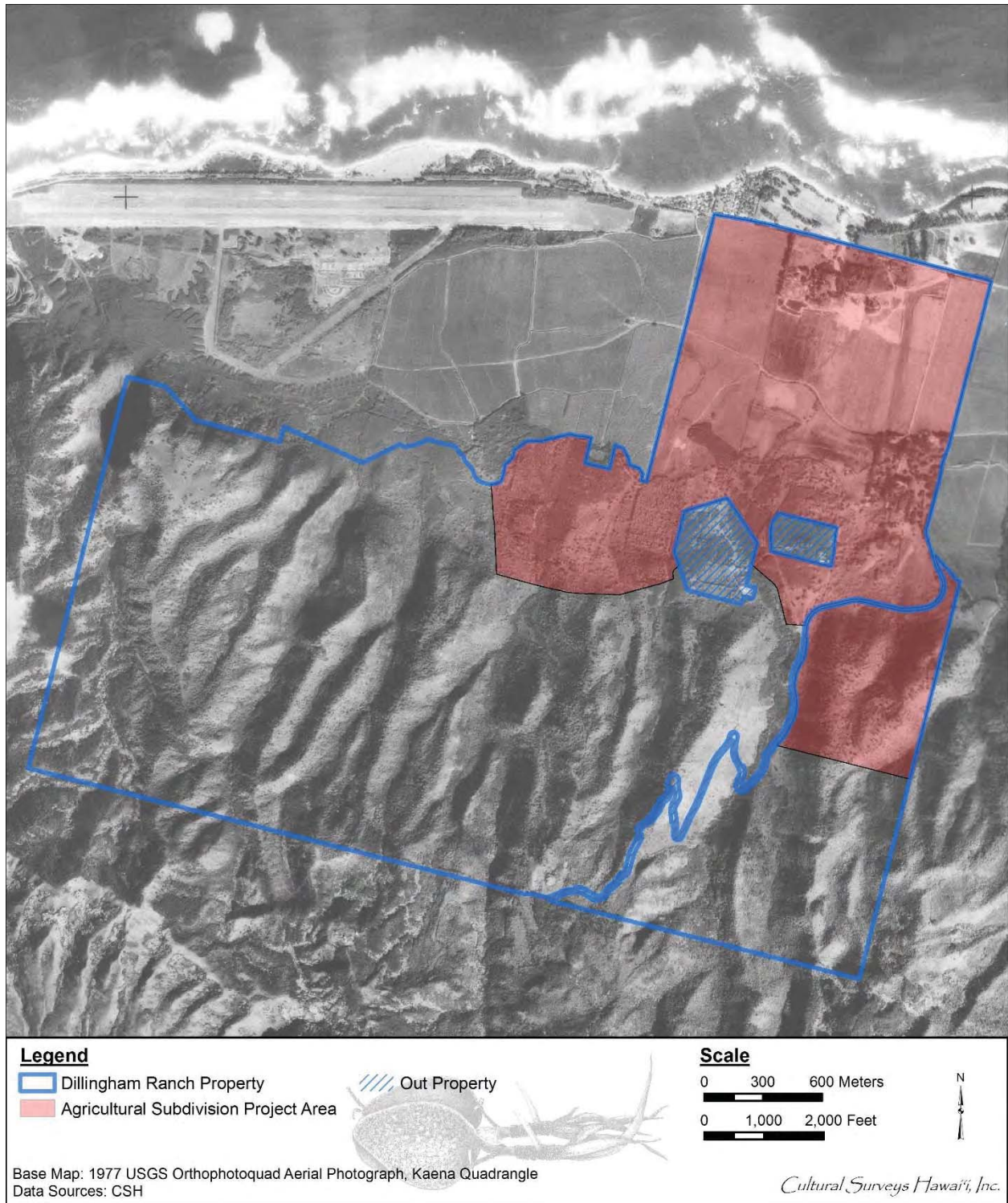


Figure 12. 1977 USGS Orthophotoquad, Kaena Quadrangle, showing development in the vicinity of the Dillingham Ranch Agricultural Subdivision project area

Section 3 Archaeological Background

Archaeological studies in the vicinity of the Dillingham Ranch Agricultural Subdivision project area have largely been limited to the inadvertent finds of burial remains along the beach and short, one or two-day reconnaissance surveys in the inland areas. Figure 13 illustrates the locations of previously conducted archaeological studies. Table 2 presents the findings of the archaeological studies in the vicinity of the Dillingham Ranch Agricultural Subdivision project area. Several of these studies have focused on locating archaeological sites first identified in early archaeological studies. Historic properties located within and near the Dillingham Ranch Agricultural Subdivision project area are illustrated on Figure 14 and summarized in Table 3.

3.1 Early Archaeological Studies

Two early archaeological studies were conducted in the vicinity of the Dillingham Ranch Agricultural Subdivision project area. These consist of Gilbert McAllister in his island-wide survey conducted in 1930 (McAllister 1933) and Handy's ethnographic survey of Hawaiian farming (Handy 1940).

McAllister (1933) identified eight sites within Mokulē'ia and Kawaihāpai Ahupua'a, in the vicinity of the Dillingham Ranch Agricultural Subdivision project area. Four sites were located along the coast and consisted of *ko'a*, or fishing shrines. Sites 190, 193, 195, and 201 are described as follows:

Site 190 Pu'u o Hekili Ko'a

Pu'u o Hekili, an ahua which was once located on the beach below the Kawaihāpai [railroad] station. According to Hookala, an ahua is 'bent instead of angular in construction' and was evidently a type of fishing shrine (*ko'a*). Unfortunately nothing remains of the site. [McAllister 1933 in Sterling and Summers 1978:99]

Site 193. Fishing Shrine (destroyed)

Kuakea fishing shrine (*ko'a*), Kawaihāpai, was formerly located on the beach in a direct line with Kawailoa heiau. Nothing marks the site. [McAllister 1933 in Sterling and Summers 1978:100]

Site 195. Kolea fishing shrine (*ko'a*), Mokuleia, Fishing Shrine (destroyed)

The shrine is located on the beach in a direct line with the Dillingham stables. The stones have been removed and only an indistinct line of stones 15 by 30 feet remains to mark the foundation. A stone in the water in front of Kolea was known as Mokupaoa. [McAllister 1933 in Sterling and Summers 1978:101]

Site 201. Fishing Shrine

Keauau fishing shrine was once located on the beach at Puuiki, at the Kaena end of a long row of ironwood trees. Nothing remains of the site. [McAllister 1933 in Sterling and Summers 1978:105]

The presence of four *ko'a* in the immediate area attests to the abundance of marine resources, as described in traditional and historic accounts (see Section 2.1). McAllister (1933) also identified

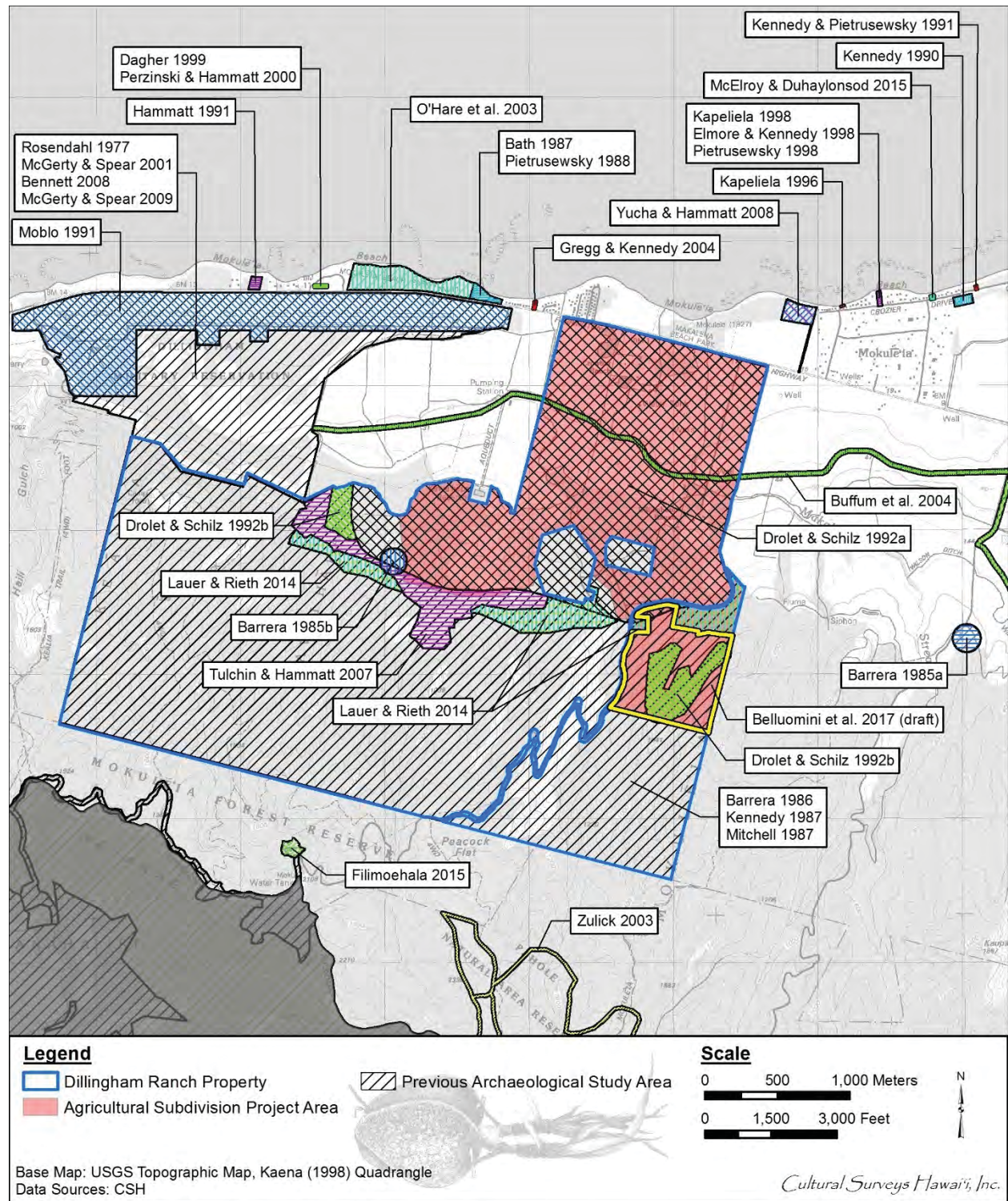


Figure 13. Portion of the 1998 Kaena USGS topographic quadrangle map showing the locations of previous archaeological studies in the vicinity of the Dillingham Ranch Agricultural Subdivision project area

Table 2. Previous archaeological studies in the vicinity of the Dillingham Ranch Agricultural Subdivision project area

Reference	Type	Location	SIHP #	Description
Rosendahl 1977	Archaeological survey and inventory of sites	Dillingham Military Reservation (DMR); Keālia and Kawaihāpai	416	Confirmed Keālia- Kawaihāpai Complex of agricultural terraces, designated State Inventory of Historic Places (SIHP) # 50-80-03-416
Barrera 1985a	Archaeological survey	Mokulē'ia I (II) well location; Mokulē'ia	-	No historic properties or cultural materials identified
Barrera 1985b	Archaeological survey	Kawaihāpai well location; Kawaihāpai	-	No historic properties or cultural materials identified
Barrera 1986	Archaeological reconnaissance survey	Dillingham Ranch property; Kawaihāpai and Mokulē'ia	4439*; 4785*	Identified two sites, no SIHP number assigned; see Drolet and Schilz (1992a and 1992b)
Bath 1987 Pietrusewsky 1988	Inadvertent find of human remains	Camp Mokulē'ia; Kawaihāpai	3747	Identified 13 adults and eight sub-adults; location of burials designated SIHP # 50-80-03-3747
Kennedy 1987	Archaeological literature review and reconnaissance survey	Dillingham Ranch property; Kawaihāpai and Mokulē'ia	190 through 196	Confirmed previously identified historic properties, no newly identified historic properties
Mitchell 1987	Archaeological reconnaissance survey	Dillingham Ranch property; Kawaihāpai and Mokulē'ia	416; 4439*; 4472 through 4777*; 4785*; 4786*	Identified five sites, no SIHP site number assigned; see Drolet and Schilz (1992a and 1992b)
Kennedy 1990	Subsurface testing	Lot 2C, Crozier Dr; Mokulē'ia	-	No historic properties or cultural materials identified

*Not designated with number until Drolet and Schilz 1992a and 1992b

Table 2. Previous archaeological studies in the vicinity of the Dillingham Ranch Agricultural Subdivision project area (cont.)

Reference	Type	Location	SIHP #	Description
Hammatt 1991	Subsurface testing	Keālia Coastal Subdivision	-	No historic properties or cultural materials identified
Kennedy and Pietrusewsky 1991	Inadvertent find of human remains	Crozier Dr. TMK [1] 6-8-005:001	4451	Two sets of human skeletal remains (SIHP # 50-80-03-4451) scattered over an area of a septic pit
Moblo 1991	Literature review and archaeological reconnaissance survey	Dillingham Airfield; Ka'ena, Keālia, Kawaihāpai, and Mokulē'ia	-	No historic properties or cultural materials identified
Drolet and Schilz 1992a	Archaeological inventory survey	Dillingham Ranch property; Kawaihāpai and Mokulē'ia	4772 through 4786	Identified 15 pre- and post-Contact sites with 40 component features, primarily religious, habitation or agricultural sites, designated SIHP #s 50-80-03-4772 through 50-80-03-4786
Drolet and Schilz 1992b	Addendum archaeological inventory survey	Dillingham Ranch property; Kawaihāpai and Mokulē'ia	4439 through 4442	Identified four sites; SIHP # 50-80-03-4439, a 300m stone wall; SIHP # 50-80-03-4440, a remnant stone wall, disturbed by stream cuts; SIHP # 50-80-03-4441, an approximately 200m long stone wall and associated barbed wire fence, interpreted to be a historic cattle wall; SIHP # 50-80-03-4442, a terrace with damage due to erosion and stream cuts
Kapeliela 1996	Inadvertent find of human remains	68-711 Crozier Dr, Mokulē'ia	5467	Two human cranium fragments recovered from the water's edge in the beach area fronting 68-711 Crozier Drive, at the east end of Mokulē'ia Ahupua'a; no other bones recovered, though additional remains believed to have been washed away by heavy surf; burial location designated SIHP # 50-80-03-5467

Table 2. Previous archaeological studies in the vicinity of the Dillingham Ranch Agricultural Subdivision project area (cont.)

Reference	Type	Location	SIHP #	Description
Kapeliela 1998 Elmore and Kennedy 1998 Pietrusewsky 1998	Inadvertent find of human remains	63-639 Crozier Dr; Mokulē'ia 2	5599	Identified seven individuals, all of probable Hawaiian ancestry; glass trade beads found with one burial, suggesting an early post-Contact; remaining six burials probably pre-Contact; area designated SIHP # 50-80-03-5599
Dagher 1999 Perzinski and Hammatt 2000	Inadvertent find of human remains	Mokulē'ia Beach Park; Kawaihāpai	5766	Documented adult skeletal remains of probable Hawaiian ancestry, designated SIHP # 50-80-03-5766
McGerty and Spear 2001	Archaeological inventory survey	DMR	191; 416; 5479 through 5492	Recorded 16 pre- and post-Contact sites; seven traditional Hawaiian sites associated with agriculture, settlement, and ceremonial/religious activities; remaining nine sites attributed to post-Contact ranching and U.S. military activities and training; Site 416 agricultural complex, originally identified or recorded by Handy (1940) and recorded by Rosendahl (1977) subdivided into five specific site areas: SIHP #s 50-80-03-416 and 50-80-03-5483 through 50-80-03-5486. Radiocarbon dates for SIHP # 50-80-03-5485 yielded the date range of "AD 1673 to AD 1753 (0.32%)" and "AD 1979 to AD 1955 (0.68%)"
O'Hare et al. 2003	Archaeological inventory survey	Mokulē'ia Beach Park; Kawaihāpai	6638	Identified one historic property: SIHP # 50-80-03-6638, subsurface cultural layer, containing both pre- and post-Contact archaeological features. Radiocarbon dating yielded the date range of AD 1280-1440 (95.4%) for 1 sample and AD 1670-1960 for the other two.

Table 2. Previous archaeological studies in the vicinity of the Dillingham Ranch Agricultural Subdivision project area (cont.)

Reference	Type	Location	SIHP #	Description
Zulick 2003	Environmental assessment Kapuna Watershed Project	Pahole Natural Area Reserve/ Mokulē'ia Forest Reserve	-	No historic properties identified
Buffum et al. 2004	Archaeological inventory survey	Schofield Barracks Military Reservation (SBMR) Dillingham Trail between Schofield Barracks and DMR		Concrete bridge spans identified on west boundary of current Dillingham Ranch project; site evaluated as not National Register of Historic Properties (NRHP) eligible and no SIHP number assigned; recorded plantation-era ditch (Wilson Ditch) and Halstead Mill smokestack and three ca. 1952 concrete span bridges; bridge spans on western boundary of current Dillingham project evaluated as not NRHP eligible
Gregg and Kennedy 2004	Inadvertent find of human remains	68-681 Farrington Hwy; Mokulē'ia	6708	Partial remains of one individual consistent with Hawaiian/Polynesian ancestry, designated SIHP # 50-80-03-6708
Tulchin and Hammatt 2007	Archaeological inventory survey	Dillingham Ranch property; Kawaihāpai, Kikahi, Auku'u, and Mokulē'ia 2	6884 through 6888	Identified five historic properties consisting of five agricultural complexes designated: SIHP #s 50-80-03-6884, 50-80-03-6885, 50-80-03-6886, 50-80-03-6687, and 50-80-03-6888
Bennett 2008	Site visit report	Mokuleia Military Reservation		Identified features of the Mokuleia Military Reservation (no SIHP # designated in report)
Yucha and Hammatt 2008	Archaeological literature review and field inspection	Crozier Drive, Mokulē'ia		Remnants of the OR&L railway (SIHP #50-80-12-9714) and the location of an inadvertent human burial find and reburial location were identified.

Table 2. Previous archaeological studies in the vicinity of the Dillingham Ranch Agricultural Subdivision project area (cont.)

Reference	Type	Location	SIHP #	Description
McGerty and Spear 2009	Archaeological inventory survey	Dillingham Military Reservation; TMK [1] 6-8-002 and 014	419; 5479 through 5486; 5488 through 5492	Fourteen historic properties identified consisting of rock alignments, rock-faced/rock surfaced terraces, rock-faced/soil-surfaced terraces, rock mounds, rock platforms, rock lined channels, water diversion features, wells, cement foundations, buildings, and bunkers.
Lauer and Rieth 2015	Archaeological inventory survey	Dillingham Ranch property; Kawaihāpai, Kīkahi, Auku 'u, and Mokulē'ia 2	7653 and unmodified seeps	Identified one historic property and two unmodified seeps; SIHP # 50-80-03-7653 consists of four discontinuous rock walls once used as ranch-era paddocks and enclosures
Filimoehala 2015	Archaeological inventory survey	Information and Communication Services Division (ICSD) Pahole Radio Facility at Pahole Rare Plant Facility, Kawaihāpai		No historic properties or cultural materials identified
McElroy and Duhaylonsod 2015	Archaeological inventory survey	TMKs: [1] 6-8-004:017 and 030 in Mokulē'ia 2		No historic properties or cultural materials identified
Belluomini et al. 2017-draft	Archaeological inventory survey	TMK: [1] 6-8-003:005	4777, 7653; 7976, 7977, 7978	Identified five historic properties consisting of wall alignments (SIHP #s 50-80-03-4777, 50-80-03-7653, and 50-80-03-7976), a terrace complex (SIHP # 50-80-03-7977), and a platform (SIHP # 50-80-03-7978)

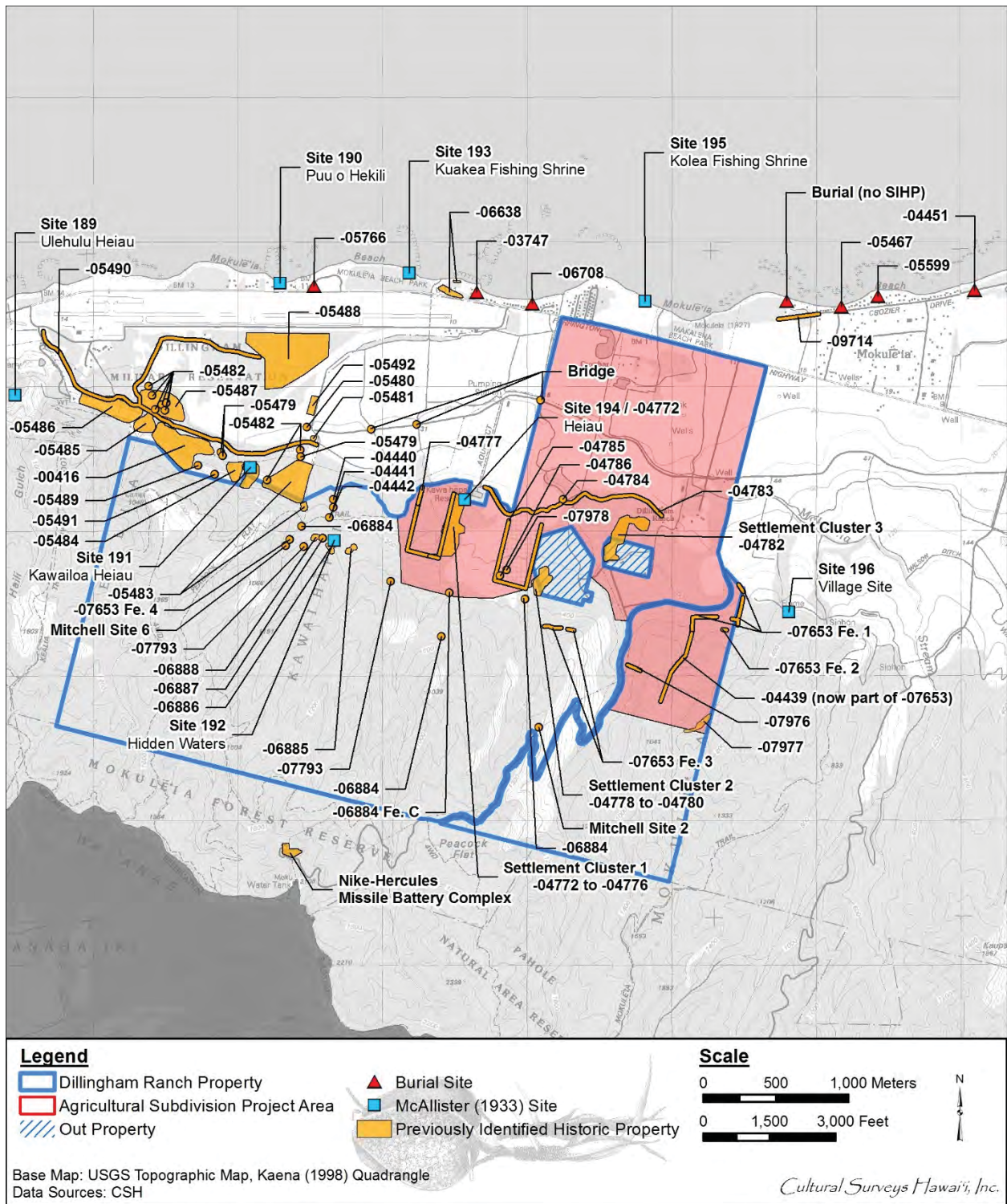


Figure 14. Portion of the 1998 Kaena USGS topographic quadrangle map showing the locations of historic properties in the vicinity of the Dillingham Ranch Agricultural Subdivision project area

Table 3. Historic properties identified within the Dillingham Ranch Agricultural Subdivision project area

SIHP # 50-80-03-	Site Type	Source	Comment
4772 (formerly 4424) (Site 194)	Heiau	McAllister (1933); Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)	25 m square enclosure with internal wall section; possibly Pologaie Heiau, originally designated a house site (Site 194) by McAllister (1933)
4773 (formerly 4425)	Complex (habitation/agriculture)	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)	Feature cluster that covers an area of 80 m by 40 m in size and is composed of five units, consisting of a platform (Fea. A) and enclosures (Fea. B-C)
4774 (formerly 4426)	Platform (habitation)	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)	Platform measures 2.0 m by 3.5 m in size
4775 (formerly 4427)	Enclosure (habitation)	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)	Enclosure with a wall segment, measures 18 m by 9 m in size
4776 (formerly 4428)	Habitation- religious/ceremonial- agricultural complex	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)	Enclosures (3), terraces (3), walls (2), alignment, mound, and clearing
4777 (formerly 4429)	Wall	Drolet and Schilz (1992a); Tulchin and Hammatt (2008); Belluomini et al. (2017- draft)	Two wall segments (Features A and B) identified.
4782 (formerly 4434)	Agricultural-habitation complex	Drolet and Schilz (1992a); Tulchin and Hammatt (2008)	Walled field complex with habitation features covering 8 hectares; large enclosures, terraces, and mound
4783 (formerly 4435)	Historic agricultural complex	Drolet and Schilz (1992a)	Plantation-era irrigation ditch with associated rock wall and clearing mounds
4784 (formerly 4436)	Agricultural ditch	Drolet and Schilz (1992a)	Possible remnant 'auwai

Table 3. Historic properties identified within the Dillingham Ranch Agricultural Subdivision project area (cont)

SIHP #	Site Type	Source	Comment
50-80-03- 4785 (formerly 4437)	Ranch enclosure- paddock	Barrera (1986); Mitchell (1987); Kennedy (1987); Drolet and Schilz (1992a)	Large paddock disturbed by subsequent development
4786 (formerly 4438)	Platform-terrace complex with religious/ceremonial function	Barrera (1986); Mitchell (1987); Kennedy (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)	In southwest corner of SIHP # 50- 80-03-4785; site includes undocumented and unrecorded terrace identified during CSH 2008 monitoring
6884	Ranch-related walls in gully features	Tulchin and Hammatt (2007); Tulchin and Hammatt (2008)	Four rock wall sections (Features A–D) located in the Dillingham Ranch Agricultural Subdivision project area
7653 (formerly 4439)	Ranch enclosure- paddock complex	Barrera (1986); Mitchell (1987); Drolet and Schilz (1992b); Lauer and Rieth (2015); Belluomini et al. (2017-draft)	Rock wall section in eastern and central survey areas (Features 1–3)
7976	Wall	Belluomini et al. (2017- draft)	Rock wall measuring 1 m wide, 0.8 to 1.2 m in height, and extending 115 m in east/west orientation
7977	Terraces	Belluomini et al. (2017- draft)	System of nine terraces on both the west and east side of the stream
7978	Platform	Belluomini et al. (2017- draft)	Platform measures approximately 6.7 m in width and 7.8 m in length, with a maximum height of 1.5 m. Possible religious/ceremonial function

four sites in the foothills above the coastal plain. Site 191 is Kawailoa Heiau, indicated to be located in the area *mauka* of the present Dillingham Airfield, west of the Dillingham Ranch Agricultural Subdivision project area:

Only a portion of two terraces remains. The upper terrace is 66 feet long and 4 feet high, and is excellently paved with small stones a few inches in size. The southwest limits can not be discerned. On the east end is a wall 1.5 feet high which can be followed for about 10 feet. The lower terrace was 25 feet wide with a facing 2 feet high, which can only be traced a short distance. The houses (kahua hale) in which the kahunas lived were known as 'Paweo', according to Hookala. This is undoubtedly the site referred to by Thrum [1909] as Paweu, 'A small heiau 58 by 65 feet at the base of the hill: badly damaged by freshets.' [McAllister 1933 in Sterling and Summers 1978:99-100]

Site 196 was identified by McAllister (1933) as a village site, indicated to be located east of the Dillingham Ranch Agricultural Subdivision project area. The following description was provided:

In the valley near the mountain side of the Greenfield house was once evidently a large Hawaiian settlement. Old coconut palms and the dead trunks of others, portions of house sites, isolated sections of terracing, can still be found, despite the inroads of roaming cattle. Water freshets have also obliterated many remains. These sites are thought to have furnished the stones for the numerous walls, probably of later construction, on the hillside and in the valley. [McAllister 1933 in Sterling and Summers 1978:101]

Two of McAllister's sites were indicated to be located within the Dillingham Ranch property. Site 192 consists of "hidden waters," or natural freshwater springs, located in the hills of Kawaihāpai. The following description was provided:

These are the four hidden waters upon which Hiiaka called when she was refused water by the old inhabitants. Their names, as given by Hookala, are Ulunui, Koheiki, Ulehulu, and Waiakaaiea. Farther toward Kaena Point is another water known as Kawaikumuole, which is a conjunction of Kanaloa and Waihuna a Kaalai. Another hidden water, which Hookala says is mentioned in the Hiiaka chant is Kuilaau o Kealia, but he does not know its location. [McAllister 1933 in Sterling and Summers 1978:100]

The general location of Site 192 was provided by Sterling and Summers (1978: Waialua District Map) based on notes taken by McAllister (1933), placing it in the southwestern portion of the Dillingham Ranch property. This location is consistent with traditional accounts that describe the springs of Kawaihāpai up in the hills at the base of cliffs (see Section 2.1).

Also indicated to be located within the Dillingham Ranch Property and within the Dillingham Agricultural Subdivision project area is McAllister's (1933) Site 194, Poloaiie Heiau. The site, which was noted by McAllister to have been destroyed, was described as follows:

On the Kaena side of Dillingham's ranch, near the plantation reservoir in the western part of Mokuleia, is said to be an old heiau site. The straggling stone wall near a group of rather large rocks is covered with a dense growth of lantana. It is doubtful that this site was ever of importance, as it suggests a house site rather than

the location of a heiau. Poloaiaie is the name given me of a former Mokuleia heiau about which nothing else is known. [McAllister 1933 in Sterling and Summers 1978:101]

In an ethnographic survey of Hawaiian farming, Handy noted in 1940 that there were agricultural terraces, possibly for taro, in the lowlands of Kawaihāpai extending into Keālia. Handy describes the features:

There is a sizable area of terraces in the lowlands (now surrounded by sugar cane), watered by Kawaihāpai Stream. These terraces have evidently been lying fallow for some time, though several were being plowed for rice or taro in the summer of 1935. At the foot of the cliffs, watered by a stream the name of which was not learned, are several small terraces in which taro is grown by David Keaau. He says that taro cannot be grown in the lowlands, as salt water seeps in and sometimes flows in, mingling with the fresh water in the terraces and spoiling the taro.

The large area of lowland terraces between the cliff and the elevated coral, though mostly in Kawaihāpai, extends a short way into Keālia. Otherwise this small ahupua'a offered little opportunity for cultivation, unless for sweet potatoes. [Handy 1940]

The site was confirmed during a 1977 survey of the Dillingham Military Reservation by the Bishop Museum (Rosendahl 1977) and the extent of these terraces was mapped. These terraces were given the designation of State inventory of Historic Places (SIHP) # 50-80-03-416, and later listed as destroyed (Rosendahl 1977). The terraces are located 2,250-4,500 ft inland, on the *mauka* edge of the military reservation, at elevations of 80-140 ft AMSL. The site was described as an "extensive complex of agricultural and associated occupation features spread over virtually entire rocky sloping area between flat land of airfield and sheer cliffs" (Rosendahl 1977:1-25). In 1987, during a day-long survey on horseback of portions of the Dillingham Ranch property, Mitchell (1987) was informed that there was "a great deal of rock terracing" in the area along the western end of the Dillingham Ranch property, which he designated as Site 6. Mitchell did not locate the site but, based on informant information, placed it in the vicinity of SIHP # -416, as the informant was likely referring to components of SIHP # -416. Additional portions of SIHP # -416 were again identified in later archaeological surveys of the Dillingham Airfield (Moblo 1991), Dillingham Military Reservation (McGerty and Spear 2001), and the Dillingham Ranch lands (Tulchin and Hammatt 2007).

3.2 Archaeological Studies in Vicinity of the Dillingham Ranch Agricultural Subdivision Project Area

The following is a summary of previously conducted archaeological studies and identified historic properties within the vicinity of the Dillingham Ranch Agricultural Subdivision project area. Previously conducted archaeological studies within the Dillingham Ranch Agricultural Subdivision project area per se are discussed in Section 3.3.

In 1985, an archaeological survey was conducted for numerous proposed Board of Water Supply well sites, including the proposed wells at Kawaihāpai near Dillingham Airfield and Mokolē'ia I, east of Makaleha Stream (Barrera 1985a and 1985b). No historic properties were identified.

In 1987, human remains were inadvertently uncovered during the excavation of a boathouse at Camp Mokulē'ia, east of Mokulē'ia Beach Park in Kawaihāpai Ahupua'a (Bath 1987). Osteological analysis by Michael Pietruszewsky identified 13 adults and eight sub-adults from the recovered remains. The location of the remains was designated SIHP # 50-80-03-3747 (Pietruszewsky 1988).

In 1990, Archaeological Consultants of Hawaii (ACH) conducted subsurface testing at Lot 2C Crozier Drive in Mokulē'ia Ahupua'a (Kennedy 1990). Nine backhoe trenches were excavated through various sandy topsoil, calcareous sand, and coarse sand layers. No historic properties were identified.

In 1991, CSH conducted subsurface testing with hand and backhoe trenches to investigate archaeological impacts on a proposed subdivision at a beach front lot located at 68-999 Farrington Highway near Dillingham Airfield (Hammatt 1991). Nine backhoe trenches and three shovel test trenches were excavated within that project area. No subsurface archaeological features or cultural materials were identified.

In 1991, the International Archaeological Research Institute (IARII) conducted a literature review and archaeological reconnaissance survey for the Dillingham Airfield Master Plan. Dillingham Airfield is located inland of Farrington Highway at the base of the Waianae Mountains (Moblo 1991). During the survey, Moblo (1991) attempted to confirm SIHP # 50-80-03-416, the cultivation terraces associated with the Keālia-Kawaihāpai Complex documented in Rosendahl (1977) and Handy (1940). Unfortunately, the probable site was located outside that project area; this combined with dense vegetation made it too difficult to determine if it was the Keālia-Kawaihāpai Complex site. Moblo also noted a few rock features on the southwest corner of their project area could be an extension of Site 416. No other historic properties were identified.

In 1991, an inadvertent burial discovery consisting of two sets of human skeletal remains at 68-421 Crozier Drive at the east end of Mokulē'ia Ahupua'a (Kennedy and Pietruszewsky 1991). The skeletal remains were scattered across a septic pit. Analysis of the skeletal remains determined the remains were previously disturbed and represents a secondary burial.

In 1996, an inadvertent burial discovery consisting of two human cranium fragments was recovered from the water's edge in the beach area fronting 68-711 Crozier Drive, at the east end of Mokulē'ia Ahupua'a. No other bones were recovered, though additional remains were believed to have been washed away by heavy surf. The burial location was designated SIHP # 50-80-03-5467 (Kapeliela 1996).

In 1998, seven inadvertent burial finds were encountered at 68-637 Crozier Drive in Mokulē'ia Ahupua'a by a construction crew during excavations for a house foundation (Elmore and Kennedy 1998; Kapeliela 1998; Pietruszewsky 1998). The burials were found at a depth of approximately 4.5 to 5 ft. Based on osteological features and the burial location, the remains were determined to be of Hawaiian ethnicity. Six of the burials were deemed pre-Contact, while the seventh burial was more likely to be from the early post-Contact period based on the presence of western trade items. The burial site was designated SIHP # 50-80-03-5599.

In 1999, human remains were inadvertently discovered during excavations associated with the installation of a leach field at Mokulē'ia Beach Park, Kawaihāpai Ahupua'a (Dagher 1999; Perzinski and Hammatt 2000). The remains were determined to be from a single individual, likely

Native Hawaiian. Following the recovery of the remains, archaeological monitoring was conducted for the remaining leach field excavations. A possible posthole was also noted in the excavations. The burial location was designated SIHP # 50-80-03-5766.

In 2001, Scientific Consultant Services (SCS) completed an archaeological inventory survey (AIS) comprising 504 acres of the Dillingham Military Reservation (DMR). A pedestrian survey was conducted in the southwest portion of the DMR project area and previously identified sites were tested to determine association with the Kealia-Kawaihliapai Complex, a portion of which was determined to be within their project area (McGerty and Spear 2001). Sixteen sites of various functions were reidentified or recorded during the SCS AIS. Features identified during the AIS included rock alignments, rock-surfaced terraces, modified outcrops, enclosures, stacked rock rolls, core-filled rock walls, rock mounds, rock platforms, and water diversion features (McGerty and Spear 2001). The recorded sites were designated SIHP # 50-80-03-5479 through 50-80-03-5492. These sites are located within the Dillingham Ranch Agricultural Subdivision project area.

In 2003, CSH conducted an archaeological inventory survey, including a program of subsurface testing, for the proposed expansion of Mokulē'ia Beach Park (O'Hare et al. 2003). No surface archaeological features were identified. Seventeen shovel tests were excavated along the beach bank and 32 backhoe trenches were excavated within the Mokulē'ia Beach Park project area. A grayish cultural layer (SIHP # 50-80-04-6638) exposed on the beach bank was also found in five trenches on the east side of the Mokulē'ia Beach Park project area. In two trenches, the cultural layer was also associated with five subsurface features including two fire pits, two possible postholes, and a feature of undetermined function. Charcoal from one fire pit was dated to AD 1280-1440.

In 2003, the DLNR conducted an Environmental Assessment of the Pahole Natural Area Reserve and the Mokulē'ia Forest Reserve as part of a proposal to construct new fences within the Pahole Natural Area Reserve extending to the Mokulē'ia Forest Reserve (Zulick 2003). A pedestrian survey was completed and no historic properties were observed or encountered along the fence line route.

In 2004, human remains were inadvertently encountered during excavations associated with the repair of a seawall at 68-681 Farrington Highway, in Mokulē'ia Ahupua'a (Gregg and Kennedy 2004). The partial set of fragmented human remains was determined to likely have been previously disturbed. Based on the location of the remains, it was suggested to be of pre-Contact, Native Hawaiian origin. The burial site was designated SIHP # 50-80-03-6708.

Over the course of several years of site inspections, John D. Bennett provided a site visit report for the Mokuleia Military Reservation. Only areas open to the public were observed and features of the reservation were located and documented. Sites include World War II-era structures, including former coast artillery batteries (Bennett 2008).

In 2003, SCS conducted a survey to evaluate and test sites previously identified by McGerty and Spear (2001) (SIHP #s 50-80-03-416, 50-80-03-5479 through 50-80-03-5486, 50-80-03-5488 and 50-80-03-5492). The sites are associated with World War II-era military buildings and complexes as well as pre-Contact and post-Contact agricultural and habitation sites and sites related to historic sugar cane production and ranching activities (McGerty and Spear 2009).

3.3 Archaeological Studies within the Dillingham Ranch Agricultural Subdivision Project Area

With the exception of McAllister's (1933) island-wide survey that possibly identified one historic property in the Dillingham Ranch Agricultural Subdivision project area (Site 194, Poloaia Heiau), most of the Dillingham Ranch Agricultural Subdivision project area's previous archaeological studies were triggered by development plans for portions of the Dillingham Ranch property (Barrera 1986; Drolet and Schilz 1992a; Drolet and Schilz 1992b; Kennedy 1987; Lauer and Rieth 2015; Mitchell 1987; Tulchin and Hammatt 2007). These project-specific studies are discussed below. Some features of the historic properties are located outside the Dillingham Ranch Agricultural Subdivision project area, the features located within the project area is presented in Table 3Table 4 and illustrated in Figure 15 and Figure 16.

3.3.1 Barrera (1986)

Barrera conducted the first archaeological reconnaissance survey of the approximately 2,800-acre Dillingham Ranch property in 1986. The report was not available; however, it was referenced in Drolet and Schilz 1992a. The brief two-day reconnaissance identified two archaeological sites within the property. These included a stone wall on the end of the ridge south of the Dillingham Ranch, and another stone wall southeast of the Kawaihāpai Reservoir, described to be a portion of a historic paddock (Barrera 1986). Barrera did not provide a site location map. However, based on the general location information and brief site descriptions, it is believed these two sites were later confirmed and later designated SIHP # -4783 and -4785 in subsequent archaeological studies within the Dillingham Ranch property (see Section 3.3.4).

3.3.2 Kennedy (1987)

The following year, Kennedy (1987) reviewed previous archaeological studies within and in the vicinity of the Dillingham Ranch, and conducted another brief two-day reconnaissance of the Dillingham Ranch property. The study was conducted to assess the archaeological potential within the property and generate recommendations for future archaeological work. The reconnaissance survey confirmed the stone wall southeast of the Kawaihāpai Reservoir previously identified by Barrera (1986). In the vicinity of the wall, Kennedy (1987) noted the presence of two platforms which he thought may be *heiau* structures. The wall and platforms were later confirmed by subsequent archaeological studies within the Dillingham Ranch property and are discussed further below. Based on the preliminary archaeological investigation, Kennedy (1987) indicated the archaeological potential of the Dillingham Ranch property was high and recommended intensive survey and documentation of sites, a program of subsurface testing, and historic background research be conducted prior to any development of the property.

3.3.3 Mitchell (1987)

In 1987, Mitchell (1987) conducted an additional archaeological reconnaissance of portions of the Dillingham Ranch property that were then proposed for golf course and residential development. The reconnaissance was made on horseback and was led by local informants who directed Mitchell to archaeological sites they knew of within the Dillingham Ranch property. A total of six site areas were documented. Site 1 consisted of a stone wall situated along a ridge south of the Dillingham Ranch. Site 2 consisted of a large wall structure, indicated to be a possible World War II military construction, located at approximately 1,100 ft elevation. Site 2 is indicated to be

Table 4. Historic property features* located within the Dillingham Ranch Agricultural Subdivision project area

SIHP #	Feature #s	Source
50-80-03-		
4772 (Site 194)	--	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)
4773	A through C only	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)
4774	--	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)
4775	--	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)
4776	A through K	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)
4777	A through C	Drolet and Schilz (1992a); Tulchin and Hammatt (2008); Belluomini et al. (2017- draft)
4782	A, C, E, and F (B and D in "out" property)	Drolet and Schilz (1992a); Tulchin and Hammatt (2008)
4783	--	Drolet and Schilz (1992a)
4784	--	Drolet and Schilz (1992a)
4785	--	Barerra (1986); Mitchell (1987); Kennedy (1987); Drolet and Schilz (1992a)
4786	--	Barerra (1986); Mitchell (1987); Kennedy (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008)
6884	C	Tulchin and Hammatt (2007); Tulchin and Hammatt (2008)
7653	1 and 2	Barerra (1986); Mitchell (1987); Drolet and Schilz (1992b); Lauer and Rieth (2015); Belluomini et al. (2017-draft)
7976	--	Belluomini et al. (2017-draft)
7977	A-I	Belluomini et al. (2017-draft)
7978	--	Belluomini et al. (2017-draft)

*Feature #'s marked "--" do not have individual features designations. The entire historic property is located within the Dillingham Ranch Agricultural Subdivision project area

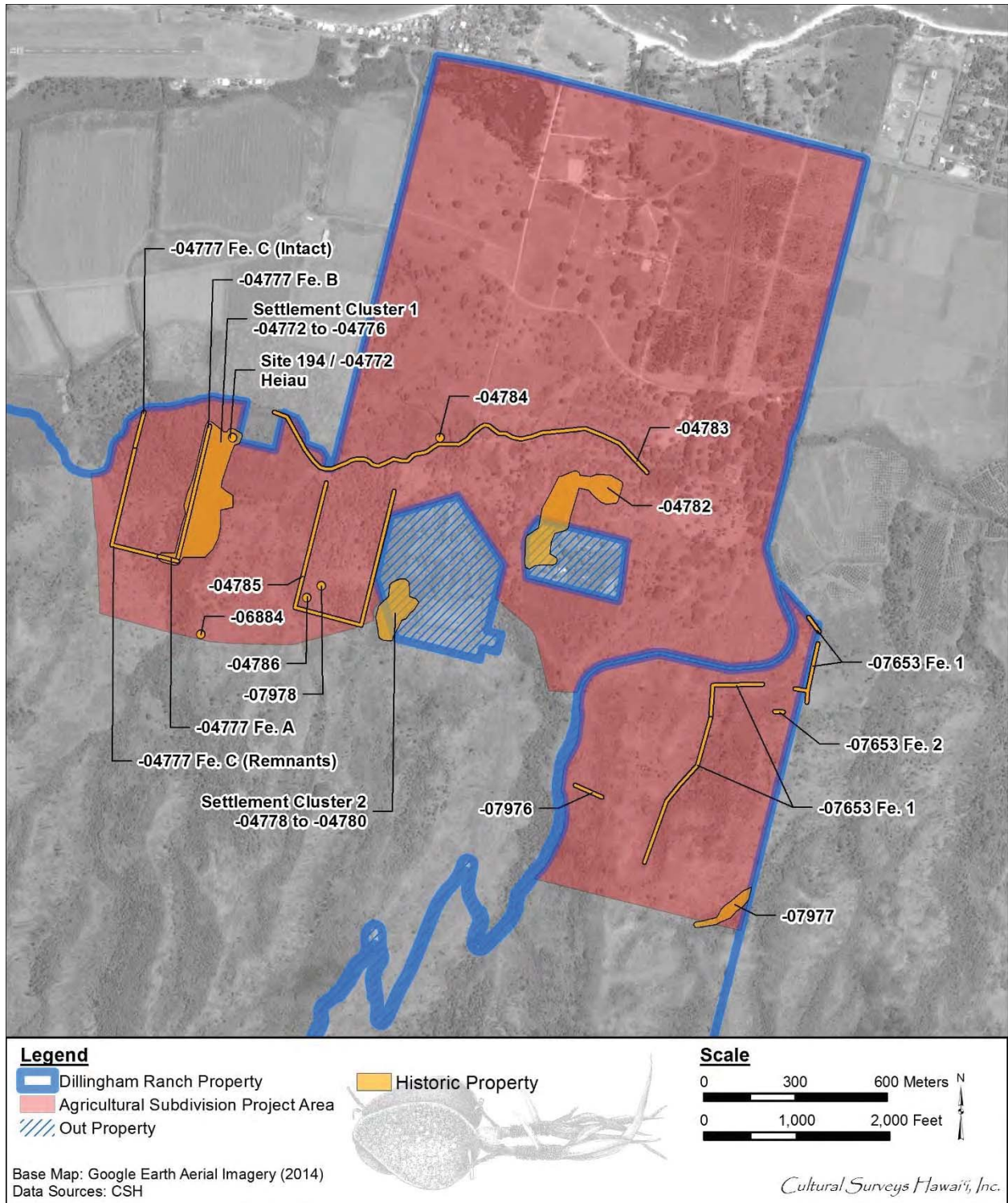


Figure 15. 2014 Google Earth aerial photograph showing historic properties identified within the Dillingham Ranch Agricultural Subdivision project area

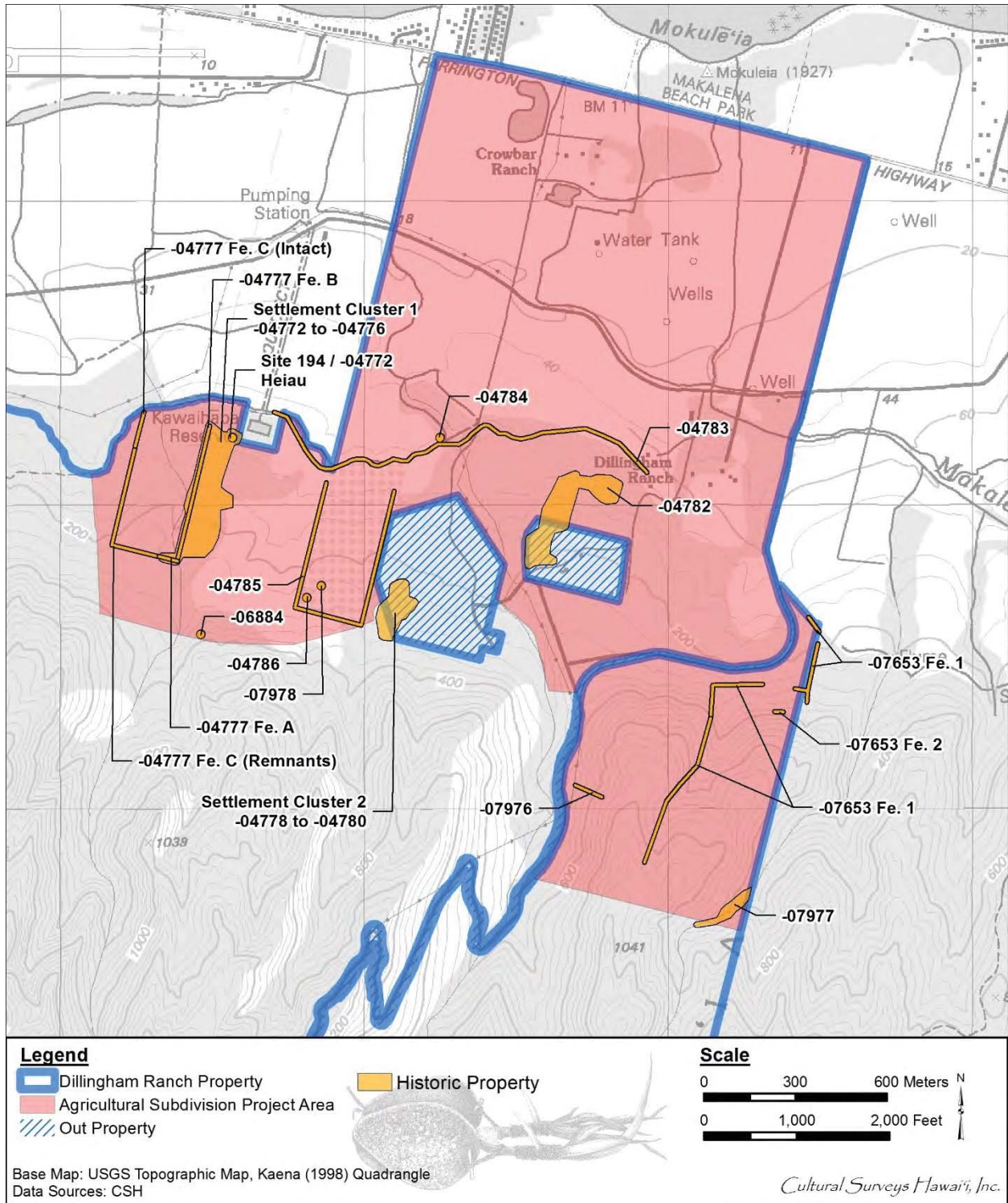


Figure 16. Portion of a 1998 Kaena USGS topographic quadrangle, showing the locations of historic properties within the Dillingham Ranch Agricultural Subdivision project area

mauka of subsequent proposed development areas and has not been confirmed. Site 3 included a continuous wall structure that runs south, east, and west, and platform structures within the enclosure, located east of the Kawaihāpai Reservoir. Site 4 refers to McAllister (1933) Site 192, the hidden waters springs that Mitchell indicates “were still producing water for the reservoir” (Mitchell 1987:3). Site 5, based solely on informant information, included a large wall and many rock structures located south of the Kawaihāpai Reservoir. Site 5 was later confirmed by subsequent archaeological studies. Site 6, also based solely on informant information, included “a great deal of rock terracing” located near the base of the cliffs at the western end of the Dillingham Ranch property (Mitchell 1987:4). The informants were likely referring to the terracing located *mauka* of the Dillingham Airfield, originally described by Handy (1940) later designated SIHP # 50-80-03-416 by Rosendahl (1977).

3.3.4 Drolet and Schilz (1992a and 1992b)

In 1992, Drolet and Schilz (1992a) conducted an AIS of an approximately 840-acre portion of the Dillingham Ranch property proposed for golf course and residential development. The inventory survey consisted of a systematic pedestrian survey of the entire Dillingham Ranch Agricultural Subdivision project area and a program of subsurface testing with a backhoe within the coastal plain portion of the Dillingham Ranch Agricultural Subdivision project area. A total of 28 trenches were excavated throughout the testing area. No cultural material was recovered from the test excavations.

A total of 15 archaeological sites with 40 component features were identified through the pedestrian survey. Eleven of the 15 sites were located within three site complexes described by Drolet and Schilz (1992a) as “settlement clusters.” These settlement clusters are generally located in the foothills above the coastal plain to the base of the coastal cliffs. The sites are situated along gently sloping upland terraces adjacent to natural stream drainages and consist of agricultural field systems with associated habitation structures constructed during the pre-Contact or early post-Contact period. It was also noted that the settlement clusters were likely much more extensive than what was documented, as significant land alteration by ranching and military activities was observed in the vicinity of the sites. Drolet and Schilz (1992a) suggested the principal villages were located along the coastal plain, though ranching and plantation agriculture had removed any evidence of this. No archaeological sites were identified in the coastal plain portion of the Dillingham Ranch Agricultural Subdivision project area.

Settlement Cluster 1—located within the current (subdivision) project area—is located southeast of the Kawaihāpai Reservoir and includes six historic properties (SIHP #s 50-80-03-4772 through 50-80-03-4777) comprised of 19 individual features. Settlement Cluster 1 measures approximately 470 m north/south by 150 m east/west, covering approximately 13 acres. Settlement Cluster 1 was previously referred to by Mitchell (1987) as Site 5. The primary feature of Settlement Cluster 1 is SIHP # -4772, is an enclosure “rectangular in shape” located near the southwest corner of the Kawaihāpai Reservoir property (Drolet and Schilz 1992a:24). “The overall size is 25 m by 25 m” (Drolet and Schilz 1992a:24) which suggests it is likely square. This enclosure was interpreted to be *Poloaie Heiau*, documented by McAllister (1933) as Site 194. The enclosure was previously identified as Mitchell’s (1987) Site 5. SIHP #s -4773 through -4776 consist of enclosures, platforms, terraces, walls, alignments, and mounds located *mauka* of the *heiau*. SIHP # -4777 is a long north-south (*makai-mauka*) oriented stone wall. The wall was interpreted to

represent an *ahupua'a* boundary marker dividing Mokulē'ia and Kawaihāpai Ahupua'a. However, recent archaeological investigations associated with the current study, as well as a preservation plan for sites within the Dillingham Ranch Agricultural Subdivision project area (Tulchin and Hammatt 2008), have determined the wall is actually the eastern portion of a historic paddock, similar to SIHP # 50-80-03-4785 identified by Drolet and Schilz (1992a) and described below. The two historic paddocks are also indicated on historic maps of the area (see Figure 9 and Figure 10). The existence and location of the southern and western walls of the paddock were confirmed during CSH inventory survey fieldwork in October 2006 (Tulchin and Hammatt 2007). Drolet and Schilz (1992a) did not locate the southern and western walls of the paddock or note the location of the paddock on historic maps.

Settlement Cluster 2—outside the current project area—is located approximately 600 m southeast of Settlement Cluster 1 and includes three historic properties (SIHP #s 50-80-03-4778 through 50-80-03-4780) and 17+ individual features. Settlement Cluster 2 measures approximately 190 m north/south by 135 m east/west, covering approximately 4 acres. SIHP #s -4778 through -4780 consist of rectangular enclosures, terraces, and platforms. Damage to the sites due to military road construction was noted.

Settlement Cluster 3—inside the current project area—is located approximately 500 m northeast of Settlement Cluster 2 and includes one historic property (SIHP # 50-80-03-4782) comprised of six individual features. Settlement Cluster 3 measures approximately 300 m north/south by 290 m east/west, covering approximately 9 acres. SIHP # -4782 consists of a network of large rectangular enclosures bordered by field walls, mounds, terraces, and paved areas.

Drolet and Schilz (1992a) also identified four sites—all within the current project area—located outside the boundaries of the three designated settlement clusters. SIHP # 50-80-03-4783 consists of a plantation-era irrigation ditch and associated stone wall and clearing mounds. SIHP # -4783 was originally discussed by Barrera (1986). SIHP # 50-80-03-4784 is an earthen ditch, possibly an *'auwai*, a traditional Hawaiian ditch used to irrigate crops like taro. SIHP # 50-80-03-4785 is a large stone walled enclosure interpreted to be a historic paddock. The paddock, along with a second located approximately 450 m to the west, is indicated on historic maps of the area (see Figure 10 and Figure 11). SIHP # -4785 was originally discussed by Barrera (1986). SIHP # 50-80-03-4786, located within the SIHP # -4785 paddock, is a large, well-constructed stone platform, interpreted to be a *heiau* structure. SIHP #s -4785 and -4786 were referred to by Kennedy (1987), and later designated Site 3 by Mitchell (1987). Kennedy (1987) and Mitchell (1987) indicated the presence of at least two platforms within the enclosure, which was confirmed during recent archaeological investigations associated with the current study, as well as a preservation plan for sites within that project area (Tulchin and Hammatt 2008). Drolet and Schilz (1992a) did not locate the second platform, nor did they note the existence of two platforms based on the previous archaeological work within that project area.

Subsequent to the AIS of the approximately 840-acre portion of the Dillingham Ranch property, Drolet and Schilz (1992b) surveyed an additional approximately 53 acres, documented in an addendum AISR. The additional lands consisted of an approximately 42-acre parcel located south of the Dillingham house, *mauka* of the coastal cliffs, and an approximately 11-acre parcel located west of the western extent of the original survey area. One site, SIHP # 50-80-03-4439, was identified in the *mauka* parcel. SIHP # -4439 is an approximately 300-m long stone wall oriented

in a north-south direction along a ridge. This wall was designated Site 1 by Mitchell (1987). Three additional sites were located in the western parcel. SIHP # 50-80-03-4440 consisted of a remnant stone wall, disturbed by stream cuts. SIHP # 50-80-03-4441 consisted of an approximately 200-m long stone wall and associated barbed wire fence, interpreted to be a historic cattle wall. SIHP # 50-80-03-4442 consisted of a terrace, with damage due to erosion and stream cuts.

3.3.5 Buffum et al. (2004)

In 2004, an AIS was conducted for a number of proposed military training areas at Schofield Barracks Military Reservation, Kahuku Training Area, Wheeler Army Airfield, and military vehicle trails running from Schofield Barracks to the Dillingham Training Area, a portion of which crosses through the present Dillingham Ranch Agricultural Subdivision project area (Buffum et al. 2004). Survey methods included pedestrian survey that included transects set at 15 m intervals to ensure area coverage. No historic properties were identified.

3.3.6 Tulchin and Hammatt (2007)

In 2006, Tulchin and Hammatt (2007) conducted an AIS investigation that extends into a portion of the Dillingham Ranch Agricultural Subdivision project area on adjacent *mauka* lands not covered by the Drolet and Schilz (1992a and 1992b) inventory survey. The survey areas were added as part of the current Dillingham Ranch Agricultural Subdivision development plan. Six historic properties comprising 28 individual archaeological features were identified within the approximately 78-acre study area.

SIHP # 50-80-03-6884 contains four historic, ranch-related stone wall features located within gully areas in the eastern, central, and western portions of Dillingham Ranch; Feature C is within the current (subdivision) project area. SIHP # 50-80-03-6885 is an agricultural complex located within a gully area in the western portion of the Tulchin and Hammatt (2007) study area. The complex consists of three terraces and a retaining wall. SIHP #s 50-80-03-6886 and 50-80-03-6888 consist of agricultural complexes composed mostly of crudely constructed mounds and terraces situated along or immediately downslope of exposed cliff faces. SIHP #s -6885–6888 are all outside the current (subdivision) project area. Although no natural springs or seeps were identified in the area, the last two historic properties were located along a prominent hillside indicated by McAllister (1933) as the location of SIHP # 50-80-03-192 referred to as “hidden waters.” SIHP # 50-80-03-6887 is a modified overhang shelter, also located on the prominent hillside in the vicinity of Site 192. The overhang shelter was modified with the construction of a retaining wall and level terrace across the entrance of the overhang.

An eastern extension of the previously identified SIHP # 50-80-03-416 agricultural and habitation complex was identified in the northwestern corner of the study area. Six features including walls, terraces, and a mound were located within the Tulchin and Hammatt (2007) study area, though numerous associated archaeological features were observed to continue to the northwest, as previously identified or documented in previous archaeological studies by Handy (1940), Rosendahl (1977), and Moblo (1991).

Historic properties identified by Tulchin and Hammatt (2007) represent two distinct periods of land use within the Dillingham Ranch property. SIHP #s 50-80-03-416, 50-80-03-6885, 50-80-03-6886, and 50-80-03-6888 are late pre-Contact to early post-Contact traditional Hawaiian agricultural complexes. The agricultural complexes were built to utilize limited water resources

on the inland coastal terrace, particularly along stream drainages and at the base of exposed cliff faces near the *mauka* or southern boundary of the Dillingham Ranch Agricultural Subdivision project area. The location, feature types, and pattern of relatively dense site clustering are similar to the “settlement clusters” identified by Drolet and Schilz (1992a) within adjacent stream drainages of the Dillingham Ranch Agricultural Subdivision project area.

The four ranch-related rock walls (SIHP # 50-80-03-6884 Features A–D) are affiliated with the post-Contact ranching period. The ranching period has a long history in the Waialua District, with large ranches developing ca. the mid- to late 1800s.

3.3.7 Tulchin and Hammatt (2008a)

In 2008, CSH completed a preservation plan for sites located within an earlier design plan of the Dillingham Ranch Agricultural Subdivision project (Tulchin and Hammatt 2008a). The plan addressed all historic properties in the earlier 820-acre project area, including properties identified by Drolet and Schilz (1992a and 1992b) and Tulchin and Hammatt (2007). In accordance with the previous inventory surveys' Hawai'i Register of Historic Places significance evaluations and treatment recommendations, and following consultation among CSH, SHPD, and the property owner, the preservation plan provided proposed interim and long-term preservation measures for 16 traditional Hawaiian sites: SIHP #s 50-80-03-416, 50-80-03-4772 through 50-80-03-4780, 50-80-03-4782, 50-80-03-4786, and 50-80-03-6885 through 50-80-03-6888.

3.3.8 Tulchin and Hammatt (2008b)

In 2008, CSH completed a monitoring plan for the Dillingham Ranch Agricultural Subdivision project (Tulchin and Hammatt 2008b). The plan covers ranch improvement projects and the initial subdivision infrastructure construction activities undertaken by Dillingham Ranch Aina, LLC. This includes initial grubbing, grading, and excavation work. Subsequent construction within the subdivision development lots by individual lot owners is not covered by the monitoring plan.

3.3.9 2008 Monitoring under Tulchin and Hammatt 2008b Monitoring Plan

In 2008, CSH conducted a brief period of archaeological monitoring under the Tulchin and Hammatt (2008b) monitoring plan for the creation of access pathways for geotechnical boring equipment. Some of the fieldwork was conducted within the Dillingham Ranch Agricultural Subdivision project area. The monitoring was very brief and the project that required archaeological monitoring has been on hold and no formal documentation of the results of monitoring has been provided to the SHPD to date.

During the course of the brief period of archaeological monitoring, two additional components of previously identified sites were encountered. These consist of a platform near a previously identified platform (SIHP # 50-80-03-4786), and a continuation of a cattle wall (SIHP # 50-80-03-4777). All information gathered during the monitoring is presented below in the historic property descriptions.

3.3.10 Lauer and Rieth (2015)

In 2014, IARII conducted an AIS of approximately 85.3 acres along the southern or *mauka* portion of the Dillingham Ranch Agricultural Subdivision project area (Lauer and Rieth 2015). The survey area represented additional, unsurveyed property in the proposed subdivision. The AIS covered three separate parcels. Lauer and Rieth (2015) identified one historic property (SIHP #

50-80-03-7653) with four discontinuous rock wall sections (Features 1–4). SIHP # -7653 was interpreted as nineteenth or early twentieth century ranch walls that were enclosures and exclosures used for grazing cattle in the upper and steeper slopes of the Dillingham Ranch Agricultural Subdivision project area. Two unmodified springs or seeps were also identified in the southwestern portion of the Dillingham Ranch Agricultural Subdivision project area (their westernmost survey parcel), on the prominent hillside indicated by McAllister (1933) as the location of freshwater springs referred to as “hidden waters” (SIHP # 50-80-03-192).

Four shovel test probes were excavated at SIHP # 50-80-03-7653 Feature 3 wall and an adjoining unmodified rock shelter (Lauer and Rieth 2015). No cultural deposits were identified in the floor of the rock shelter nor among the colluvial deposits retained upslope by the Feature 3 wall.

Because the site had been fully documented during the inventory survey, Lauer and Rieth (2015:47) recommended no further fieldwork at SIHP # 50-80-03-7653. However, to ensure the preservation of representative examples of this portion of Dillingham Ranch’s history, preservation was recommended. Protection of the two unmodified springs (outside of the Dillingham Ranch Agricultural Subdivision project area), was also recommended because of their potential associations with the “hidden waters” (SIHP # 50-80-03-192), natural water springs, as documented in oral history and by McAllister (1933).

3.3.11 Belluomini et al. (2017-draft)

In 2017, CSH conducted an AIS of approximately 113.5 acres east of Mokuleia Access Road, on a portion of the Dillingham Ranch Agricultural Subdivision project area (Belluomini et al. 2017–draft). The survey area covered the previously unsurveyed area in the proposed subdivision. Belluomini et al. (2017–draft) newly identified two historic properties (SIHP # 50-80-03-7976 and SIHP # 50-80-03-7977) and one previously identified historic property (SIHP # 50-80-03-7653 Feature 1). The two historic properties identified during the 2008 archaeological monitoring (SIHP # 50-80-03-7978 and SIHP # 50-80-03-4777 Feature C) were fully documented.

SIHP # 50-80-03-7976 consists of a basalt rock wall construction measuring approximately 1 m wide and extending approximately 115 m in an east/west orientation terminating at the ridgeline in the northwest portion of the Dillingham Ranch Agricultural Subdivision project area. SIHP # -7976 is consistent with cattle walls seen throughout the Dillingham Ranch property. SIHP # 50-80-03-7977, located in the southwestern corner of the project area along Makaleha Streambed, consists of a system of terraces on both the west and east side of the stream extending to the western extent of the project area and includes nine features. SIHP # 50-80-03-7978 was originally observed during archaeological monitoring associated with Dillingham Ranch improvements in 2008 but was left undocumented except for a photograph and GPS location of the feature observed. The platform was located, photographed, and documented during the current archaeological pedestrian survey. The platform consisted of a rock-filled rectangular structure of stacked basalt stones of varying wall heights and aligned stones.

SIHP # 50-80-03-4777 consists of a property boundary wall related to Land Grant 457 granted to J.T. Gulick. Portions of the wall were identified in three different studies. Features A and B were initially identified by Drolet and Schilz (1992a). An additional extent of Feature A was

identified by Tulchin and Hammatt 2008a. The newly identified Feature C is the continuation of the wall to the west and north from the portion identified by Tulchin and Hammatt 2008a.

SIHP # 50-80-03-7653 consists of five areas of rock wall segments (Features 1–4) located along the southern boundary of the proposed Dillingham Ranch Agricultural Subdivision project and on the western edge of the Dillingham Ranch Agricultural Subdivision project area. Only two of the wall sections, Feature 1 and Feature 2, are located within the Dillingham Ranch Agricultural Subdivision project area in the southeast corner.

Section 4 Historic Properties within the Dillingham Ranch Agricultural Subdivision Project Area

The previous archaeological investigations discussed above identified and evaluated 16 historic properties within the current boundaries of the proposed Dillingham Ranch Agricultural Subdivision project area (Figure 17, Table 3 and Table 4). The sites represent traditional Hawaiian agricultural, ceremonial, and habitation complexes, and post-Contact ranching complexes.

The traditional Hawaiian settlement and agricultural features are concentrated on the upper coastal terrace that comprises the southern portion of the Dillingham Ranch Agricultural Subdivision project area from approximately 80 ft AMSL to the upper cliff faces at 400 ft AMSL, defined by Drolet and Schilz (1992a) as three high-use areas, designated Settlement Clusters 1–3. Settlement Cluster 1 includes SIHP #s -4772 through -4777, Settlement Cluster 2 includes SIHP #'s -4778 through -4780 and Settlement Cluster 3 is a single historic property, SIHP # -4782.

4.1 SIHP # 50-80-03-4772 (Site 194/Formerly SIHP # 50-80-03-4424)

FORMAL TYPE:	Walled enclosure
FUNCTION:	Religious/ceremonial (possible <i>heiau</i> ; Drolet and Schilz 1992); Habitational (possible house site; McAllister 1933)
SETTLEMENT CLUSTER:	1
NUMBER OF FEATURES:	1
SIZE:	25 m by 25 m (625 sq m)
AGE:	Pre-Contact or Early Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	McAllister (1933); Michell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008a)

SIHP # 50-80-03-4772 was originally documented as a 25 m by 25 m walled enclosure located 50 m southwest of the Kawaihāpai Reservoir (Drolet and Schilz 1992a). The enclosure is roughly square except for a slight notch in its southeast corner (Figure 18 through Figure 20). The site is interpreted as a *heiau* and might correspond with Site 194, Poloaiāe Heiau, said to have been located near Kawaihāpai Reservoir (McAllister 1933). Mitchell (1987) also documented a number of rock structures in approximately the same location as Site 194 which he refers to as Site 5 and notes it may be the Paloaiāe Heiau site.

The following description of SIHP # 50-80-03-4772 was provided by Drolet and Schilz (1992a):

Site 4772 (Field Site 01): Heiau. This structure appears to be a heiau enclosure. It is rectangular in shape, located approximately 50m southwest of the southwest corner of the Kawaihapai reservoir at a bearing of 38 degrees. Wall height ranges from 50-100cm, with boulders and cobbles piled, not stacked or faced, and constructed 3-5 courses high. Some wall segments are missing, specifically along

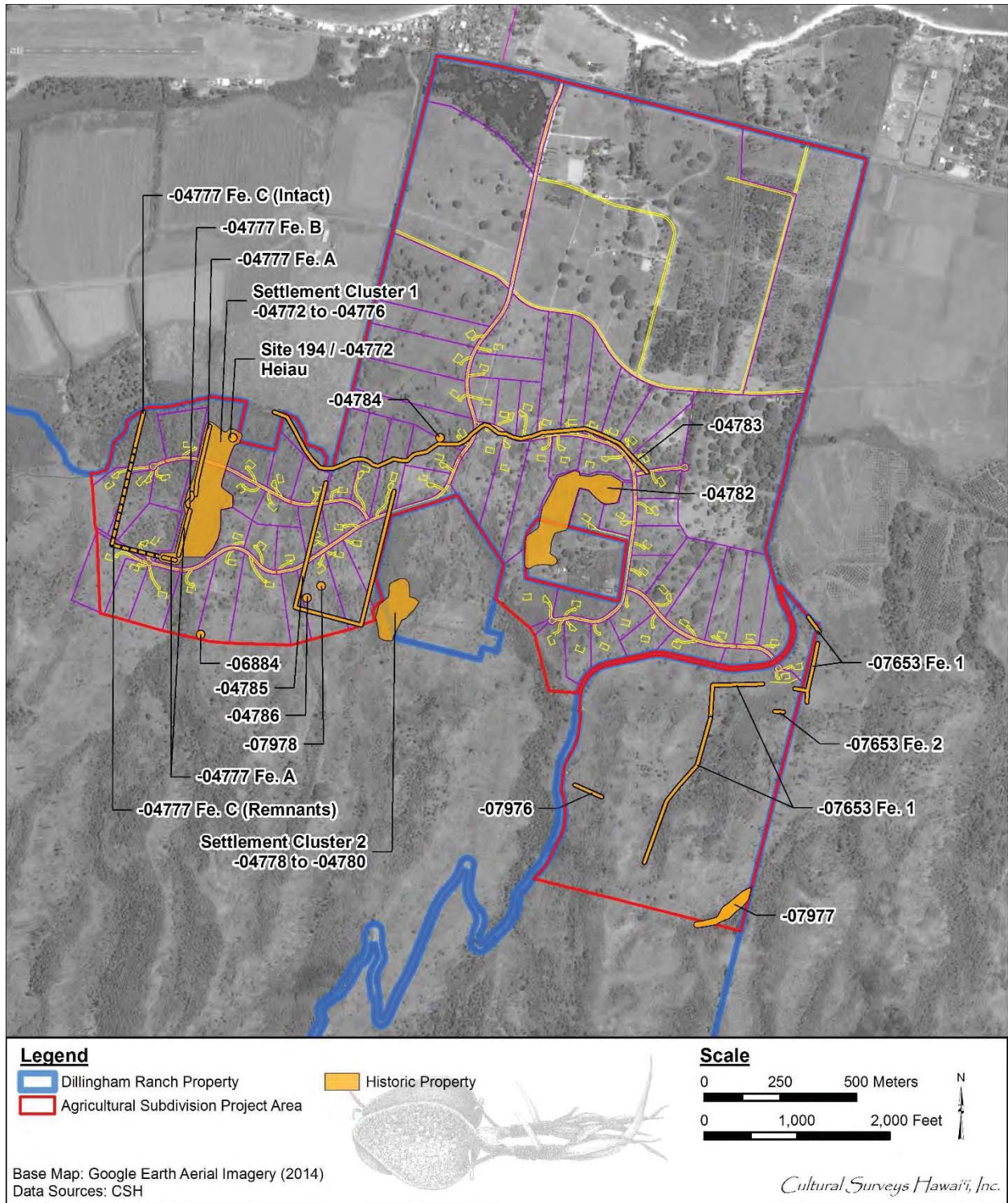


Figure 17. 2014 Google Earth aerial photograph showing the distribution of historic properties within the Dillingham Ranch Agricultural Subdivision project area with overlay of house lot boundaries and road alignments

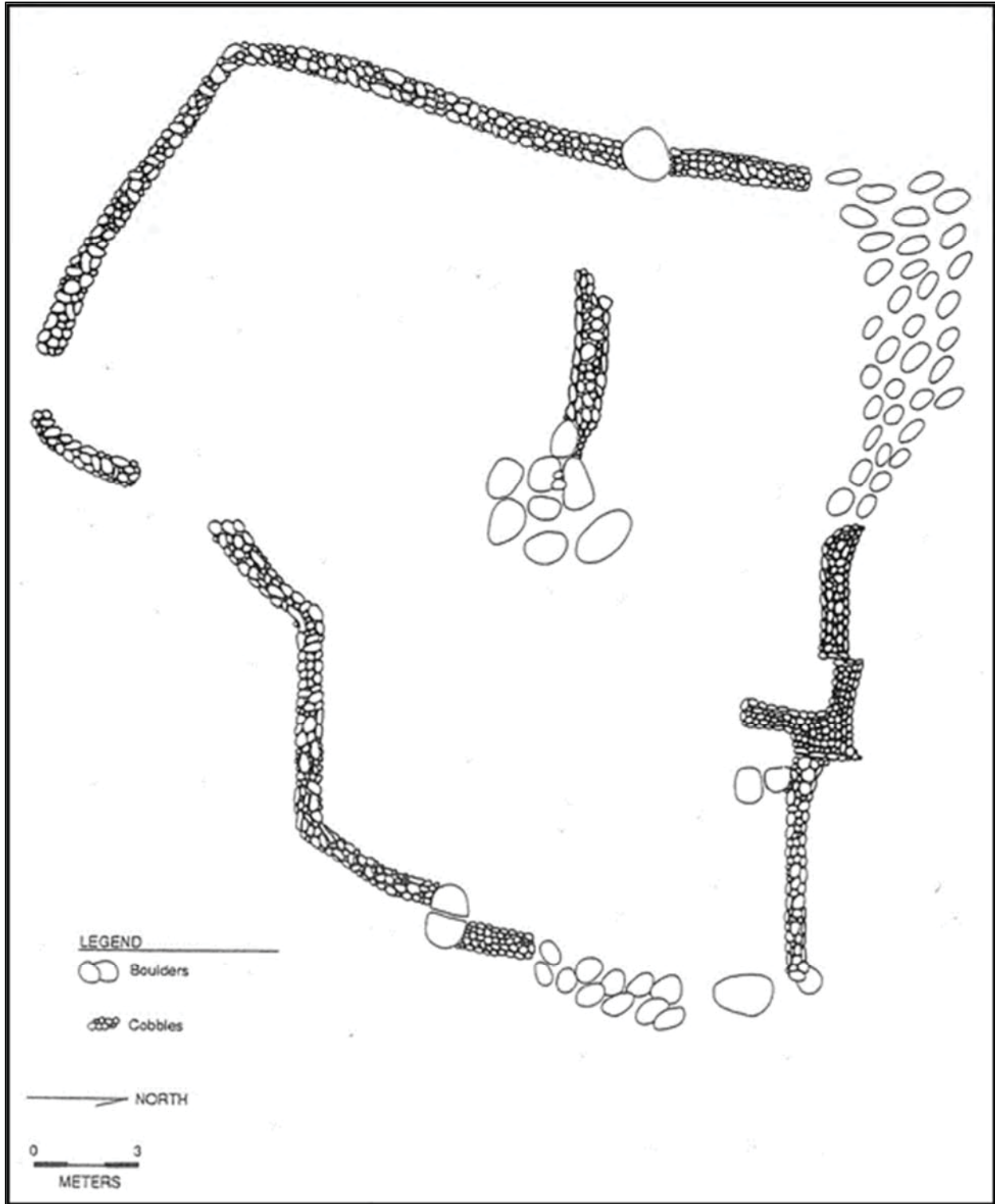


Figure 18. Plan view diagram of SIHP # 50-80-03-4772 *heiau* (Drolet and Schilz 1992a)



Figure 19. Photograph of a portion of SIHP # 50-80-03-4772; view to southeast (Tulchin and Hammatt 2008a)

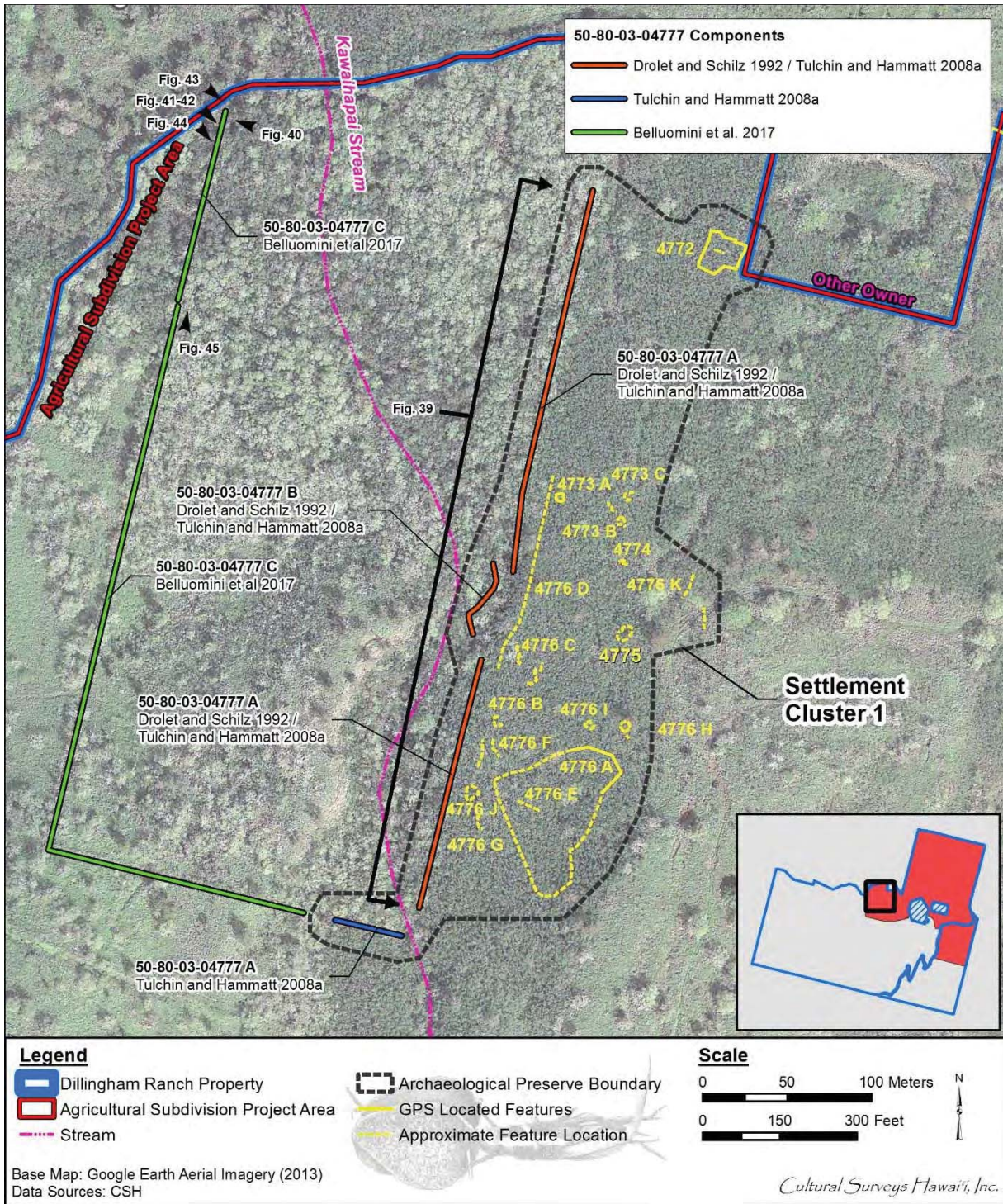


Figure 20. 2013 Google Earth aerial photograph showing the locations of Settlement Cluster 1 historic properties (SIHP #s 50-80-03-4772 through 50-80-03-4776) and SIHP # 50-80-03-4777 Features A and B, as well as the previously undocumented Feature C, in relation to the archaeological preserve boundary and Dillingham Ranch Agricultural Subdivision project area and associated lot boundaries

the south side. The overall size is 25 x 25m, and the unit contains an internal alignment of boulder/cobbles running out from the east wall. [Drolet and Schilz 1992a:24]

Drolet and Schilz (1992a) evaluated SIHP # 50-80-03-4772 as significant pursuant to HAR §13-284-6, Criteria d (have yielded, or is likely to yield, information important for research on prehistory or history) and e (have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity). Protection measures are warranted for SIHP # 50-80-03-4772.

The historic property was significant under Criterion e, based on the interpretation of the features as representing religious or ceremonial structures.

Tulchin and Hammatt (2008a) located SIHP # 50-80-03-4772 during a 2006 field inspection for the preservation plan. The site was evaluated as being in good to excellent condition and remained unchanged from the original site description provided by Drolet and Schilz (1992a). Tulchin and Hammatt (2008a) evaluated SIHP # -4772 as eligible for listing on the Hawai'i Register of Historic Places under Criteria C, D, and E (see Section 5).

This historic property was assessed as significant under Criterion C based on the following:

Given these sites' excellent integrity, the fact that they represent a related group of sites characteristic of the type that was built on the coastal terrace of Mokule'ia during prehistoric times, and because other site groups of this type in the region might have less integrity, we believe that these sites are also significant because they embody the distinctive characteristics of a type (criterion C). [SHPD review letter Log No. 5155, Doc No. 0682t]

Although not assessed as significant under HAR §13-284-6 Criterion c by Drolet and Schilz (1992a), its eligibility to the Hawaii Register under Criterion C by Tulchin and Hammatt (2008a) suggests it is also significant under HAR §13-284-6 Criterion c.

Site preservation measures are required for SIHP # 50-80-03-4772 and are included in Tulchin and Hammatt (2008a) (see Appendix B). SIHP # -4772 is located within the Settlement Cluster 1 preservation boundary (see Figure 20).

4.2 SIHP # 50-80-03-4773 (Formerly SIHP # 50-80-03-4425)

FORMAL TYPE:	Complex (platform and enclosures)
FUNCTION:	Habitation/agricultural complex
SETTLEMENT CLUSTER:	1
NUMBER OF FEATURES:	3
SIZE:	80 m by 40 m (3200 sq m)
AGE:	Pre-Contact or Early Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992a); Tulchin and Hammatt (2008a)

SIHP # 50-80-03-4773 (Figure 21; see Figure 20) was described by Drolet and Schilz (1992a):

Site 4773: This is a feature cluster that covers an area of 80 by 40m in size and is composed of five units, four of which [Features B and C; 2 units each] encircle a flat terrace area (20 x 24m) void of field stone. This central portion appears to have been purposely cleared and utilized, possibly for habitation or planting, in association with other domestic and agricultural constructions adjacent to it. The cluster is located 102m south of Site 4772, along the banks of a secondary, unnamed stream channel [Figure 21 through Figure 23].

Feature A: Platform. This feature consists of an irregular shaped platform with basalt cobbles and larger natural boulders. The west side is raised above the surrounding surface and the unit measures 6 x 6m in total size. A large, flaked core was found on the platform surface. The core measures 22 cm long, 17 cm wide, and 6.5 cm thick.

Feature B: Enclosure. This feature is an enclosure with a dirt floor bordered by rectangular rock walls. The walls are formed by upright boulders placed east to west and boulder/cobble fill placed south to north. The unit measures 10 x 6m in total size and is located 18m east of Feature A and 2m south of Feature C.

Feature C: Enclosure. This feature is a terrace enclosure outlined with natural boulders and filled with cobbles and has a mean height of 35cm. The overall dimensions are 10 x 15m. [Drolet and Schilz 1992a:24]

Drolet and Schilz (1992a) evaluated SIHP # 50-80-03-4773 as significant pursuant to HAR §13-284-6, Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). Protection measures are warranted for SIHP # -4773. SIHP # -4773 Features A–C were located during the field inspection for the preparation of the preservation plan (Tulchin and Hammatt 2008a). The features were observed to be under dense vegetation, but were in good condition and unchanged from the Drolet and Schilz (1992a) description. Tulchin and Hammatt (2008a) evaluated SIHP # -4773 as eligible for listing on the Hawai'i Register of Historic Places under Criteria C and D (see Section 5).

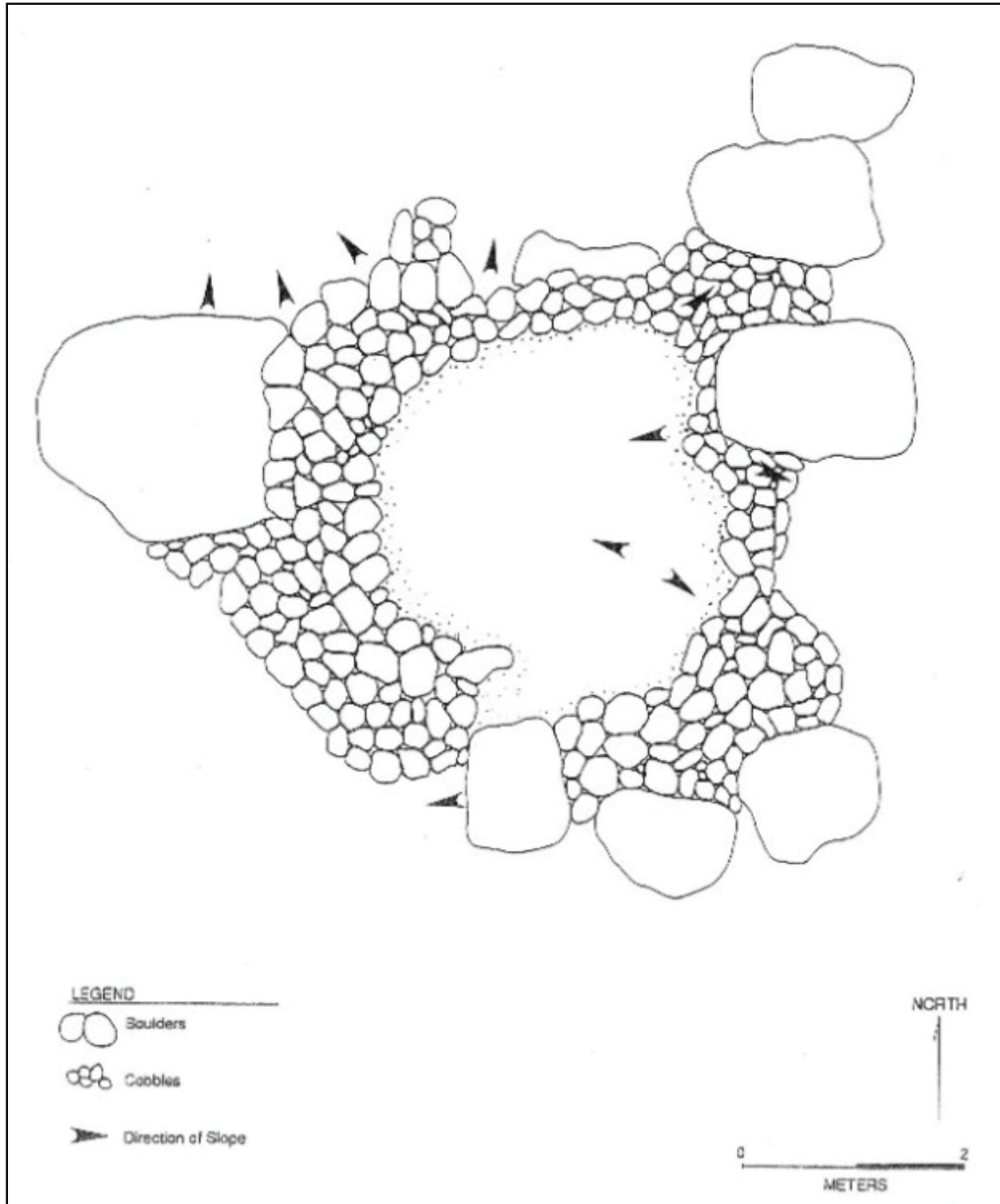


Figure 21. Plan view diagram of SIHP # 50-80-03-4773 Feature A platform (Drolet and Schilz 1992a: A2)

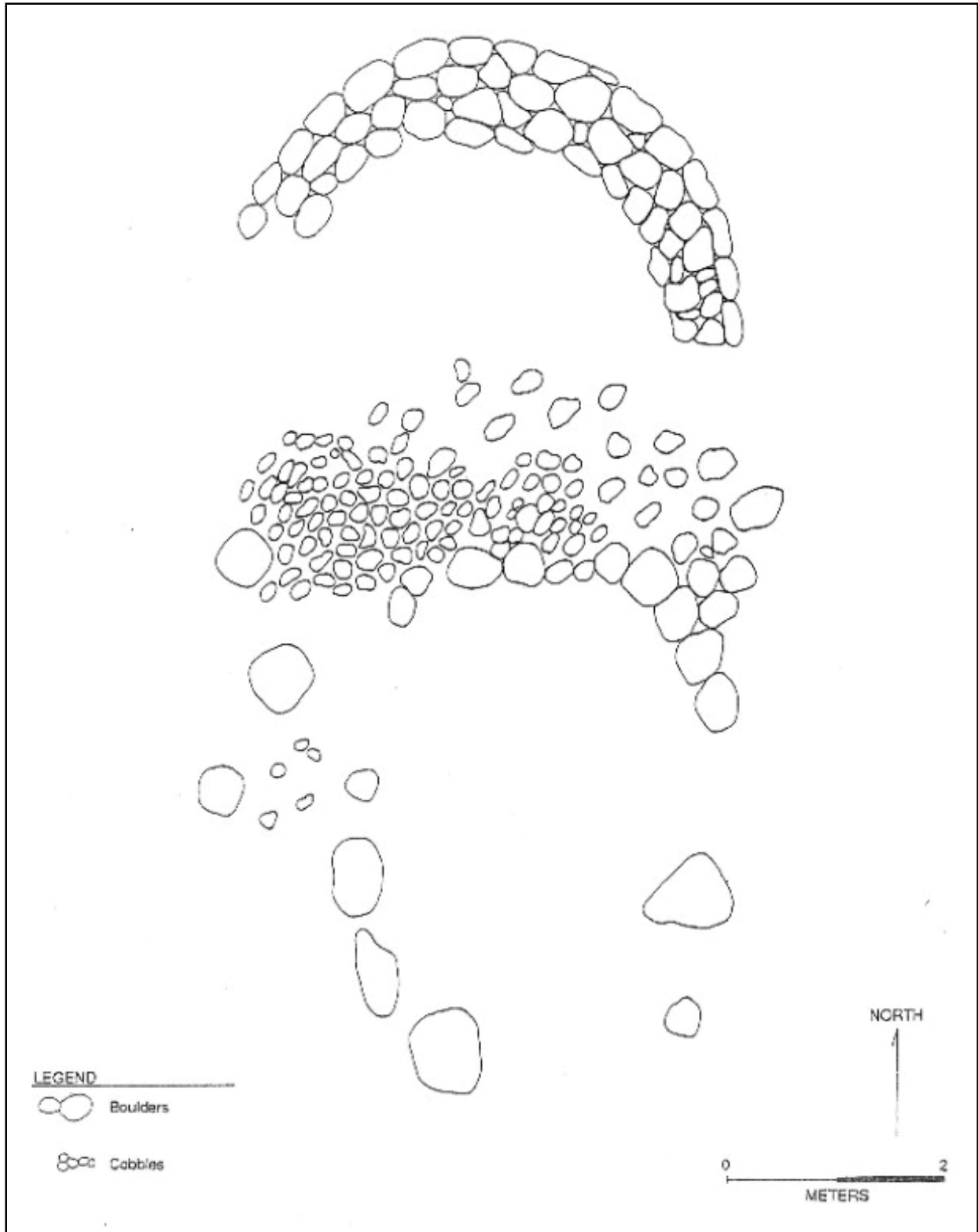


Figure 22. Plan view diagram of SIHP # 50-80-03-4773 Feature B enclosure (Drolet and Schilz 1992a: A3) (note: two units shown)

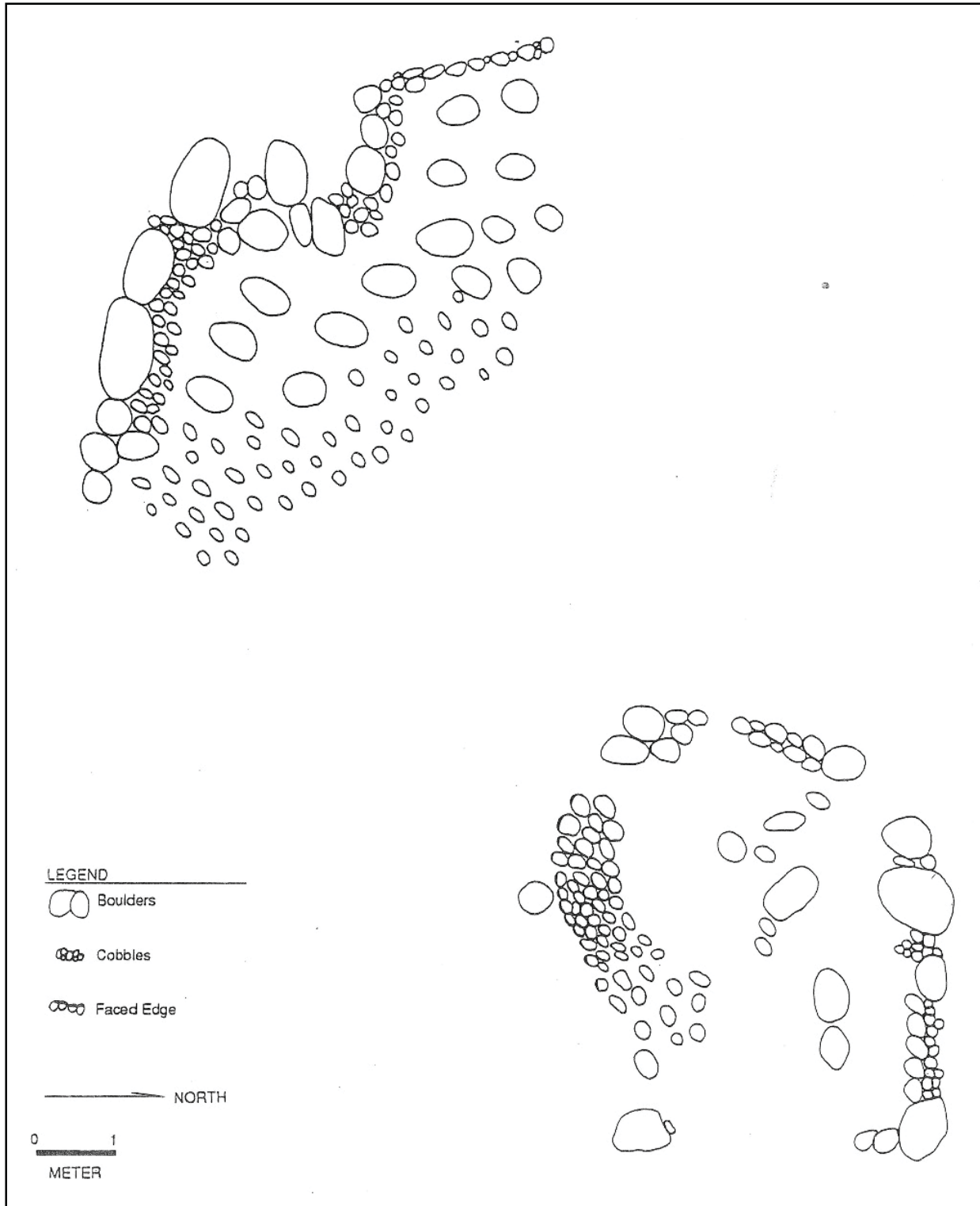


Figure 23. Plan view diagram of SIHP # 50-80-03-4773 Feature C enclosure (Drolet and Schilz 1992a: A4) (note: two units shown)

This historic property was assessed as significant under Criterion c based on the following:

Given these sites' excellent integrity, the fact that they represent a related group of sites characteristic of the type that was built on the coastal terrace of Mokule'ia during prehistoric times, and because other site groups of this type in the region might have less integrity, we believe that these sites are also significant because they embody the distinctive characteristics of a type (criterion C). [SHPD review letter Log No. 5155, Doc No. 0682t]

Although not assessed as significant under HAR §13-284-6 Criterion c by Drolet and Schilz (1992a), its eligibility to the Hawaii Register under Criterion C by Tulchin and Hammatt (2008a) suggests it is also significant under HAR §13-284-6 Criterion c.

Site preservation measures are required and included in Tulchin and Hammatt (2008a) (see Appendix B). SIHP # 50-80-03-4773 is located within the Settlement Cluster 1 preservation boundary (see Figure 20).

4.3 SIHP # 50-80-03-4774 (Formerly SIHP # 50-80-03-4426)

FORMAL TYPE:	Platform
FUNCTION:	Habitation
SETTLEMENT CLUSTER:	1
NUMBER OF FEATURES:	1
SIZE:	2 m by 3.5 m (7 sq m)
AGE:	Pre-Contact or Early Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992a); Tulchin and Hammatt (2008a)

The following description of SIHP # 50-80-03-4774 (see Figure 20) was provided by Drolet and Schilz (1992a):

Site 4774 (Field Site 16): Platform. This is a platform defined by large natural boulders that outline the outer limits and internally is filled with smaller cobbles. It is located just south of a rock-free lot and Site 4425. The unit measures 2 x 3.5m in size [Figure 24]. [Drolet and Schilz 1992:24]

Drolet and Schilz (1992a) evaluated SIHP # 50-80-03-4774 as significant pursuant to HAR §13-284-6, Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). Protection measures are warranted for SIHP # -4774.

The SIHP # 50-80-03-4774 site location and condition could not be located during the field inspection associated with the preparation of the preservation plan (Tulchin and Hammatt 2008). Tulchin and Hammatt (2008a) evaluated SIHP # -4774 as eligible for listing on the Hawai'i Register of Historic Places under Criteria C and D (see Section 5).

This historic property was assessed as significant under Criterion C based on the following:

Given these sites' excellent integrity, the fact that they represent a related group of sites characteristic of the type that was built on the coastal terrace of Mokule'ia during prehistoric times, and because other site groups of this type in the region might have less integrity, we believe that these sites are also significant because they embody the distinctive characteristics of a type (criterion C). [SHPD review letter Log No. 5155, Doc No. 0682t]

Although not assessed as significant under HAR §13-284-6 Criterion c by Drolet and Schilz (1992a), its eligibility to the Hawaii Register under Criterion C by Tulchin and Hammatt (2008a) suggests it is also significant under HAR §13-284-6 Criterion c.

Site preservation measures are required and included in Tulchin and Hammatt (2008a) (see Appendix B). SIHP # 50-80-03-4774 is located within the Settlement Cluster 1 preservation boundary (see Figure 20).

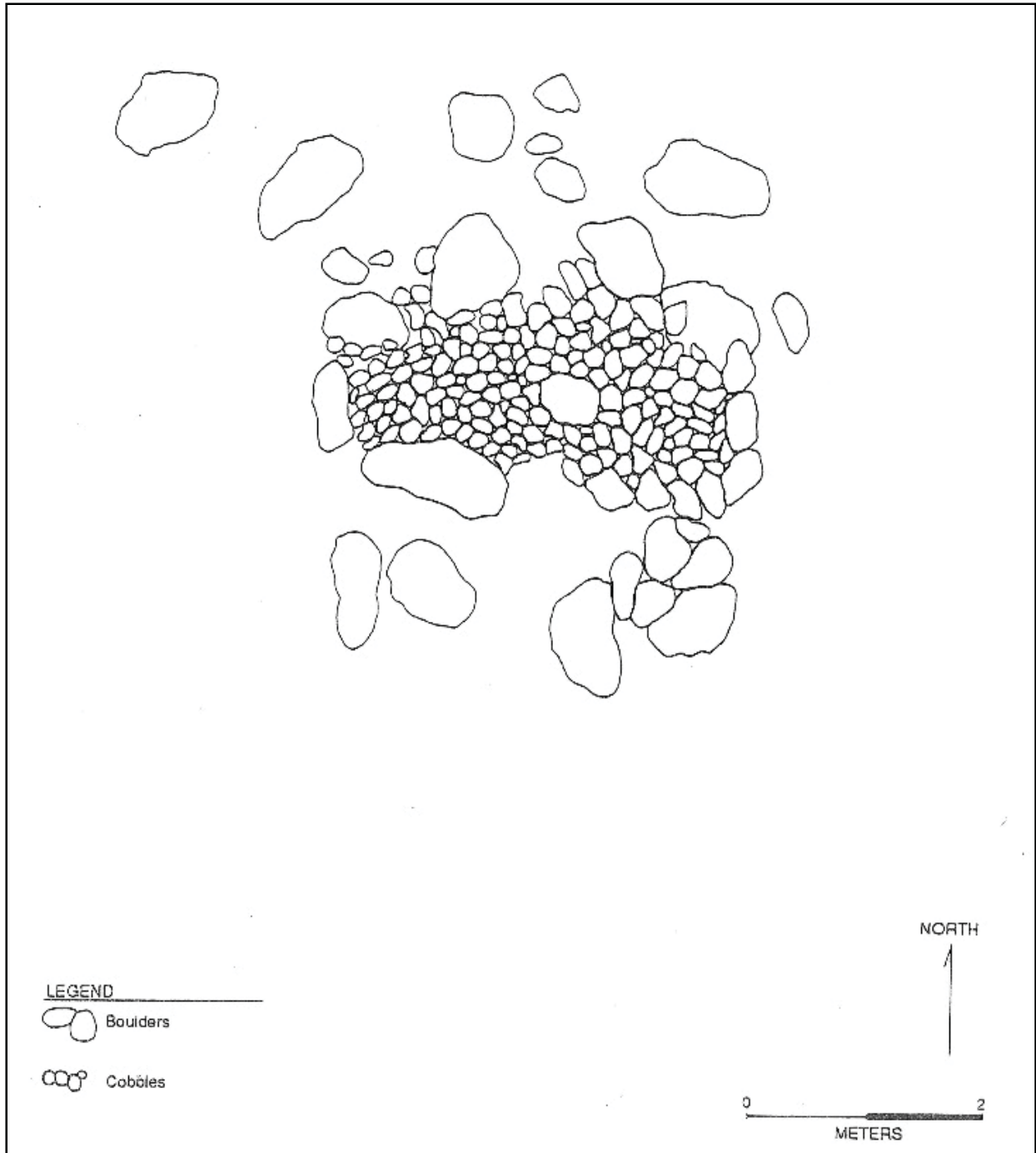


Figure 24. Plan view diagram of SIHP # 50-80-03-4774 platform (Drolet and Schilz 1992a: A5)

4.4 SIHP # 50-80-03-4775 (Formerly SIHP # 50-80-03-4427)

FORMAL TYPE:	Enclosure
FUNCTION:	Habitation
SETTLEMENT CLUSTER:	1
NUMBER OF FEATURES:	1
SIZE:	18 m by 9 m (162 sq m)
AGE:	Pre-Contact or Early Post Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992a); Tulchin and Hammatt (2008a)

The following description of SIHP # 50-80-03-4775 (Figure 25; see Figure 20) was provided by Drolet and Schilz (1992a):

Site 4775 (Field Site 03): Enclosure. This feature consists of an enclosure with a wall segment that together form a mound. The enclosure is composed of stacked boulders and cobbles. Naturally occurring boulders in the area have been incorporated into the enclosure structure. The surrounding area seems to be the remains of clearing. Large boulders abound in the area directly surrounding the feature. Some areas appear culturally modified. However, it is apparent that a great deal of damage has occurred as a result of cattle grazing in the area. The unit measures 18 x 9m in size. It is located 16m south of Site 4774. [Drolet and Schilz 1992a:25]

Drolet and Schilz (1992a) evaluated SIHP # 50-80-03-4775 as significant pursuant to HAR §13-284-6, Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). Protection measures are warranted for SIHP # -4775.

The SIHP # 50-80-03-4775 site location was confirmed during the field inspection associated with the preparation of the preservation plan (Tulchin and Hammatt 2008a). The feature was observed to be covered under dense vegetation, but appeared to be in fair condition and unchanged from the original Drolet and Schilz (1992a) description of the historic property. Tulchin and Hammatt (2008a) evaluated SIHP # -4775 as eligible for listing on the Hawai'i Register of Historic Places under Criteria C and D (see Section 5).

This historic property was assessed as significant under Criterion C based on the following:

Given these sites' excellent integrity, the fact that they represent a related group of sites characteristic of the type that was built on the coastal terrace of Mokule'ia during prehistoric times, and because other site groups of this type in the region might have less integrity, we believe that these sites are also significant because they embody the distinctive characteristics of a type (criterion C). [SHPD review letter Log No. 5155, Doc No. 0682t]

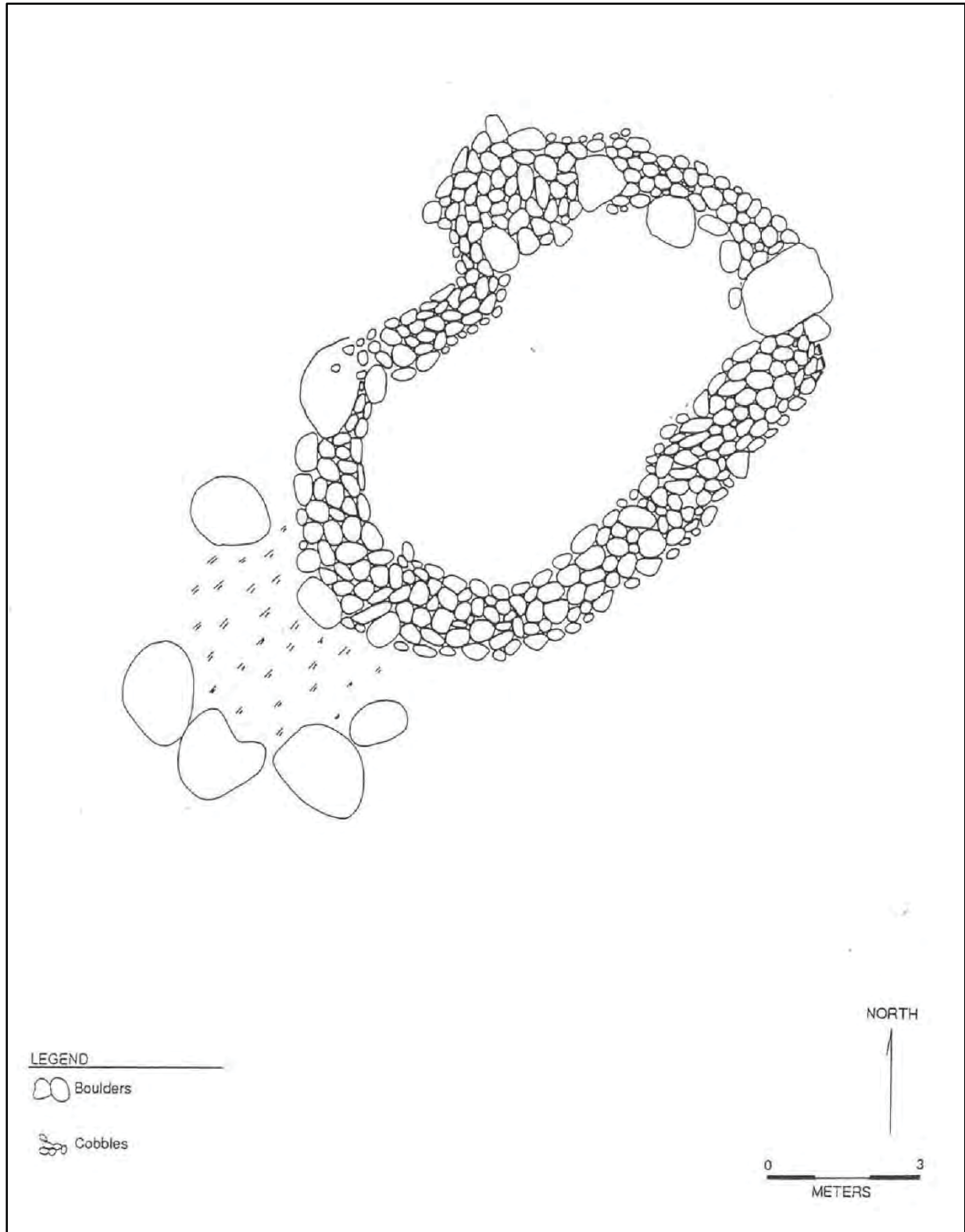


Figure 25. Plan view diagram of SIHP # 50-80-03-4775 (Drolet and Schilz 1992a)

Although not assessed as significant under HAR §13-284-6 Criterion c by Drolet and Schilz (1992a), its eligibility to the Hawaii Register under Criterion C by Tulchin and Hammatt (2008a) suggests it is also significant under HAR §13-284-6 Criterion c.

Site preservation measures are required and included in Tulchin and Hammatt (2008a) (see Appendix B). SIHP # 50-80-03-4775 is located within the Settlement Cluster 1 preservation boundary (see Figure 20).

4.5 SIHP # 50-80-03-4776 (Formerly SIHP # 50-80-03-4428)

FORMAL TYPE:	Complex (enclosures, terraces, walls, alignment, mound, and clear area)
FUNCTION:	Habitation/religious/ceremony/agriculture
SETTLEMENT CLUSTER:	1
NUMBER OF FEATURES:	11
SIZE:	200 m by 205 m (41 sq km)
AGE:	Pre-Contact or Early Post Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Mitchell (1987); Drolet and Schilz (1992a); Tulchin and Hammatt (2008a)

SIHP # 50-80-03-4776 consists of a complex of 11 features within the uplands of Settlement Cluster 1, a concentration of five historic properties (SIHP # 50-80-03-4772 through 50-80-03-4777) (see Figure 20). The complex is aligned parallel to the Makahela stream and covers an area 200 m by 205 m. Drolet and Schilz (1992a) stipulate the complex is the best preserved in comparison to the other features within the cluster.

SIHP # 50-80-03-4776 features include enclosures (Features A, B, and H), one clearing piles (Feature C), four terraces (Features D, E, I, and K), one wall (Feature F), and one alignment (Feature G) (Figure 26 through Figure 38). The site's agricultural features are characterized by planting areas, defined by enclosures and terraces, and irrigation channels that tapped water from the stream and rainfall on the adjoining slope. Drolet and Schilz (1992a) speculated the site's habitation features were occupied on a short-term basis and were associated with management of the surrounding planting areas. One mound (Feature J) was interpreted as a shrine based on the presence of branch coral (Drolet and Schilz 1992a).

The SIHP # 50-80-03-4776 features are described by Drolet and Schilz as follows:

Feature A: Enclosure. This unit is a bell-shaped, stone wall enclosure located in the southern portion of the Feature 4 cluster. Other than a dense scattering of surface cobbles in the northwestern corner of the structure, only one visible feature, a small stone-lined terrace, is contained in [its] interior portion (Feature E- see below). Within Feature A, only scattered stone is found in the interior surface. The maximum extension of the unit is 90m (east-west) by 70m (north-south). The walls are 2 to 10 course high, range in height from 30 to 108cm, and measure 60-70cm thick. In parts, especially the northern side, there is considerable collapse and damage. Large boulders are located at the base and at the very top. Smaller boulders and cobbles are stacked and make up the central areas. A basalt core measuring 14cm long, 11cm wide, and 9cm thick was found along the western wall. The unit may have functioned as a planting area, animal pen, or possibly a protected habitation unit. In addition, because of its closeness to a long terrace wall (Feature D) it may have also functioned in conjunction with this nearby structure as a means of water control along the slope. [Drolet and Schilz 1992a:25]

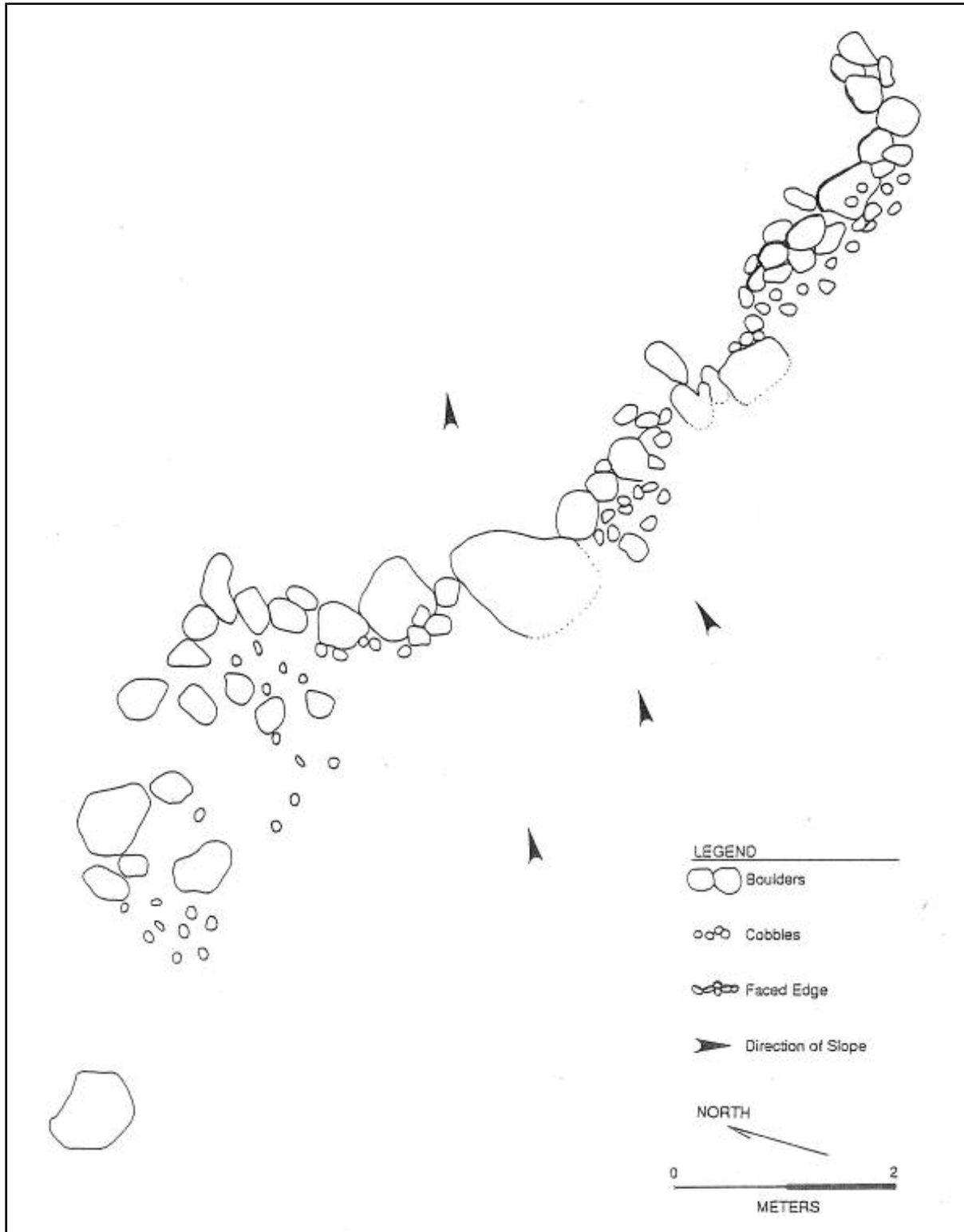


Figure 26. Plan view diagram of SIHP # 50-80-03-4776 Feature A enclosure (Drolet and Schilz 1992a)



Figure 27. Photograph of portion of SIHP # 50-80-03-4776 Feature A enclosure, view to northeast

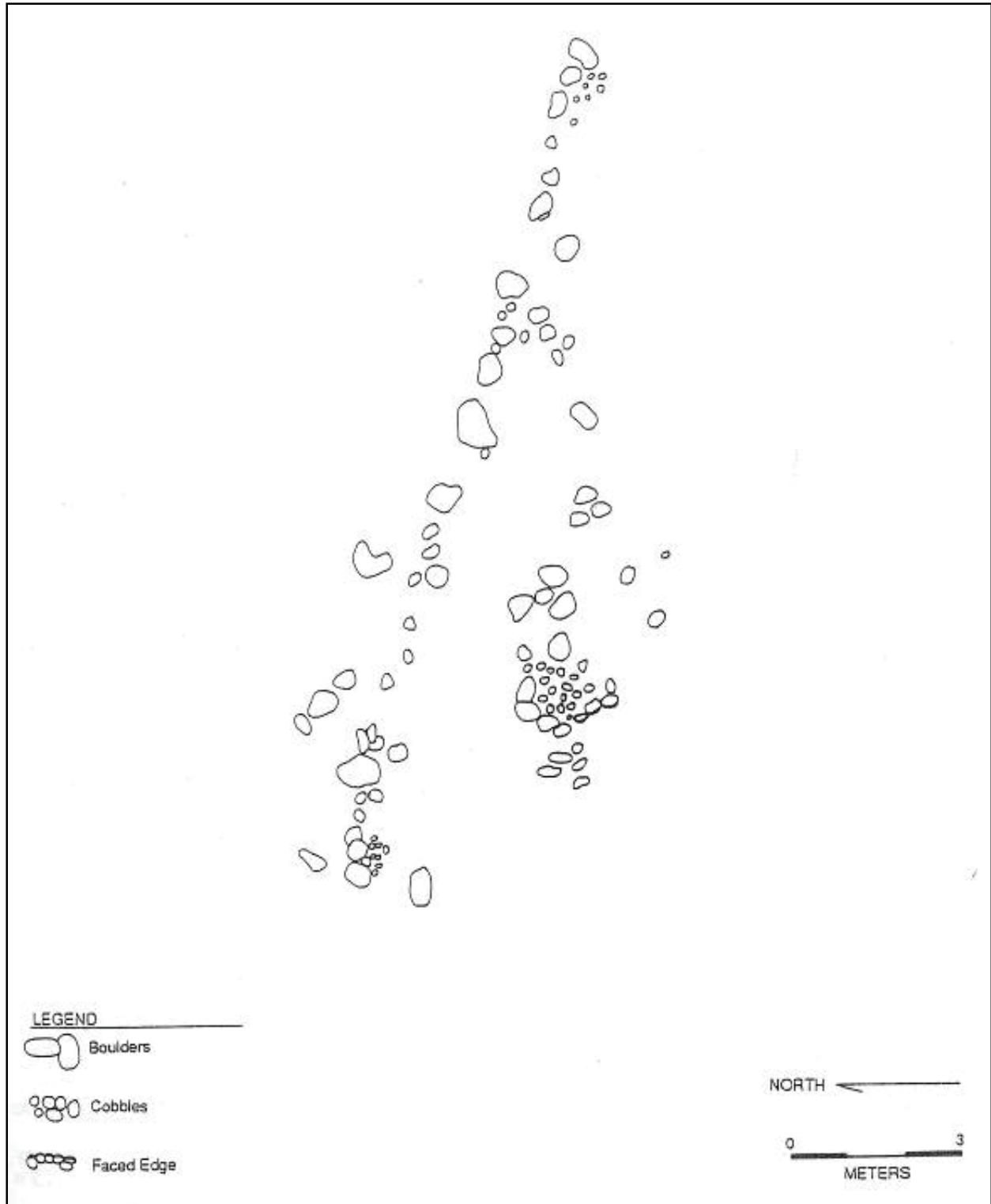


Figure 28. Plan view diagram of SIHP # 50-80-03-4776 Feature E terrace (Drolet and Schilz 1992a)

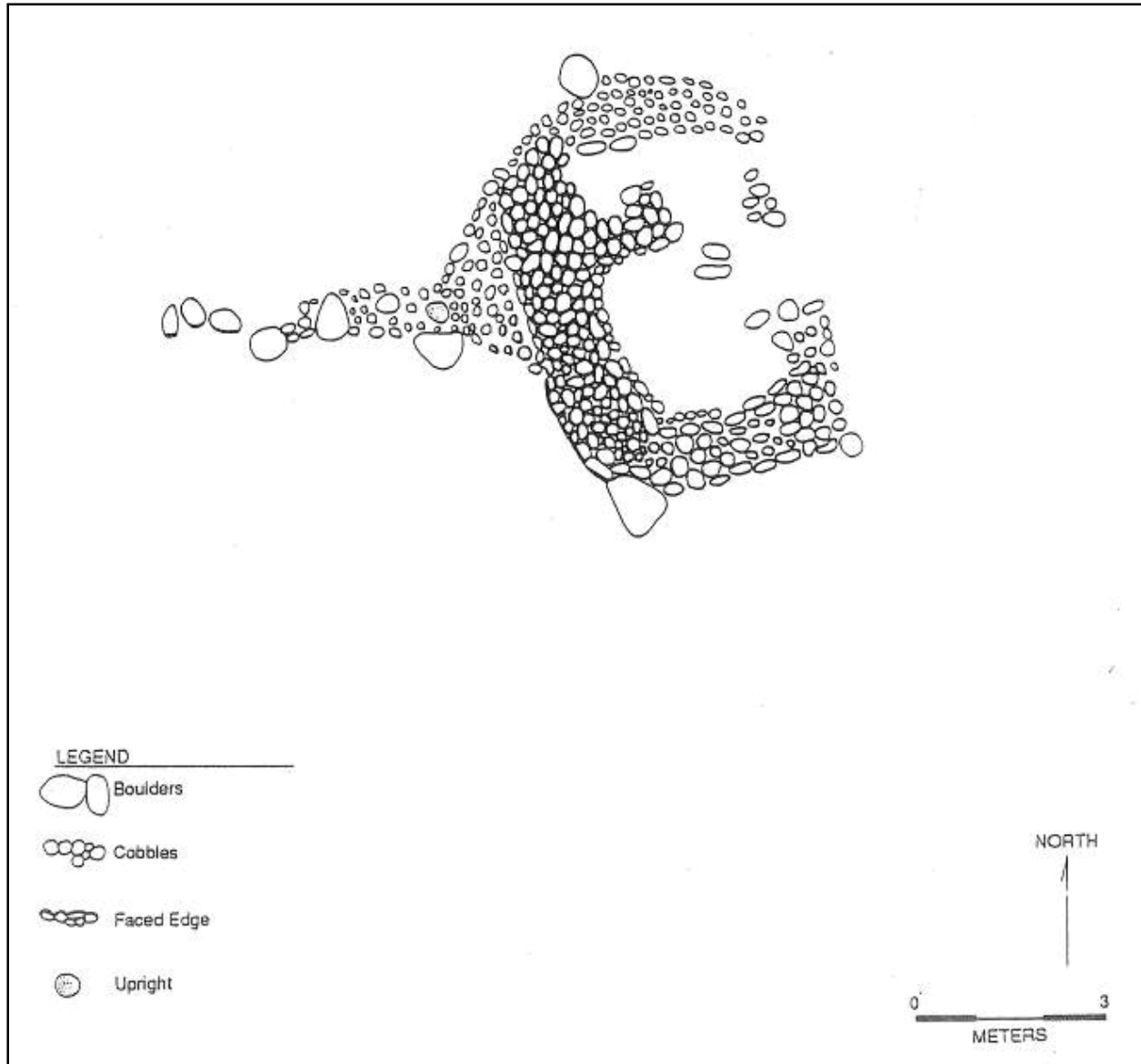


Figure 29. Plan view diagram of SIHP # 50-80-03-4776 Feature B enclosure (Drolet and Schilz 1992a)

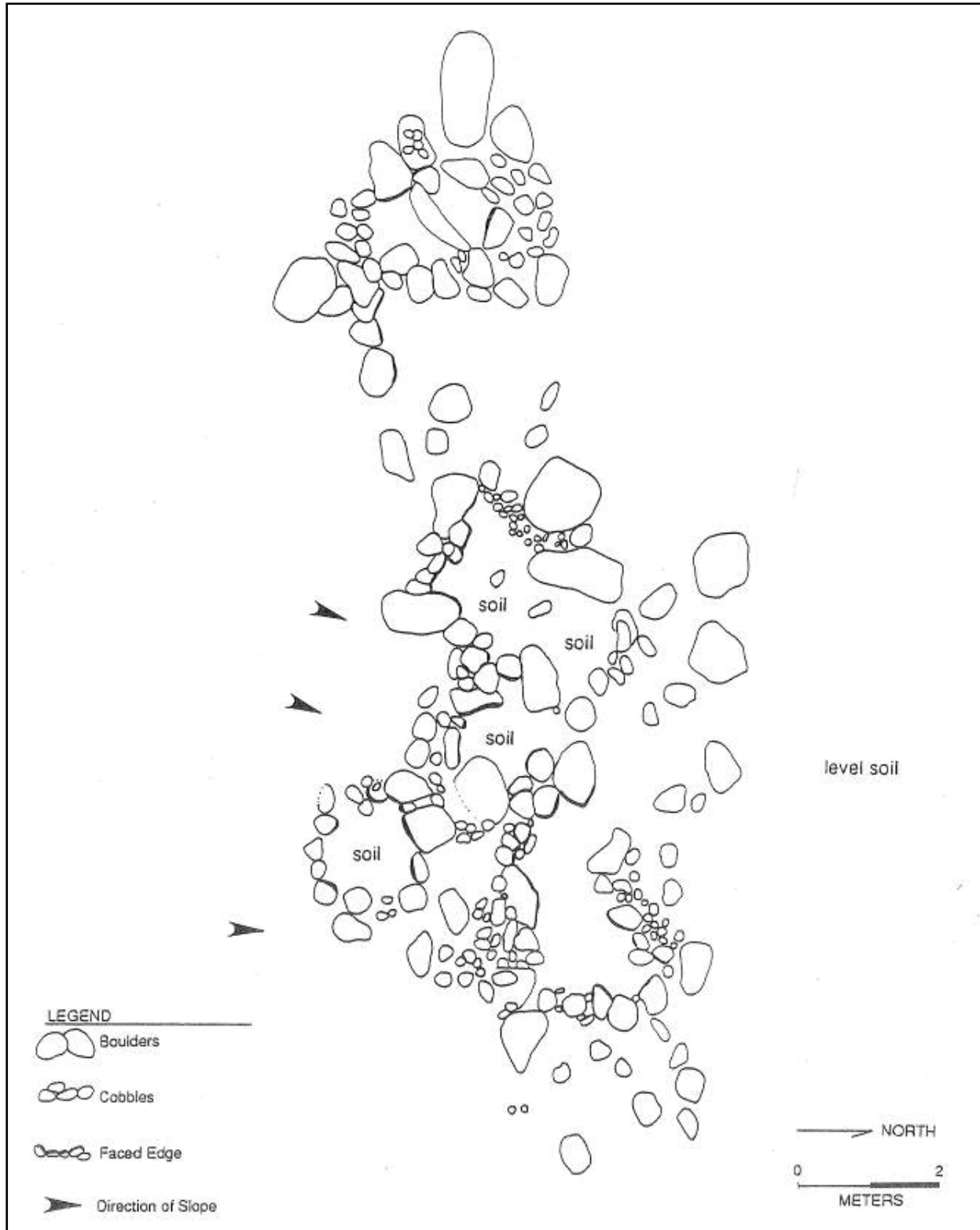


Figure 30. Plan view diagram of SIHP # 50-80-03-4776 Features C1 and C2 cleared planting areas (or enclosures) (Drolet and Schilz 1992a)

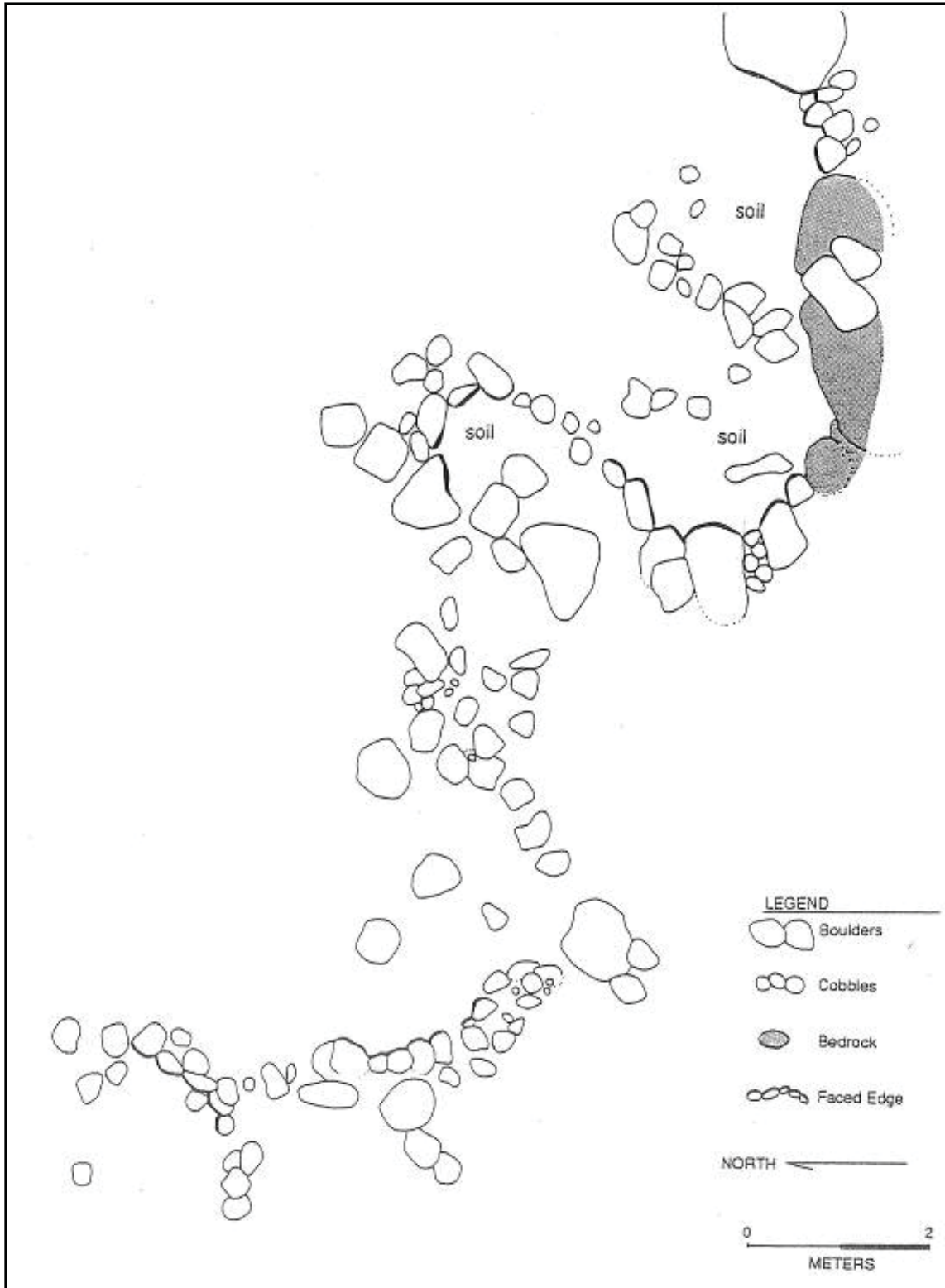


Figure 31. Plan view diagram of SIHP # 50-80-03-4776 Feature C3 cleared planting areas (or enclosures) (Drolet and Schilz 1992a)

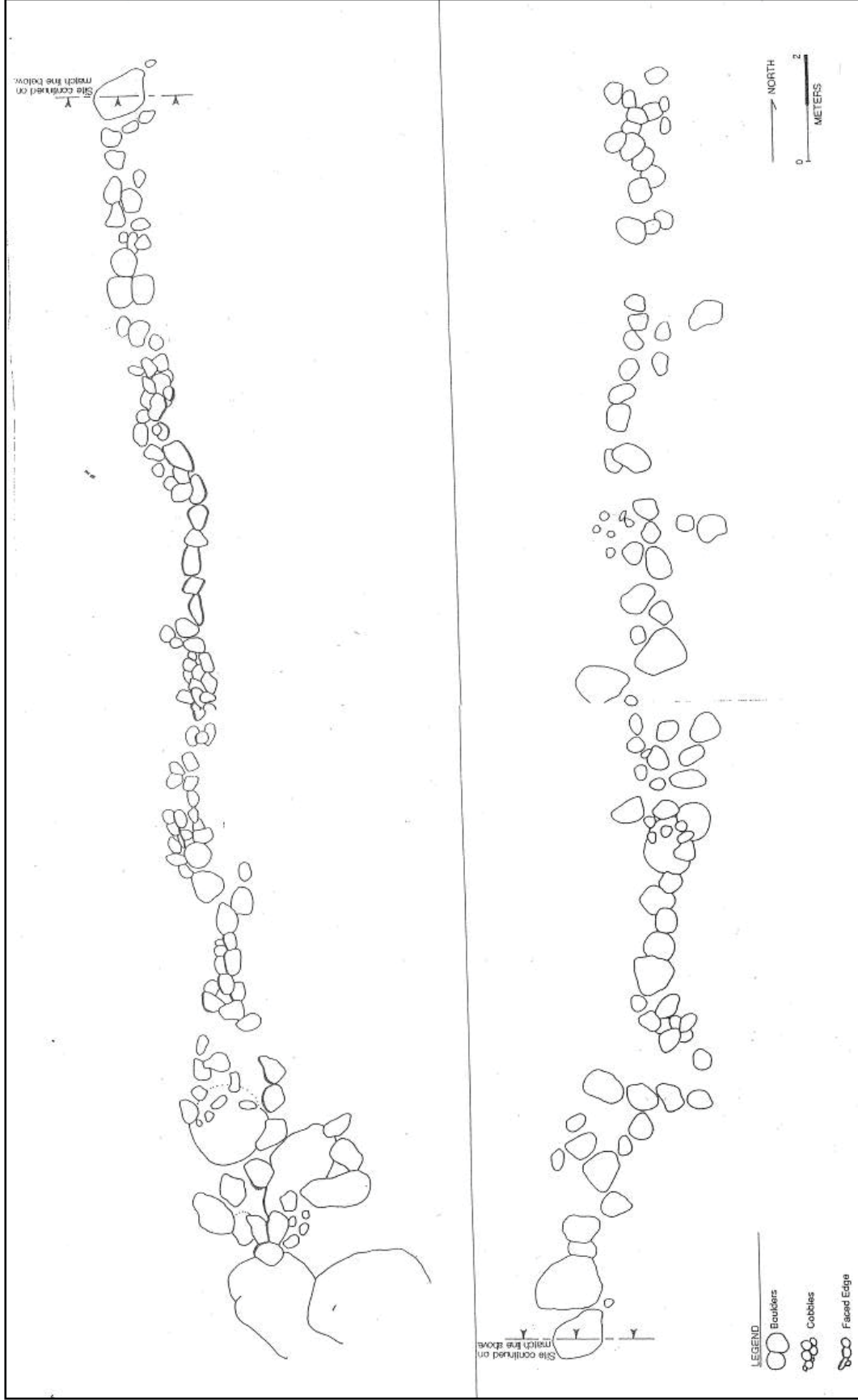


Figure 32. Plan view diagram of SIHP # 50-80-03-4776 Feature D wall (Drolet and Schilz 1992a)

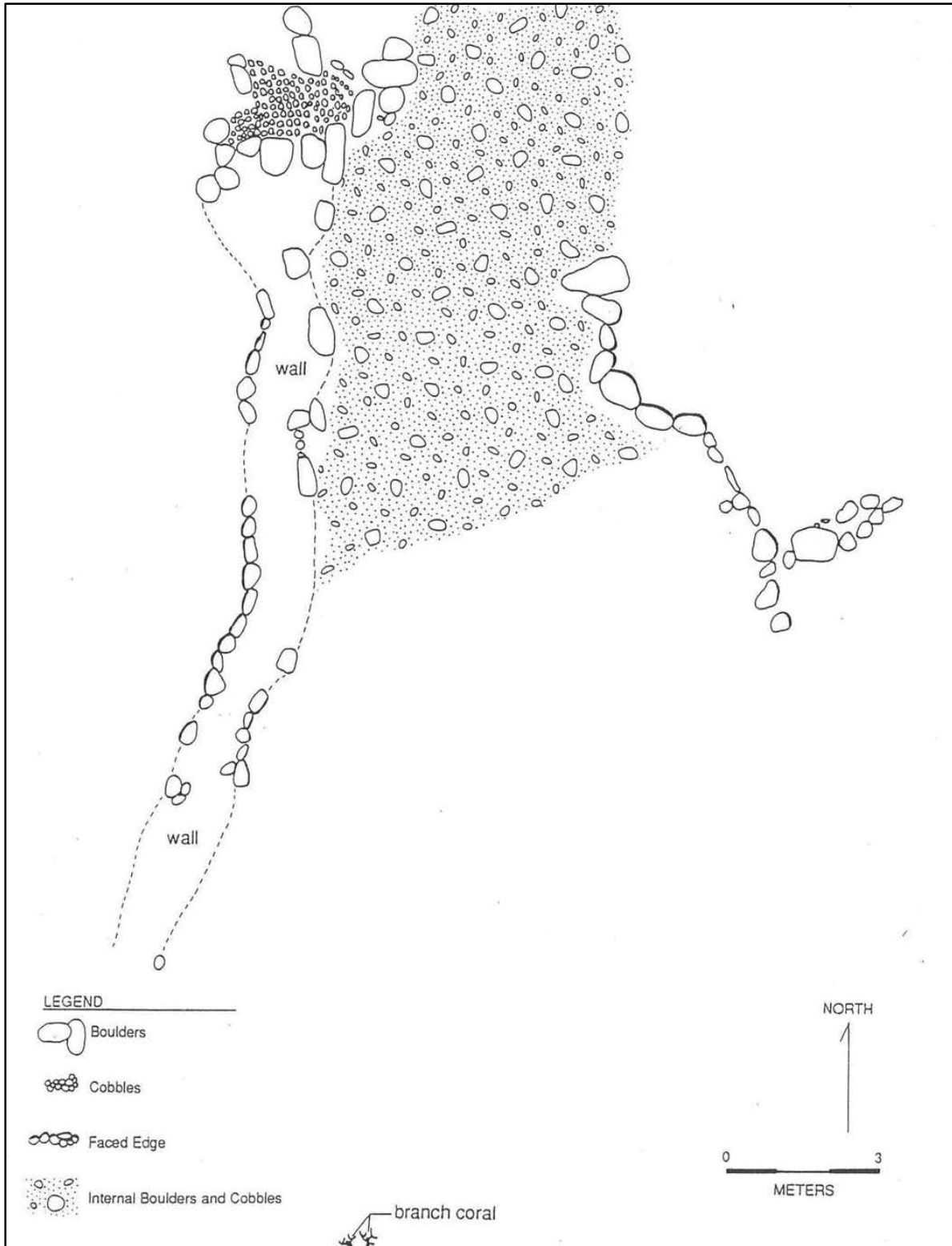


Figure 33. Plan view diagram of SIHP # 50-80-03-4776 Feature F terrace (Drolet and Schilz 1992:A12)

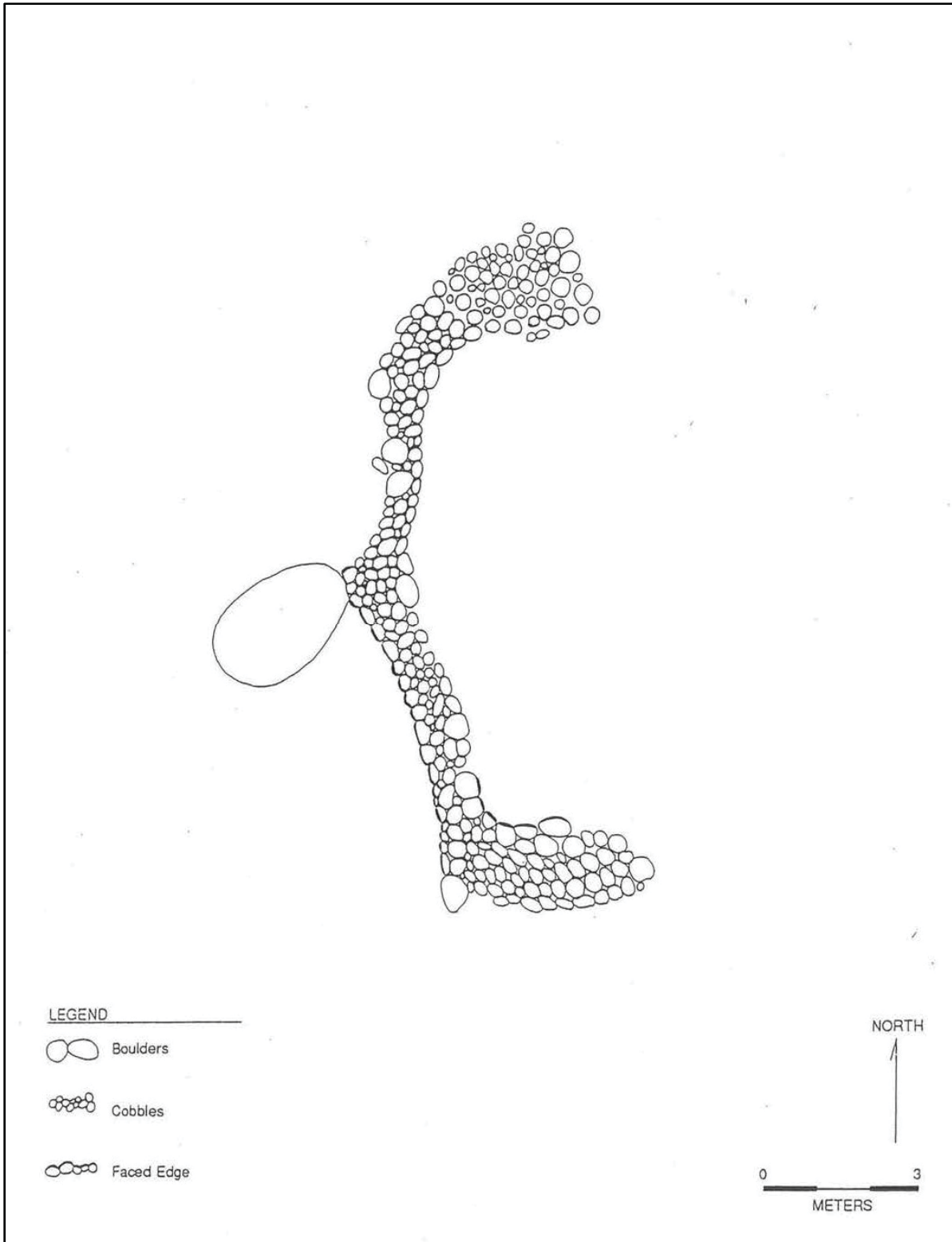


Figure 34. Plan view diagram of SIHP # 50-80-03-4776 Feature G terrace (Drolet and Schilz 1992:A13)

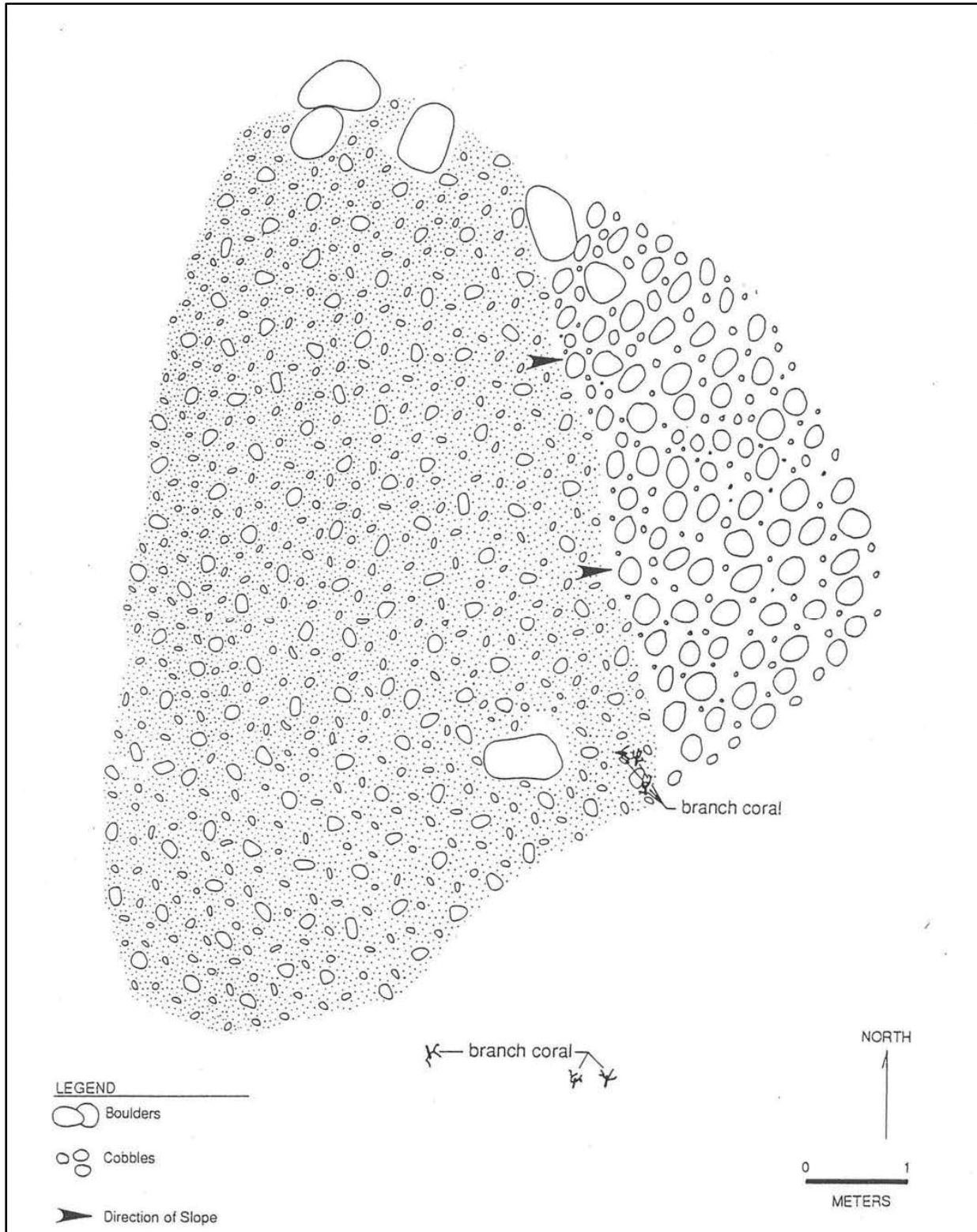


Figure 35. Plan view diagram of SIHP # 50-80-03-4776 Feature J terrace (Drolet and Schilz 1992:A16)



Figure 36. Plan view diagram of SIHP # 50-80-03-4776 Feature H terrace (Drolet and Schilz 1992:A14)

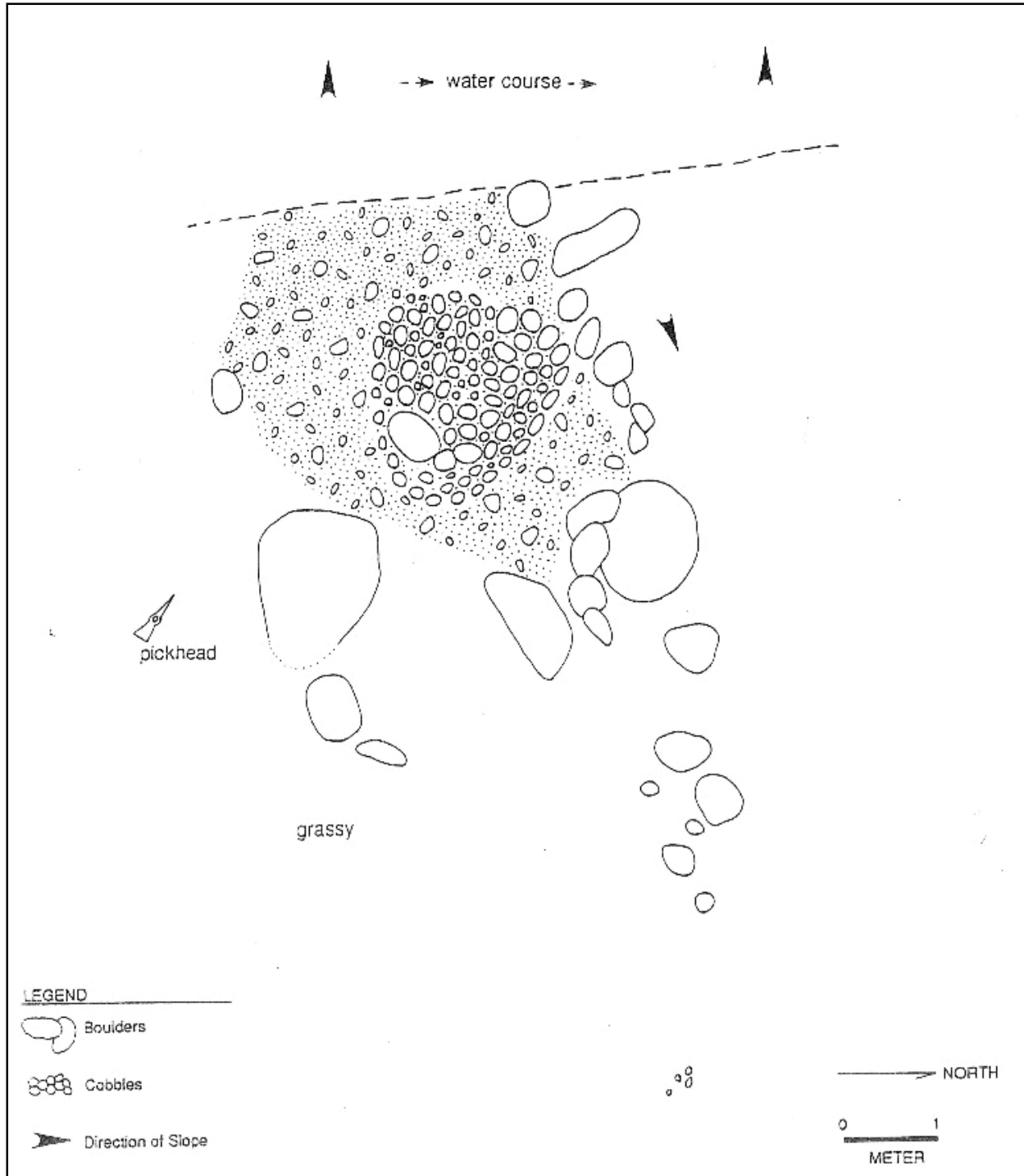


Figure 37. Plan view diagram of SIHP # 50-80-03-4776 Feature I terrace (Drolet and Schilz 1992:A15)

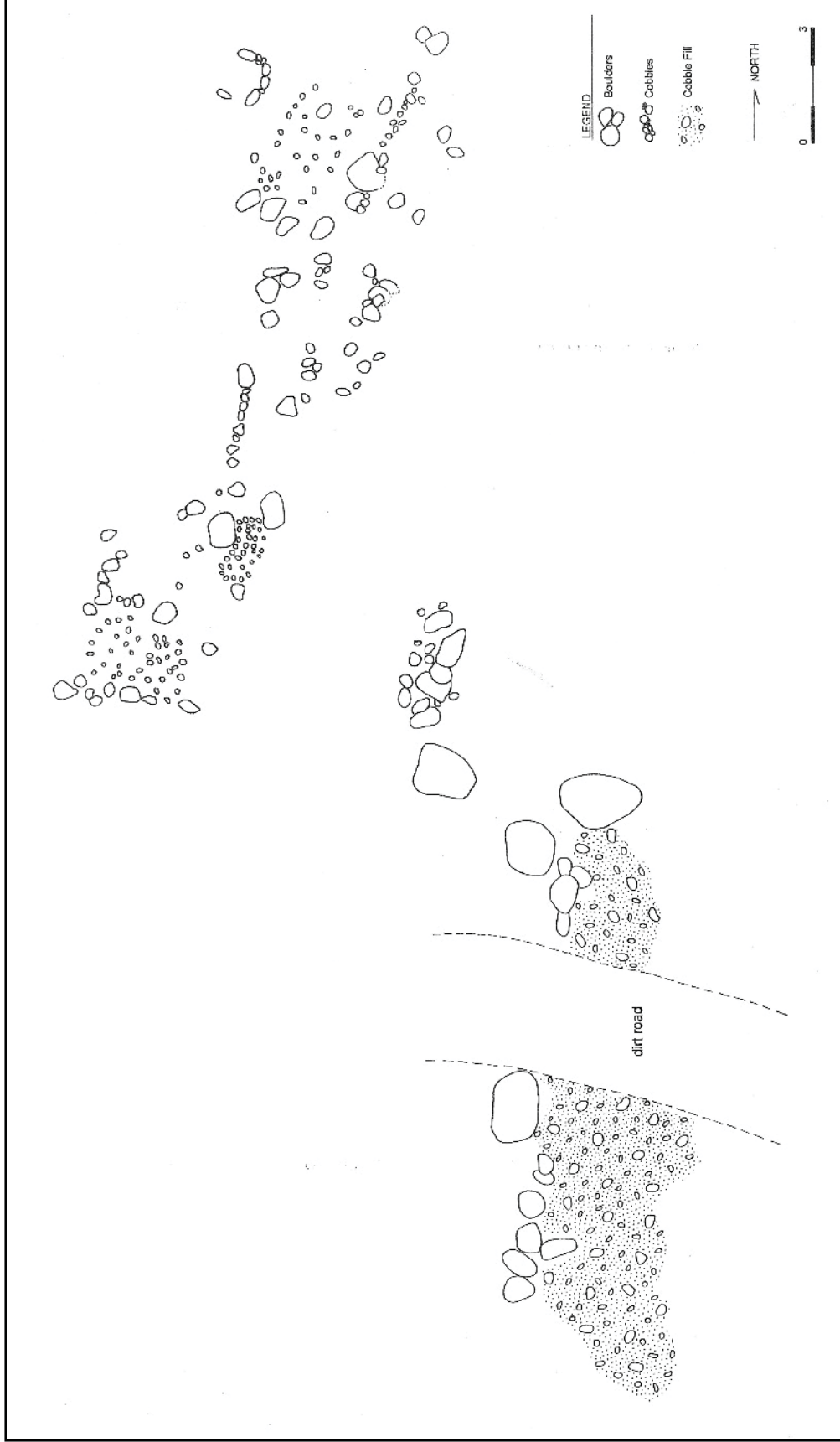


Figure 38. Plan view diagram of SIHP # 50-80-03-4776 Feature K terrace (Drolet and Schilz 1992:A17)

Feature E: Terrace. As mentioned above, this is an internal feature within the stone enclosure Feature A. It consists of a terrace running 15m east and west with 1-2 courses of cobble and boulder stones [see Figure 27]. Most of the feature is buried, although stepped area facing is apparent. An adjacent area of cobble and boulder construction may be an added feature, possibly used as a garden area. It is located at the northwest portion inside the wall enclosure, associated with the area of heavy cobble rubble, adjacent to the west wall.

Feature B: Enclosure. This is a C-shaped structure connected with a terrace wall (Feature D). The enclosure is in poor condition, with only one area of wall clearly observable. Large boulders that occur naturally have been incorporated into the structure at most places. The enclosure is 2 courses high and in some places 3 courses high. It is located 20m north of the large Feature A enclosure, along the margin of the stream terrace.

Feature C: Clearing. This feature is located to the north of Feature B, along the eastern portion of the nearby terrace wall (Feature D). It covers an area of 20 x 20m. An elongated alignment of bedrock boulders found in situ has been utilized to develop partial enclosures by the placement of these stones and smaller cobbles. This structure is fairly distinct with 1-3 courses of cobble and medium size boulders (50-70cm). The creation of a level, rock free, soil area on the down slope side of the basalt structure seems to indicate an agricultural function. These [types] of garden planting areas are similar to what has been identified in Makaha Valley south of the Waianae Range, where field shelters, gardening areas and house features have been found (Ladd 1969:37). At Mokuleia, the agricultural features have similar integrity, but have been more adversely affected by many years of slope wash. Despite this modification, this single feature appears to be one of the best remaining ones in this site cluster.

Feature D: Wall. This structure consists of a 40-70cm high terrace wall. It is composed principally of large boulders, with smaller boulders and cobbles stacked in specific areas, but no more than two courses high. It has a consistent bearing, running almost north and south and is located directly on the margin of the stream terrace. The upper (south) end joins Features B and F and the middle portion sweeps by Feature C, although no clear junctions or original joinings are distinguishable between these units. The wall, or alignment, is approximately 55m long. West of the wall is a stream bank that drops off 8-12m. The structure may well have been utilized to control and direct surface water flow into the stream bank in order to protect planting and residential areas below and to the east. [Drolet and Schilz 1992a:25-26]

Feature F: Wall. This is a 20m long composite feature located just to the south of the nearby terrace wall (Feature D) and just east of the northwest corner of the large bell-shaped enclosure (Feature A). It is approximately 25m long and contains portions of a 1-3 course high stacked wall, paved areas, and stone terrace stacking; although in areas the wall is only one stone high. A paved area extends to the west of the wall and is loosely faced on the west end. The terrace wall which is clearly

faced runs from the west and in a northwesterly direction. Smaller cobbles are interspersed between larger boulders and stones for wall stability. [Drolet and Schilz 1992a:26-27]

Feature G: Alignment. This is a stone alignment located east of the long stone wall (Site 4429), west of the large stone enclosure (Site 4428A), and south of the features defining Site 4428 (Features J, F, B, D, and C). It is 12m long and 1m wide and is constructed of loosely placed boulders and cobbles. Its preservation is fair, and may have originally formed a connected unit or functioned as a domestic area along with Features J and F. [Drolet and Schilz 1992a: 27]

Feature J: Mound. This unit consists of a raised mound constructed with cobble sized stone. It is located approximately 10m north of Feature G and a few meters south of Feature F. The feature is rectangular and measures 8.5m by 4.5m. Boulders and cobbles are associated with the construction of the structure and various pieces of branch coral are in association with the raised stone fill. The structure appears to be damaged, perhaps due to cattle traffic throughout the area, which has resulted in a considerable area of collapse and rubble on the northern side. Although the coral fragments were found at the base portion of the structure, it is possible that they were actually on the feature at the time of construction and subsequently pulled off. [Drolet and Schilz 1992a: 27]

Feature H: Enclosure. In the northeast outer portion of the large stone enclosure (Feature A), two more features of the Site 4428 configuration are present and in close proximity to one another. Feature H is one of these, and appears to define a protected planting area. It measures 6 x 6.5m in size and represents a small circular shaped structure. The partially complete circle is constructed of 1-2 course small boulders with a linear alignment along the *mauka* (SW) side. The enclosure is associated with two small boulder alignments located *mauka* and *makai*. The interior area is clear of rock and containing exposed soil, presumably for planting purposes. The feature has been damaged by water erosion. It is located 10m to the east of Feature I. [Drolet and Schilz 1992a: 27]

Feature I: Terrace. This feature measures 8m by 5m, and is located 9m to the west of Feature H. It appears to be a residential area, containing a terrace wall and what seems to be an adjacent paved area. The terrace wall is located along what appears to be a seasonal water coarse. The terrace facing is stepped in the area near the water coarse. Some recent artifacts were found nearby, including a glass water bottle and metal pick, although these appear to be unassociated with the earlier construction and use of the architectural unit. [Drolet and Schilz 1992a: 27]

Feature K: Terrace. This is a terrace feature consisting of a parallel boulder/cobble alignment that is washed out in parts, but extends 35m in length. The two rock alignments are separated from each other by approximately 4-5m. It contains a partial enclosure, possibly also a planting area, with an interior of approximately 1m. There are two small, flat, cobble areas along the alignment, located close to one another, each measuring 1 x 2m in size. [Drolet and Schilz 1992a: 28]

Drolet and Schilz (1992a:40) assessed SIHP # 50-80-03-4776, complex site, as significant pursuant to HAR §13-284-6, Criteria d (have yielded, or is likely to yield, information important for research on prehistory or history) and e (have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity).

Tulchin and Hammatt (2008a) confirmed portions of Features A and D during the 2006 field inspection for the preservation plan. The field inspection identified the site as being in fair condition and unchanged from the site description provided by Drolet and Schilz (1992a). The remaining features of SIHP # 50-80-03-4776 were not confirmed by Tulchin and Hammatt (2008a). Tulchin and Hammatt (2008a) evaluated SIHP # -4776 as eligible for listing on the Hawai'i Register of Historic Places under Criteria C, D, and E (see Section 5). This historic property was assessed as significant under Criterion C based on the following:

Given these sites' excellent integrity, the fact that they represent a related group of sites characteristic of the type that was built on the coastal terrace of Mokule'ia during prehistoric times, and because other site groups of this type in the region might have less integrity, we believe that these sites are also significant because they embody the distinctive characteristics of a type (criterion C). [SHPD review letter Log No. 5155, Doc No. 0682t]

The historic property was significant under Criterion E, based on the interpretation of the features as representing religious or ceremonial structures.

Although not assessed as significant under HAR §13-284-6 Criterion c by Drolet and Schilz (1992a), its eligibility to the Hawaii Register under Criterion C by Tulchin and Hammatt (2008a) suggests it is also significant under HAR §13-284-6 Criterion c.

Site preservation measures are required and included in Tulchin and Hammatt (2008a) (see Appendix B). SIHP # 50-80-03-4776 is located within the Settlement Cluster 1 preservation boundary (see Figure 20).

4.6 SIHP # 50-80-03-4777 (Formerly SIHP # 50-80-03-4429)

FORMAL TYPE:	U-Shaped Wall
FUNCTION:	Property boundary
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	3 wall segments
SIZE:	Total area is approximately 475 m by 225 m
AGE:	Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992a); Tulchin and Hammatt (2008a); Belluomini et al. (2017-draft)

SIHP # 50-80-03-4777 consists of a property boundary wall related to Land Grant 457 Lot 2 (see Figure 7) granted to J.T. Gulick located in the west portion of the Dillingham Ranch Agricultural Subdivision project area. The location is west of the main Settlement Cluster 1 feature concentration (see Figure 20). Portions of the wall were identified in three different studies. Features A and B were initially identified by Drolet and Schilz (1992a). An additional extent of Feature A was identified by Tulchin and Hammatt 2008a. The newly identified Feature C is a continuation of the wall to the west and north extending from the portion identified by Tulchin and Hammatt (2008a).

The following description of SIHP # 50-80-03-4777 was provided by Drolet and Schilz (1992a:28) (Figure 40):

Site 4429 [4777] (Field Site 05): Wall. Feature A is a principal feature of this settlement cluster and probably a major regional landmark of this north shore area. It consists of a faced wall that stretches approximately 280m in a north/south direction, situated along the margin of the stream bed that borders the western portion of Settlement Cluster 1. The well-built wall corresponds to the location of the Mokuleia ahupua'a western division limits [see Figure 1] and thus appears to have been constructed as a landmark feature during early historic occupation here. The faced wall ranges between 1-2m in height and between 0.7-1.2m in width. It is constructed with a boulder base and stacked with smaller cobbles placed vertically 4-7 courses high. Just west of the Site 4776 complex of features, the wall contains a 39m gap. The presence of numerous features in this area, the high terrace bank, and the gap in the ahupua'a wall may indicate a principal point along the terrace for water diversion to aid in both water run off and field irrigation. Also noteworthy is the presence of a faced wall (Feature B) constructed along the opposite side of the stream. Presumably, this construction also functioned to aid in water channeling along the stream where an array of residential and field system constructions are evident [Figure 40].

Feature B: Wall. As noted in the description of Feature A, this feature is a wall segment, placed on the western bank margin of the stream where there is a 39m gap in the principal ahupua'a wall construction. It measures 1m in height and 50cm in

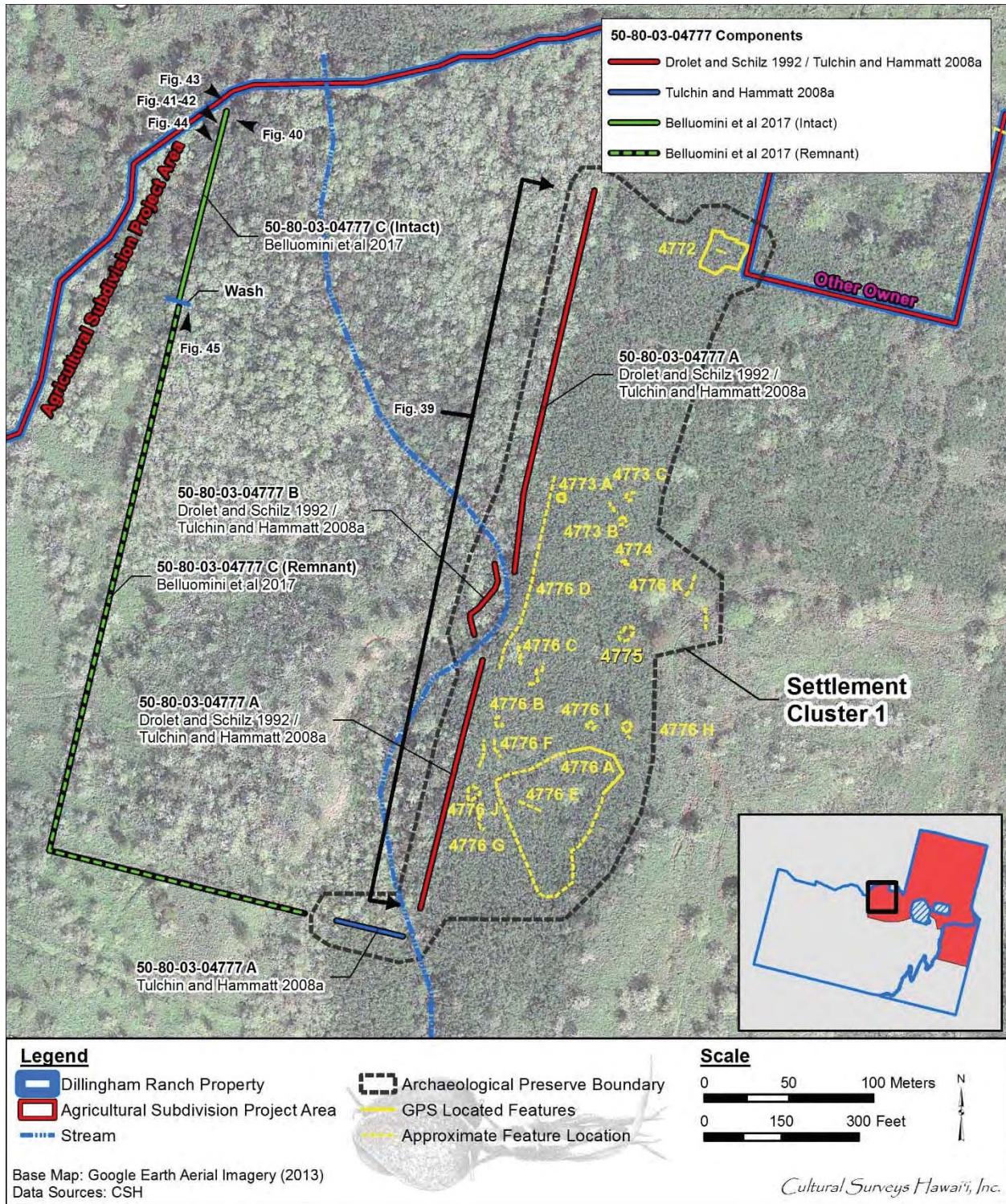


Figure 39. Detailed map of SIHP # -4777 showing the features, references, and photograph views (Figure 39's exact photograph location is unknown), note that the stream and wash locations are based on field observations



Figure 40. Photograph of SIHP # 50-80-03-4777 Feature A wall, view to north (Tulchin and Hammatt 2008a)

width and runs approximately 40m in length. The wall is S-shaped from north to south, presumably formed this way to facilitated water channeling at this point along the stream. It is situated much lower than the wall on the opposite side of the stream. [Drolet and Schilz 1992a:28]

The complete extent of the SIHP # 50-80-03-4777 Feature A and B walls was located and traversed during the field inspection associated with the preparation of the preservation plan (Tulchin and Hammatt 2008a). The walls were observed to be in good to excellent condition, with very little collapse observed. In addition to the *mauka/makai* (north/south) running walls (i.e., Features A and B) described by the original Drolet and Schilz (1992a) inventory survey, an approximately 40-m long east/west trending wall was observed near the *mauka* (southern) end of the Feature A wall. The Feature A wall section identified by Tulchin and Hammatt (2008a) is located on the western side of the unnamed gulch, opposite the Drolet and Schilz (1992a) Feature A wall, and runs perpendicular to the Feature A wall. Tulchin and Hammatt (2008a) evaluated SIHP # -4777 as eligible for listing on the Hawai'i Register of Historic Places under Criteria C and D (see Section 5).

According to Tulchin and Hammatt 2008a, this historic property was assessed as significant under Criterion C as part of Settlement Cluster 1 which was determined to be significant beyond Criterion D based on the following:

Given these sites' excellent integrity, the fact that they represent a related group of sites characteristic of the type that was built on the coastal terrace of Mokule'ia during prehistoric times, and because other site groups of this type in the region might have less integrity, we believe that these sites are also significant because they embody the distinctive characteristics of a type (criterion C). [SHPD review letter Log No. 5155, Doc No. 0682t; see Appendix A]

During the course of the brief period of archaeological monitoring in 2008, a continuation of the wall was observed. This portion of the wall was not formally documented. During the course of AIS fieldwork, the full extent of the undocumented wall was surveyed and designated SIHP # 50-80-03-4777 Feature C (Figure 42 through Figure 46). Feature C is of similar construction and size to the previously identified Feature A and follows the boundaries of Land Grant 457 Lot 2 awarded to J.T. Gulick. The wall construction is made of stacked basalt cobbles approximately three to four courses wide and five to seven courses tall. The wall measures approximately 1 m in thickness and 1.1 m in height.

Feature C extends from the southwesternmost extent of Feature A and extends east/west approximately 162 m. The wall then extends north/south approximately 331 m and disappears at a small wash. The wall continues for an additional 119 m on the northern end of the wash, where the wall ultimately ends at an existing road that leads from the cattle and horse paddocks toward the west side of the property. Feature C is in poor condition and is almost entirely collapsed except for the 119 m portion north of the wash that is in good condition.

The three features of the wall (Features A, B, and C) form a U-shape that follows the boundary of Land Grant 457 Lot 2 granted to J.T. Gulick. SIHP # 50-80-03-4777 is similar in construction, size, and function as a cattle wall (SIHP # 50-80-03-4785). Both walls follow the *mauka* boundaries of two lots of the same land grant (457) to J.T. Gulick. They are likely related to the clearing of the property and the enclosing of the property for use as a grazing pasture. The wall is not an *ahupua'a* boundary wall, but an historic land grant boundary wall. Based on the

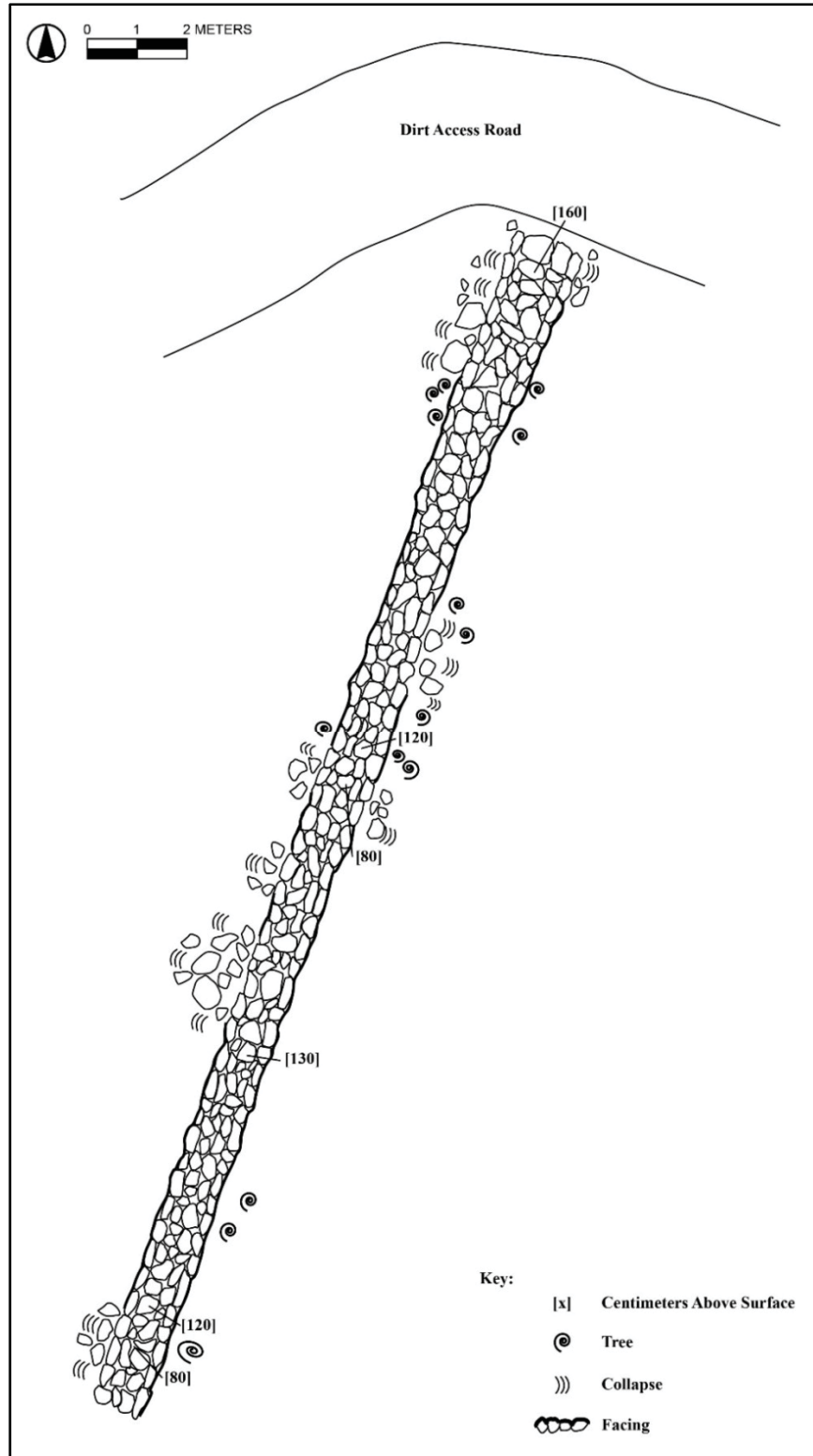


Figure 41. Representative plan map of intact portion of SIHP # 50-80-03-4777 Feature C (Belluomini et al. 2017–draft)



Figure 42. Northern portion of SIHP # 50-80-03-4777 Feature C (intact portion), view to south (Belluomini et al. 2017–draft)



Figure 43. Oblique view showing top of SIHP # 50-80-03-4777 Feature C (intact portion), view to southwest (Belluomini et al. 2017–draft)



Figure 44. Northern terminus of SIHP # 50-80-03-4777 Feature C (intact portion) wall adjacent to existing road from cattle paddocks, view to east (Belluomini et al. 2017–draft)



Figure 45. Northern portion of SIHP # 50-80-03-4777 Feature C (intact portion) with periodic areas of collapse about 1 m apart, view to south (Belluomini et al. 2017–draft)



Figure 46. SIHP # 50-80-03-4777 Feature C (remnant portion) at the wash, showing the portion of the wall completely destroyed by water runoff, view to north (Belluomini et al. 2017–draft)

Belluomini et al. (2017-draft) findings, SIHP # -4777 is no longer considered to be part of the pre-Contact to early post-Contact Settlement Cluster 1 as it is a historic feature that is not associated with pre-Contact to early post-Contact habitation in the area. The wall is not significant under Criterion C as an excellent type of feature that was built on the coastal terrace of Mokule'ia during prehistoric times, as discussed above, but rather significant under Criteria C as a type of dry-stacked wall that was constructed during the ranching period and represents the westernization of land ownership (land grants) and land use in the area. The lack of mortar also suggests a continuation of traditional Hawaiian wall building techniques in the post-Contact period.

SIHP # 50-80-03-4777, U-shaped wall, was previously documented by Drolet and Schilz (1992a) and Tulchin and Hammatt (2008a). SIHP # -4777, was previously assessed as significant by Drolet and Schilz (1992b) under Criteria C and D. Tulchin and Hammatt (2008a) evaluated SIHP # -4777 as eligible for listing on the Hawai'i Register of Historic Places under Criteria C and D. Based on the findings of this report, SIHP # -4777 is in poor to intact condition and is assessed as significant under Criterion c (embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value) and Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) pursuant to HAR §13-284-6. The historic property is also evaluated as eligible for listing on the Hawai'i Register of Historic Places per HAR §13-198-8 under Criteria C and D. This report concurs with this assessment due to the historic property providing information regarding ranching activities and land divisions and may provide additional information regarding the land use of the land grant for which it borders. The historic property, which borders the *mauka* portion of Land Grant 457 Lot 2 is significant under Criterion c/C due to its being representative of post-Contact boundary walls that incorporate traditional techniques. This assessment of significance is for the overall site and applies to all features of the historic property. The historic property retains integrity of location, design, setting, materials, and workmanship.

Site preservation measures are required for SIHP # 50-80-03-4777 Features A and B and are included in Tulchin and Hammatt (2008a) (see Appendix B). SIHP # -4777 Features A and B are located within the Settlement Cluster 1 preservation boundary, although not considered associated with the settlement cluster. Preservation is recommended for the features of SIHP # 50-80-03-4777 that are located within the Dillingham Ranch Agricultural Subdivision project area. SIHP # -4777 preservation measures for SIHP # -4777 Feature C are not currently addressed in a preservation plan.

4.7 SIHP # 50-80-03-4782 (Formerly SIHP # 50-80-03-4434)

FORMAL TYPE:	Complex (enclosures, terraces, mound, and pavements)
FUNCTION:	Habitation/agricultural complex
SETTLEMENT CLUSTER:	3
NUMBER OF FEATURES:	6 plus ancillary features
SIZE:	8 hectares (0.08 sq km)
AGE:	Possibly pre-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992a); Tulchin and Hammatt (2008a)

SIHP # 50-80-03-4782 consists of six features (Feature A–F) and multiple ancillary features that together form a “massive field construction” of rock wall enclosures and residential areas (Drolet and Schilz 1992a) (Figure 47). The site is aligned along a primary intermittent stream drainage and covers more than 8 hectares (Drolet and Schilz 1992a). Features consist of three stone wall enclosures and ancillary features (Features A, B, and C) a triangular boulder and cobble mound (Feature D), a pavement area (Feature E) and terrace walls (Feature F). The pavement (Feature E) is interpreted as a habitation component of the site. A large part of the site was destroyed by residential development, cattle ranching and road building in the area. Drolet and Schilz (1992a) only discusses Features A, B and C in detail and only provided a plan map of a portion of Feature C. The following description of SIHP # -4782 was provided by Drolet and Schilz (1992a):

Site 4782 (Field Site 07): This site is a massive field construction that covers more than 8 hectares and consists of a maze of stone wall enclosures and residential areas. The site extends down-slope along a principal stream terrace in the western portion of the survey area. The entire complex appears to be a single unit. However, owing to its size and internal complexity, the constructions were divided up into individual feature units to facilitate mapping and systematic coverage of the entire area. Unfortunately, because of recent house construction, roads, and cattle farming in this local area, a significant part of this original field network of constructions has been destroyed.

Feature A: Enclosure. This unit is sandwiched between Features B and C. It is the principal portion of the stone wall enclosure still remaining. The lineal wall constructions are oriented in a north-south direction. The eastern wall extends over 200m in length before it terminates (north end) at a point destroyed by modern farm landscaping. On the southern portion, the wall contains the original corner where it extends westerly approximately 70m before terminating at an electrical power line clearing, the western wall of the rectangular unit is missing because of this power line construction. Within the large unit, four principal wall divisions run east and west, dividing the unit into smaller grid units. Finally, a secondary north-south wall further divides the overall construction into two east-west halves. Within the unit, there is only minimal evidence of further constructions

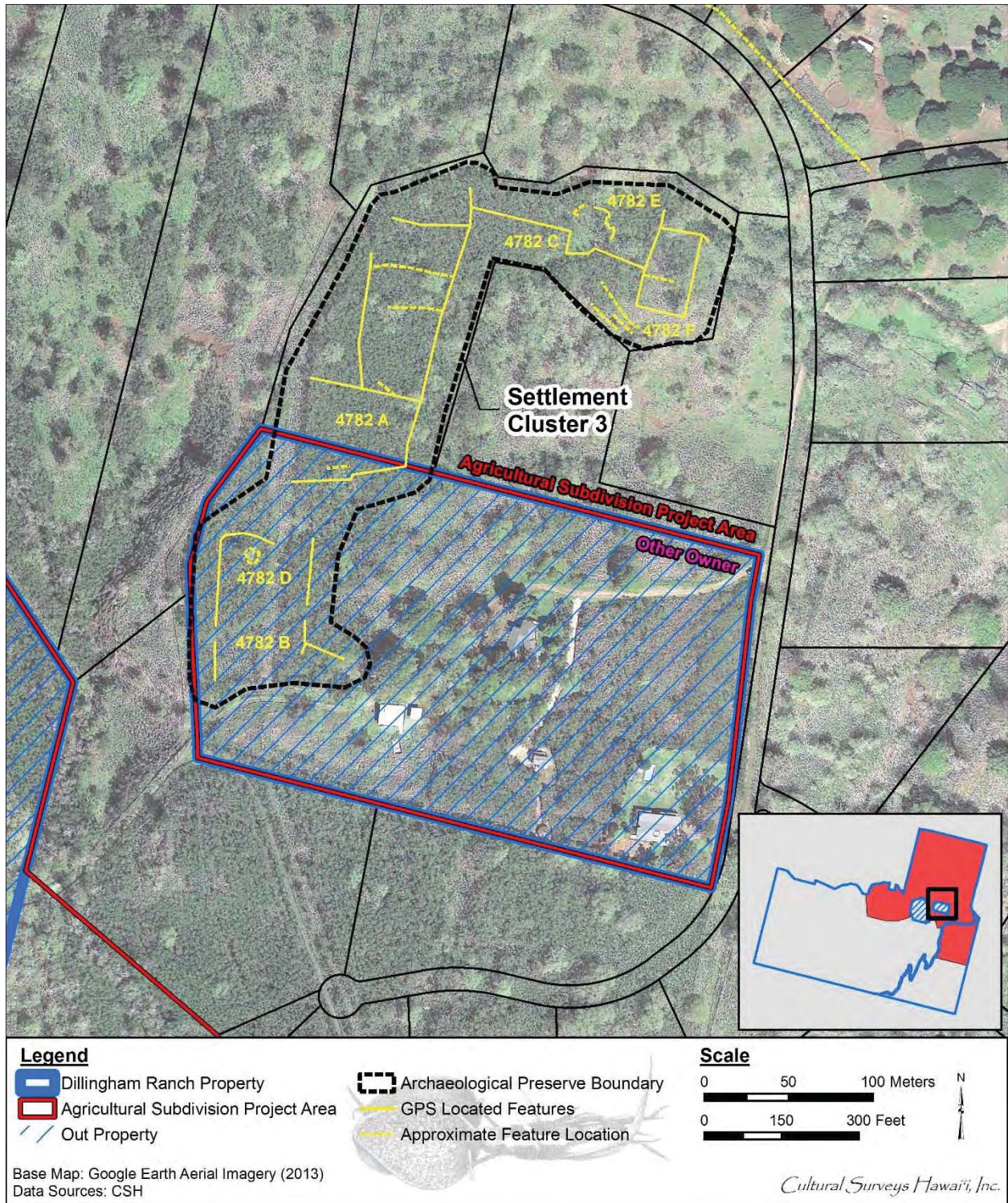


Figure 47. 2013 Google Earth aerial showing the locations of Settlement Cluster 3 historic property (SIHP # 50-80-03-4782) and the archaeological preserve boundary in relation to the Dillingham Ranch Agricultural Subdivision project area and lot boundaries

or features. Along one of the east-west division walls, a double wall is in evidence, forming a V-shaped terrace area 15m in length. Also, along the principal southern wall, another parallel terrace wall extends 15m in length, creating a 'double wall' effect. These two internal constructions appear to indicate small terracing within a few of the smaller grid units created by the bisecting wall constructions. Throughout the unit, the adjoining walls vary in height and construction methods, as is true in Features B and C. In some areas walls are well faced and well preserved, in other areas they are broken down with uneven facing. Single boulder construction is common throughout and heights vary between 25 and 65cm. In some areas, naturally occurring boulders and bedrock have been incorporated, utilizing the natural terrain. Cobble fill construction is also evident in some wall areas. Secondary east-west [walls] are generally one course high, and walls run perpendicular and parallel throughout the site area. The dimensions of the interior rectangular areas average 40 x 30m.

Feature B: Enclosure [Figure 48]. This appears to be a southern extension of the large wall enclosure at Feature A. However, owing to road and electrical line disturbance between the two, it could not be confirmed that they were originally connected. What remains is the outline of another large rectangular enclosure defined by two parallel, north-south oriented stone walls. These walls extend approximately 60m, and one connects to the east-west wall on the northern side of the unit. Unfortunately this unit is severely damaged. At its southern extension, there is an original corner construction, indicating the existence of another large unit. Additional construction includes a small triangular shaped mound measuring 3.5 x 3.3m in size (Feature D). The unit is located in the northwestern portion of Feature 7B and is made of piled and stacked boulders and cobbles with no clear facing.

Feature C: Enclosures and Terraces [Figure 49 and Figure 50]. This is an enclosure extending to the east of Feature A and is similar to Features A and B. In addition, outside of the enclosures are terrace walls [SIHP # -4782 Feature F] and a pavement area [SIHP #-4782 Feature E] suggestive of a residential feature. Wall construction is similar to that for Feature[s] A and 7B, incorporating natural features and bedrock. The walls average 1-3 courses and use single boulder construction. Feature C differs from the others described in several ways. First, it is a large U-shaped wall that may have functioned as an enclosure for a house site. It is located to the north of the long wall that connects Feature C with Feature A. This sub-unit extends 40m in length and forms a long narrow pavement area running north and south just below the connecting wall noted above. Another distinguishing feature in this area is a series of long parallel terraces running east and west, and situated along the slope south of the enclosure (Feature 7F). These additional features located here suggest a specific habitation area associated with the use of this extensive field network and planting area. Fragmentary surface remains of concrete, leather, and glass bottles are also located in the vicinity of Feature C. Historic use of the area naturally may have altered the earlier constructions, however, most of



Figure 48. Photograph of portion of SIHP # 50-80-03-4782 Feature B enclosure wall (Tulchin and Hammatt 2008a); note direction of photo not stated



Figure 49. Photograph of portion of SIHP # 50-80-03-4782 Feature C enclosure wall (Tulchin and Hammatt 2008a); note direction of photo not stated

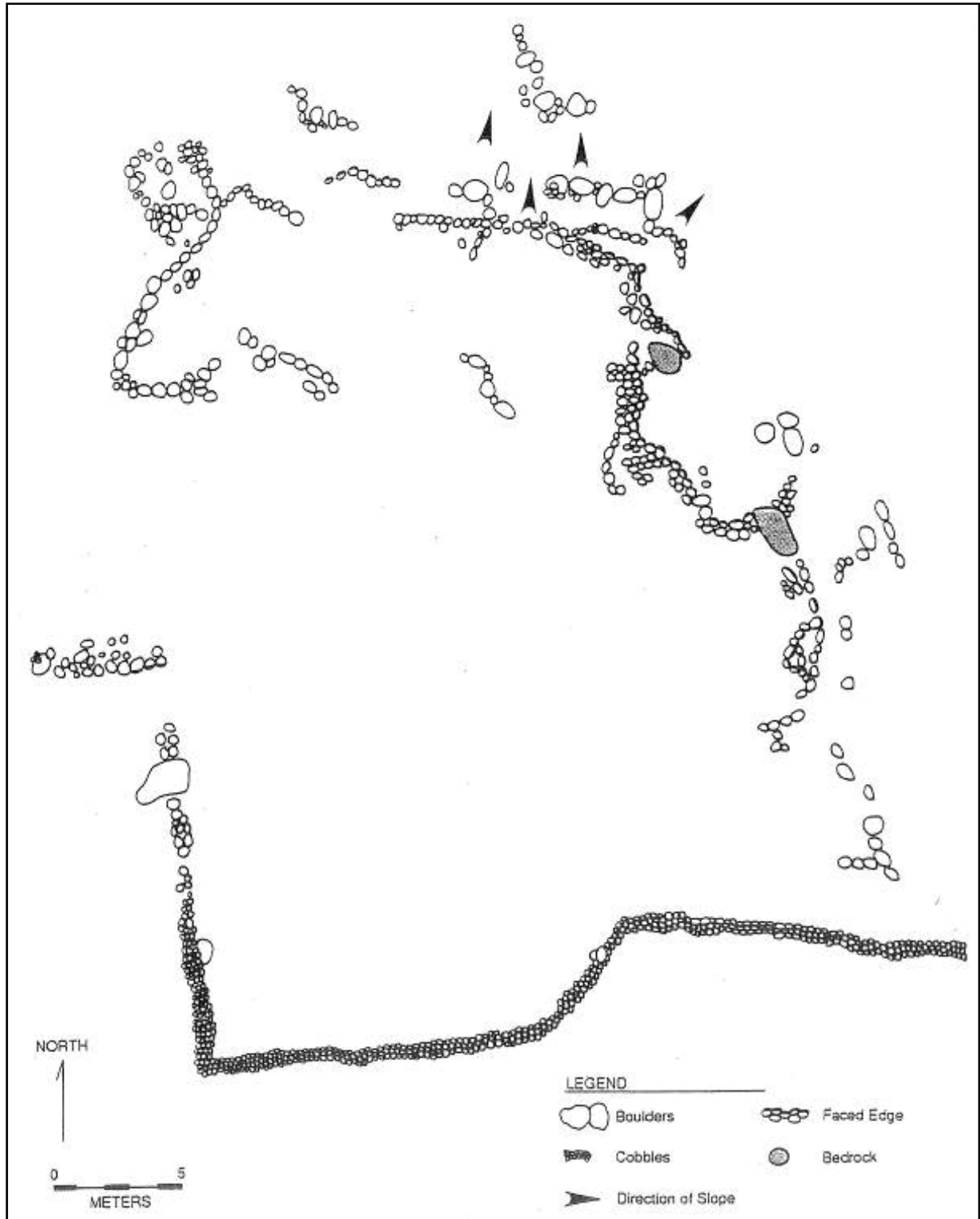


Figure 50. Plan view diagram of SIHP # 50-80-03-4782 portion of Feature C enclosures and terraces (Drolet and Schilz 1992a)

the damage to these architectural units has been recent. [Drolet and Schilz 1992a:31–32]

Drolet and Schilz (1992a) evaluated SIHP # 50-80-03-4782 as significant pursuant to HAR §13-284-6, Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). Additional information regarding the construction, age, and function of the historic property is likely to be yielded by the historic property as well as further information about former land use of the area. Protection measures are warranted for SIHP # -4782.

Tulchin and Hammatt (2008a) located the more dominant wall features during the 2006 preservation plan field inspection and evaluated the walls as being in good to fair condition with the only complete rectangular enclosure (Feature C) identified at the northeastern portion of the site. The remaining interior site features were not located. The condition of site features was unchanged from the site description provided by Drolet and Schilz (1992a). Tulchin and Hammatt (2008a) evaluated SIHP # 50-80-03-4782 as eligible for listing on the Hawai'i Register of Historic Places under Criterion D (see Section 5).

Site preservation measures are required and included in Tulchin and Hammatt (2008a) (see Appendix B). SIHP # 50-80-03-4782 is located within the Settlement Cluster 3 preservation boundary (see Figure 47).

4.8 SIHP # 50-80-03-4783 (Formerly SIHP # 50-80-03-4435)

FORMAL TYPE:	Complex (water channel, wall, and mounds)
FUNCTION:	Agriculture
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	8
SIZE:	1,500 m in length
AGE:	Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992a)

SIHP # 50-80-03-4783 consists of a rock wall, water channel, two mounds, and rock piles located in the center of the Dillingham Ranch project (Figure 51). Little information about the historic property was collected and no feature designations were assigned to the historic property. The historic property is aligned in an east-west direction along roughly the 80-ft contour at a maximum length of 1,500 m.

The rock wall and water channel extend parallel to each other with the flume located on the *makai* or north side of the wall (Drolet and Schilz 1992a). The flume consists of a cement and cobble flume with two gates. Four large boulder and cobble mounds are below or north of the flume and are adjacent to another water channel that directed water flow from the main flume. Two smaller rock piles were also identified near the water channel. Dillingham Ranch grew commercial sugar cane, which is probably the crop this irrigation system watered.

Drolet and Schilz (1992a) surmise that the location of the mounds and rock piles near the flume system indicates an historic agricultural function:

Owing to the isolation of this site and the amount of historic constructions here, a clear association of the mound structures with other indigenous constructions found in the survey area seems doubtful, especially considering their placement within the historic water channel area. [Drolet and Schilz 1992a:32–33]

SIHP # 50-80-03-4783 was interpreted as an historic plantation complex. The flume system recorded at the site was designed to carry water to agricultural fields from Kawaihāpai Reservoir located west of the site (Drolet and Schilz 1992a). Drolet and Schilz (1992a) evaluated the historic property as not significant based on the disturbed nature of the site or insufficient research value. No site preservation measures are required at SIHP # -4783.

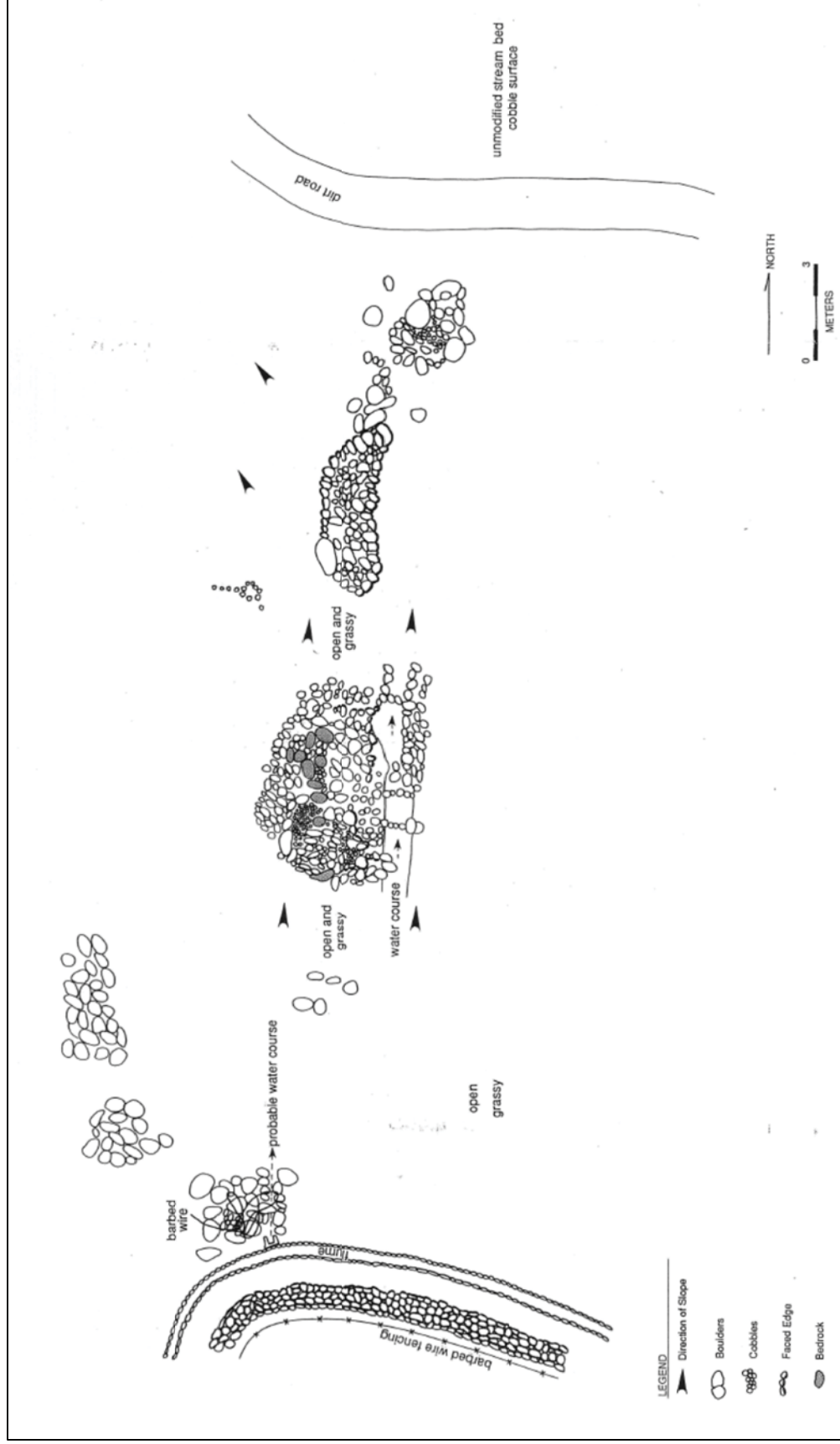


Figure 51. Plan view diagram of SIHP # 50-80-03-4783, showing mounds, rock piles, and portions of wall and flume features (Drolet and Schilz 1992a)

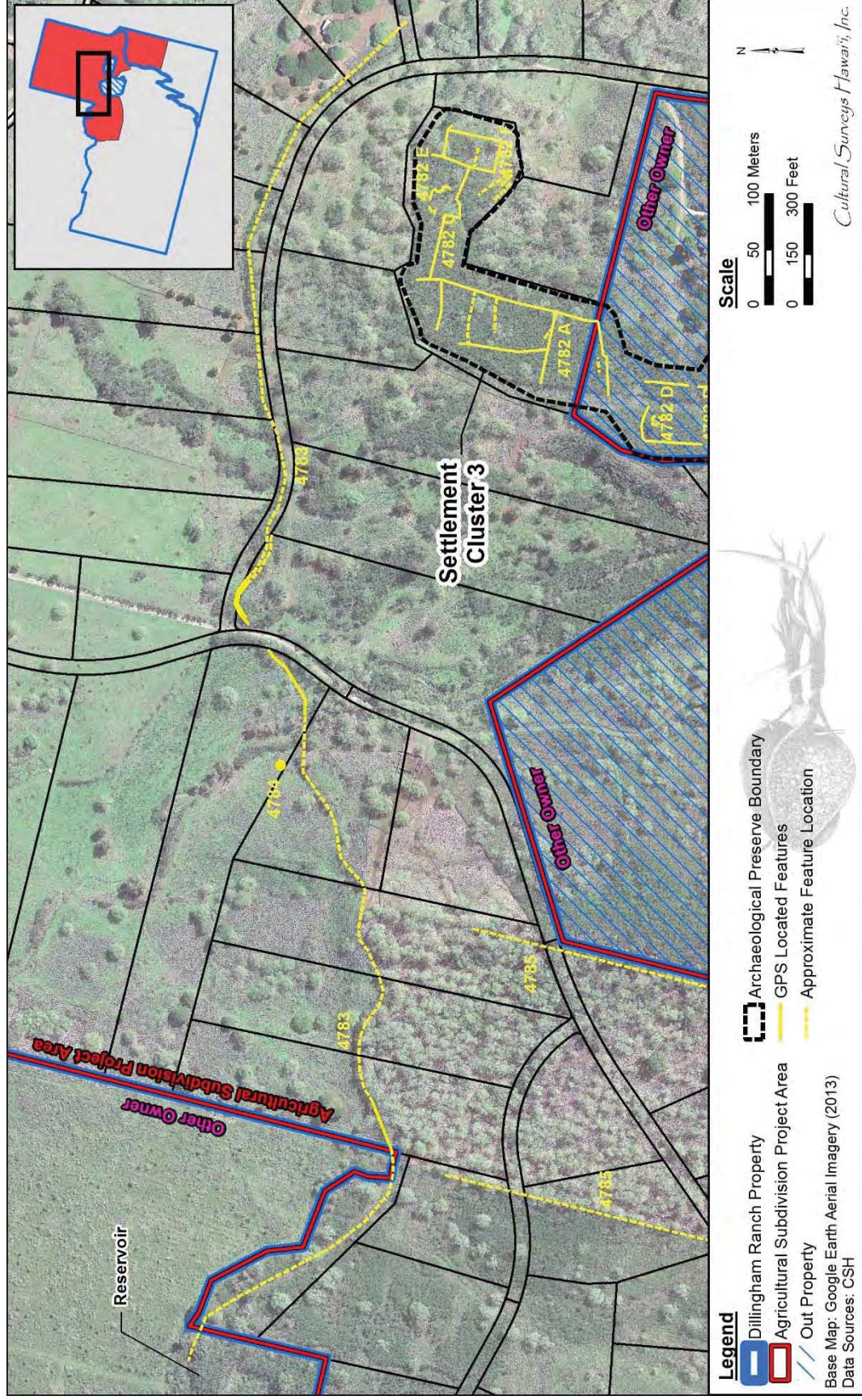


Figure 52. 2013 Google Earth aerial photograph showing the locations of SIHP #s 50-80-03-4783 and 50-80-03-4784 within the Dillingham Ranch Agricultural Subdivision project area

4.9 SIHP # 50-80-03-4784 (Formerly SIHP # 50-80-03-4436)

FORMAL TYPE:	Ditch (possible 'auwai)
FUNCTION:	Agriculture
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	1
SIZE:	30 m by 2 m (60 sq m)
AGE:	Unknown
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992a:33)

SIHP # 50-80-03-4784 is a ditch located at the center of the Dillingham Ranch Agricultural Subdivision project area, on the opposite stream bank of SIHP # 50-80-03-4784 agricultural complex (Settlement Cluster 3) (see Figure 52). The ditch, measuring 30 m long by 2.0 m wide, is aligned parallel with the stream drainage (north-south). Drolet and Schilz (1992a:33) identified the site as a possible “channeling ditch for water diversion” and noted the site had been heavily impacted by cattle grazing. No plan map or photograph of the historic property was provided by Drolet and Schilz (1992).

Drolet and Schilz (1992a:43) evaluated SIHP # 50-80-03-4784 as not significant based on the disturbed nature of the site or its insufficient research value. Therefore, no site preservation measures are required for SIHP # -4784.

4.10 SIHP # 50-80-03-4785 (Formerly SIHP # 50-80-03-4437)

FORMAL TYPE:	Rectangular enclosure
FUNCTION:	Ranch paddock (agriculture)
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	1
SIZE:	300 m by 175 m (52.5 sq km)
AGE:	Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992a:33)

SIHP # 50-80-03-4785 is a large, rock-walled enclosure located in the southern portion of the Dillingham Ranch Agricultural Subdivision project area. The enclosure is three-sided because its original north wall was destroyed during recent farming activities (Drolet and Schilz 1992a). The extant portion of the enclosure is aligned 300 m (north/south) by 175 m (east/west). The enclosure walls are well-constructed and in good preservation. Drolet and Schilz (1992a) interpreted SIHP # -4785 as an historic ranching paddock. No plan map or photograph of the historic property was provided by Drolet and Schilz (1992). Based on information gathered by Belluomini et al. (2017) while documenting SIHP # -4777, it was determined that the wall is a property boundary wall marking the *mauka* boundary of Land Grant (457) Lot 1 to J.T. Gulick. The enclosure was still being used for cattle ranching at the time of the Belluomini et al. (2017) fieldwork.

Drolet and Schilz (1992a) evaluated SIHP # 50-80-03-4785 as not significant based on the disturbed nature of the historic property or its insufficient research value. Similar to SIHP # -4777 the rectangular enclosure is likely a boundary wall that can provide information concerning grants, and ranching. Therefore, this report assesses SIHP # -4785 as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) pursuant to HAR §13-284-6. Based on recent analysis of the walls and in consultation with the SHPD, it was agreed that portions of SIHP # -4785 would be preserved.

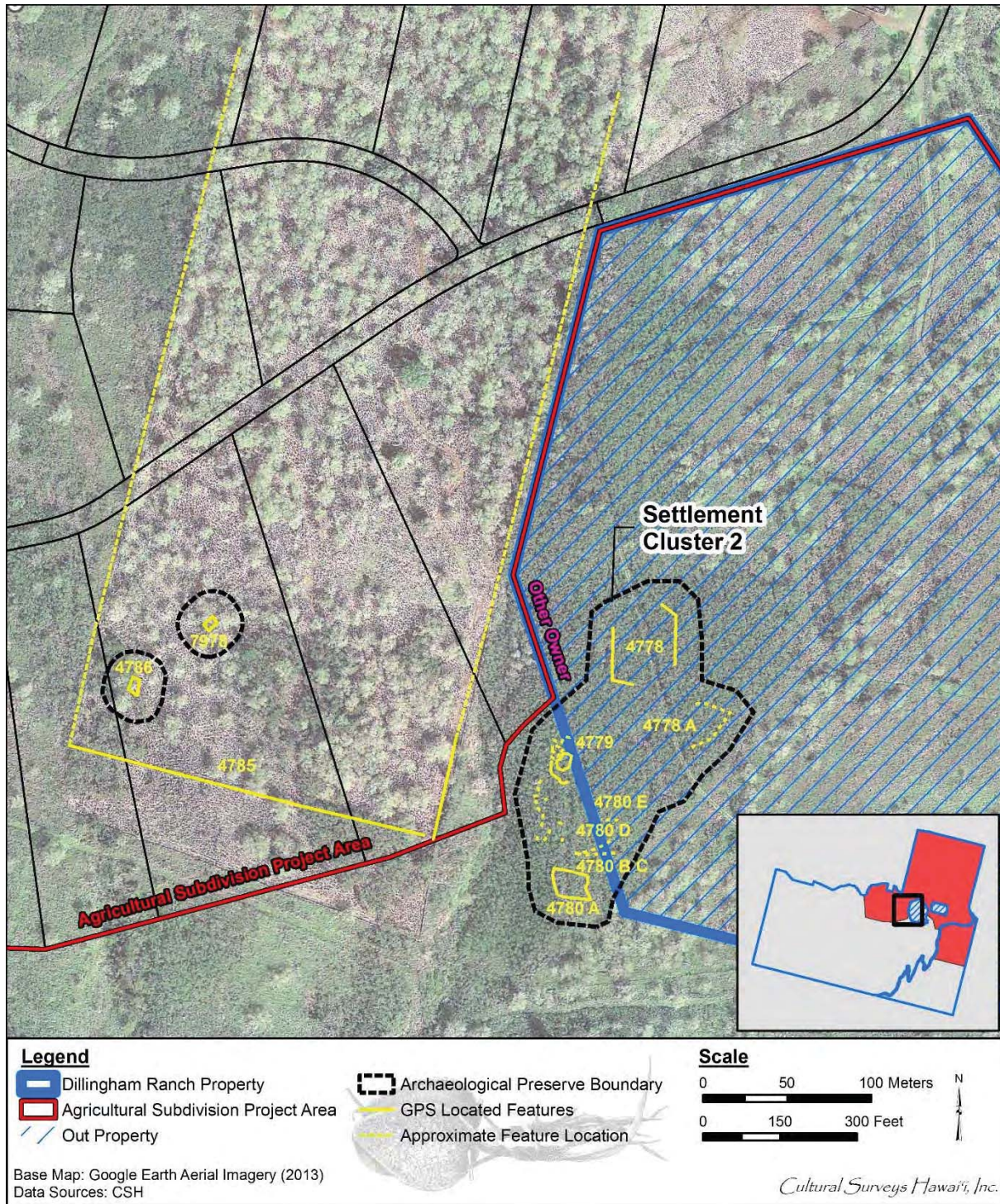


Figure 53. 2013 Google Earth aerial photograph showing the locations of Settlement Cluster 2 (SIHP #s 50-80-03-4778 through -4780) (outside current project area) and nearby historic properties (SIHP #s 50-80-03-4785, -4786, and -7978) (within the current project area) in relation to the archaeological preserve boundary and Dillingham Ranch Agricultural Subdivision project area and associated lot boundaries

4.11 SIHP # 50-80-03-4786 (Formerly SIHP # 50-80-03-4438)

FORMAL TYPE:	Platform
FUNCTION:	Religious/ceremonial
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	1
SIZE:	10 m by 6 m (60 sq m)
AGE:	Pre-Contact or Early Post Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992a); Tulchin and Hammatt (2008a)

SIHP # 50-80-03-4786 consists of a platform, previously documented by Drolet and Schilz (1992a) and Tulchin and Hammatt (2008a) in the southwest corner of SIHP # 50-80-03-4785 enclosure (see Figure 53). The platform was documented by Drolet and Schilz (1992a) as a 10.0 m by 6.0 m “quadrangular” platform (Figure 54 and Figure 55). The platform is constructed with a large boulder and smaller cobble interior surface and possible entrance on the eastern side. Based on its construction, Drolet and Schilz (1992a) interpret the site as a “religious structure associated with early occupation of the area.” No further explanation of the site or its interpretation was given.

Drolet and Schilz (1992a) evaluated the historic property as significant pursuant to HAR §13-284-6 under Criteria d (have yielded, or is likely to yield, information important for research on prehistory or history), and e (have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity). Protection measures are warranted for the platform (SIHP # 50-80-03-4786).

Tulchin and Hammatt (2008a) located the platform during the 2006 field inspection for the preservation plan. The field inspection evaluated the site as being in excellent condition, with intact facing in excess of 2.0 m in height observed. The condition of SIHP # 50-80-03-4786 appeared unchanged from the original site description provided by Drolet and Schilz (1992a). Tulchin and Hammatt (2008a) evaluated SIHP # -4786 as eligible for listing on the Hawai‘i Register of Historic Places under Criteria D and E (see Section 5).

Site preservation measures are required for the platform (SIHP # 50-80-03-4786) and included in Tulchin and Hammatt (2008a) (see Appendix B). The site protection measures include a 15-m (50-ft) buffer around the historic property.



Figure 54. Photograph of SIHP # 50-80-03-4786, platform, view to north (Tulchin and Hammatt 2008a)

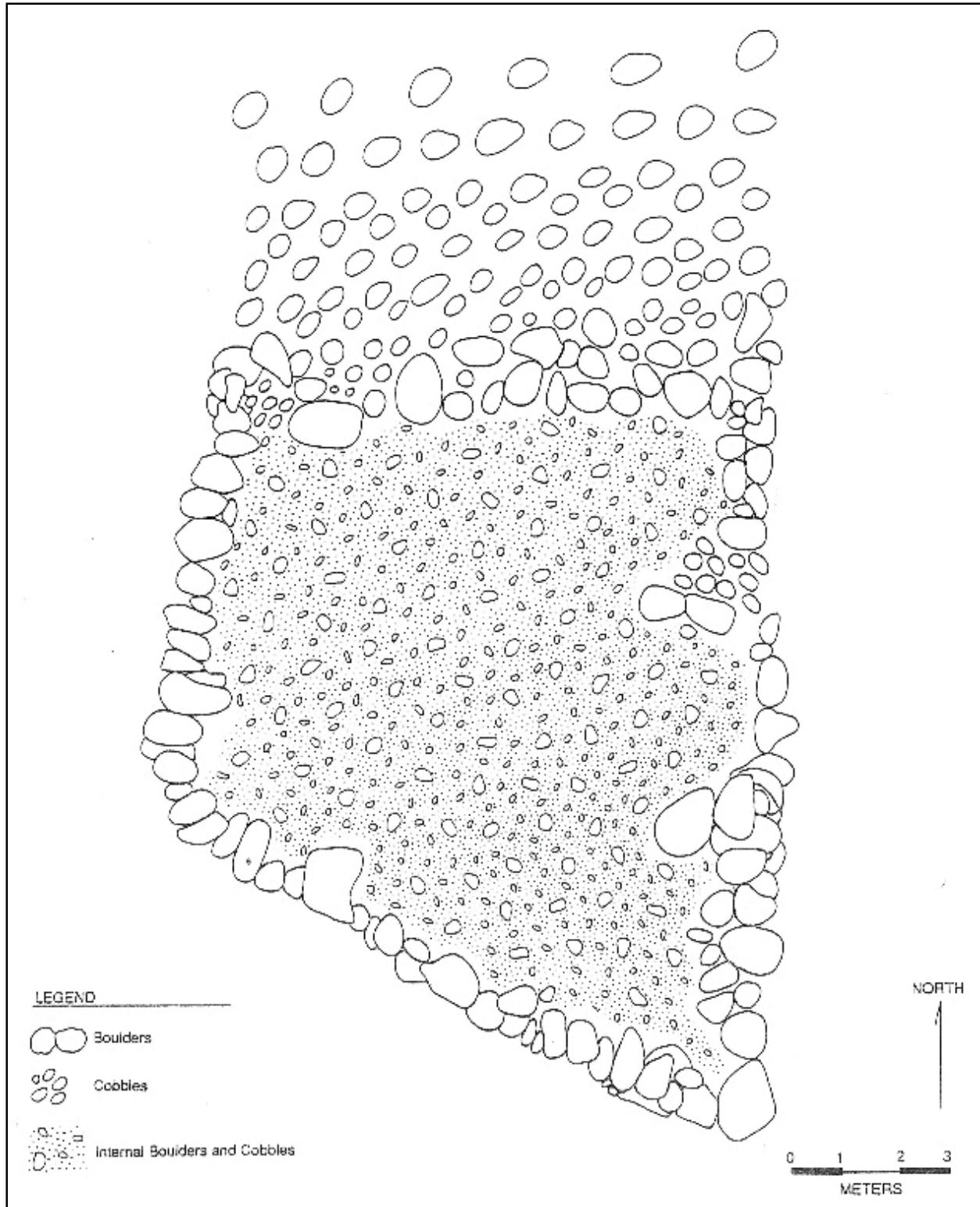


Figure 55. Plan view diagram of SIHP # 50-80-03-4786, platform (Drolet and Schilz 1992a)

4.12 SIHP # 50-80-03-6884

FORMAL TYPE:	Walls
FUNCTION:	Ranch paddocks/exclosures (agriculture)
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	4
SIZE:	67.1 m in length (discontinuous)
AGE:	Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Tulchin and Hammatt (2007)

SIHP # 50-80-03-6884 consists of four rock walls (Feature A–D) located within gully areas and spaced between 500 and 1,100 m apart. Feature C wall is the only feature located within the Dillingham Ranch Agricultural Subdivision project area (see Figure 15 and Figure 16):

... Feature C [Figure 56 and Figure 57] is a single, stacked-stone wall located along the southern boundary of project area close to the southeast corner [along the southern boundary of the project area close to the southwest corner]. The rock wall is lies along the eastern slope of an unnamed gulch and is oriented northeast-southwest along the contour of the steep sloping hillside. The wall section measures approximately 27.5 m in length, with a maximum height of 1.4 m on the downslope side and average width of 1.5 m. The wall is constructed of loosely stacked basalt boulders and cobbles, 5-7 courses high, in a core-filled manner. The wall construction comprises cobbles and boulders ranging from 10-80 cm in diameter, with larger boulders used for the base course and smaller stones in the upper courses. The Feature C wall is constructed along an exposed bedrock outcrop, with the northeastern end of the wall terminating at an approximately 1.5 m tall ledge, and the southwestern end of the wall ending flush against an approximately 1.8 m high bedrock outcrop. The wall is well-faced along the downslope edge, and nearly level with the sloping hillside along the upslope edge. A remnant barbed-wire fence is located immediately upslope of the wall, running roughly parallel to the wall and continuing northeast and southwest beyond the wall construction. Portions of the northeastern half of the wall have suffered damage from collapse. [Tulchin and Hammatt 2007:71]

Tulchin and Hammatt (2007) interpreted the walls as historic, ranch-related constructions of similar age, design, and function. For that reason, the features were included under a single site designation. SIHP # 50-80-03-6884 was evaluated as significant under Criterion D of the Hawai'i Register of Historic Places evaluation criteria. No additional work or preservation measures are required for SIHP # -6884 because sufficient information was generated by the inventory survey to mitigate any adverse effect caused by proposed development activities.

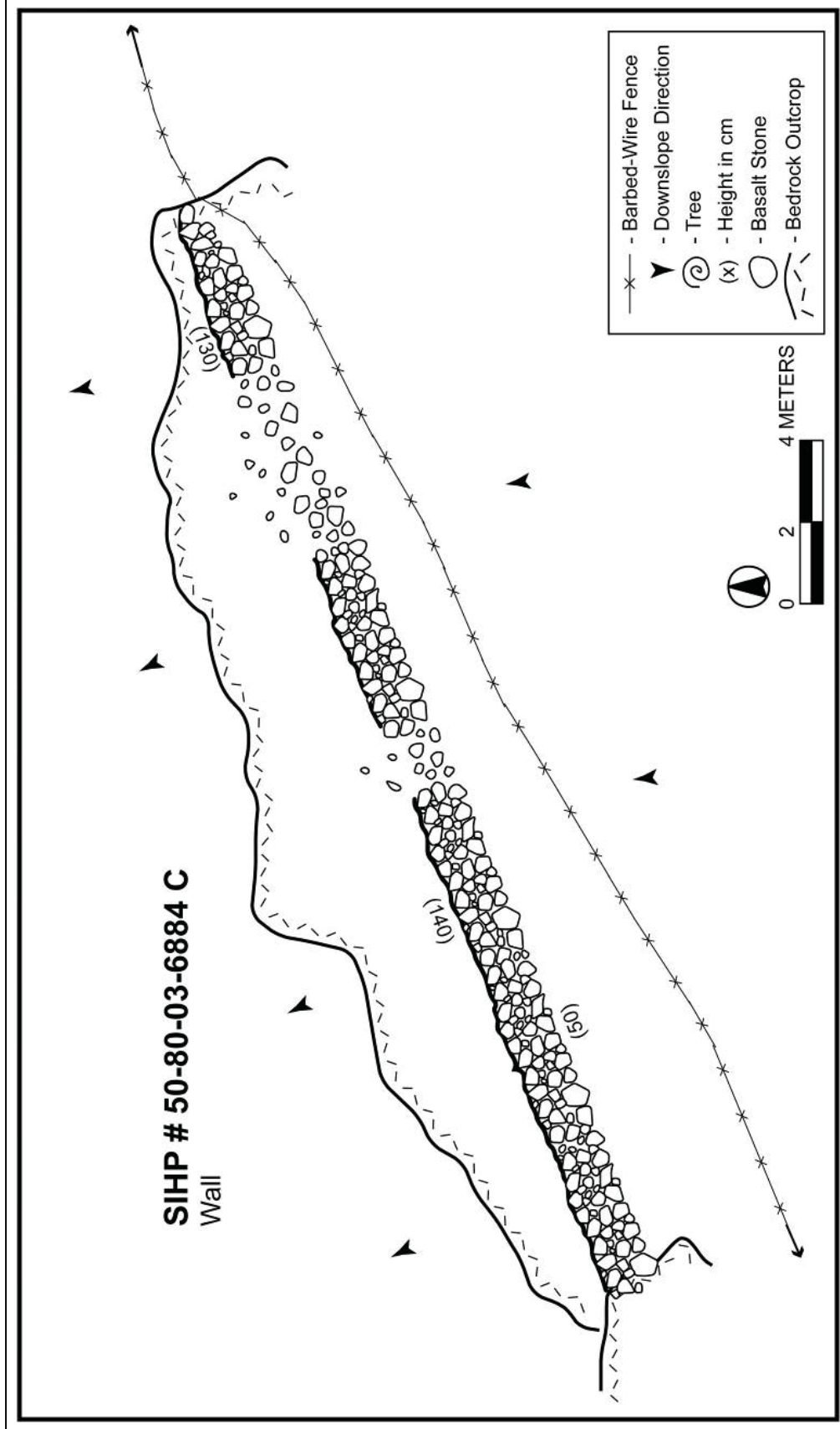


Figure 56. Illustration of SIHP # 50-80-03-6884, Feature C (Tulchin and Hammatt 2007)



Figure 57. Photograph of SIHP # 50-80-03-6884 Feature C, wall, view to south (Tulchin and Hammatt 2007)

4.13 SIHP # 50-80-03-7653 (Includes SIHP # 50-80-03-4439)

FORMAL TYPE:	Walls
FUNCTION:	Animal Husbandry
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	4
SIZE:	Total length (discontinuous) is approximately 1500 m
AGE:	Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Drolet and Schilz (1992b); Lauer and Rieth (2015); Belluomini et al. (2017-draft)

SIHP # 50-80-03-7653 consists of five areas of rock wall segments (Features 1–4) located along the southern boundary of the proposed Dillingham Ranch Agricultural Subdivision project (Figure 58 and Figure 59). The walls were previously identified by Lauer and Rieth (2015):

Site 7653 consists of dry-stacked stone walls that in places incorporate large colluvial boulders and outcrops. Wall segments may parallel the slope contours (generally east-west) or run cross contour (generally north-south). Slope erosion and collapse has affected numerous portions of these walls, but the remaining segments are consistent with the extensive 19th/early 20th century ranching infrastructure in this area. These walls, and the components of Site 6884, likely once formed an integrated enclosure/exclosure system for the ranch. [Lauer and Rieth 2015:29]

Four features (Features 1–4) were identified by Lauer and Rieth (2015). Feature 1 was the only feature encountered within the AIS study area. Feature 1 (Figure 60 through Figure 66) is described by Lauer and Rieth (2015) as follows:

Feature 1 is a series of adjoining, or once continuous, dry-stacked stone walls located within the eastern survey parcel. The longest segment is oriented east-west and extends 312 m with an 80 m wide break where a single track dirt road breaches the wall. At the western end of this segment the wall makes a nearly 90-degree turn south and continues for at least 106 m intersecting the southern boundary of the survey parcel. The wall appears to have originally continued further to the south but it is now completely collapsed in this area. At the eastern end of the east-west segment there is another right angle intersection with a north-south oriented wall segment. This component is largely beyond the survey parcel, although a 50 m portion of it falls within the survey parcel along its northeast edge. The north-south wall segment extends across at least 295 m and is parallel to the current TMK boundary, although offset by approximately 20 m. These core filled wall segments are constructed with multiple courses of basalt cobbles and small boulders. The maximum wall height is 1.2 m and the average width is 0.7 m. There are several sections where the wall has collapsed or has been breached. [Lauer and Rieth 2015:31]

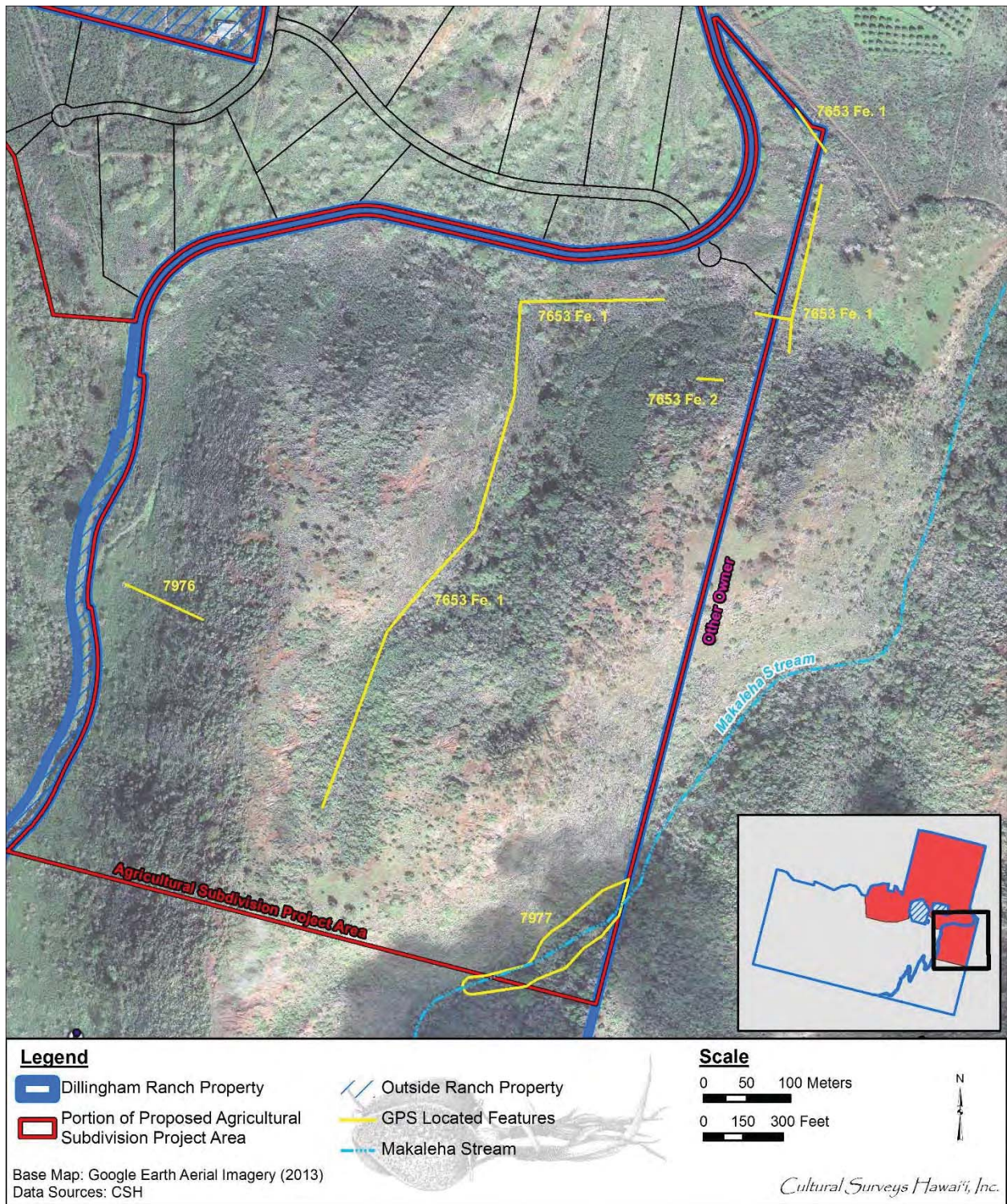


Figure 58. 2013 Google Earth aerial photograph showing the locations of SIHP #s 50-80-03-7653 Features 1 and 2, SIHP # 50-80-03-7976, SIHP # 50-80-03-7977, and SIHP # 50-80-03-7978 within the Dillingham Ranch Agricultural Subdivision project area

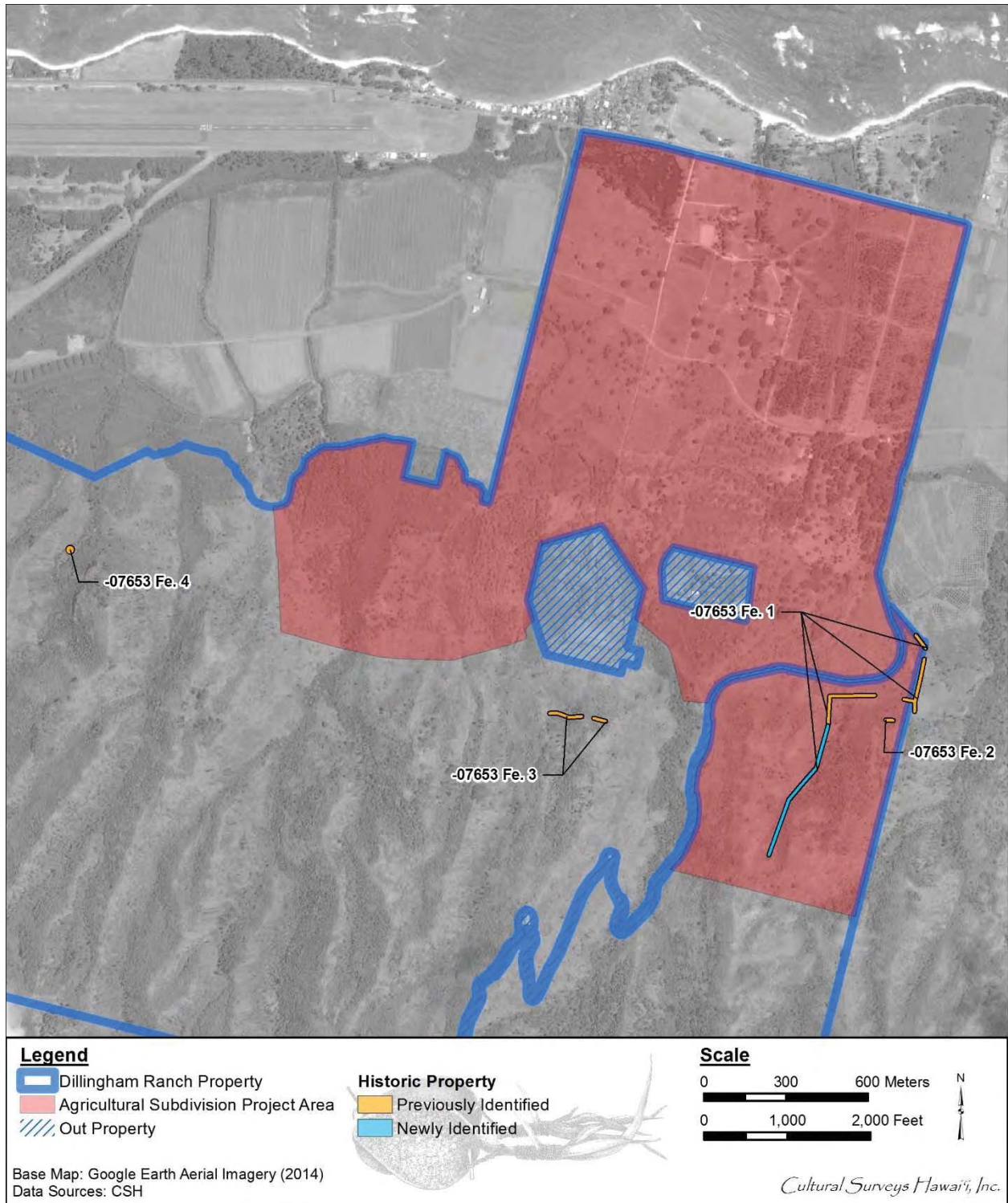


Figure 59. 2014 Google Earth aerial photograph showing the locations of SIHP # -7653 Features

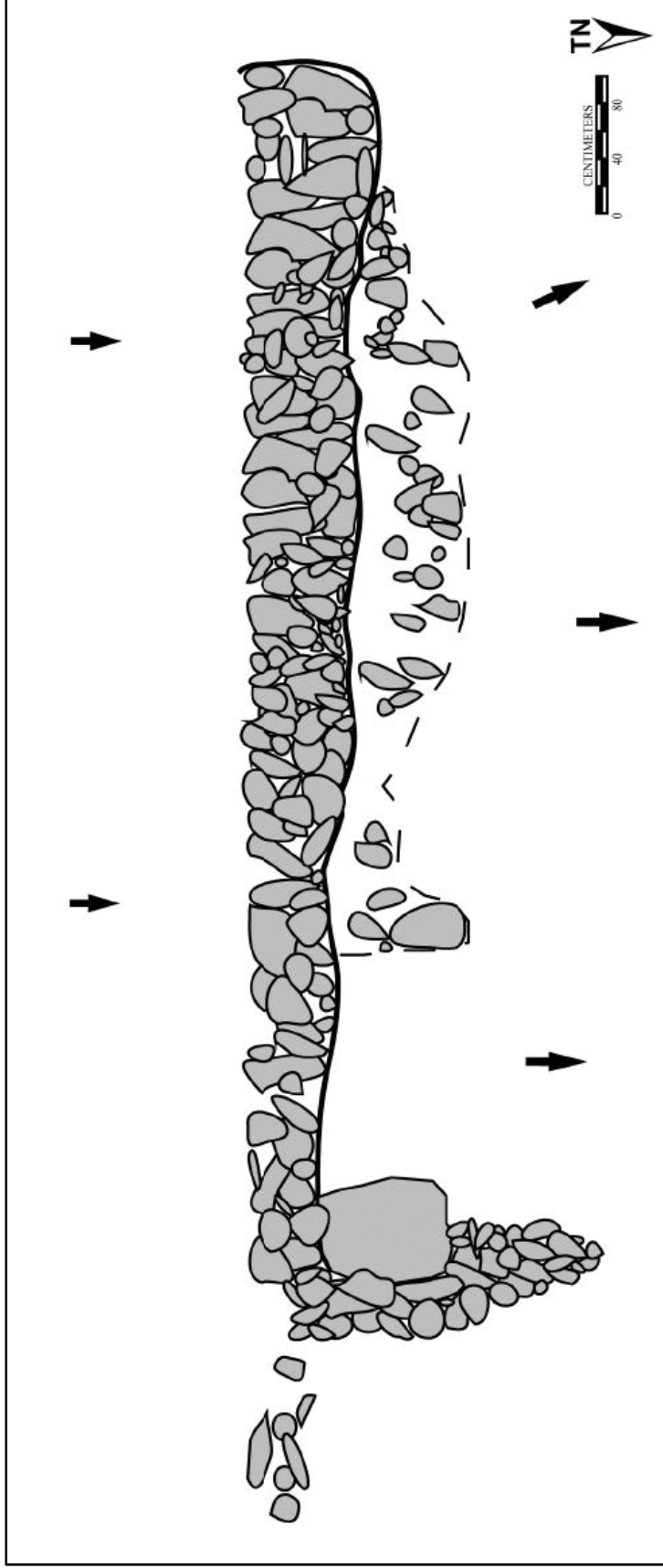


Figure 60. SIHP # 50-80-03-7653 Feature 1 plan map of portion of east-west segment (Lauer and Rieth 2015:33)



Figure 61. SIHP # 50-80-03-7653 Feature 1, view to southwest (Lauer and Rieth 2015:34)



Figure 62. SIHP # 50-80-03-7653 Feature 1, view to south (Lauer and Rieth 2015:34)

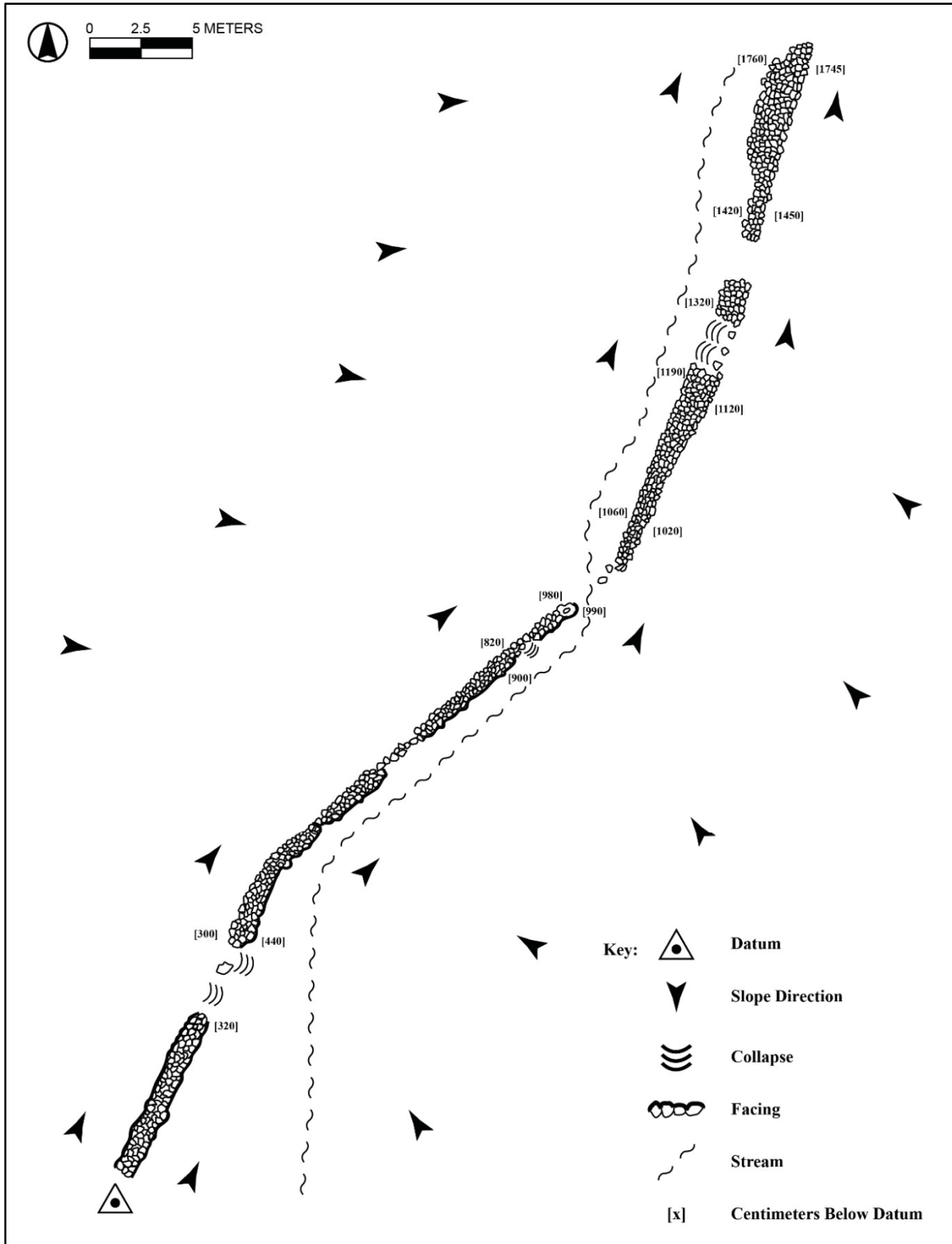


Figure 63. SIHP # 50-80-03-7653 Feature 1 (formerly SIHP # -4439) plan map of a portion of the south segment within the AIS study area (Belluomini et al. 2017–draft)



Figure 64. SIHP # 50-80-03-7653 Feature 1 (formerly SIHP # 50-80-03-4439) showing facing, view to southwest (Belluomini et al. 2017–draft)



Figure 65. SIHP # 50-80-03-7653 Feature 1 (formerly SIHP # 50-80-03-4439) disturbed portion, view to south (Belluomini et al. 2017–draft)



Figure 66. Portion of SIHP # 50-80-03-7653 (formerly SIHP # 50-80-03-4439) showing wall built into hillside, view to northwest (Belluomini et al. 2017–draft)

During archaeological fieldwork conducted by Belluomini et al. (2017–draft), SIHP # 50-80-03-7653 Feature 1 was encountered extending into the beyond the southern edge of the Lauer and Rieth (2015) study area. The majority of this wall, which was outside Lauer and Rieth's project area, is newly documented (Belluomini et al. 2017–draft). The wall was determined to be the same wall as the wall designated SIHP # 50-80-03-4439 and documented by Drolet and Schilz (1992b). The Feature 1 wall extends an additional 515 m south from the previously documented extent and is mostly intact and of similar construction (making it the longest segment at approximately 600 m long). The longest segment of Feature 1 is no longer the (312-m-long) east-west segment cited by Lauer and Rieth (2015). The Drolet and Schilz (1992b) description of SIHP # -4439 is as follows:

It is situated along the western bank of an unnamed stream channel that separates the two high ridges in this parcel. The wall extends 300 meters in a north-south direction, parallel to the stream channel, and runs from the low terraces to the top of the ridge. It measures one meter wide and 90cm in height, and is made of boulder and cobble construction. The feature appears to be prehistoric although no other cultural associations could be found in the area inspected. Only a few sections of the stone construction are damaged from cattle crossings; its location in the stream channel gully has protected it from further alterations. [Drolet and Schilz 1992b:3]

Feature 2 is also located within the Dillingham Ranch Agricultural Subdivision project area; Features 3 and 4 are not (see Figure 67 through Figure 72). Features 3 and 4 are located west of Feature 1 and well outside the Dillingham Ranch Agricultural Subdivision project area. The features are described by Lauer and Rieth (2015) as follows:

Feature 2 is a shorter dry-stacked stone wall located in the eastern survey parcel. This wall is 28 m long and is parallel to the east-west segment of Feature E. The core filled wall is constructed with multiple courses of basalt cobbles and small boulders. The maximum height of the wall is 0.6 m and the average width is 0.7 m. [see Figure 14.]

Feature 3 is a stacked stone wall located in the central survey parcel. The dry stacked wall runs east-west in three sections across ridge tops and a shallow hanging valley. The total length of the wall is 210 m, including two breaches of 6 m and 45 m. Portions of the wall have been heavily damaged by erosion and have collapsed. A segment of the wall extends outside the project area on the bluff top running south from the project area for a minimum of 30 m. The maximum wall height is 1.6 m, the maximum width is 1 m with an average width of 0.7 m. [see Figure 14.]

Feature 4 is a stacked stone wall located in a steeply sided gully at the western edge of the western survey parcel. The small L-shaped feature was built by infilling the gaps between large colluvial boulders with stacked stone courses. The northeastern portion of the wall is 7.9 m long and 0.7-0.9 m high, while the western portion of the wall, which runs parallel to the main stream bed, is 7.8 m long and 1.35-1.85 m high. [see Figure 14.] [Lauer and Rieth 2015:31]



Figure 67. Portion of Feature 2, view to southwest (Lauer and Rieth 2015:35)

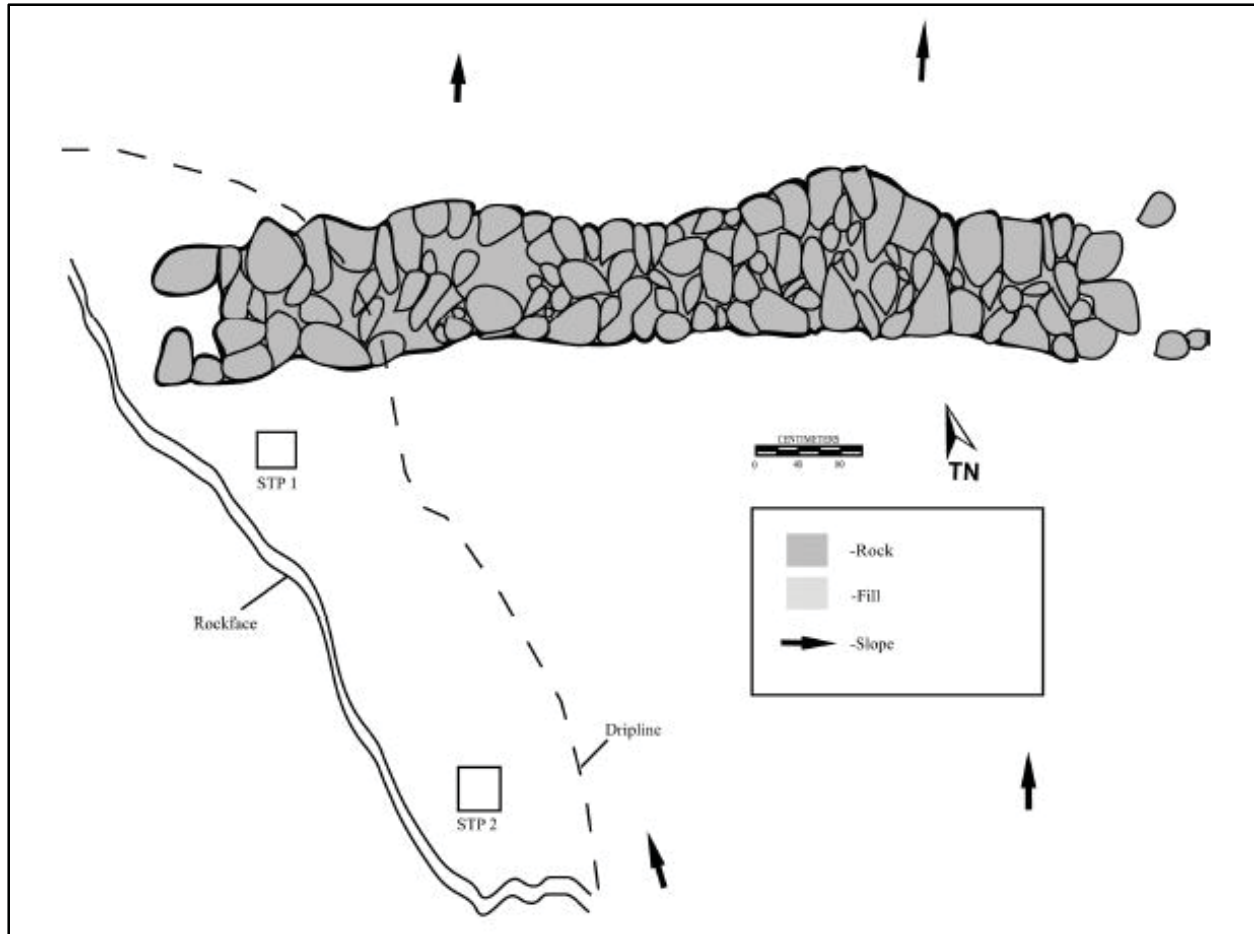


Figure 68. Plan map of a portion of SIHP # 50-80-03-7653 Feature 3 with rockshelter and dripline shown on left; note: arrows point downslope (outside the current project area) (Lauer and Rieth 2015:42)



Figure 69. SIHP # 50-80-03-7653 Feature 3, view to west (Lauer and Rieth 2015:37)



Figure 70. SIHP # 50-80-03-7653 Feature 3 and rockshelter, view to west (Lauer and Rieth 2015:36)

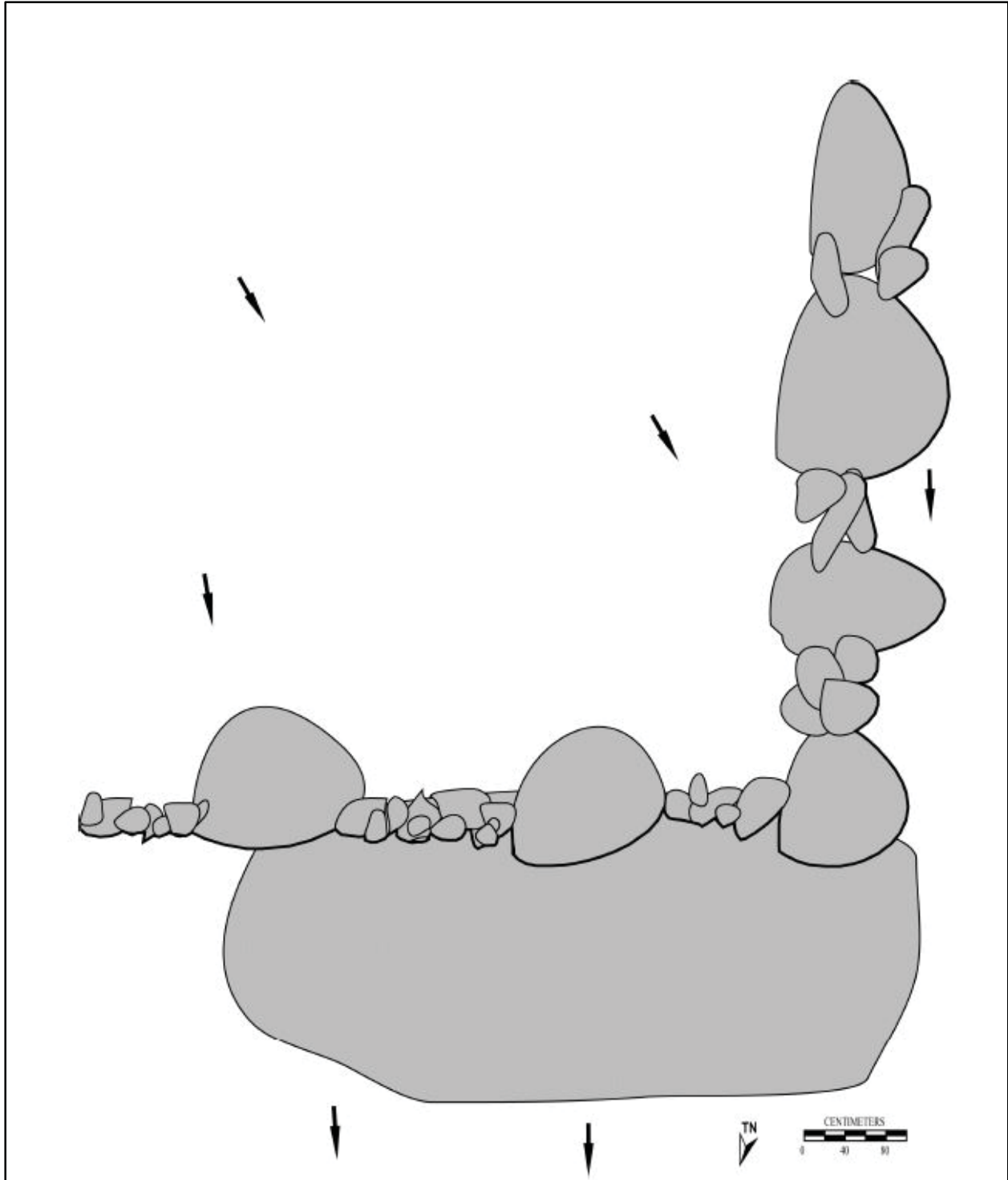


Figure 71. Plan map of SIHP # 50-80-03-7653 Feature 4; note: arrows point downslope, gray shading represent boulders/cobbles and dark lining represents facing (outside the current project area) (Lauer and Rieth 2015:38)



Figure 72. Portion of SIHP # 50-80-03-7653 Feature 4, view to southwest (Lauer and Rieth 2015)

Drolet and Schilz (1992b) suggest SIHP # 50-80-03-4439 marks a remnant *mauka* edge of a pre-Contact agricultural complex previously destroyed by development or represents the *makai* boundary of an agricultural complex that expands outside the Dillingham Ranch Agricultural Subdivision project area. No evidence of this interpretation was observed during Belluomini et al. (2017–draft) and follows the interpretation by Lauer and Rieth (2015) that the walls are part of an integrated enclosure/exclosure system for the Dillingham Ranch.

SIHP # 7653, walls, was previously identified by Lauer and Rieth (2015). SIHP # 50-80-03-4439 (now Site 7653 Feature 1) was previously assessed as significant by Drolet and Schilz (1992b) under Criterion d. This assessment of significance is for the overall site and applies to all features of the historic property. SIHP # 50-80-03-7653 was evaluated by Lauer and Rieth (2015:47) as significant pursuant to HAR §13-284-6 under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) and was evaluated as eligible for listing on the Hawai'i Register of Historic Places per HAR §13-198-8 under Criterion D. This assessment was based on the historic property's distribution and characteristics providing information regarding ranching activities and land divisions (Lauer and Rieth 2015:iii,49). This site has provided information regarding ranching practices in the area and there is a potential that additional features of the historic property may be present in areas not yet surveyed. This report concurs with the Lauer and Rieth (2015) and Drolet and Schilz (1992b) assessment of significance. The historic property retains integrity of location, design, setting, materials, and workmanship.

Based on the findings of previously conducted AIS studies, preservation is required for SIHP # 50-80-03-7653 Features 1 and 2 (cattle wall). Preservation is already a mitigation commitment for the previously identified features of SIHP # 50-80-03-7653 that are located within the Dillingham Ranch Agricultural Subdivision project area. SIHP # 50-80-03-7653 Features 3 and 4 are located outside the Dillingham Ranch Agricultural Subdivision project area and therefore will not be adversely affected. SIHP # -7653 preservation measures are not current addressed in a preservation plan.

4.14 SIHP # 50-80-03-7976

FORMAL TYPE:	Wall
FUNCTION:	Animal Husbandry
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	1
SIZE	Total length is approximately 115 m
AGE:	Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Belluomini et al. (2017-draft)

SIHP # 50-80-03-7976 consists of a basalt rock wall construction measuring approximately 1 m wide and extending approximately 115 m in an east/west orientation terminating at the edge of the tablelands of the western mountain in the southwest portion of the Dillingham Ranch Agricultural Subdivision project area (see Figure 58).

The wall is constructed of dry-stacked basalt with a boulder base and smaller cobbles placed vertically about three to five courses high and three to four stacks wide (Figure 73 through Figure 76). Approximate height of the wall varies from 80 to 120 cm from the ground surface. The wall is faced on both sides with periodic areas of collapse throughout. The wall does not extend to the previously identified historic property SIHP # 50-80-03-7653 Feature 1, a large cattle wall documented by Lauer and Rieth (2015) and formerly designated SIHP # 50-80-03-4439 by Drolet and Schilz 1992b. It is unclear if the two walls are associated with each other. However, SIHP # 50-80-03-7976 is similar to SIHP # -7653 and many other cattle walls throughout the Dillingham Ranch Property.

SIHP # 50-80-03-7976, wall, is assessed for significance pursuant to HAR §13-284-6 under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). This is based on the historic property's yielding of information regarding ranching activities on the Dillingham Ranch property. Additional features of the historic property may be present outside of the previously surveyed areas, and there is a potential that additional information on the age of the wall may be acquired. The historic property retains integrity of location, design, setting, materials, and workmanship.

Based on the many cattle walls present within the Dillingham Ranch property, as well as several cattle walls being preserved as representative examples of a portion of Dillingham Ranch's history as part of the Dillingham Ranch Agricultural Subdivision project, no further work is recommended for SIHP # 50-80-03-7976. The wall is in fair to poor condition and is unlikely to provide any additional information or significant value to the community. Therefore, the site will not be adversely affected by the proposed project.

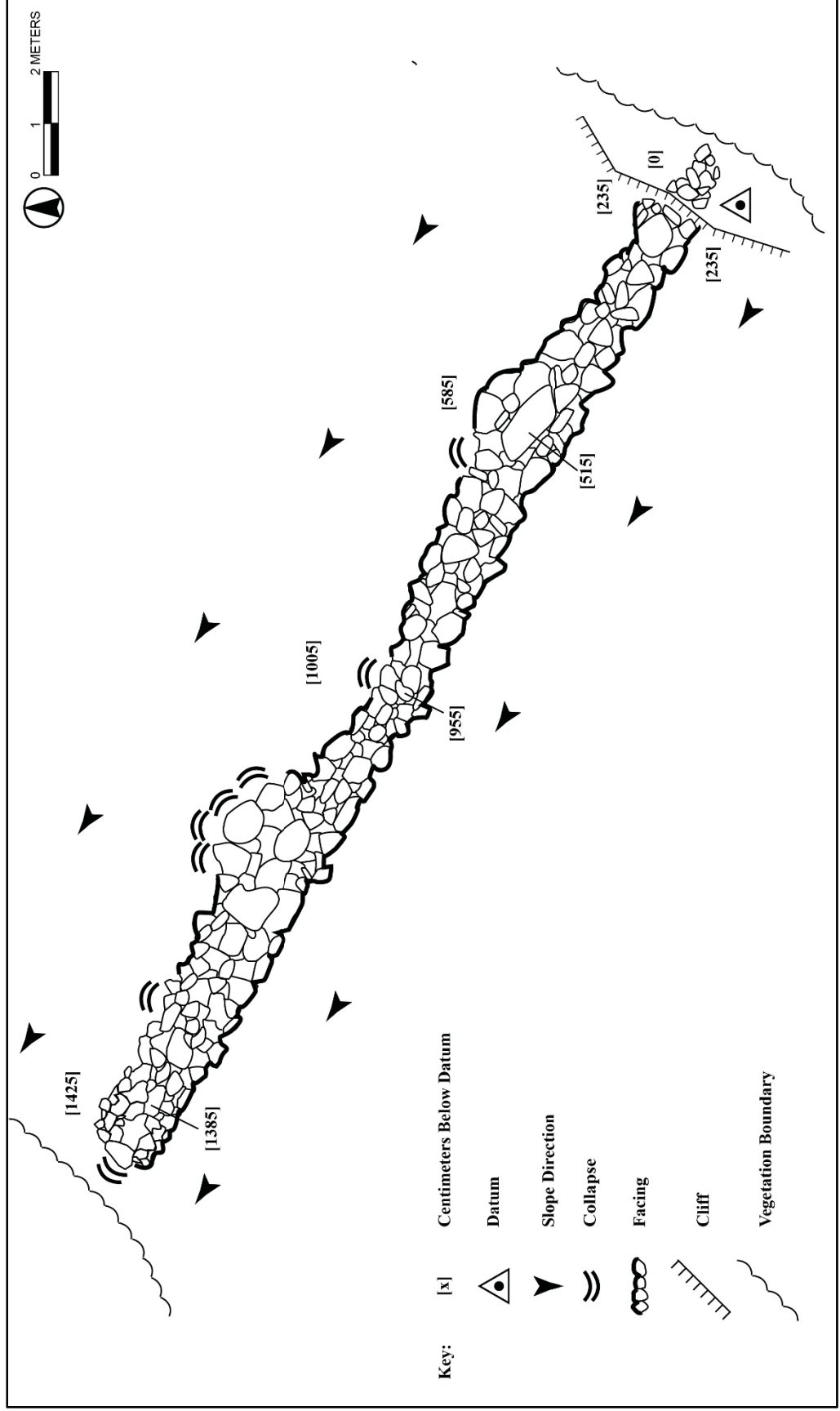


Figure 73. Plan map of a representative portion of SIHP # 50-80-03-7976 (Belluomini et al. 2017-draft)



Figure 74. Faced portion of SIHP # 50-80-03-7976, view to south (Belluomini et al. 2017–draft)



Figure 75. Plan view of SIHP # 50-80-03-7976 (Belluomini et al. 2017–draft)



Figure 76. SIHP # 50-80-03-7976 extending over cliff face, view to southeast (Belluomini et al. 2017–draft)

4.15 SIHP # 50-80-03-7977

FORMAL TYPE:	Terraces
FUNCTION:	Agricultural and ranching
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	9
SIZE:	Approximately 650 sq m
AGE:	Pre- Contact to early Post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Belluomini et al. (2017-draft)

SIHP # 50-80-03-7977, located in the southeast corner of the project area along Makaleha Streambed, consists of a system of terraces on both the west and east side of the stream extending to the western extent of the project area (see Figure 58). SIHP # -7977 consists of nine features: a square-shaped terrace (Feature A), three terraces on the east side of the project area (Features B through D), a terrace cutting across the stream (Feature E), a terrace on the west side of the stream (Feature F), a U-shaped terrace (Feature G), and two upstream terraces on the west side of the stream (Features H and I).

SIHP # 50-80-03-7977 Feature A is at the north end of the stream adjacent to the east project area boundary. It consists of a triangle-shaped terrace with a flattened area on top on the east side of the stream bed. Portions of terrace walls are clear and intact and the site feature is in fair to good condition. The northwest wall adjacent to the orientation of the stream is a stacked wall construction approximately 90 cm in height (Figure 79). Along the northeast wall of the terrace there are small stacked stones approximately 1 m long, 60 cm in height, and approximately 20 cm wide. The northwest wall of the terrace is in good condition, while the northeast wall is in poor to fair condition. Both walls of the terrace are approximately 1 course wide (50 cm). The southernmost portion of the wall is much wider than the northern portions at approximately 2 m wide and is made of a larger boulder pile than smaller stacked stones. The upper surface of the terrace is flat and may be evidence of pre-Contact to early post-Contact agricultural terracing.

SIHP # 50-80-03-7977 Feature B is a terrace wall that abuts the property boundary and extends south back into the valley approximately 15 m long. The terrace wall is a basalt stacked stone construction in fair condition (Figure 80). Areas of extensive water runoff and grass growth have disturbed portions of the wall. The intact portions of the wall measure three courses high (measuring 120 cm in height), with the bottom course being larger boulders with smaller stones stacked atop, and one course wide (50-80 cm). This portion of terracing may have also been associated with pre-Contact to early post-Contact agricultural practices.

SIHP # 50-80-03-7977 Feature C is the lower terrace wall further south from Feature A and Feature B adjacent to the stream bed (see Figure 77 and Figure 80). The feature wall measured approximately 30 m in length, 1.8 m at maximum height, and is 50 cm to 1 m wide. The wall is in good condition with only a few minor areas of collapse where the top stacked stones have fallen. The wall is constructed of stacked stones, intermittent cliff facing with stacked stones on top, and

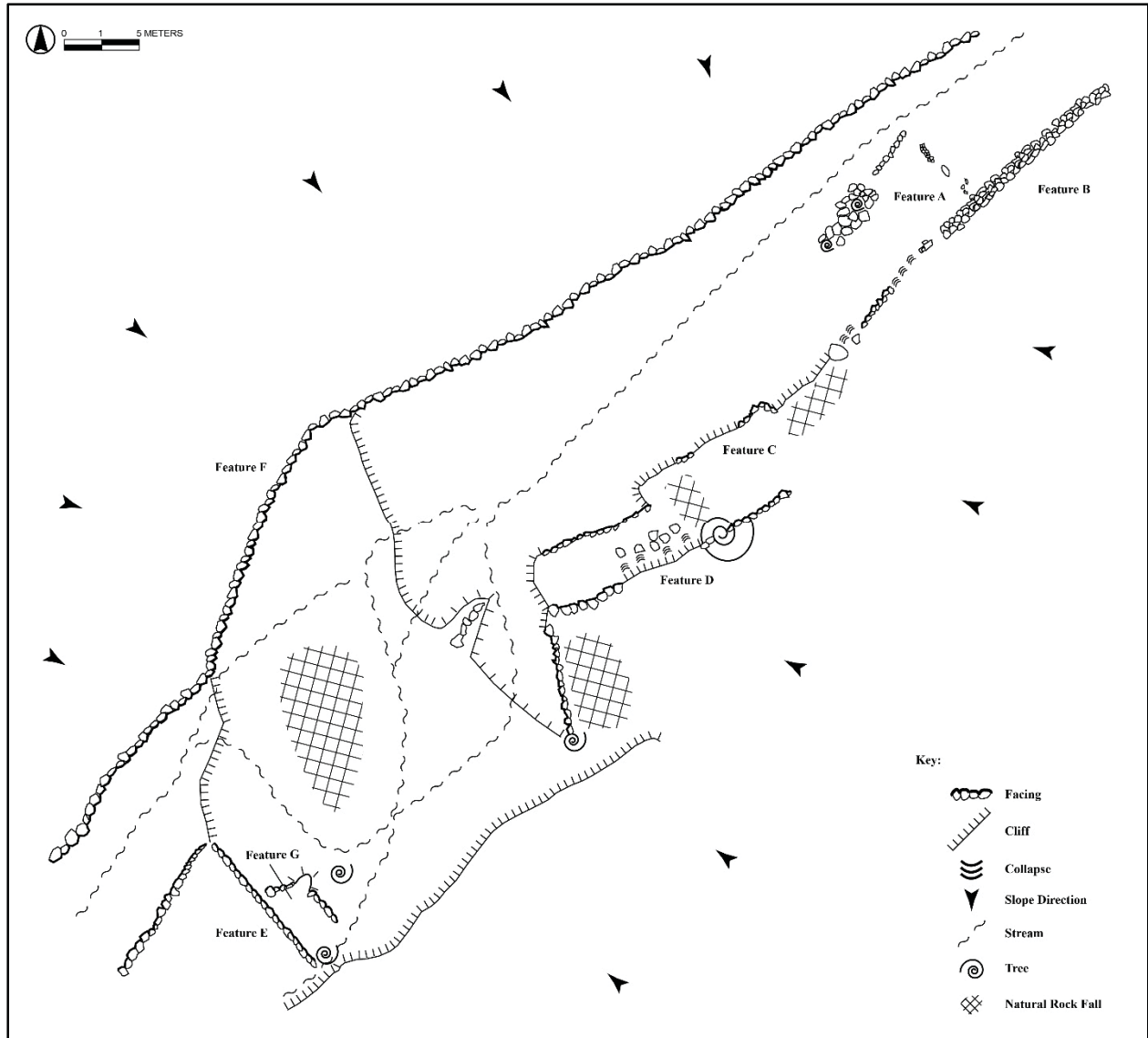


Figure 77. Plan map of SIHP # 50-80-03-7977 Features A–G (Belluomini et al. 2017–draft)

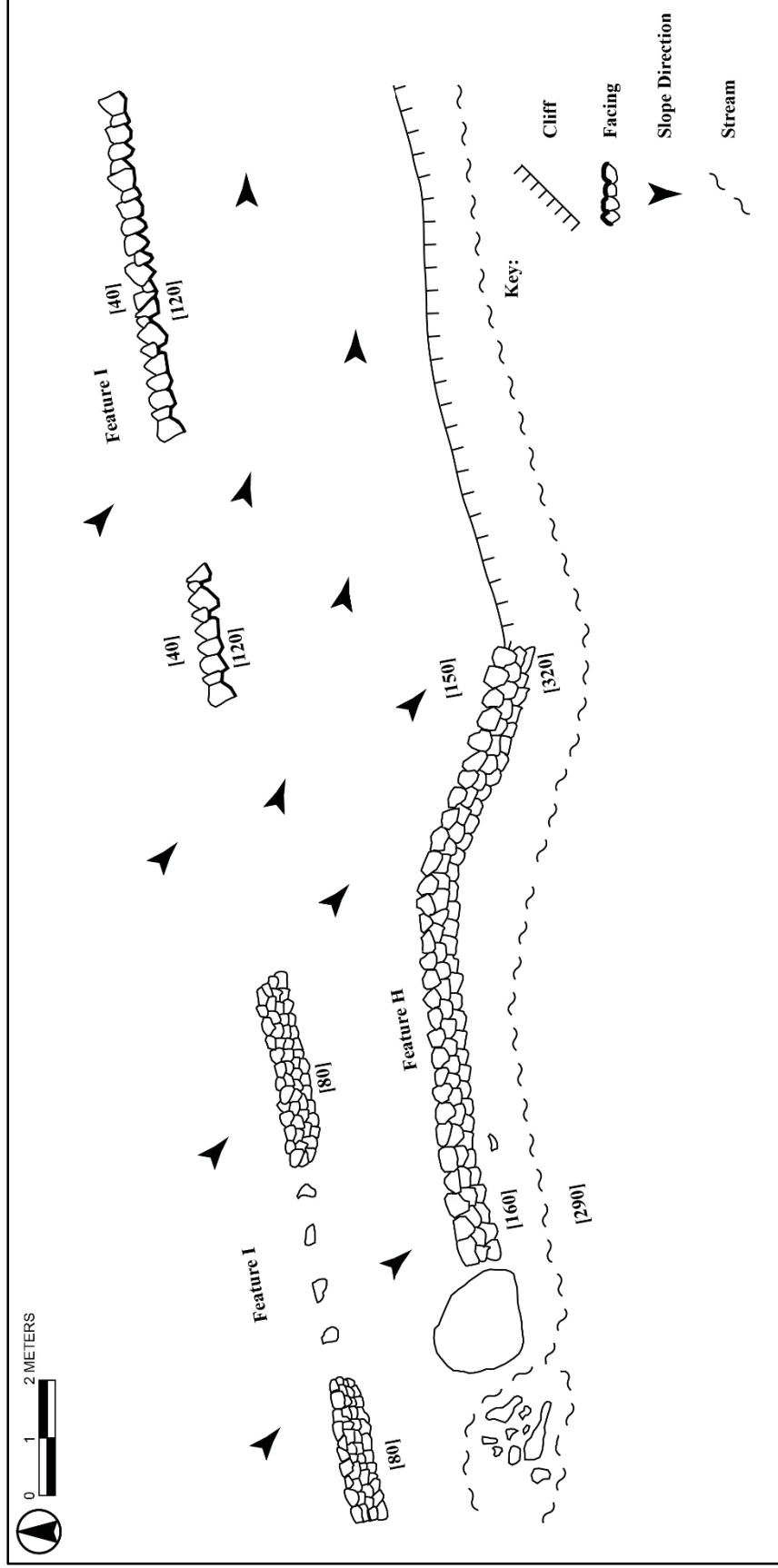


Figure 78. Plan map of SIHP # 50-80-03-7977 Features H and I (Belluomini et al. 2017-draft)



Figure 79. Northwest wall of SIHP # 50-80-03-7977 Feature A terrace showing the stacked basalt construction approximately five to six courses tall, view to east (Belluomini et al. 2017–draft)



Figure 80. Southern portion of SIHP # 50-80-03-7977 Feature B terrace wall showing the larger boulders on the bottom with smaller stacked stones on top, view to south (Belluomini et al. 2017–draft)

natural boulders with rock to fill in areas that are not as high. In areas where rock is stacked, the terrace wall is four to six courses tall with bottom course being larger boulders. The terrace wall extends into Feature D at the southern extent of the feature. The terrace platform is a flattened area and extends until Feature D and is associated with pre-Contact to early post-Contact agricultural practices and early historic ranching activities.

SIHP # 50-80-03-7977 Feature D is a terrace located upslope of Feature C (see Figure 77 and Figure 82 through Figure 84). The terrace is approximately 30 m in length with a maximum height of 1.5 m and an average width of 1 m. The terrace facing is comprised of dry-stacked basalt cobbles and boulders that lie atop a basalt outcrop cliff face approximately 1 m in height. The northern end of the basalt facing is primarily cobbles four to five courses high. Soil is present atop the terrace in this portion. A large banyan tree is growing over the majority of these cobbles. In the center of the feature (south of the banyan tree), the feature has been disturbed. Boulders and cobbles (likely the former terrace facing in this portion) were observed at the base of the outcrop, likely the result of natural forces or the grazing cattle observed in the area. South of the collapsed area, the construction is different and there is a lack of soil atop the terrace. This portion is constructed of boulders two to three courses high and loosely stacked. Atop the terrace are many large boulders and cobbles, likely fallen from the large cliff faces and outcrops upslope of the terrace. The terrace extends east at the stream and extends into a large cliff face. The feature is in fair condition, with the continual rock fall from upslope, and the vegetation overtaking the feature causing the majority of the damage. The terrace platform is not as flat as the other terraces in the area and is more rocky. Feature D is likely associated with pre-Contact to early post-Contact agricultural practices and was likely modified during Historic ranching activities

SIHP # 50-80-03-7977 Feature E is a large terrace located approximately 26 m southwest of Feature D (see Figure 77, Figure 85, and Figure 86). The terrace extends from the cliff face of a large outcrop in a northeast direction approximately 10 m to Makaleha Stream. The dry-stacked basalt cobble facing in this portion is six to seven courses high with a maximum height of 1.4 m. The facing extends perpendicular to the stream bed and follows the direction of a basalt outcrop cliff face in which the stream extends down. The terrace facing turns southwest and follows the edge of the stream approximately 8 m. This portion is less intact, likely due to natural stream erosion, however, in portions that were intact, the dry-stacked basalt cobble terrace facing was approximately two to three courses high with a maximum height of 50 cm. The terrace platform consisted of soil and was entirely flat with only a few small boulders observed on the surface, likely the result of falling from the steep slope to the south. The terrace was in good condition and is likely associated with pre-Contact to early post-Contact agricultural practices.

SIHP # 50-80-03-7977 Feature F is a terrace facing that extends along the west side of Makaleha Stream (see Figure 77, Figure 87, and Figure 88). The terrace is approximately 96 m in length. The terrace facing consists of dry-stacked basalt cobbles two to three courses high with a maximum height of 60 cm. Where the stream extends down the face of a basalt outcrop, the terrace face makes a nearly right-angled turn to the northwest and follows the outcrop before turning northeast again following the contour of the slope. Feature F extends to the northeast beyond the study area. The feature ends approximately 15 m southwest of the turn at the cliff face roughly parallel to Feature E's facing along the edge of the stream. The feature is in good condition and is continuous only throughout the documented section. It does not appear the feature was disturbed at its southernmost extent however, it is likely associated with Feature H and/or Feature I as the features have similar construction, design, and function and additional features may also be extant between



Figure 81. Northern portion of SIHP # 50-80-03-7977 Feature C showing the terrace wall and SIHP # 50-80-03-7977 Feature D in the background, view to south (Belluomini et al. 2017–draft)



Figure 82. Southern portion of terrace facing of SIHP # 50-80-03-7977 Feature D, showing the banyan tree overtaking most of the structure, view to east (Belluomini et al. 2017–draft)



Figure 83. Northern portion of terrace wall of SIHP # 50-80-03-7977 Feature D, showing growth of banyan tree on wall face, view to east (Belluomini et al. 2017–draft)



Figure 84. Southern portion of SIHP # 50-80-03-7977 Feature D wall showing stacked stone atop boulder construction, view to south (Belluomini et al. 2017–draft)



Figure 85. SIHP # 50-80-03-7977 Feature E terrace wall that runs in an east-west orientation across the river valley, view to west (Belluomini et al. 2017–draft)



Figure 86. Flattened area of SIHP # 50-80-03-7977 Feature E terrace, view to west (Belluomini et al. 2017–draft)



Figure 87. Stacked basalt wall of SIHP # 50-80-03-7977 Feature F located on west bank of stream, view to west (Belluomini et al. 2017–draft)



Figure 88. Southern portion of SIHP # 50-80-03-7977 Feature F, view to northwest (Belluomini et al. 2017–draft)

Features E and H, however, dense vegetation likely has obscured them from view. Feature F is likely associated with pre-Contact to early post-Contact agricultural practices and was likely modified during historic ranching activities.

SIHP # 50-80-03-7977 Feature G is a small square-shaped terrace downslope of Feature E (see Figure 77 and Figure 89). The terrace extends 4 m northeast from approximately the mid-point of Feature E's northeast terrace facing. The terrace facing turns southeast at a small basalt outcrop and extends approximately 5 m. A natural spring extending from just above Feature E runs between the features and the basalt outcrop cliff-face. The upper surface of the terrace is flat and comprised of soil which may be evidence of pre-Contact to early post-Contact agricultural terracing.

SIHP # 50-80-03-7977 Feature H is similar to Feature F. The feature is approximately 12 m in length and extends along the northwestern edge of Makaleha Stream approximately 70 m southwest of Feature F (see Figure 78, Figure 90, and Figure 91). The dry-stacked basalt boulder and cobble terrace facing is five courses tall with a maximum height of 1.7 m. It extends from a large boulder to a basalt outcrop cliff face. The upper surface of the terrace is relatively flat and comprised of soil which may be evidence of pre-Contact to early post-Contact agricultural terracing.

SIHP # 50-80-03-7977 Feature I is similar to Feature A in construction and design. Feature I is located approximately 2 m upslope of Feature H and consists of three to four courses of dry-stacked basalt cobbles (see Figure 78, Figure 91, and Figure 92). The terrace is discontinuous and was observed in four sections. The southernmost two sections were not vertically faced, but angled slightly. The two northernmost sections were vertically faced. The feature extends a total of 29 m. It could not be established if the gaps in the terrace facing were by design or due to erosion or disturbance. The upper surface of the terrace is relatively flat and comprised of soil which may be evidence of pre-Contact to early post-Contact agricultural terracing.

SIHP # 50-80-03-7977, agricultural feature complex, is assessed for significance pursuant to HAR §13-284-6 under Criteria d (have yielded, or is likely to yield, information important for research on prehistory or history) and e (have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity). This is based on the historic property's potential to provide information regarding traditional Hawaiian cultural and agricultural practices. The terrace complex likely extends along the stream well beyond the survey area. In addition, there is a potential that additional information regarding agricultural use may be acquired. This may include types of crops that may have been cultivated within the complex, soil suitability studies, crop yield analysis, and the modification of the terraces for ranching use. The terrace complex is upstream of a This assessment of significance is for the overall site and applies to all features of the historic property. The historic property retains integrity of location, design, setting, materials, and workmanship.

Based on the findings of previously conducted AIS studies, preservation is required for SIHP # 50-80-03-7977. SIHP # -7977 preservation measures are not current addressed in a preservation plan. Consultation with NHOs and individuals knowledgeable about the project area's history should be conducted during the development of the preservation plan.



Figure 89. SIHP # 50-80-03-7977 Feature G extending from Feature E, view to west (Belluomini et al. 2017–draft)



Figure 90. Portion of SIHP # 50-80-03-7977 Feature H along Makaleha Stream, view to north (Belluomini et al. 2017–draft)



Figure 91. SIHP # 50-80-03-7977 Feature H (in foreground) and Feature I (in background), view to northwest (Belluomini et al. 2017–draft)



Figure 92. Southernmost terrace facing of SIHP # 50-80-03-7977 Feature I, view to northwest (Belluomini et al. 2017–draft)

4.16 SIHP # 50-80-03-7978

FORMAL TYPE:	Platform
FUNCTION:	Possible habitational/ceremonial
SETTLEMENT CLUSTER:	N/A
NUMBER OF FEATURES:	1
SIZE:	7.8 m by 6.8 m (approximately 53 sq. m)
AGE:	Pre-Contact to early post-Contact
LAND JURISDICTION:	Dillingham Ranch
PREVIOUS DOCUMENTATION:	Belluomini et al. (2017–draft)

During a brief period of archaeological monitoring associated with Dillingham Ranch improvements in 2008, a platform was located by CSH archaeologists. The feature was undocumented except for a photograph and GPS location.

The platform was located, photographed, and documented during Belluomini et al.'s (2017–draft) AIS (see Figure 58, Figure 93 and Figure 99). The platform consisted a rock-filled rectangular structure of dry-stacked basalt stone walls of varying heights composed of varying stone sizes. The platform is in fair condition. The overall dimensions of the platform measure approximately 6.7 m in width and 7.8 m in length. The maximum height of the northwest wall stands at 150 cm and the height of the constructed alignment at the southeast wall is at 40 cm.

The platform walls are constructed of large basalt boulders and smaller cobble walls, with a smaller cobble interior. The walls are faced on the northeast, northwest, and southwest sides. The walls are approximately five to six courses tall (at the tallest point) and one to two courses wide, with the larger boulders at the base and the smaller cobbles resting on top. There are no areas of collapse in the constructed walls, however, the northeast and southeast walls are not as well preserved and have gaps in their construction. It is unclear if these gaps are by design or if the stones were removed, as there has been documented collecting of stones from the area (Mitchell 1987).

SIHP # 50-80-03-7978 is located approximately 50 m northeast of SIHP # 50-80-03-4786 (platform) documented by Drolet and Schilz (1992) and Tulchin and Hammatt (2008) as having a possible religious/ceremonial function. It is also possible the platform is a remnant house platform or some other structure related to habitational use. The two platforms (SIHP # 50-80-03--4786 and SIHP # 50-80-03-7978) share similar construction methods and may be associated with each other, however, a direct association could not be definitively established.

SIHP # 50-80-03-7978, platform, is newly identified and is assessed as significant pursuant to HAR §13-284-6 under Criteria d (have yielded, or is likely to yield, information important for research on prehistory or history) and e (have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity). This is based on the historic property's potential to provide information regarding traditional Hawaiian

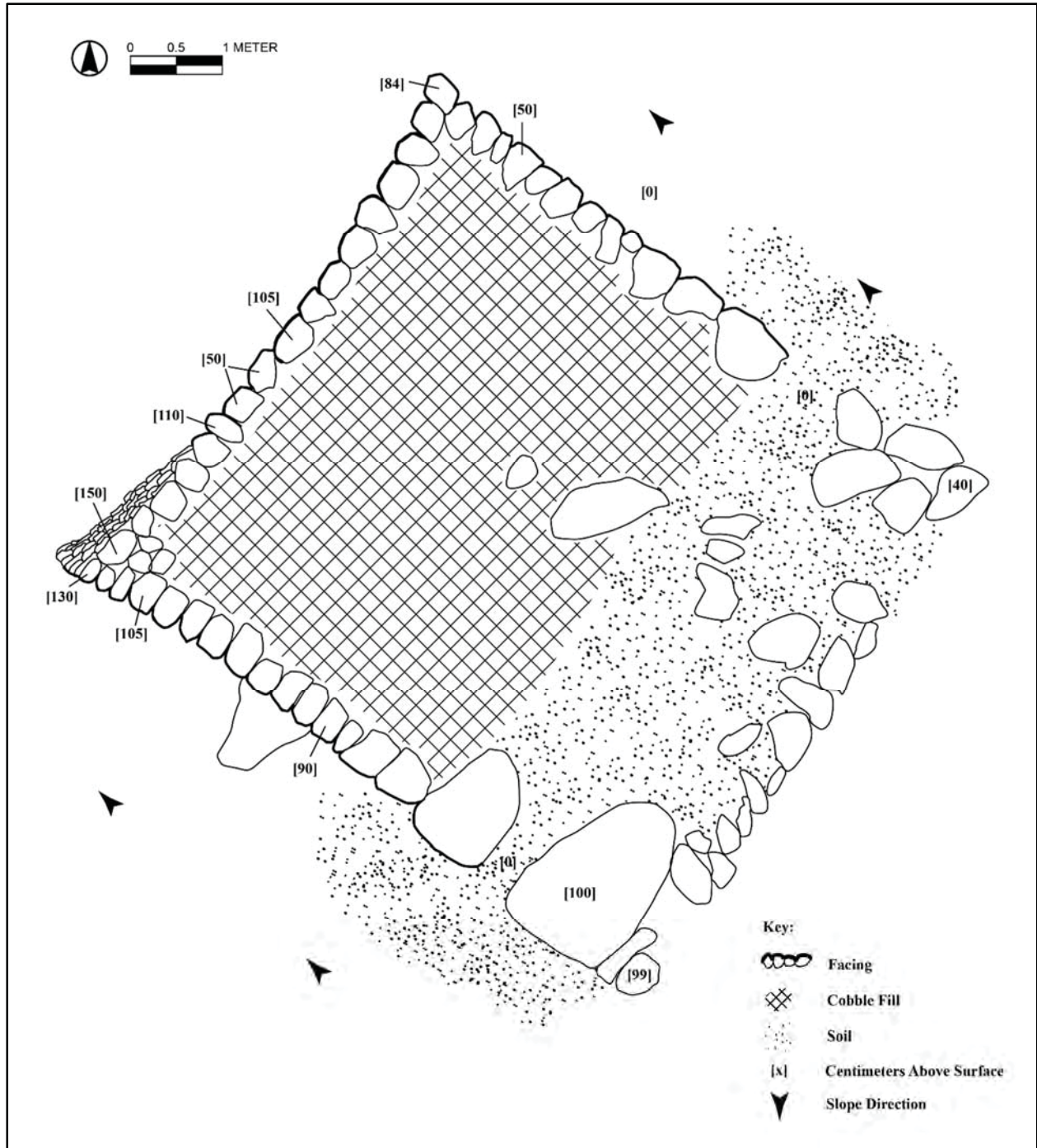


Figure 93. Plan map of SIHP # 50-80-03-7978 (Belluomini et al. 2017–draft)



Figure 94. Photograph of SIHP # 50-80-03-7978 platform observed ca. 2008, view to east (from CSH project files associated with 2008 brief archaeological monitoring)



Figure 95. Photograph of northwest and southwest walls of SIHP # 50-80-03-7978 platform, view to south (Belluomini et al. 2017–draft)



Figure 96. Photograph of faced southwest wall of SIHP # 50-80-03-7978 platform, view to west (Belluomini et al. 2017–draft)



Figure 97. Plan view of northeast wall of SIHP # 50-80-03-7978 platform and small boulder rock fill, view to southwest (Belluomini et al. 2017–draft)



Figure 98. Northwest wall of SIHP # 50-80-03-7978 platform, view to east (north arrow marked incorrectly) (Belluomini et al. 2017–draft)



Figure 99. Large boulders along the southwest wall of SIHP # 50-80-03-7978 with a gap in the middle of wall construction, view to east (Belluomini et al. 2017–draft)

cultural practices. Additional information regarding the construction, age, and function of the historic property can be potential collected. The historic property has a possible religious or ceremonial function, based on its construction and therefore has an important value to the native Hawaiian people with its associated with their traditional beliefs and cultural practices. This assessment of significance is for the overall site and applies to all features of the historic property. The historic property retains integrity of location, design, setting, materials, and workmanship.

Based on the findings of previously conducted AIS studies, preservation is required for SIHP # 50-80-03-7978. SIHP # -7978 preservation measures are not current addressed in a preservation plan. Consultation with NHOs and individuals knowledgeable about the project area's history should be conducted during the development of the preservation plan.

Section 5 Summary of Significance Assessments

Of the 16 historic properties located in the proposed Dillingham Ranch Agricultural Subdivision project area, four historic properties were recommended for no further work (Table 5). The individual significance evaluations and, when available, recommendations of eligibility for listing on the Hawai'i Register of Historic Places and assessment of integrity are located within each site description presented in the previous section. All assessments and evaluations are from previously accepted AIS reports. Historic properties were evaluated as being significant under one or more of the broad criteria established for assessing State of Hawai'i historic property significance. To be considered significant, a historic property must possess integrity of location, design, setting, materials, workmanship, feeling, and/or association and meet one or more of the following broad cultural/historic significance criteria (in accordance with HAR §13-284-6):

- a. Be associated with events that have made an important contribution to the broad patterns of our history;
- b. Be associated with the lives of persons important in our past;
- c. Embody the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value;
- d. Have yielded, or is likely to yield information important for research on prehistory or history; or
- e. Have an important value to the Native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts—these associations being important to the group's history and cultural identity.

Pursuant to HAR §13-198-8, two historic properties were previously evaluated for eligibility for listing on the Hawai'i Register of Historic Places. To be considered eligible for listing on the Hawai'i Register of Historic Places, a historic property should possess integrity as described above, and meet one or more of the following broad significance criteria:

- A. Associated with events that have made a significant contribution to the broad patterns of our history;
- B. Associated with the lives of persons significant in our past;
- C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent that work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;
- D. Have yielded, or may be likely to yield, information important in prehistory or history
- E. Have an important value to the Native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts—these associations being important to the group's history and cultural identity.

Table 5. Significance evaluations and mitigation for historic properties in the Dillingham Ranch Agricultural Subdivision project area from previous studies

SIHP #	Type	Age	Significance Criteria	Hawai'i Register	Mitigation
50-80-03-4772	Heiau or house site (habitation or ceremonial)	Pre- or early post-Contact	c, d and e	C and D	Preservation
4773	Complex (habitation/agriculture)	Pre- or early post-Contact	c, and d	C and D	Preservation
4774	Platform (habitation)	Pre- or early post-Contact	c, and d	C and D	Preservation
4775	Enclosure (habitation)	Pre- or early post-Contact	c, and d	C and D	Preservation
4776	Complex (habitation/agriculture/ceremonial)	Pre- or early post-Contact	c, d and e	C and D	Preservation
4777	U-Shaped Wall (property boundary for Land Grant 457 Lot 2)	Post-Contact	c and d	C and D	Preservation
4782	Complex (habitation/agriculture)	Pre-Contact	d	D	Preservation
4783	Complex (agriculture)	Post-Contact	Not significant	-	No further work
4784	Ditch (agriculture)	Unknown	Not significant	-	No further work
4785	Enclosure (ranch paddock; agriculture; property boundary for Land Grant 457 Lot 1)	Post-Contact	d	D	Preservation
4786	Platform (ceremonial or habitation)	Pre-Contact	d and e	D	Preservation
6884	Walls (agriculture)	Post-Contact	-	D	No further work
7653	Walls (animal husbandry)	Post-Contact	d	D	Preservation
7976	Wall (animal husbandry)	Post-Contact	d	-	No further work
7977	Terraces (agriculture)	Pre- and early post-Contact	d and e	D	Preservation
7978	Platform (habitational/ceremonial)	Pre- and early post-Contact	d and e	D	Preservation

Section 6 Mitigation Requirements

Following consultation among CSH, SHPD, and landowner representatives, it was agreed that preservation of significant historic properties in the proposed Dillingham Ranch Agricultural Subdivision project area, with the exceptions of SIHP #s -6884 and -7976 (see Table 4), will include interim and long-term protection measures to be established in a preservation plan. Figure 100 illustrates the current understanding of mitigation, specifically in regards to preservation associated with the Dillingham Ranch Agricultural Subdivision project.

Based on the five AIS reports (Drolet and Schilz 1992a and 1992b, Tulchin and Hammatt 2007, Lauer and Reith 2015, and Belluomini et al. 2017–draft), preservation is agreed to for twelve historic properties in the Dillingham Ranch Agricultural Subdivision project area: SIHP #s 50-80-03-4772 through 50-80-03-4777, 50-80-03-4782, 50-80-03-4785, 50-80-03-4786, 50-80-03-7653, 50-80-03-7977, and 50-80-03-7978.

Tulchin and Hammatt (2008a; see Appendix B) plans preservation for Sites 4772-4776, 4782, and 4786. Four historic properties (SIHP # 50-80-03-4785, -7653, -7977, and -7978) as well as SIHP # -4777 Feature C are to be preserved and are not currently covered under a preservation plan. A preservation plan for all historic properties recommended to be preserved within the Dillingham Ranch Agricultural Subdivision project area and meeting the requirements of HAR §13-277 will be submitted for review and acceptance by the SHPD. This plan will incorporate the historic properties and provisions documented in the Tulchin and Hammatt (2008a) preservation plan (see Appendix B).

No further work was previously recommended for SIHP # 50-80-03-6884 (agricultural walls), SIHP # 50-80-03-7976 (cattle wall). No further work is also recommended for two of the three historic properties previously assessed as not significant (SIHP #s 50-80-03-4783, and -4784). In consultation with the SHPD, it was determined that SIHP # -4785 is significant for its information potential and it was determined that portions of SIHP # -4785 would be preserved.

Mitigation in the form of archaeological monitoring is also required, provisions of which will be detailed in an archaeological monitoring plan that meets the requirements of HAR §13-279-4. The plan will be submitted for review and acceptance by the SHPD and will incorporate the historic properties and provisions detailed in the Tulchin and Hammatt (2008b) archaeological monitoring plan (see Appendix C).

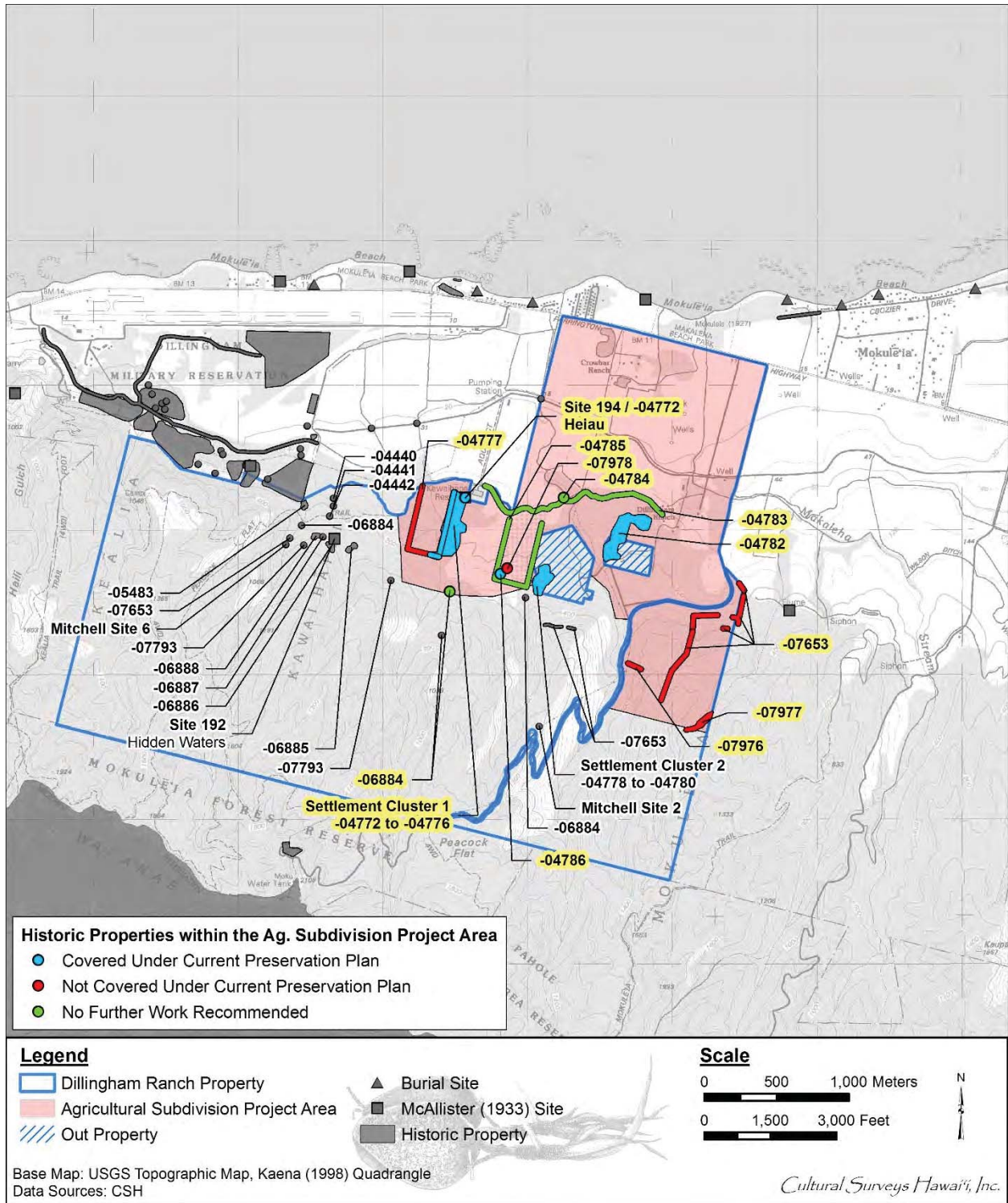


Figure 100. Portion of a 1998 Kaena USGS topographic quadrangle, showing the locations of historic properties within the Dillingham Ranch Agricultural Subdivision project area and their respective mitigation requirements.

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2008b *Archaeological Monitoring Plan for the 820-Acre Dillingham Ranch Development Project, Mokulē'ia 2, Auku'u, Kikahi, and Kawaihāpai Ahupua'a, Waialua District, Island of O'ahu (TMK: [1] 6-8-002:006 por.; 6-8-003:006 por., 015, 019, 030, 031, 033, 035, 040).* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

U.S. Army War Department

1919 U.S. Army War Department fire control map, Kaena Quadrangle. USGS Information Services, Denver, Colorado.

1943 U.S. Army War Department terrain map, Kaena and Schofield Barracks Quads. USGS Information Services, Denver, Colorado.

USDA (U.S. Department of Agriculture)

2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas. <http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/> (accessed March 2005).

USGS (U.S. Geological Survey)

1929 Kaena, Schofield, and Haleiwa USGS 7.5-minute series topographic quadrangles. USGS Information Services, Denver, Colorado.

1964 Kaena USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.

1977 USGS Orthophoto aerial photograph, Kaena quadrangle. USGS Information Services, Denver, Colorado.

1998 Kaena USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.

2005 USGS Orthoimagery aerial photograph. USGS Information Services, Denver, Colorado.

Wilcox, Carol

1996 *Sugar Water: Hawaii's Plantation Ditches.* University of Hawai'i Press, Honolulu.

Yardley, Paul

1981 *Millstones and Milestones: The Career of B.F. Dillingham 1844-1918.* University of Hawaii Press, Honolulu.

Yucha, Trevor and Hallett H. Hammatt


2008 *Archaeological Literature Review and Field Inspection for the Castle & Cooke Corporate Retreat Kaiahulu Project Mokulē'ia Ahupua'a, Waialua District, Island of O'ahu TMK: [1] 6-8-003:001.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Zulick, Loren

2003 *Trip Report Archaeological Reconnaissance of Multiple Fence Line Routes for Proposed Exclosures within the Pahole Nature Area Reserve (NAR), Waianae Mountain Range, O'ahu Island, Hawaii.* Department of the Army, O'ahu, Hawai'i.

Appendix A SHPD Acceptance Letters

SHPD Acceptance for the Drolet and Schilz (1992) AIS

JOHN WAIHEE GOVERNOR OF HAWAII		WILLIAM W. FATY, CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES
	STATE OF HAWAII	DEPUTIES
	DEPARTMENT OF LAND AND NATURAL RESOURCES	JOHN P. KEPPELER, II DONA L. MANAHE
	STATE HISTORIC PRESERVATION DIVISION 33 SOUTH KING STREET, 8TH FLOOR HONOLULU, HAWAII 96813	AQUACULTURE DEVELOPMENT PROGRAM
April 24, 1992		AQUATIC RESOURCES CONSERVATION AND ENVIRONMENTAL AFFAIRS
		CONSERVATION AND RESOURCES ENFORCEMENT CONVEYANCES
Mr. Allan J. Schilz Ogden Environmental & Energy Services 680 Iwilei Rd., Suite 660 Honolulu, HI 96817		FORESTRY AND WILDLIFE HISTORIC PRESERVATION DIVISION LAND MANAGEMENT STATE PARKS WATER AND LAND DEVELOPMENT
		LOG NO. 5155 DOC NO. 0682t
Dear Mr. Schilz:		
	SUBJECT: Chapter 6E Review -- Archaeological Inventory Survey and Evaluation Prepared for Mokuleia Land Company (February 1992) Mokule'ia and Kawaihapai, Waialua, O'ahu <u>TMK: 6-8-02 and -03 various</u>	
	Thank you for the copy of this report which adequately addresses concerns with an earlier draft noted in our letter of October 7, 1991 and in a subsequent meeting and telephone conversations. We now believe that this is an acceptable inventory survey report.	
	A total of 840 acres was inventoried through a combination of pedestrian survey and backhoe test excavation. These survey techniques were adequate to locate all extant historic sites. Fifteen historic sites (comprising 40 features) were found and have been assigned state numbers 50-80-03-4424 through -4438. Table 2 on p.41 offers a preliminary significance assessment for each of the 40 features; technically, the site is the unit of analysis for significance determinations. Abstracting from this table, three sites (-4424, -4428, and -4438) are assessed as significant for their information content (criterion D) and for their historical value to the Hawaiian ethnic group (criterion E); eight sites (-4425, -4426, -4427, -4429, -4430, -4431, -4432, and -4434) for criterion D alone; and four sites (-4433, -4435, -4436, and -4437) are no longer significant because their location and description exhaust the information about Hawaiian history and pre-history that they contain. Based on the information presented in this report we disagree with the significance assessments for the six sites (-4424, -4425, -4426, -4427, -4428, and -4429) comprising Settlement Cluster 1. Given these sites' excellent integrity, the fact that they represent a related group of sites characteristic of the type that was built on the coastal terrace of Mokule'ia during prehistoric times, and because other site groups of this type in the region might have less	

Mr. Allan Schilz
April 24, 1992
Page 2

integrity, we believe that these sites are also significant because they embody the distinctive characteristics of a type (criterion C). Our disagreement on this point does not affect the acceptability of the inventory survey report. It does require that consultation to resolve the differences take place; this could be a letter from Mokuleia Land Company, or you as their agent, agreeing to our assessment. If you do not agree, then we will need to schedule a meeting.

Once concurrence on significance assessments is reached, the next step will be to determine the effect of Mokuleia Land Company's proposed development on significant historic sites, and once these effects have been agreed upon, to develop a mitigation plan. It is at this stage that recommendations for excavation and/or preservation are appropriate.

If you have any questions please call Tom Dye at 587-0014.

Sincerely,





DON HIBBARD, Administrator
State Historic Preservation Division

TD:amk

APR 28 1992

SHPD Acceptance for the Tulchin and Hammatt (2007) AIS

 <p>LINDA LINGLE GOVERNOR OF HAWAII</p>		<p>LAURA H. THELEN CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCES MANAGEMENT</p> <p>RUSSELL Y. TSUJI FOREST DEPUTY</p> <p>KEN C. KAWAHARA DEPUTY DIRECTOR, WATER</p> <p>AQUATIC RESOURCES BOATING AND FISHING RECREATION BUREAU OF CONSERVATION COMMISSION ON WATER RESOURCES MANAGEMENT CONSERVATION AND COASTAL LANDS CONSERVATION AND RESOURCES ENFORCEMENT ENGINEERING FORESTRY AND WILDLIFE HISTORIC PRESERVATION KAMOHAKI ISLAND RESERVE COMMISSION LAND STATE PARKS</p>
<p>STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES STATE HISTORIC PRESERVATION DIVISION 601 KAMOKILA BOULEVARD, ROOM 555 KAPOLEI, HAWAII 96707</p>		
<p>December 19, 2007</p>		
<p>Todd Tulchin Cultural Surveys Hawai'i P.O. Box 114 Kailua, Hawai'i 96734</p>	<p>LOG NO: 2007.2421 DOC NO: 0712LM03 Archaeology</p>	
<p>Dear Mr. Tulchin:</p>		
<p>SUBJECT: Chapter 6E-42 Historic Preservation Review – Archaeological Inventory Survey of an Approximate 75-Acre Portion of the Proposed 861-Acre Dillingham Ranch Development Project, Auku'u, Kikahi, and Kawaihāpai Ahupua'a, Wailua District, Island of O'ahu TMK: (1) 6-8-002:006 por.; 6-8-003:006 por.</p>		
<p>Thank you for the opportunity to review the aforementioned report, which we received on July 11, 2007. We apologize for the delay in reviewing this project. The archaeological inventory survey, of approximately 75 acres of the mauka portion within the overall 861 acre Dillingham Ranch Development Project, identified six historically significant properties. Approximately 787 acres of the 861 acre Dillingham Ranch project area were covered by a previous archaeological inventory survey in 1992 (Drolet and Schilt:1992). This survey was reviewed and accepted by SHPD in 1992 (Log No. 5155, Doc No. 0682t).</p>		
<p>Two of the identified significant historic properties, sites 50-80-03-6884 and -6885 are located within the 75 acre survey area. The four other sites, -416, -6886, -6887, and -6888 are located outside of the 75 acre survey area. These sites were originally a part of a 78 acre survey area but the property boundaries were adjusted to exclude the approximately three acres where these four sites are located thus reducing the project area to 75 acres. This approximately 3 acre area will not be affected by the current development and should be classified as a preservation easement. Portions of Site -416 were previously identified in an adjacent property (Rosendahl 1977; Moblo 1991). The four historically significant properties are located on the boundaries of the overall 861 acre project area or the Area of Potential Effect (APE) and will not be affected by the proposed development project. Site -6884 consists of four historic, ranch related stone walls and is eligible for the Hawai'i Register under Criterion D, informational content relevant to research of historic era ranching in the Waiialua area. Site -6885 consists of a pre-contact/early historic agricultural complex including terraces and a retaining wall which is eligible for the Hawai'i Register of Historic Places under Criteria C and D. Site -416, an agricultural complex, is eligible for the Hawai'i Register under Criteria C and D. Site -6886, an agricultural complex, is eligible for the Hawai'i Register under Criteria D and E due to its possible association with the legendary springs of Kawaihāpai. Site -6887, modified overhang, is eligible for the Hawai'i Register under Criteria D. Site -6888, an agricultural complex, is eligible for the Hawai'i Register under Criteria D and E due to its possible association with the legendary springs of Kawaihāpai. The following proposed mitigation recommendations were developed in consultation with community members knowledgeable of the history and culture of the area and with the Office of Hawaiian Affairs (OHA). We concur with the proposed mitigation.</p>		

Mr. Tulchin

Page 2

The proposed mitigation recommendation for Site -6884, the four ranching era stone walls, is no further work recommended. Sufficient information regarding the location, function, age, and construction methods was compiled by the current survey investigation to mitigate any adverse effect. We concur with this recommendation, but we recommend that these stone walls be incorporated into the design of the project. Breaching of the walls for access and other needs can be accomplished without the destruction of the entire site. The stone walls will add character and increased value to the community and reflect its post-contact land use for ranching.

The proposed mitigation for Site -6885, an agricultural complex which includes distinctive remnants of Mokulē'ia and Kawaihāpai's pre-contact/early historic land use and is a future resource for both the Hawaiian community and further archaeological research, is preservation, in the form of avoidance and protection. We concur with this recommendation, but we would suggest that an ongoing maintenance program be established to take care of the site in perpetuity ie; periodic hand clearing of invasive alien vegetation.

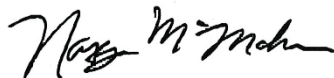
Sites -416, -6886, -6887, and -6888 which are located outside of the project area but in close proximity to the project areas boundary. Due to the sites proximity to the project area mitigation recommendations for these sites were included in the current study. The proposed mitigation for the sites located outside of the project area is preservation, in the form of avoidance and protection. Again we suggest that an ongoing maintenance program be established to take care of the site(s) in perpetuity ie; periodic hand clearing of invasive alien vegetation.

The introduction, methods, background research and previous archaeology sections are excellent and effectively provide a logical context for the inventory survey work.

This archaeological inventory survey is accepted as fulfilling the requirements of Hawai'i Administrative Rules (HAR) Chapter 13-276. We look forward to reviewing the Preservation Plan and we suggest that you interview Mr. Thomas Shirai a recognized lineal descendent of the Kawaihāpai area and any other knowledgeable persons that he might recommend for this plan.

Please contact Lauren Morawski (O'ahu Archaeologist) at (808) 692-8015 if you have any questions or concerns regarding this letter.



Aloha,



Nancy McMahon
Acting Archaeology Branch Chief and Kaua'i Archaeologist
State Historic Preservation Division

LM

SHPD Acceptance for the Tulchin and Hammatt (2008a) Preservation Plan

 <p>LINDA LINGLE GOVERNOR OF HAWAII</p>		<p>LAURA H. THEILEN CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT</p> <p>RUSSELL Y. TSUJI FIRST DEPUTY</p> <p>KEN C. KAWAHARA DEPUTY DIRECTOR - WATER</p> <p>AQUATIC RESOURCES BOATING AND OCEAN RECREATION BUREAU OF CONVEYANCES COMMISSION ON WATER RESOURCE MANAGEMENT CONSERVATION AND COASTAL LANDS CONSERVATION AND RESOURCES ENFORCEMENT ENGINEERING FORESTRY AND WILDLIFE HISTORIC PRESERVATION KAOHOLAWE ISLAND RESERVE COMMISSION LAND STATE PARKS</p>
<p>STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES STATE HISTORIC PRESERVATION DIVISION 601 KAMOKILA BOULEVARD, ROOM 555 KAPOLEI, HAWAII 96707</p>		
<p>September 29, 2008</p>		
<p>Todd Tulchin Cultural Surveys Hawai'i, Inc. P.O. Box 1114 Kailua Hawai'i 96734</p>	<p>LOG NO: 2008.2963 DOC NO: 0809LM07 Archaeology</p>	
<p>Dear Mr. Tulchin:</p>		
<p>SUBJECT: Chapter 6E-42 Historic Preservation Review – Revised Archaeological Preservation Plan For SIHP #'s 50-80-03-416, -4772 to -4780, -4780, -4782, -4786, and -6885 to -6888 in the Proposed 820 Acre Dillingham Ranch Development Project Mokule'ia 2, Auku`u, Kikahi, and Kawaihapai Ahupua`a, Waialua District, Island of O`ahu <u>TMK: (1) 6-8-002; 006 por.; 6-8-003 por.; 015, 019, 030, 031, 033, 035, 040</u></p>		
<p>Thank you for the opportunity to review the aforementioned revised preservation plan (Tulchin and Hammatt 2008), which we received on July 18, 2008. The plan details both the interim and long term preservation measures that will be established before construction activities commence on the subject parcel.</p>		
<p>Interim preservation measures include the identification and marking, with brightly colored flagging tape all archaeological features to be preserved. Following the marking of all identified archaeological features orange web event fencing or some similar highly visible continuous fencing will be erected around an area 15.0 meters (50 feet) in radius from the perimeter of all historic properties designated for preservation. These continuous barriers will act as heavy machinery exclusion zones during all construction activities in the vicinity and will be re-established as needed. The erection of this continuous barrier will be supervised by qualified archaeologists prior to the commencement of construction activities. No land disturbing activities or stockpiling of construction materials will be permitted within these interim buffer zones. The boundaries of the designated heavy machinery exclusion zones will be accurately located by licensed land surveyor and indicated on all construction plans. A preconstruction meeting will be held for all project construction personnel to inform them of the conditions of the preservation plan and the location and significance of each of the archaeological preserve areas. Any construction activities in the immediately vicinity of the designated preserve areas will be supervised by qualified archaeologists. Specific archaeological monitoring measures will be outlined in the Archaeological Monitoring Plan (Tulchin and Hammatt 2008 currently under review).</p>		
<p>Long term preservation methods for the archaeological preserves will include permanent buffer zones of 15.0 meters (50 feet). These permanent buffers zones will be drawn from the perimeters of all features designated within the archaeological preserves. All long-term preservation buffer zones will be demarcated with permanent land survey markers and by using permanent fencing and/or boulder barriers. Any construction activity within these buffer zones is prohibited. The style of permanent fencing will be</p>		

Mr. Tulchin
Page 2

determined in consultation with community members with familial ties to the area, in particular those who were consulted during the preparation of this preservation plan.

Access to historic properties shall be provided for those community members with familial ties to the area and those individuals and groups that desire to conduct cultural activities at these sites. Access agreements between the landowner or representatives and individuals and groups who desire access for cultural practices and or educational/research purposes will be granted with prior written consent of the landowner or representatives. Currently any requests for access can be obtained by contacting Dillingham Ranch Aina, LLC 68-540 Farrington Highway Waiialua HI 96791. After the implementation of the preservation plan access requests should be directed to the Dillingham Ranch Community Association.

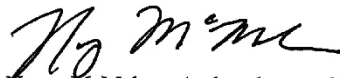
An Archaeological Monitoring Plan is currently under review by our office and pending acceptance will be carried out to insure that sites identified within the project area are not impacted during construction activities and that any subsurface cultural deposits and/or 'iwi kūpuna (human burials) receive appropriate treatment and or mitigation pursuant to compliance with procedures outlined in Hawai'i Revised Statutes (HRS) Chapter 6E-43.

Given the above information, we believe that any effect on the known historic properties by the proposed undertaking will be mitigated through adherence to the conditions of the accepted preservation plan and the archaeological monitoring plan. Via this letter the applicant is notified that the conditions in the preservation plan shall be adhered to pursuant to Section 6E-42, HRS. This includes notifying the State Historic Preservation Division, Lauren Morawski (O'ahu Archaeologist) at (808) 692-8015 or by email at Lauren.M.Morawski@hawaii.gov, that the interim protection measures are in place prior to the commencement of construction activities. The Division shall then verify in writing the County that these measures are in place prior to the commencement of any ground altering activities.

The requested revisions, SHPD Log No. 2008.0202 Doc No. 0806LM06, have been incorporated into the preservation plan. This Revised Preservation Plan is accepted as satisfying the requirements of Hawai'i Administrative Rules (HAR) Chapter 13-277.

Please contact Lauren Morawski (O'ahu Archaeologist) at (808) 692-8015 if you have any questions or concerns regarding this letter.

Aloha,





Nancy McMahon, Archaeology and Historic Preservation Manager
State Historic Preservation Division

LM

Cc: ✓ Cliff Smith-Dillingham Ranch LLC

SHPD Acceptance for the Tulchin and Hammatt (2008b) Archaeological Monitoring Plan

 <p>LINDA LINGLE GOVERNOR OF HAWAII</p>		<p>LAURA H. THIELEN CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT</p> <p>RUSSELL Y. TSUJI FIRST DEPUTY</p> <p>KEN C. KAWAHARA DEPUTY DIRECTOR - WATER</p> <p>AQUATIC RESOURCES BOATING AND OCEAN RECREATION BUREAU OF CONVEYANCES COMMISSION ON WATER RESOURCE MANAGEMENT CONSERVATION AND COASTAL LANDS CONSERVATION AND RESOURCES ENFORCEMENT ENGINEERING</p> <p>FORESTRY AND WILDLIFE HISTORIC PRESERVATION KAHOLAWE ISLAND RESERVE COMMISSION LAND STATE PARKS</p>
<p>STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES STATE HISTORIC PRESERVATION DIVISION 601 KAMOKILA BOULEVARD, ROOM 555 KAPOLEI, HAWAII 96707</p>		
<p>October 30, 2008</p>		
<p>Todd Tulchin Cultural Surveys Hawai'i, Inc. P.O. Box 1114 Kailua Hawai'i 96734</p>	<p>LOG NO: 2008.4774 DOC NO: 0810LM42 Archaeology</p>	
<p>Dear Mr. Tulchin:</p>		
<p>SUBJECT: Chapter 6E-42 Historic Preservation Review – Revised-Archaeological Monitoring Plan for the 820 Acre Dillingham Ranch Development Project; Mokule'ia 2, Auku'u, Kikahi and Kawaihāpai Ahupua'a, Waialua District, Island of O'ahu TMK: (1) 6-8-002:006 por.; 6-8-003:006 por., 015, 019, 030, 031, 033, 035 and 040</p>		
<p>Thank you for the opportunity to review the aforementioned revised archaeological monitoring plan (Tulchin and Hammatt 2008), which we received on October 27, 2008. The monitoring plan details the program of archaeological monitoring to be conducted during ranch improvement projects and initial subdivision infrastructure construction activities undertaken by Dillingham Ranch Aina LLC. Planned land-disturbing activities include: grubbing, grading and excavations associated with ranch drainage improvements; grubbing and grading associated with subdivision road construction; grubbing and grading associated with water well, water tank and access road construction; excavations for subsurface utilities; and rockfall remediation work, including grubbing and grading associated with access road construction, excavations for geotechnical testing, boulder removal and stabilization work, and excavations for rockfall catchment ditches and/or fencing. Subsequent construction activities within subdivision development lots by individual lot owners and are not covered by this plan. Subsequent construction activities on individual lots will be subject to permit approval by the Honolulu City and County Department of Planning and Permitting and the State Historic Preservation Division will provide comments and recommendation for individual lot owners at that time to the City and County Department of Planning and Permitting.</p>		
<p>The aforementioned plan (Tulchin and Hammatt 2008) recommends on-site monitoring of all initial grubbing and grading activities within the project area, including; subdivision road construction; water well; water tank; and access road construction; utility corridor construction; geotechnical testing; and rockfall mediation work. Grubbing, grading and excavation associated with ranch drainage improvement activities, including work in the vicinity of the old Dillingham Ranch house and maintenance of the Makaleha Stream channel will require full time on-site monitoring. Additionally full time on-site archaeological monitoring of any construction activities occurring within 30 meters (100 ft.) of designated archaeological preserve areas will occur throughout the duration of the proposed construction of the subdivision and its associated infrastructure. The remaining construction activities will be monitored on an on-call basis with weekly site visits to document the progress of construction activities and to coordinate with project contractors on upcoming and future construction activities.</p>		

Mr. Tulchin
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The archaeological monitoring program implemented under the plan includes provisions that ensure that historic properties previously identified within the project area, SIHP 50-80-03-416, -4772 to -4780, -4782, -4786 and -6885 to 6888, are not adversely affected by construction activities. Additionally the program of archaeological monitoring will ensure the proper documentation of any additional historic properties identified during construction activities. Also if `iwi kūpuna (human remains) are identified during the program of archaeological monitoring compliance with procedures outlined in Hawai'i Revised Statutes (HRS) Chapter 6E-43 will be followed.

We accept this archaeological monitoring plan as fulfilling the requirements of Hawai'i Administrative Rules (HAR) Chapter 13-279. Please submit a copy of this acceptance letter and an electronic (pdf) copy of the report on a CD to the Kapolei SHPD office.

Please contact Lauren Morawski (O'ahu Archaeologist) at (808) 692-8015 if you have any questions or concerns regarding this letter.



Aloha,



Nancy McMahon, Archaeology and Historic Preservation Manager
State Historic Preservation Division

LM

SHPD Acceptance for the Lauer and Rieth (2015) Archaeological Inventory Survey

 <p>DAVID Y. IGE GOVERNOR OF HAWAII</p>		<p>SUZANNE D. CASE CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT</p> <p>KEKOA KALUHIWA FIRST DEPUTY</p> <p>W. ROY HARDY ACTING DEPUTY DIRECTOR - WATER</p> <p>AQUATIC RESOURCES BOATING AND OCEAN RECREATION BUREAU OF CONVEYANCES COMMISSION ON WATER RESOURCE MANAGEMENT CONSERVATION AND COASTAL LANDS CONSERVATION AND RESOURCES ENFORCEMENT ENGINEERING FORESTRY AND WILDLIFE HISTORIC PRESERVATION KAHOOLAWE ISLAND RESERVE COMMISSION LAND STATE PARKS</p>
<p>STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES</p> <p>STATE HISTORIC PRESERVATION DIVISION KAKUHIHEWA BUILDING 601 KAMOKILA BLVD, STE 555 KAPOLEI, HAWAII 96707</p>		
<p>July 17, 2015</p>		
<p>Mr. George I. Atta, FAICP, Director Department of Planning and Permitting City and County of Honolulu</p>		
<p>Mr. Clifford R. Smith, Sr. Vice President Kennedy Wilson Commercial Investment Group 9701 Wilshire Boulevard, Suite 700 Beverly Hills, CA 90212</p>	<p>Log No. 2014.02945 Doc. No. 1507SL07 Archaeology</p>	
<p>Dear Mr. Smith:</p>		
<p>SUBJECT: Chapter 6E-42 Historic Preservation Review – Archaeological Inventory Survey of the Mauka Lands, Dillingham Ranch Agricultural Subdivision Kawaihāpai, Kīkahe, Aukū'u, and Mokulē'ia 2 Ahupua'a, Waialua District, Island of O'ahu TMK: (1) 6-8-002:006 por., 6-8-003:005 por., 006 por.</p>		
<p>Thank you for the opportunity to review the draft report titled <i>Archaeological Inventory Survey of the Mauka Lands, Dillingham Ranch Agricultural Subdivision, Kawaihāpai, Kīkahe, Aukū'u, and Mokulē'ia 2 Ahupua'a, Waialua District, O'ahu, Hawai'i, Tax Map Key (1) 6-8-002:006 (portion), 6-8-003:005 (portion), 006 (portion)</i>. We received the initial draft (Lauer and Rieth, June 2014) on June 25, 2014, and the revised draft (Lauer and Rieth, July 2015) via email on July 15, 2015.</p>		
<p>Related reports and plans reviewed and accepted for portions of the Dillingham Ranch Agricultural Subdivision property are summarized below:</p>		
<p>1987 - Reconnaissance survey by horseback. Sites identified but not assigned site numbers [no information on SHPD review located];</p>		
<p>1992 - AIS for 840-acre portion [783 acres (1992a) and 55 acres (1992b)], TMK: (1) 6-8-002:006 por., 015, 019, 021, 030, 031, 033, 034, 035, 040 (Drolet and Schilz 1992 [a,b]), accepted in 1992 (Log No. 5155, Doc. No. 0682t);</p>		
<p>2007 - AIS for 75-acre portion, TMK: (1) 6-8-002:006 por., 6-8-003:006 por. (Tulchin and Hammatt 2007), accepted December 21, 2007 (Log No. 2007.2421, Doc. No. 0712LM03);</p>		
<p>2008 - PP for SIHP #s 50-80-03-416, 4772 to 4780, 4782, 4786 and 6885 to 6888, TMK: (1) 6-8-002:006 por., 6-8-003:006 por., 015, 019, 030, 031, 033, 035, 040 (Tulchin and Hammatt 2008), accepted on September 29, 2008 (Log No. 2008.2963, Doc. No. 0809LM07); and</p>		
<p>2008 - AMP for 820-acre portion, TMK: (1) 6-8-002:006 por., 6-8-003:006 por., 015, 019, 030, 031, 033, 035, 040 (Tulchin and Hammatt 2008), accepted October 30, 2008 (Log No. 2008.4774, Doc. No. 0810LM42)</p>		

Mr. Smith
July 15, 2015
Page 2

International Archaeology, LLC (IA) completed an archaeological inventory survey (AIS) of approximately 85.3 acres for the landowner, Dillingham Ranch Aina, LLC. The landowner initiated the project in support of their proposed Dillingham Ranch Agricultural Subdivision (Subdivision Application No. 2014/SUB-149). The project acreage consists of three areas that will largely be used for pasturage but also residential development—an eastern parcel (30.1 acres), a central parcel (38.2 acres), and a western parcel (17 acres). The roughly 400-acre portion immediately south of the eastern survey parcel will continue to be used to graze cattle, and will not be subject to development.

Earlier archaeological inventory survey (AIS) studies were completed for portions of the subdivision area (Drolet and Schilz 1992a, 1992b; Tulchin and Hammatt 2007). The current AIS fieldwork included a pedestrian survey involving transects spaced 5-10 m apart, and excavation of three shovel test pits at two features. Sites and features were recorded using a Global Positioning System (GPS) unit, tape-and-compass mapping, photography, and detailed descriptions.

One archaeological site and one cultural property were recorded. The archaeological site (Site 50-80-03-7653) consists of four discontinuous historical ranching walls. In places, the dry-stacked stone walls incorporate large colluvial boulders and bedrock exposures. Wall segments either parallel the slope contours (generally east-west) or run cross contour (generally north-south). Slope erosion and collapse has affected numerous portions of these walls. The remaining segments are consistent with the extensive 19th/early 20th century ranching infrastructure in this area. These walls, and the components of previously recorded Site 50-80-03-6884 (walls recorded by Tulchin and Hammatt 2007), likely once formed an integrated enclosure/exclosure system for the ranch. Two unmodified fresh water seeps (Site 50-80-03-7793) were noted within the western survey parcel. They are located along the colluvial slopes, are in the general location of Site 192, "Hidden Waters" springs, recorded by McAllister (1933), and are considered a significant cultural property by some community members.

Site 50-80-03-7653 is assessed as significant per Hawaii Administrative Rules (HAR) §13-284-6 under Criterion d and is evaluated as eligible for listing on the Hawai'i Register of Historic Places per HAR §13-198-8 under Criterion D. Specifically, the distribution and characteristics of the various historical walls provide information about ranching activities and land divisions. The site features have been recorded in detail and no further work is recommended prior to the initiation of development activities. The site is recommended for preservation.

Site 50-80-03-7793 is assessed as significant per HAR §13-284-6 under Criterion e and is evaluated as eligible for listing on the Hawai'i Register of Historic Places per HAR §13-198-8 under Criterion D. Although the springs noted during the survey are not culturally modified features, their potential correlation with the "Hidden Waters" recorded in oral history and by McAllister (1933) and their importance to certain native Hawaiian community members warrants this evaluation. The site will be preserved.

In addition, the report indicates that if future development is considered for any previously un-surveyed portions of the ranch (e.g., the southern extension of Lots 90 and 91), the SHPD must be consulted for potential historic properties review requirements (e.g., archaeological inventory survey) prior to initiating development in these areas.

The AIS report adequately describes the project area, environment, cultural and historical background, previous investigations, anticipated findings, research objectives, field and laboratory methods, cultural consultation, and findings. SHPD concurs with the site significance assessments and mitigation recommendations for the current project area, and the stipulation that SHPD will be consulted regarding historic properties review requirements prior to initiating any future development in un-surveyed areas.

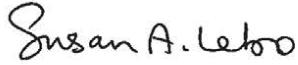
The report meets the standards set forth in HAR §13-276-5. It is accepted by SHPD. Please send one hardcopy of the document, clearly marked **FINAL**, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library.

SHPD looks forward to receiving for review a preservation plan for Sites 50-80-03-7653 and 50-80-03-7793 that meets the requirements specified in HAR §13-277.

Please contact me at Susan.A.Lebo@hawaii.gov or at (808) 692-8019 if you have any questions or concerns regarding archaeological resources or this letter.

Aloha,

Mr. Smith
July 15, 2015
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Susan A. Lebo, PhD
Archaeology Branch Chief

cc: Timothy Rieth, International Archaeology, LLC (trieth@iarii.org)

Appendix B Tulchin and Hammatt 2008a Preservation Measures

Portions of Settlement Cluster 2 (SIHP #s 50-80-03-4778 to 50-80-03-4780), Settlement Cluster 3 (SIHP # 50-80-03-4782), and SIHP # 50-80-03-416 extend outside of the Dillingham Ranch Property [see Figure 20, Figure 47, and Figure 52]. Preservation measures for these historic properties will only be carried out on the portions of the designated archaeological preserve areas within the Dillingham Ranch property. The portions of the archaeological preserve areas located on lands that are not owned by Dillingham Ranch Aina, LLC are not under the jurisdiction of this preservation plan. Preservation measures for the portions of the archaeological preserve areas located outside of the Dillingham Ranch property should be addressed as a requirement of the Hawai'i Revised Statutes (HRS) Chapter 6E historic preservation review prior to any proposed development within those independently owned parcels.

7.1.1 Interim Protection Measures

Prior to any land disturbing activities in the vicinity of any historic properties designated for preservation, archaeologists will identify and clearly mark with bright colored flagging tape all archaeological features to be preserved. Due to heavy vegetation on and around the features, some vegetation clearance will be necessary to locate and identify each feature. This initial vegetation clearing will be conducted by archaeologists by hand or with hand-held tools.

Following the identification of each of the archaeological features, orange web event fencing, or some similar highly visible continuous fencing, will be erected around an area 15 m (50 ft.) in radius from the perimeter of all historic properties designated for preservation. The continuous barriers will act as heavy machinery exclusion zones during all construction activities. The continuous barriers are to remain in place for the duration of construction activities in the vicinity and are to be re-established as needed.

In the cases of historic properties preserved together as Settlement Clusters 1-3, the continuous barrier will surround the entire settlement cluster, with no heavy machinery activity allowed within the overall settlement cluster boundary. One exception is with Settlement Cluster 1 (SIHP #s 50-80-03-4772 to 50-80-03-4777), where it has been determined that a breach in the SIHP # 50-80-03-4777 Feature A *ahupua'a* boundary wall will be allowed for the construction of a new road right-of-way. The road right-of-way will generally run east-west across the northern portion of Settlement Cluster 1, between SIHP # 50-80-03-4772 and SIHP # 50-80-03-4773. In this area, fencing will be erected around an area 15 m (50 ft) in radius from the perimeter of SIHP # 50-80-03-4772 and SIHP # 50-80-03-4773, with construction allowed between the fenced areas. The construction of the road right-of-way through Settlement Cluster 1, including the breaching of SIHP # 50-80-03-4777 Feature A wall will be supervised by an archaeologist. Archaeological monitoring of the wall breach will include detailed cross-section diagrams of the wall construction, as well as documentation of any artifacts or features that may be identified during the breaching activities. Specific archaeological monitoring provisions are detailed in the companion archaeological monitoring plan (Tulchin and Hammatt 2008) prepared for the Dillingham Ranch development project. The archaeological monitoring plan was written to fulfill the requirements

of Hawai'i Administrative Rules Chapter 13-279 and must be reviewed and approved by the State Historic Preservation Division (SHPD) prior to land disturbing activities in the vicinity of any historic properties designated for preservation.

As previously discussed, portions of Settlement Cluster 2 (SIHP #s 50-80-03-4778 to 50-80-03-4780), Settlement Cluster 3 (SIHP # 50-80-03-4782), and SIHP # 50-80-03-416 extend outside of the Dillingham Ranch Property. For these historic properties, the continuous fencing will encompass the designated archaeological preserve areas up to the Dillingham Ranch property boundary. The property line in the vicinity of the designated archaeological preserve areas will also be clearly demarcated by a licensed land surveyor with highly visible fencing or flagging tape to prevent encroachment of construction activity into neighboring parcels and possible damage to historic properties designated for preservation in those neighboring parcels.

The continuous fencing barrier will be erected under the supervision of archaeologists prior to any construction work in the vicinity. No land disturbing activities or stockpiling of construction materials will be allowed within these interim protection areas. The boundaries of the designated heavy machinery exclusion zones will be accurately located by a licensed land surveyor and indicated on all construction plans. A preconstruction meeting with the project construction personnel will be held to make them aware of the location and significance of each of the archaeological preserve areas. The prime contractor will be responsible for informing all sub-contractors and workers under his direction regarding the importance of avoiding the archaeological preserve areas. Any construction activity in the immediate vicinity of the designated interim protected areas will be carried out with archaeologist supervision. As previously discussed, specific archaeological monitoring provisions are detailed in the companion archaeological monitoring plan (Tulchin and Hammatt 2008) prepared for the Dillingham Ranch development project, that must be reviewed and approved by the State Historic Preservation Division (SHPD) prior to land disturbing activities in the vicinity of any historic properties designated for preservation.

7.1.2 Long-Term Preservation Measures

7.1.2.1 Long-Term Buffer Zone

The long-term buffer zones for historic properties addressed in this preservation plan include an area extending a minimum of 15 m (50 ft.) in radius from the perimeter of all features of the designated historic properties. In the cases of historic properties preserved together as Settlement Clusters 1-3, the buffer zone will encompass the entire settlement cluster with a minimum distance of 15 m (50 ft) from any historic property within the settlement cluster. The boundaries of the designated archaeological preserve areas, including 15 m (50 ft.) buffer zones, are indicated on the following figures: Settlement Cluster 1 (SIHP #s 50-80-03-4772 to 50-80-03-4777); Settlement Cluster 2 (SIHP #s 50-80-03-4778 to 50-80-03-4780) and SIHP # 50-80-03-4786; Settlement Cluster 3 (SIHP # 50-80-03-4782) (see Figure 47); SIHP # 50-80-03-416; SIHP # 50-80-03-6885; and SIHP #s 50-80-03-6886, 50-80-03-6887, and 50-80-03-6888.

As previously discussed, the construction of a new road corridor will be allowed to breach the SIHP # 50-80-03-4777 Feature A *ahupua'a* boundary wall and run roughly east-west through the northern portion of Settlement Cluster 1. In this area, the buffer zone will extend to the boundary of the road right-of-way, with a minimum distance of 15 m (50 ft) from SIHP # 50-80-03-4772 and SIHP # 50-80-03-4773.

7.1.2.2 Demarcation of Buffer Zone

The boundaries of the long-term buffer zones will be demarcated with permanent land survey markers and by using permanent fencing and/or boulder barriers. Any construction activity within these buffer zones would be prohibited. The installation of permanent fencing and/or boulder barriers will be conducted under the supervision of archaeologists. Fences will be constructed with durable materials potentially including, but not limited to, chain-link, wood, or moss rock. Decorative fencing or fencing materials for animal enclosures, such as wire fencing, along the borders between agricultural subdivision lots and the archaeological preserve areas may also be used. If permanent fencing is constructed, a lockable entry gate should be incorporated to facilitate authorized access to the archaeological preserve areas. The style of permanent fencing should be determined in consultation with community members with familial ties to the vicinity of the project area, particularly those contacted and consulted with in the preparation of this preservation plan.

Permanent fencing will be constructed along the borders of the planned road right-of-way through the northern portion of Settlement Cluster 1, in the vicinity of SIHP #s 50-80-03-4772, 50-80-03-4773, and 50-80-03-4777. The permanent fencing will prevent unauthorized access to the archaeological preserve areas from the subdivision road. The long-term buffer zones around SIHP # 50-80-03-4786 and SIHP # 50-80-03-6885 will be demarcated with permanent fencing. These archaeological preserve areas will be located within planned agricultural subdivision lots and would therefore be most at-risk of inadvertent damage due to ongoing land disturbing activities associated with agricultural endeavors.

If ranching activities are to occur within the subdivision lots that border archaeological preserve areas, including Settlement Cluster 1 (SIHP #s 50-80-03-4772 to 50-80-03-4777), Settlement Cluster 2 (SIHP #s 50-80-03-4778 to 50-80-03-4780), Settlement Cluster 3 (SIHP # 50-80-03-4782), and SIHP # 50-80-03-416, construction of permanent fencing will be required to prevent livestock from entering the archaeological preserve buffer zone. The fencing may be constructed along the buffer zone boundary or the property line of the subdivision lot, which exceeds the 15 m (50 ft.) radius buffer zone. Periodic grazing by a limited number of livestock will be allowed within Settlement Clusters 1-3 to control excessive growth of invasive vegetation that may present a fire hazard to the planned subdivision. Hand clearing of vegetation within these large land areas would be an impractical undertaking.

Due to the steep and rocky terrain in the vicinity of SIHP #s 50-80-03-6886, 50-80-03-6887, and 50-80-03-6888, no permanent fencing will be required to demarcate the buffer zones around these historic properties. Permanent fencing is unnecessary as these archaeological preserve areas are relatively inaccessible. Fencing along this prominent hillside would also detract from the otherwise undisturbed nature of the traditional cultural property (i.e. the legendary springs of Kawaihāpai, McAllister Site 192 "Hidden Waters") that the historic properties are associated with.

The remaining buffer zone boundaries not subject to permanent fencing will be demarcated with permanent land survey markers at the corners of the archaeological preserve areas, as well as boulder barriers. The permanent land survey markers will be located by a licensed land surveyor and indicated on all subdivision maps. Boulder barriers will consist of a continuous alignment of large boulders, with a minimum diameter of approximately 75-90 cm (2.5-3.0 ft.), spaced a maximum of approximately 90 cm (3 ft.) apart. The boulder barriers will prevent machinery from inadvertently entering the archaeological preserve areas from adjacent subdivision lots.

7.1.2.3 Vegetation Clearing Methods

If vegetation removal from the archaeological preserve areas is necessary, all vegetation clearing on and around the individual archaeological features will be done by hand or with hand-held tools. Allowable hand tools include, but are not restricted to: chain saws, machetes, weed-eaters, and clippers. Herbicides may be used prior to manual clearing in order to minimize the volume of vegetation to be removed. It should be emphasized that during vegetation clearing, care should be exercised to avoid any disturbance to the historic properties. No on-site or adjacent burning will be allowed. In general, wheeled vehicles will not be used within the buffer zone boundaries of the archaeological preserve areas.

As previously discussed, periodic grazing by a limited number of livestock will be allowed within Settlement Cluster 1 (SIHP #s 50-80-03-4772 to 50-80-03-4777), Settlement Cluster 2 (SIHP #s 50-80-03-4778 to 50-80-03-4780), and Settlement Cluster 3 (SIHP # 50-80-03-4782) to control excessive growth of invasive vegetation that may present a fire hazard to the planned subdivision. Hand clearing of vegetation within these large land areas would be an impractical undertaking.

7.1.2.4 Stabilization

As previously discussed, a portion of the SIHP # 50-80-03-4777 Feature A wall will be breached during the construction of a new road right-of-way. Following the completion of road construction, the disturbed ends of the SIHP # 50-80-03-4777 Feature A wall will be stabilized by persons experienced in traditional Hawaiian dry-stack rock wall building.

No additional stabilization measures are anticipated in the foreseeable future for any of the historic properties addressed in this preservation plan. No structures were observed to be in danger of collapse or other disturbance by human or natural causes. Any future stabilization of these sites would be restricted to repairing walls and facings in areas where rocks have been displaced, with repair work limited to returning sites to their condition as documented in June 2006. The work would be performed by persons experienced in traditional Hawaiian dry-stack rock wall building, and in consultation with SHPD.

7.1.2.5 Landscaping Plan

At present, no landscaping is planned for any of the archaeological preserve areas addressed in this preservation plan. However, if landscaping within the archaeological preserve areas is to occur in the future, the following landscaping provisions are recommended:

- a. Use of *ti*, *laua'e* fern, or other native dry-land species that require minimal irrigation and can be used as buffers between the archaeological preserve areas and adjacent subdivision lots and roadways.
- b. Minimal ground alteration during landscaping activities, in order to maintain the integrity of the historic properties.
- c. Vegetation adjacent to historic properties should not include varieties that contain large and ground disturbing root systems, large overhanging branches, or which are so overbearing as to destroy or overrun structural elements of the historic properties.

7.1.2.6 Pathways, Lighting, Other Hard-scape Structures within the Preserve Areas

At present there is no plan for specific hard-scape construction, pathways, or lighting within any of the archaeological preserve areas. No benches or lighting, drawing particular attention to the preserve areas, is indicated. Future pathways, benches and/or lighting would be allowed within the long-term buffer zones as long as they do not involve adverse impact to the integrity of the historic properties. Any future plans for hard-scape construction within the archaeological preserve areas should be made in consultation with SHPD.

7.1.2.7 Access to Historic Properties within the Archaeological Preserve Areas

Public access to historic properties within the archaeological preserve areas will be restricted to individuals or small groups for legitimate cultural practices or educational/research purposes. Access to the historic properties will also be allowed for SHPD staff to inspect the archaeological preserve areas and assure compliance with the provisions of this preservation plan. Access will be allowed only with prior written consent of the landowner or representatives. Access to the archaeological preserve areas prior to and during implementation of this preservation plan can be obtained by contacting landowner Dillingham Ranch Aina, LLC, via the following contact information:

Dillingham Ranch Aina, LLC
68-540 Farrington Highway
Waiialua, HI 96791

Future access requests should be directed to the Dillingham Ranch Community Association.

7.1.2.8 Handling of Litter

At present, historic properties within the archaeological preserve areas have not been accessible to the public and are generally free of litter. Very little future impact on historic properties within the archaeological preserve areas from litter is anticipated. The planned Dillingham Ranch agricultural subdivision will generally surround each of the archaeological preserve areas with private agricultural lots. However, portions of the Settlement Cluster 1 (SIHP #s 50-80-03-4772 to 50-80-03-4777) archaeological preserve area will be bordered by a subdivision roadway. Periodic removal of any buildup of litter within the archaeological preserve areas should be done by hand. Litter removal is the responsibility of the landowner or a future community association responsible for the maintenance of common areas within the subdivision. In addition, owners of agricultural lots adjacent to the archaeological preserve areas should be informed that dumping of agricultural green waste or any other refuse within the archaeological preserve areas is prohibited.

7.1.2.9 Approaches to Interpret and Inform the Public

At present, no informational signage is anticipated at any of the archaeological preserve areas. Any future informational signage would require the review and approval of the SHPD prior to installation. Recognized lineal and/or cultural descendents of the Mokulē'ia and Kawaihāpai areas should be consulted to ensure that any informational signage is culturally sensitive and of sufficient quality to enhance public understanding of the historic properties.

To prevent unauthorized access and possible vandalism or other disturbance to historic properties within the archaeological preserve areas, small signs may be placed along the perimeter fencing around the archaeological preserve areas, reading:

PRESERVE HAWAII'S PAST FOR THE FUTURE
PLEASE DO NOT DISTURB THESE ARCHAEOLOGICAL SITES

Damage to these Historic Sites is Punishable by Fine or Imprisonment
Under Chapter 6E-11, Hawai'i Revised Statutes

To report violations contact the State Historic Preservation Division (808) 692-8015

7.1.2.10 Future Archaeological Research

Future archaeological research within the archaeological preserve areas will be allowed only with the written approval of a research plan by SHPD and in coordination with the landowner.

7.1.2.11 Penalty

Non-compliance with the provisions and procedures of this preservation plan once accepted by SHPD may result in a directive not to proceed with construction in the project area, a denial or revocation of SHPD's written concurrence or agreement, and penalties as provided in HRS 6E-11, HAR Chapter 13-275, 13-278, 13-281, 13-282, 13-284, and other applicable laws.

Appendix C Tulchin and Hammatt 2008b

Archaeological Monitoring Provisions

In consultation with the State Historic Preservation Division (SHPD), it has been determined that an archaeological monitoring program is warranted as an historic preservation mitigation measure for the planned Dillingham Ranch development project. As previously discussed, this archaeological monitoring plan covers ranch improvement projects and initial subdivision infrastructure construction activities conducted by Dillingham Ranch Aina, LLC. Planned land-disturbing activities include: grubbing, grading, and excavations associated with ranch drainage improvements; grubbing and grading associated with subdivision road construction; grubbing and grading associated with water well, water tank, and access road construction; excavations for subsurface utilities; and rockfall mediation work, including grubbing and grading associated with access road construction, excavations for geotechnical testing, boulder removal and stabilization work, and excavations for rockfall catchment ditches and/or fencing. Subsequent construction activities within subdivision development lots by individual lot owners are not covered by this archaeological monitoring plan.

Under Hawai'i State historic preservation legislation, "Archaeological monitoring may be an identification, mitigation, or post-mitigation contingency measure. Monitoring shall entail the archaeological observation of, and possible intervention with, on-going activities which may adversely affect historic properties" (HAR Chapter 13-279-3). For this project, the proposed monitoring program will serve as both mitigation and post-mitigation measures. The planned archaeological monitoring program will ensure that historic properties previously identified within the project area and immediate vicinity that have been designated for preservation (i.e. SIHP #s 50-80-03-416, 50-80-03-4772 to 50-80-03-4780, 50-80-03-4782, 50-80-03-4786, and 50-80-03-6885 to 50-80-03-6888) are not adversely affected by planned construction activities. The locations of historic properties designated for preservation within and in the immediate vicinity of the project area are indicated on Figures 15-17. Archaeological monitoring will also ensure proper documentation should any additional historic properties be encountered during planned subdivision construction activities. Initial subdivision infrastructure construction activities may encounter surface historic properties within the project area that could have gone undocumented due to heavy vegetation cover. Land-disturbing activities also have the potential of encountering subsurface cultural deposits related to pre-contact and historic land use, as well as human remains.

This archaeological monitoring plan specifies that an archaeological monitor must be on-site during initial grubbing and grading activities within the project area, including: subdivision road construction; water well, water tank, and access road construction; utility corridor construction; geotechnical testing; and rockfall mediation work. An archaeological monitor must be on-site during grubbing, grading, and excavation associated with ranch drainage improvement activities, including work in the vicinity of the old Dillingham Ranch house and maintenance of the Makaleha Stream channel. An archaeological monitor will also be on-site during any land-disturbing activities within 30 m (100 ft.) of any designated archaeological preserve areas. The remaining construction activities will be monitored on an on-call basis, with weekly site visits to document the progress of construction activities and coordinate with project contractors on future

construction activities. Efforts must also be made to document stratigraphic profiles of open trench excavations throughout the project area.

The following discussion outlines the provisions and procedures that will govern the project's archaeological monitoring program. Hawai'i State historic preservation legislation governing archeological monitoring programs requires that each monitoring plan discuss eight specific items, in accordance with HAR Chapter 13-279-4. The monitoring provisions below address those eight requirements in terms of the archaeological monitoring for construction activities within the project area.

1. Anticipated Historic Properties:

Planned construction activities will occur in the vicinity of previously identified historic properties that have been designated for preservation (i.e. SIHP #s 50-80-03-416, 50-80-03-4772 to 50-80-03-4780, 50-80-03-4782, 50-80-03-4786, and 50-80-03-6885 to 50-80-03-6888), both within the project area and immediately outside of the project area. The project area also has the potential for undocumented surface historic properties, subsurface cultural deposits related to pre-contact and historic land use, as well as human remains.

2. Locations of Historic Properties:

The locations of previously identified historic properties within the project area and immediate vicinity are indicated on Figures 15-17. Undocumented surface historic properties and subsurface cultural deposits may be encountered throughout the project area. However, based on the results of the Drolet and Shilz (1992a; 1992b) and Tulchin and Hammatt (2007) inventory survey investigations, historic properties within and in the vicinity of the project area were observed to have a pattern of relatively dense site clustering. Therefore, additional historic properties and subsurface cultural deposits are more likely to be located in the vicinity of previously identified historic properties.

3. Fieldwork:

An archaeological monitor must be on-site during initial grubbing and grading activities within the project area, including: subdivision road construction; water well, water tank, and access road construction; utility corridor construction; geotechnical testing; and rockfall mediation work. An archaeological monitor must be on-site during grubbing, grading, and excavation associated with ranch drainage improvement activities, including work in the vicinity of the old Dillingham Ranch house and maintenance of the Makaleha Stream channel. An archaeological monitor will also be on-site during any land-disturbing activities within 30 m (100 ft.) of designated archaeological preserve areas. The remaining construction activities will be monitored on an on-call basis, with weekly site visits to document the progress of construction activities and coordinate with project contractors on future construction activities.

As detailed in the companion archaeological preservation plan for the Dillingham Ranch development project (Tulchin and Hammatt 2008), a breach in the SIHP # 50-80-03-4777 Feature A *ahupua'a* boundary wall will be allowed for the construction of a subdivision road right-of-way. The road right-of-way will generally run east-west across the northern portion of Settlement Cluster 1, between SIHP # 50-80-03-4772

and SIHP # 50-80-03-4773. In this area, fencing will be erected around an area 15 m (50 ft) in radius from the perimeter of SIHP # 50-80-03-4772 and SIHP # 50-80-03-4773, with construction allowed between the fenced areas. The construction of the road right-of-way through the northern portion of the Settlement Cluster 1 archaeological preserve area, including the breaching of SIHP # 50-80-03-4777 Feature A wall will be monitored by an archaeologist. Archaeological monitoring of the wall breach will include detailed cross-section diagrams of the wall construction, as well as documentation of any artifacts or features that may be identified during the breaching activities.

The monitoring fieldwork may include the documentation of subsurface cultural deposits (e.g. fire pits, trash pits, midden deposits, or structural remnants) and will employ current standard archaeological recording techniques. This will include drawing and recording the stratigraphy of excavation profiles where cultural features or artifacts are exposed. These exposures will be photographed, located on project area maps, and sampled. As appropriate, sampling will include the collection of representative artifacts, bulk sediment samples, and/or the on-site screening of measured volumes of feature fill to determine feature contents. In addition, photographs and representative profiles of excavations throughout the project area will be taken even if no historically-significant features are documented.

In the event that undocumented surface historic properties are encountered during project construction activities, the archaeological monitor will stop work in the vicinity of the discovery and carry out the procedures for inadvertent discoveries in accordance with HAR Chapter 13-280 and in consultation with SHPD/DLNR. Procedures would involve documentation of the historic property to assess historic property significance, and consultation with the SHPD regarding appropriate mitigation measures.

In the event that human remains are encountered during project construction activities, no further work will take place in the vicinity of the burial find, including no screening of back dirt, no cleaning and/or excavation of the burial area, and no exploratory work of any kind unless specifically requested by the SHPD. All human skeletal remains that are encountered during construction will be handled in compliance with Hawai'i Revised Statutes (HRS) Chapter 6E-43 and HAR Chapter 13-300, and in consultation with SHPD/DLNR.

At the request of concerned community members, the Kawaihāpai 'Ohana, a recognized Native Hawaiian Organization, shall be promptly notified of any cultural material, including human remains, that are encountered during project-related construction activities. The Kawaihāpai 'Ohana can be contacted via the following contact information:

Kawaihāpai 'Ohana
P.O. Box 601
Waialua, HI 96791
Email: Kawaihapai@hawaii.rr.com

4. Archaeologist's Role:

The on-site archaeologist will have the authority to stop work immediately in the area of any findings so that documentation can proceed and appropriate treatment can be determined. In addition, the archaeologist will have the authority to slow and/or suspend construction activities in order to insure that the necessary archaeological sampling and recording can take place.

5. Coordination Meeting:

Before work commences on the project, the on-site archaeologist shall hold a coordination meeting to orient the construction crew to the requirements of the archaeological monitoring program. At this meeting the monitor will emphasize his or her authority to temporarily halt construction and that all historic finds, including objects such as bottles, are the property of the landowner and may not be removed from the construction site. At this time it will be made clear that the archaeologist must be on-site during the initial grubbing and grading activities associated with the various aspects of the project's construction, and during any land-disturbing activities in the vicinity of designated archaeological preserve areas.

6. Laboratory work:

Laboratory analysis of non-burial related finds will include standard artifact and midden recording, as follows: Artifacts will be documented as to provenience, weight, length, width, type of material, and presumed function. Bone and shell midden materials will be sorted down to species, when possible, then tabulated by provenience, and presented in table form. If appropriate charcoal samples are recovered from subsurface cultural deposits, select samples would be submitted to Beta Analytic, Inc. for radiocarbon dating analysis.

7. Report Preparation:

Following the completion of initial subdivision infrastructure construction activities, an archaeological monitoring report will be prepared for submission to the SHPD. The report will address the requirements of an archaeological monitoring report, in accordance with HAR Chapter 13-279-5. The report will contain a section on stratigraphy, description of archaeological findings, monitoring methods, and results of laboratory analyses. Photographs of excavations will be included in the monitoring report even if no historically-significant sites are documented. Should burial treatment be completed as part of the monitoring effort, a summary of this treatment will be included in the monitoring report. Should human remains be identified, additional letters, memos, and/or reports may be requested by the SHPD Burial Sites Program.

8. Archiving Materials:

Any artifacts or midden recovered during the archaeological monitoring program burials will be temporarily stored at the contracted archaeologist's facilities until an appropriate curation facility is selected, in consultation with the landowner and SHPD. All burial materials, including human remains and associated burial goods, will be transferred to SHPD/DLNR for storage.