
Draft

**Archaeological Data Recovery Report for the
Queen Ka‘ahumanu Highway Widening Phase 2 Project,
Kalaoa, Kalaoa-‘O‘oma, ‘O‘oma 2, Kohanaiki, Kaloko,
Honokōhau 1–2, and Kealakehe Ahupua‘a,
North Kona District, Island of Hawai‘i
TMKs: [3] 7-3-009, 7-3-043, and 7-4-008**

VOLUME III: Data Recovery Regarding Trails

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Table of Contents

Section 1 Data Recovery Effort Regarding Trails	1
1.1 Project Background	1
1.2 Data Recovery Efforts	1
1.3 Interim (Short-Term) Protective Measures Implemented for Historic Trail Properties during Data Recovery Efforts.....	9
Section 2 Historic Property Documentation	12
2.1 SIHP # 50-10-27-00002.....	12
2.1.1 Data Recovery Efforts	13
2.1.1.1 1999 Data Recovery Efforts (Hammatt et al. 1999)	13
2.1.1.1.1 Trench 1	18
2.1.1.1.2 Trench 2	18
2.1.1.2 2015 Data Recovery Efforts	18
2.1.1.3 Interim Protective Measures Implemented.....	22
2.2 SIHP # 50-10-27-10714.....	25
2.2.1 Data Recovery Efforts	31
2.2.2 Interim Protective Measures Implemented	35
2.3 SIHP # 50-10-27-15324.....	40
2.3.1 Data Recovery Efforts	40
2.3.2 Interim Protective Measures Implemented	43
2.4 SIHP # 50-10-27-18099.....	46
2.4.1 Data Recovery Efforts	50
2.4.2 Interim Protective Measures Implemented	51
2.5 SIHP # 50-10-27-19946.....	54
2.5.1 Data Recovery Efforts	54
2.5.2 Interim Protective Measures Implemented	60
2.6 SIHP # 50-10-27-19952.....	63
2.6.1 Data Recovery Efforts	63
2.6.2 Interim Protective Measures Implemented	65
2.7 SIHP # 50-10-27-19953.....	67
2.7.1 Data Recovery Efforts	67
2.7.1.1 1999 Data Recovery Efforts (Hammatt et al. 1999)	72
2.7.1.1.1 Trench 3	72
2.7.1.1.2 Trench 4	72
2.7.1.2 2015 Data Recovery Efforts	72
2.7.2 Interim Protective Measures Implementation	73
2.8 SIHP # 50-10-27-19954.....	78
2.8.1 Data Recovery Efforts	78
2.8.2 Interim Protective Measures Implementation	81
2.9 SIHP # 50-10-27-22418.....	84
2.9.1 Data Recovery Efforts	84
2.9.2 Interim Protective Measures Implementation	87
2.10 SIHP # 50-10-27-22507.....	90
2.10.1 Data Recovery Efforts	90
2.10.2 Interim Protective Measures Implementation	93
2.11 SIHP # 50-10-27-28774.....	96
2.11.1 Data Recovery Efforts	96
2.11.2 Interim Protective Measures Implementation	99

2.12 SIHP # 50-10-27-28782.....	102
2.12.1 Data Recovery Efforts	102
2.12.2 Interim Protective Measures Implementation.....	106
2.13 SIHP # 50-10-27-28784.....	109
2.13.1 Data Recovery Efforts	109
2.13.2 Interim Protective Measures Implemented	109
2.14 SIHP # 50-10-27-28787.....	114
2.14.1 Data Recovery Efforts	114
2.14.2 Interim Protective Measures Implementation.....	117
2.15 SIHP.SIHP # 50-10-27-28791	120
2.15.1 Data Recovery Efforts	120
2.15.2 Interim Protective Measures Implementation.....	123
2.16 SIHP # 50-10-27-29272.....	126
2.16.1 Archaeological Inventory Survey Excavations (Monahan et al. 2012a)	126
2.16.2 Data Recovery Efforts	131
2.16.3 Interim Protective Measures Implementation.....	132
Section 3 References Cited	135

List of Figures

Figure 1. Portion of the 1996 Keahole Point USGS 7.5-minute series topographic quadrangle showing the locations of the data recovery trail sites within the project area	4
Figure 2. 2013 aerial photograph of North Kona showing the locations of the data recovery trail sites within the project area (Google Earth 2013)	5
Figure 3. Shows the portion of SIHP # -29272 identified within the current project area in relation to the portion identified by Rechtman and Clark (2012) in an adjacent project area	10
Figure 4. Shows data recovery trail segments south of SIHP # -29272 in relation to segments identified during previous studies	11
Figure 5. Photograph of SIHP # -00002, showing the southeastern portion of the trail within the project area, view to northwest	14
Figure 6. Photograph of SIHP # -00002, showing the central portion of the trail within the project area, view to northwest	14
Figure 7. Photograph of SIHP # -00002, showing the northwestern portion of the trail within the project area, view to northwest; a service road intersecting with SIHP # -00002 is visible on the left	15
Figure 8. Photograph of SIHP # -00002, showing curbed portion of the trail beginning just outside the project area, view to northwest.....	15
Figure 9. Plan view map of SIHP # -00002; note the area of curbing at the northwestern portion of the trail is just outside the project area	16
Figure 10. Plan view of trench locations excavated during the 1999 data recovery efforts associated with the current project see (Hammatt et al. 1999:8)	17
Figure 11. Cross-section view of Trench 1 excavated at the Māmalahoa Trail (SIHP # -00002), view to northwest.....	19
Figure 12. Profile photograph of Trench 1 excavated at the Māmalahoa Trail (SIHP # -00002), view to northwest.....	19
Figure 13. Cross-section view of Trench 2 excavated at the Māmalahoa Trail (SIHP # -00002), view to northwest.....	20
Figure 14. Profile photograph of Trench 2 excavated at the Māmalahoa Trail (SIHP # -00002), view to northwest.....	20
Figure 15. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -00002, view to west	23
Figure 16. Preservation buffers for SIHP # -00002 (Shideler et al. 2012)	24
Figure 17. Photograph of SIHP # -10714 Feature A, view to southwest.....	26
Figure 18. Close-up of color variation and wear pattern on pāhoehoe surface of SIHP # -10741 Feature A, view to west	26
Figure 19. Plan view map of SIHP # -10714 Feature A	27
Figure 20. Plan view map of SIHP # -10714 Feature B	28
Figure 21. Photograph of SIHP # -10741 Feature B, view to east.....	29
Figure 22. Stacked boulders alongside SIHP # -10714 Feature B, view to north	29
Figure 23. Plan view of two stacked boulders along SIHP # -10714 Feature B.....	30
Figure 24. Photograph of SIHP # -10741 Feature C, view to southwest.....	32

Figure 25. Plan view map of SIHP # -10741 Feature C33

Figure 26. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -10714 Features A–C36

Figure 27. Preservation buffers for SIHP # -10714 Feature A (Shideler et al. 2012)37

Figure 28. Preservation buffers for SIHP # -10714 Feature B (Shideler et al. 2012).....38

Figure 29. Preservation buffers for SIHP # -10714 Feature C (Shideler et al. 2012).....39

Figure 30. Detail of a portion of SIHP # -15324, view to east (note stepping stone under the north arrow).....41

Figure 31. Plan view map of SIHP # -1532442

Figure 32. Preservation buffers for SIHP # -1532444

Figure 33. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -1532445

Figure 34. Photograph of SIHP # -18099 Section 1 within the project area, view to east47

Figure 35. Photograph of SIHP # -18099 Section 2 within the project area, view to east47

Figure 36. Photograph of SIHP # -18099 Section 3 within the project area, view to east48

Figure 37. Plan view map of three sections of the portion of SIHP # -18099 located within the current project area48

Figure 38. Plan view map of SIHP # -1809949

Figure 39. Preservation buffers for SIHP # -1809952

Figure 40. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -1809953

Figure 41. Photograph of SIHP # -19946, view to west55

Figure 42. Photograph of SIHP # -19446, view to east55

Figure 43. Photograph of the cairn at the makai portion of SIHP # -19446, view to northeast ...56

Figure 44. Plan view map of SIHP # -19446.....57

Figure 45. The donkey corral at Kohanaiki (Kohanaiki 2017).....59

Figure 46. Preservation buffers for SIHP # -1994661

Figure 47. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -1994662

Figure 48. Photograph of SIHP # -19952, view to west64

Figure 49. Plan view map of SIHP # -1995264

Figure 50. Preservation buffers for SIHP # -19952 (Shideler et al. 2012)66

Figure 51. Photograph of the eastern portion of SIHP # -19953, at the intersection with the Māmalahoa Trail (SIHP # -00002), view to east68

Figure 52. Photograph showing the eastern terminus of SIHP # -19953, view to east69

Figure 53. Photograph of the western portion of SIHP # -19953 showing the upright, waterworn cobble just outside (makai of) the project area (in the lower right corner), view to east ..69

Figure 54. Photograph of western portion of SIHP # -19953 in project area, view to west.....70

Figure 55. Plan view map of SIHP # -1995371

Figure 56. Cross-section view of Trench 3 excavated at SIHP # -19953, view to southwest74

Figure 57. Profile photograph of Trench 3 excavated at SIHP # -19953, view to southwest.....74

Figure 58. Cross-section view of Trench 4 excavated at SIHP # -19953, view to northeast75

Figure 59. Profile photograph of Trench 4 excavated at SIHP # -19953, view to northeast.....75

Figure 60. Preservation buffers for SIHP # -1995376

Figure 61. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -19953, view to west77

Figure 62. Photograph of SIHP # -19954, showing pāhoehoe stepping stones, view to northeast79

Figure 63. Detail of a portion of SIHP # -19954 showing stepping stones, view to southwest79

Figure 64. Plan view map of SIHP # -19954 showing trail segment within the project area and close-up inset of stepping stones.....80

Figure 65. Preservation buffers for SIHP # -1995482

Figure 66. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -1995483

Figure 67. Photograph of SIHP # -22418 showing the trail traversing a pāhoehoe outcrop, visible as subtle wear pattern and color variation, view to east85

Figure 68. Plan view map of SIHP # -2241886

Figure 69. Preservation buffers for SIHP # -2241888

Figure 70. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -2241889

Figure 71. Photograph of SIHP # -22507 showing the trail traversing a pāhoehoe outcrop, visible as subtle wear pattern and color variation, view to west91

Figure 72. Plan view map of SIHP # -2250792

Figure 73. Preservation buffers for SIHP # -2250794

Figure 74. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -2250795

Figure 75. Photograph of SIHP # -28774 showing the trail traversing a pāhoehoe outcrop, visible as subtle wear pattern and color variation, view to east97

Figure 76. Close-up of SIHP # -28774, showing subtle wear pattern and color variation, view to east97

Figure 77. Preservation buffers for SIHP # -28774100

Figure 78. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -28774101

Figure 79. Photograph of the central portion of SIHP # -28782 showing an ‘a‘ā ridge on the right, view to east.....103

Figure 80. Plan view map of SIHP # -28782104

Figure 81. Detail of coral concentration observed along the edge of SIHP # -28782, view to southeast.....104

Figure 82. Plan view map of a portion of SIHP # -28782 showing the coral concentration observed along the edge of the trail105

Figure 83. Preservation buffers for SIHP # -28782107

Figure 84. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -28782, view to west108

Figure 85. Photograph of SIHP # -28784 showing the trail just outside the boundary of the project area, with pāhoehoe slabs, view to southwest110

Figure 86. Photograph of vehicular road at the eastern terminus of SIHP # -28784, view to east111

Figure 87. Plan view map of SIHP # -28784111

Figure 88. Preservation buffers for SIHP # -28784 (Shideler et al. 2012)112

Figure 89. Photograph showing the protective fence demarcation of the interim buffer zone for SIHP # -28784, view to west113

Figure 90. Photograph of SIHP # -28787, view to northwest.....115

Figure 91. Plan view map of SIHP # -28787116

Figure 92. Preservation buffers for SIHP # -28787118

Figure 93. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -28787, view to west119

Figure 94. Photograph of SIHP # -28791, view to west121

Figure 95. Plan view map of SIHP # -28791122

Figure 96. Preservation buffers for SIHP # -28791 (Shideler et al. 2012)124

Figure 97. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -28791125

Figure 98. Plan view map of SIHP # -29272 Feature A127

Figure 99. Level area of cobbles with coral (SIHP # - 29272 Feature A), view to northwest128

Figure 100. Section of trail (SIHP # -29272 Feature B), identified by Isaac Harp, leading to Feature A, view to west128

Figure 101. Post-excavation overview of TU-1 at SIHP # -29272 Feature A, view to east.....129

Figure 102. Post-excavation overview of TU-2 at SIHP # -29272 Feature A, view to southeast129

Figure 103. Profile of TU-2 west wall at SIHP # -29272 Feature A130

Figure 104. Post-excavation overview of TU-3, view to east.....130

Figure 105. Preservation buffers for SIHP # -29272133

Figure 106. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -29272.....134

List of Tables

Table 1. Summary of mitigation for historic trail properties addressed in the APMP (Hammatt and Shideler 2014; arranged numerically) for which project effect has changed.....2

Table 2. Historic trail properties in the project area (arranged from south to north; adapted from Monahan et al. 2012a).....6

Section 1 Data Recovery Effort Regarding Trails

1.1 Project Background

On 15 October 2012, the archaeological data recovery plan (ADRP) for the project (Shideler et al. 2012) was accepted by the SHPD (LOG NO.: 2012.3052, DOC. NO.: 1210MV25); subsequently, on 9 April 2014 an archaeological preservation plan and mitigation plan (APMP; Hammatt and Shideler 2014) addressing a redesign of the project was accepted by the SHPD (LOG NO.: 2014.1379, DOC. NO.: 1404MV06; see Appendix A in Volume I). CSH completed the data recovery fieldwork for the project and submitted an end of fieldwork letter to SHPD on 25 June 2015. The mitigated historic properties were discovered during an AIS (Monahan et al. 2012a) of an approximately 190-acre survey area related to a proposed highway widening project. Project development included grading and filling portions of the highway right-of-way (ROW). Most of the major ground disturbance was proposed for the *makai* (seaward) side of the existing highway.

1.2 Data Recovery Efforts

The treatment of SIHP # 50-10-27-00002 (Māmalahoa Trail) was codified in the original 1999 memorandum of agreement (MOA), in which a combination of preservation and data recovery (for portions that could not be saved) was recommended by Walsh and Hammatt (1995). Data recovery work at SIHP # -00002 and intersecting trail SIHP # -19953 was conducted by CSH in 1999 (Hammatt et al. 1999) and included the excavation of four trenches (two at each trail), as well as photo documentation. No data recovery fieldwork was performed at trails during the subsequent 2011 and 2015 data recovery field seasons.

During a revision of the Shideler et al. (2012) ADRP (see Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the project *mauka* (inland) to secure the support of the Advisory Council on Historic Preservation (ACHP). As a result, ten trails (SIHP #s -15324, -18099, -19946, -19953, -19954, -22418, -22507, -28774, -28782, and -29272) that were going to be partially destroyed would no longer be impacted by the project (Table 1). Based on consultation with the NPS, all *mauka-makai* trails identified in the project area extend *makai* beyond the project area limits, and most can also be traced *mauka* outside the project area. Physical survey of the full extent of these trails outside the project area boundary (i.e., the State ROW) was beyond the scope of work for the current investigation; however, in response to NPS concerns and review comments, CSH recommended a more comprehensive treatment of trails. Therefore, data recovery (following the Shideler et al. 2012 ADRP and the Hammatt and Shideler 2014 APMP) for 16 historic trail properties (SIHP #s -00002, -10714, -15324, -18099, -19946, -19952 through -19954, -22418, -22507, -28774, -28782, -28784, -28787, -28791, and -29272) consisted of a comprehensive archival analysis that places the project area trail segments in a context that accurately reflects their cultural and historical significance. The 16 historic trail properties are depicted on Figure 1 and Figure 2 and summarized in Table 2. For data recovery results on the non-trail historic properties, see Volume II of this report.

Archival research involved the analysis of all relevant historic Registered Map references and other documents, which could be used as a baseline for a systematic analysis to place the project area trail segments in a wider context to more accurately reflect their cultural and historical

Table 1. Summary of mitigation for historic trail properties addressed in the APMP (Hammatt and Shideler 2014; arranged numerically) for which project effect has changed

SIHP # ¹	Formal Type	Original Effect*	Present Project Effect	Initial Agreed Upon Mitigation*	Present Agreed Upon Mitigation
15324	Trail (<i>mauka-makai</i>)	Partial destruction	No impact	Data recovery (archival research) and partial preservation	Data recovery (archival research) and preservation
18099	Trail to Honokōhau (<i>mauka-makai</i>)	Partial destruction	No impact	Data recovery (archival research) and partial preservation	Data recovery (archival research) and preservation
19946	Trail (<i>mauka-makai</i>)	Partial destruction	No impact	Avoidance during construction (as may be possible)	Data recovery (archival research) and preservation
19953	Trail (<i>mauka-makai</i>)	Partial destruction	No impact	Data recovery (archival research) and partial preservation	Data recovery (archival research) and preservation
19954	Trail (<i>mauka-makai</i>)	Partial destruction	No impact	Data recovery (archival research) and partial preservation	Data recovery (archival research) and preservation
22418	Trail (<i>mauka-makai</i>)	Partial destruction	No impact	Data recovery (archival research)	Data recovery (archival research) and preservation
22507	Trail (<i>mauka-makai</i>)	Partial destruction	No impact	Data recovery (archival research) and partial preservation	Data recovery (archival research) and preservation
28774	Trail (<i>mauka-makai</i>)	Partial destruction	No impact	Data recovery (archival research) and partial preservation	Data recovery (archival research) and preservation

SIHP # ¹	Formal Type	Original Effect*	Present Project Effect	Initial Agreed Upon Mitigation*	Present Agreed Upon Mitigation
28782	Trail (<i>mauka-makai</i>)	Partial destruction	No impact	Data recovery (archival research) and partial preservation	Data recovery (archival research) and preservation
29272	Level area in 'a 'ā with trail (<i>mauka- makai</i>)	Feature A (level area) will be destroyed by construction; Feature B (trail) will not be physically impacted by construction	No impact	Feature A: data recovery (excavation); Feature B: data recovery (archival research) and preservation	Feature A: interim preservation and commitment to mitigation prior to land disturbance in the vicinity; Feature B: data recovery (archival research) and preservation

¹ These State Inventory of Historic Places (SIHP) numbers begin with "50-10-27-"

*From Shideler et al. (2012) *Archaeological Data Recovery and Preservation Plan . . .*, Table 3, pp. 26–28 (accepted in a SHPD §6E-8 NHPA Section 106 Review of 25 October 2012 [LOG NO.: 2012.3052, DOC. NO.: 1210MV25])

+ Two historic properties (SIHP #s -29339 and -29340) were initially recommended for data recovery (Shideler et al. 2012:26). The SHPD review of 28 October 2013 asserts: "these sites should be treated in a similar fashion as the other sites whose treatment recommendations have changed to preservation. This change would not rule out the possibility of Data Recovery in the near future."

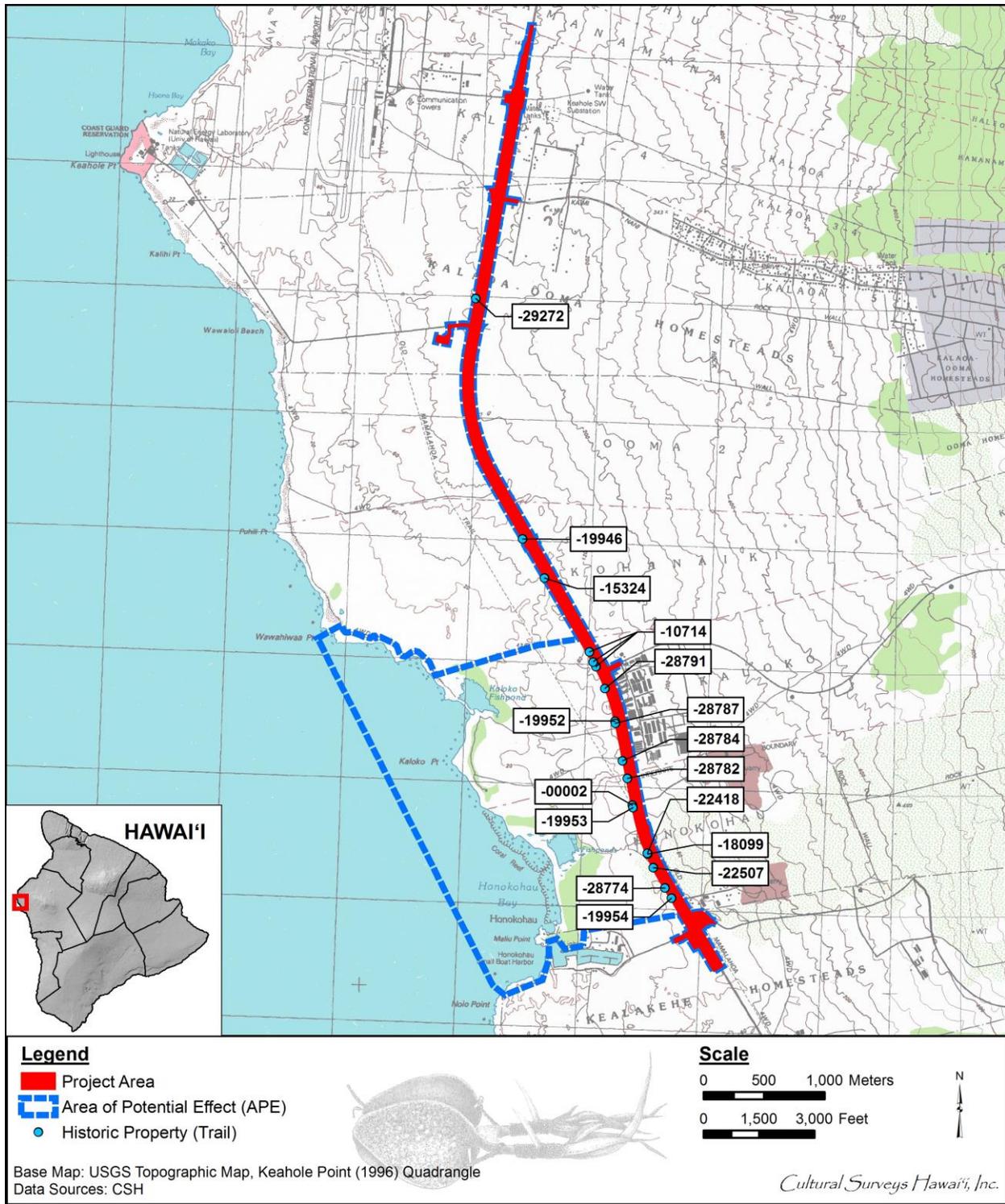


Figure 1. Portion of the 1996 Keahole Point USGS 7.5-minute series topographic quadrangle showing the locations of the data recovery trail sites within the project area

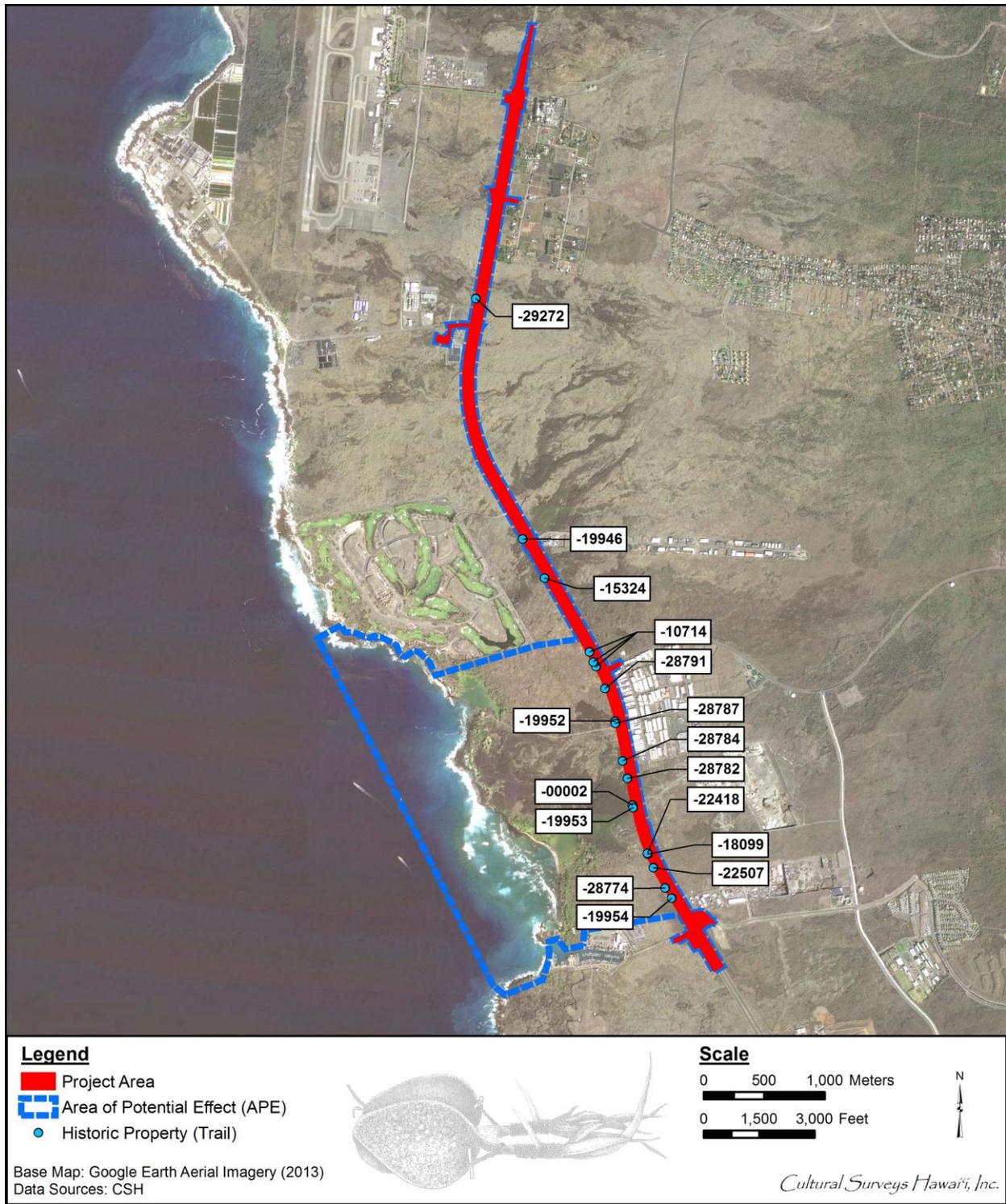


Figure 2. 2013 aerial photograph of North Kona showing the locations of the data recovery trail sites within the project area (Google Earth 2013)

Table 2. Historic trail properties in the project area (arranged from south to north; adapted from Monahan et al. 2012a)

SIHP # ¹	Temp. Site # ²	Primary Source(s)	Type	No. of Features	Age	Function
19954	15	Walsh and Hammatt 1995	Trail (<i>mauka-makai</i>)	0	Indeterminate (possibly pre- or early post-Contact)	Transportation
28774	Trail 1	Monahan et al. (2012a)	Trail (<i>mauka-makai</i>)	0	Historic (possibly also pre-Contact)	Transportation
22507	Trail 2 (Monahan et al. 2012a); 157-16 (Nelson and Gmirkin 2001)	Nelson and Gmirkin 2001; Monahan et al. 2012a	Trail (<i>mauka-makai</i>)	0	Indeterminate (possibly pre- or early post-Contact)	Transportation
18099	Trail 4 (Monahan et al. 2012a); 157-6 (Nelson and Gmirkin 2001)	Nelson and Gmirkin 2001; Monahan et al. 2012a; Robins et al. 2000 (outside PA); Yucha and McDermott 2008 (outside PA)	Trail (<i>mauka-makai</i>)	0	Pre- to post-Contact	Transportation
22418	Trail 3 (Monahan et al. 2012a); 157-6A (Nelson and Gmirkin 2001)	Nelson and Gmirkin 2001; Monahan et al. 2012a	Trail (<i>mauka-makai</i>)	0	Indeterminate (possibly pre- or early post-Contact)	Transportation
00002	—	Numerous (e.g., Cordy et al. 1991)	Māmalahoa Trail (cross slope, <i>ala loa</i> type)	0	Historic (nineteenth- twentieth century)	Transportation
19953	14	Walsh and Hammatt 1995	Trail (<i>mauka-makai</i>)	0	Pre- or early post- Contact	Transportation

SIHP # ¹	Temp. Site # ²	Primary Source(s)	Type	No. of Features	Age	Function
28782	Trail 6	Monahan et al. 2012a	Trail (<i>mauka-makai</i>)	0	Indeterminate (possibly pre- or early post-Contact)	Transportation
28784	Trail 7	Monahan et al. 2012a	Trail (<i>mauka-makai</i>)	0	Indeterminate (possibly pre- or early post-Contact)	Transportation
28787	Trail 8	Monahan et al. 2012a	Trail (<i>mauka-makai</i>)	0	Indeterminate (possibly pre- or early post-Contact)	Transportation
19952	13	Walsh and Hammatt 1995	Trail (<i>mauka-makai</i>)	0	Indeterminate (possibly pre- or early post-Contact)	Transportation
28791	Trail 11	Monahan et al. 2012a	Trail (<i>mauka-makai</i>)	0	Indeterminate (possibly pre- or early post-Contact)	Transportation
10714	T-091010-4 (Feature A) T-091010-5 (Feature B) T-091010-9 (Feature C) (Monahan et al. 2012a)	Monahan et al. 2012a; Wolforth et al. 2005 (outside PA); Bell et al. 2009	Trail System (<i>mauka-makai</i>), interpreted as part of the "Road to the Sea Trail"	3	Pre- to post-Contact	Transportation
15324	6	Walsh and Hammatt 1995	Trail (<i>mauka-makai</i>)	2	Indeterminate (possibly pre- or early post-Contact)	Transportation
19946	5	Walsh and Hammatt 1995	Trail (<i>mauka-makai</i>)	0	Historic (possibly also pre-Contact)	Transportation

SIHP # ¹	Temp. Site # ²	Primary Source(s)	Type	No. of Features	Age	Function
29272	Coral frags (Harp 2011)	Monahan et al. 2012a; Harp 2011; Monahan and Wilkinson 2012	Level area in 'a 'ā with trail (<i>mauka-makai</i>)	2	Likely pre- to post- Contact	Possible temporary resting spot / work area and transportation

¹ These State Inventory of Historic Property (SIHP) numbers begin with "50-10-27-"

² Original references are provided for sources of temporary site numbers

significance (Figure 3 and Figure 4). Additional archival research on 13 historic trail properties (SIHP #s -00002, -10714, -18099, -19952 through -19954, -22418, -22507, -28774, -28782, -28784, -28787, and -28791) was performed using data provided by the NPS through research permit # KAHO-2016-SCI-0005 (see Volume I Appendix D). This data was used to develop narrative descriptions of the trails as they extend into and throughout Kaloko-Honokōhau National Historical Park and to discuss the complexity of the trail system in the area, which connects various locations of interest along the coast. However, the specific locations of trails within the National Park that have not been disclosed to the public previously have been omitted from this report, per the request of the NPS.

In addition to performing research, trails were also evaluated according to Apple's (1965) criteria (see Volume I, Table 35). The archaeological context, including proximity to other historic properties, was also evaluated with the objective of determining relative age, function, and/or regional significance. The trail evaluations and analyses were synthesized and applied to Research Objective 1 (Trails), presented in Volume I of this report.

1.3 Interim (Short-Term) Protective Measures Implemented for Historic Trail Properties during Data Recovery Efforts

As a result of consultation with the NPS, and in response to its direct request, a continuous line of orange construction fencing tied to steel posts was erected along the construction limits from the southern end of Kaloko-Honokōhau National Historical Park to the northern end (a distance of approximately 7, 2435 m [988.9 ft], or 2.43 km [1.51 miles]). No construction work was permitted to cross this line, so all historic properties west (*makai*) of the line were protected during construction. For the rest of the project area, north of the northern limit of the national park, orange web event fencing tied to steel posts was erected along the construction limits line wherever preservation or ADC (avoidance during construction) properties were located, including historic trail properties. Fencing extended at least 25 ft north and south of each preservation and ADC property along the construction limits line. The condition of the fencing was checked by monitoring archaeologists at least once per month to ensure it remained intact for the duration of the project, as described in the project's archaeological monitoring plan (Monahan et al. 2012b).

ADC properties would not be subjected to long-term preservation buffers; rather, they were subjected only to interim protection measures, as they are not recommended for preservation. Short-term buffers are graphically depicted in the historic property specific presentations below. Photographs of the protective fencing installed during data recovery efforts are also included in the historic property descriptions. These measures were enacted to prevent inadvertent damage during construction activities. In addition to erecting orange construction fencing along the construction limits, GPS warning devices programmed with preservation and ADC locations were installed on all heavy earthmoving equipment. Furthermore, the erection of portable construction barriers provided additional protection for historic properties in close proximity to the construction limits, which were also programmed into the GPS warning devices.

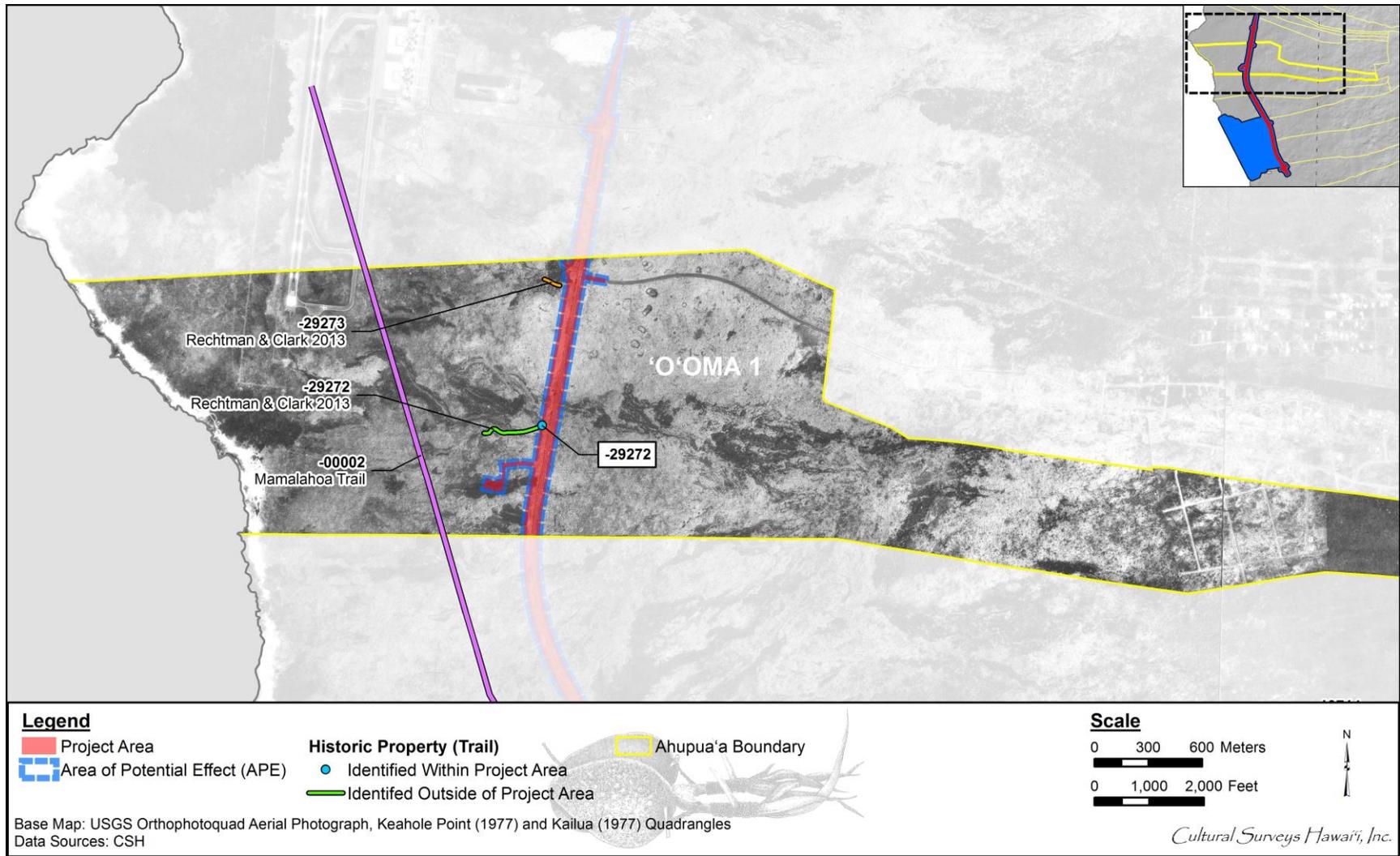


Figure 3. Shows the portion of SIHP # -29272 identified within the current project area in relation to the portion identified by Rechtman and Clark (2012) in an adjacent project area

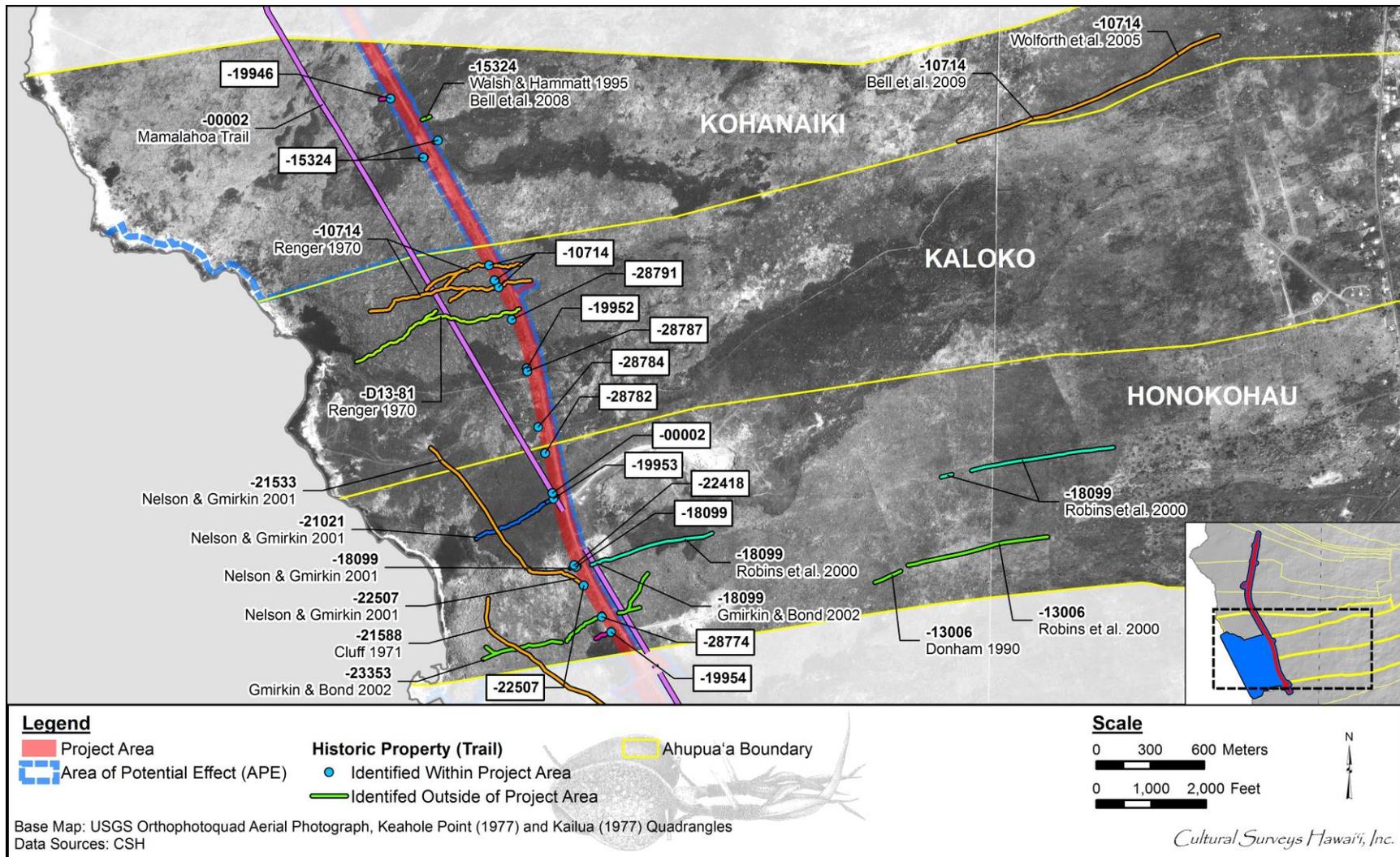


Figure 4. Shows data recovery trail segments south of SIHP # -29272 in relation to segments identified during previous studies

Section 2 Historic Property Documentation

This section describes the 16 historic trail properties included in this data recovery project. A general overview of the types of data recovery, as well as a listing of historic properties to be subjected to each type of mitigation, is presented in Volume I of this report. The historic trail properties are arranged in numerical order, starting with the Māmalahoa Trail (SIHP # -00002).

2.1 SIHP # 50-10-27-00002

Temp. Site No.: N/A

Formal Type: Māmalahoa Trail (Road)

No. of Features: 0

Function: Transportation

Age: Historic (constructed 1836–1855)

Overall Dimensions: Approximately 149 m (490 ft) (current project area; entire trail is miles long)

Topography: Gently undulating 'a'ā terrain (current project area)

Elevation: 17–18 m (57–60 ft) AMSL (current project area)

Description: SIHP # -00002, the well-known Māmalahoa Trail or Road, extends for miles outside (northwest and southeast of) the current project area (see Figure 3 and Figure 4). SIHP # -00002, also known as the *alaloa*, is one of the first improved cross-*ahupua'a* trails through Kekaha (inland of the coastal trail). Cordy et al. (1991) believe the curb-lined Māmalahoa Trail was built between 1836 and 1855. It was modified in the 1840s and called the *Alanui Aupuni* (Government Road), the King's Highway, or the Māmalahoa Trail. Portions of this trail are aligned with the current Queen Ka'ahumanu Highway.

In a 1995 report, CSH (Walsh and Hammatt 1995) described SIHP # -00002 as follows:

Site 00002 is an historic cross-*ahupua'a* road commonly referred to as the Mamalahoa Trail. The construction of the road is dated to 1836-1855. It is considered to have been the major seaward road through the region between its construction and 1888, when use of the road became infrequent (Cordy 1991:403, 406). The road, in general, is described as a remarkably straight curb-lined path—typically 2.0 to 3.0 m. wide. In some areas the road surface is raised, with low points in the terrain filled in and leveled with stone.

The trail has been used sporadically in late historic and modern times and some parts of the road show evidence of vehicular use. The road has been breached in numerous places between Kailua-Kona and the Keahole Airport in modern times. As a result, the trail exists as a series of discontinuous segments in varying conditions. [Walsh and Hammatt 1995:30]

The portion of SIHP # -00002 located within the current project area was described by Walsh and Hammatt (1995) as follows:

At Honokohau, Queen Kaahumanu Highway breaches the Mamalahoa Trail and two sections lie within the present project area. On the eastern side of the highway, one 30–40 foot (10 m) section remains within the project area. It

consists of a short ramp section below the present power line. The area surrounding this section has been cleared, presumably during the construction of the present highway. On the western side of the highway, an approximately 490 foot (149 m) section lies within the project area.... This section begins 30 feet (9 m) west of the present highway pavement edge and extends through the project area at 147 degrees T.N. [true north]. The road continues at the angle beyond the project area boundary and into the Kaloko-Honokohau National Park. This section does not appear to have been previously recorded. [Walsh and Hammatt 1995:32]

In recognition of its significance to Hawaiian history, Walsh and Hammatt (1995) recommended SIHP # -00002 eligible for listing on the National and State Registers of Historic Places under Criteria A (“reflects major trends or events in the history of the state or nation”), C (“excellent example of a site type/work of a master”), D (“information content”) and (Hawai'i only) E (“has traditional cultural significance to an ethnic group”). The Māmalahoa Trail (SIHP # -00002) should also be considered eligible under Criterion B, which recognizes the historic property's association with the lives of persons significant in our past—in this case, Kuakini (Governor of Hawai'i from 1819–1844), who initiated the program of road building using prison labor (Kirch 1996).

The Māmalahoa Trail (SIHP # -00002) is subject to protection and preservation under the Highways Act of 1892 (HRS §264-1[b]; Na Ala Hele 2008).

2.1.1 Data Recovery Efforts

The treatment of SIHP # -00002 was codified in the original 1999 MOA, and data recovery was conducted in 1999 by CSH (Hammatt et al. 1999) on a small section of the trail that was to be impacted by ground disturbances. Efforts included the excavation of two trenches to create a profile of the trail and photo documentation of the areas that would be affected by the project. The results of excavation are presented below. SIHP # -00002 was subsequently revisited during the current project's AIS (Monahan et al. 2012a) and found to be in the same general condition as in 1999 (Figure 5 through Figure 9); however, the Māmalahoa Trail is no longer within the project area on the east, or *mauka*, side.

2.1.1.1 1999 Data Recovery Efforts (Hammatt et al. 1999)

On 31 May 1999, CSH conducted data recovery fieldwork on a section of the Māmalahoa Trail (SIHP # -00002) and a bisecting seaward-inland trail (SIHP # -19953) that were slated for destruction. The Māmalahoa Trail section ran in a northwest (331° True North [TN]) to southeast (151° TN) orientation from the NPS boundary to the Queen Ka'ahumanu Highway at a width of 2–3 m and length of approximately 46 m. Two trenches (Trench 1 and 2) were excavated at SIHP # -00002; for discussion of Trenches 3 and 4, placed on the bisecting SIHP # -19953, see Section 2.7.1. The trenches were placed to provide representative cross-sections of the trails (Figure 10), and photographs and cross-sectional drawings were generated for each trench. Description of exposed stratigraphy was limited to the narrative discussions provided verbatim in Sections 2.1.1.1.1 and 2.1.1.1.2 (tabulated descriptions were not included in Hammatt et al. 1999).



Figure 5. Photograph of SIHP # -00002, showing the southeastern portion of the trail within the project area, view to northwest



Figure 6. Photograph of SIHP # -00002, showing the central portion of the trail within the project area, view to northwest



Figure 7. Photograph of SIHP # -00002, showing the northwestern portion of the trail within the project area, view to northwest; a service road intersecting with SIHP # -00002 is visible on the left



Figure 8. Photograph of SIHP # -00002, showing curbed portion of the trail beginning just outside the project area, view to northwest

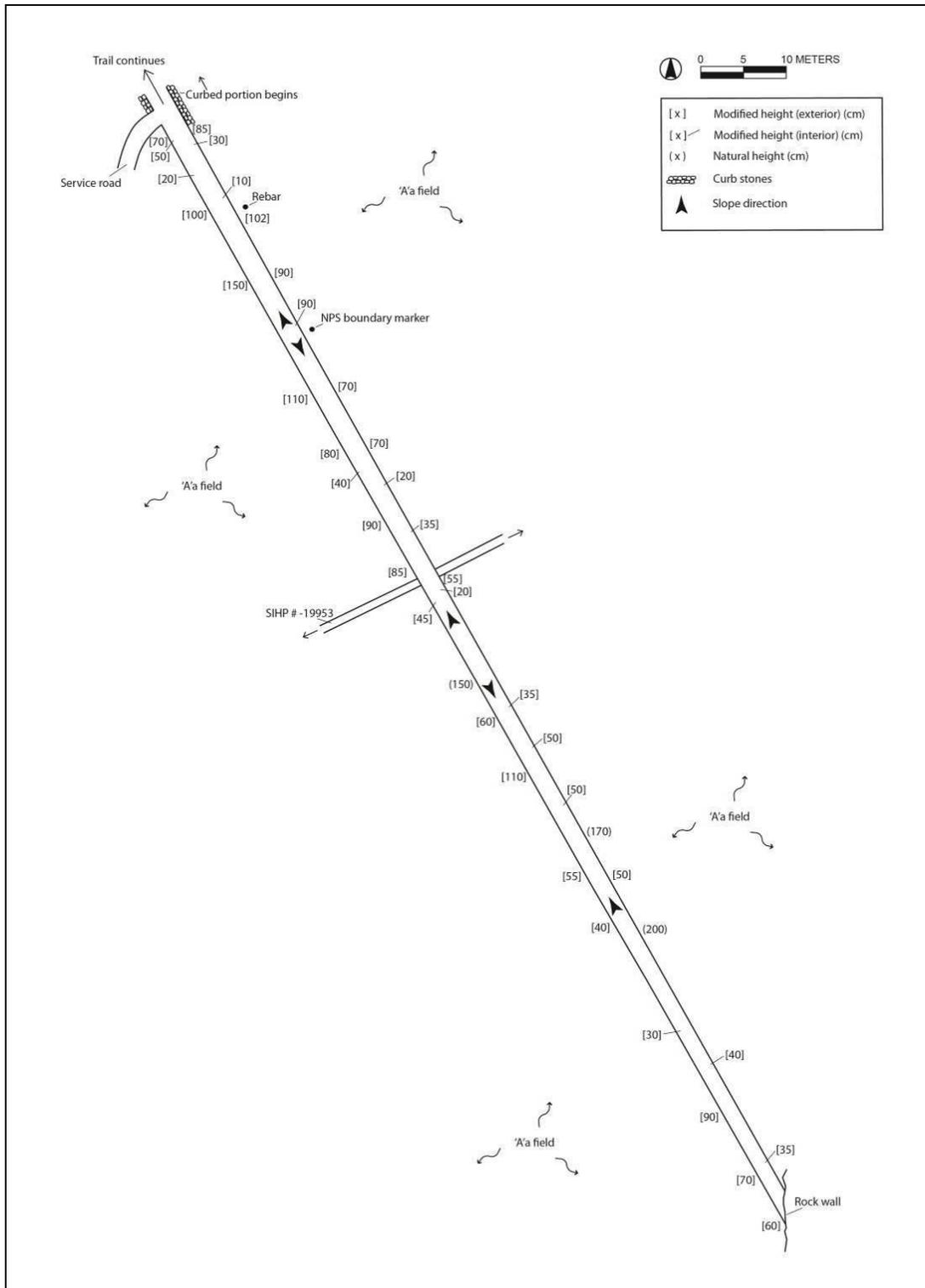


Figure 9. Plan view map of SIHP # -00002; note the area of curbing at the northwestern portion of the trail is just outside the project area

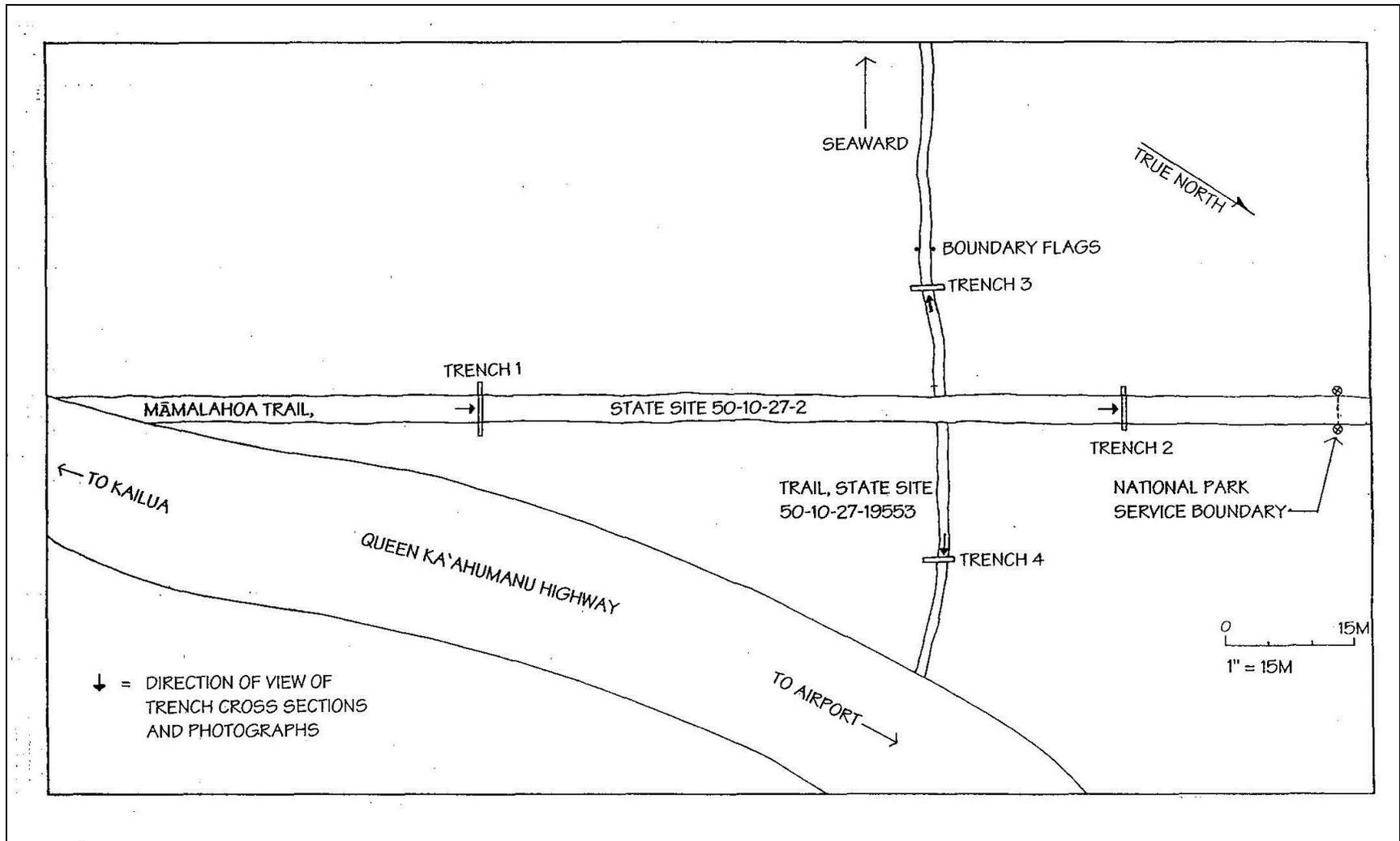


Figure 10. Plan view of trench locations excavated during the 1999 data recovery efforts associated with the current project see (Hammatt et al. 1999:8)

2.1.1.1.1 Trench 1

Hammatt et al. (1999) describe the results of Trench 1 as follows:

Trench 1 was located on the Mamalahoa Trail (State Site # 50-10-27-2) and situated approximately 40 meters northwest of the Queen Ka'ahumanu Highway and the Mamalahoa Trail intersection [see Figure 10]. This section of trail was 1.9 m wide and built up, particularly on the seaward (west) side which is in a natural depression on the 'a'ā field. The surface of the trail on this portion consisted of crushed 'a'ā pebbles. The surface is most likely the result of a combination of use wear and clearing. Large 'a'ā boulders and cobbles were placed on the flanks of the trail resulting in a trough-like profile, with the surface lying 30-75 cm below the raised sides. Below the surface, the trail consisted of 2-4 courses of mostly medium sized cobbles approximately 25-45 cm in diameter within 'a'ā pebble fill. The west (seaward) side of the trail was significantly more built up than the east (inland) side [Figure 11 and Figure 12]. No cultural materials were observed during trenching. [Hammatt et al. 1999:9]

2.1.1.1.2 Trench 2

Hammatt et al. (1999) describe the results of Trench 2 as follows:

Trench 2 was located on the Mamalahoa Trail as well and was situated approximately 25 meters southeast of the NPS boundary and 20 meters northwest of the seaward-inland trail [SIHP # -19953] intersection [see Figure 10]. This section of trail was also built up in a natural depression of the 'a'ā field. It is similar structurally to the trench 1 portion of the trail. Like trench 1, trench 2 had been built up on the flanks with small boulders approximately 25 cm above the trail surface. The surface consisted of small 'a'ā cobbles and pebble pavement approximately 5-10 cm thick with obvious signs of use-wear (dense packing, level surface). The width of the surface was 2.4 meters. Underlying the surface was a built-up berm with medium and large cobbles stacked 2- 3 courses high within a packed 'a'ā pebble and fine silt matrix [Figure 13 and Figure 14]. No midden, artifacts, manuports or cultural material were observed during the trenching. [Hammatt et al. 1999:9]

2.1.1.2 2015 Data Recovery Efforts

In the ADRP for the current iteration of the project, Shideler et al. (2012) recommended data recovery (archival research) and partial preservation of SIHP # -00002, with no further fieldwork needed in the areas to be impacted by the project. Based on the criteria presented by Apple (1965:65; see Volume I Figure 35), typology classifies SIHP # -00002 as a Type "D" trail; it is the only Type "D" trail within the current project area. Type "D" trails are generally trails the width of two horses that have been modified to accommodate wheeled vehicles. Type "D" trails are built as straight as possible, often cutting off former coastal settlements, and may contain ramping and kerbstones.

Archival research indicates SIHP # -00002, also known as the *alaloa*, was one of the first improved cross-*ahupua'a* trails through Kekaha, inland of the coastal trail (prior to abolishment of the *kapu* system, only one trail, the coastal trail, was allowed to cross *ahupua'a*). It was

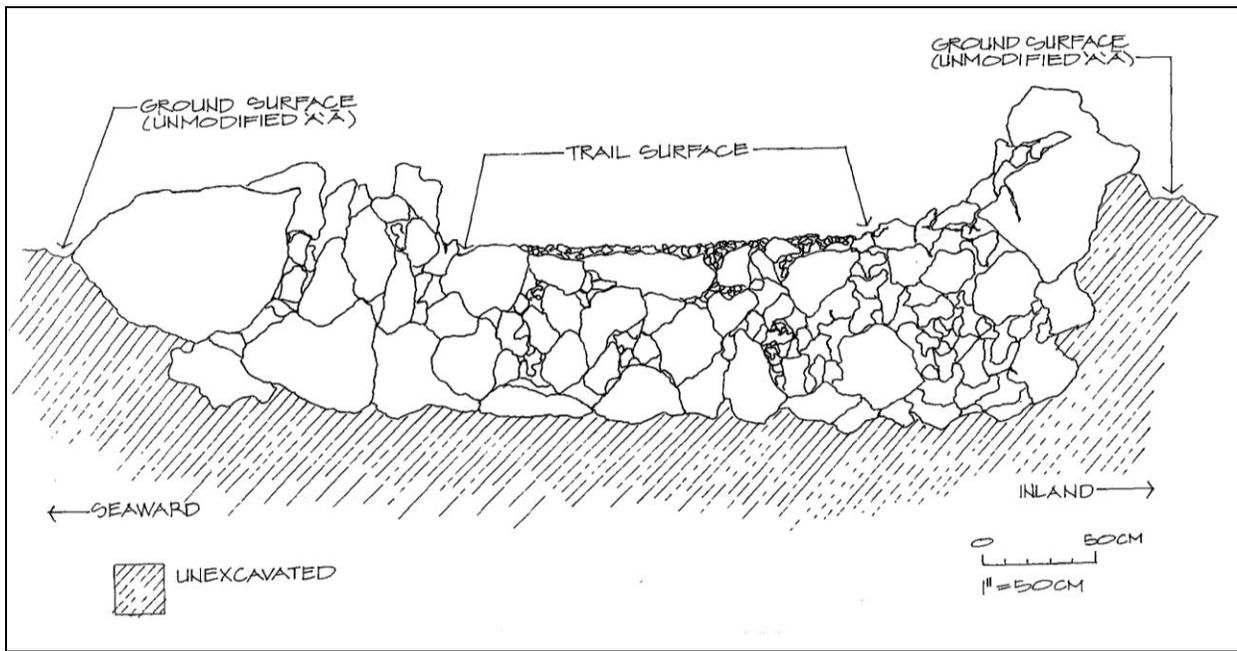


Figure 11. Cross-section view of Trench 1 excavated at the Māmalahoa Trail (SIHP # -00002), view to northwest

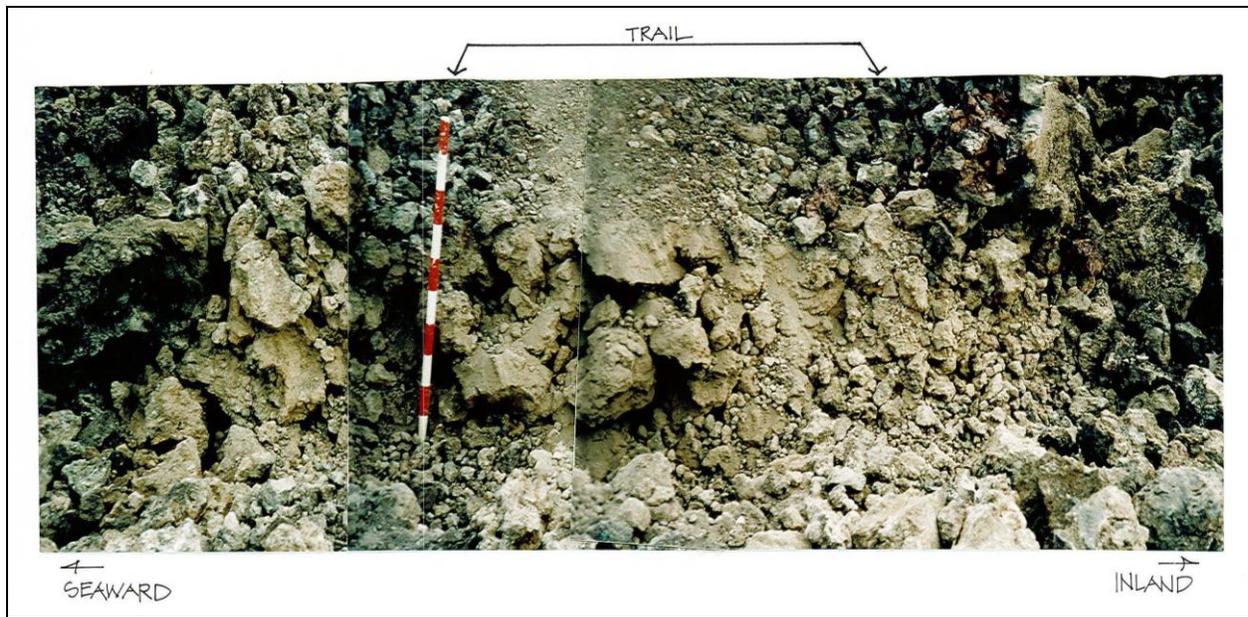


Figure 12. Profile photograph of Trench 1 excavated at the Māmalahoa Trail (SIHP # -00002), view to northwest

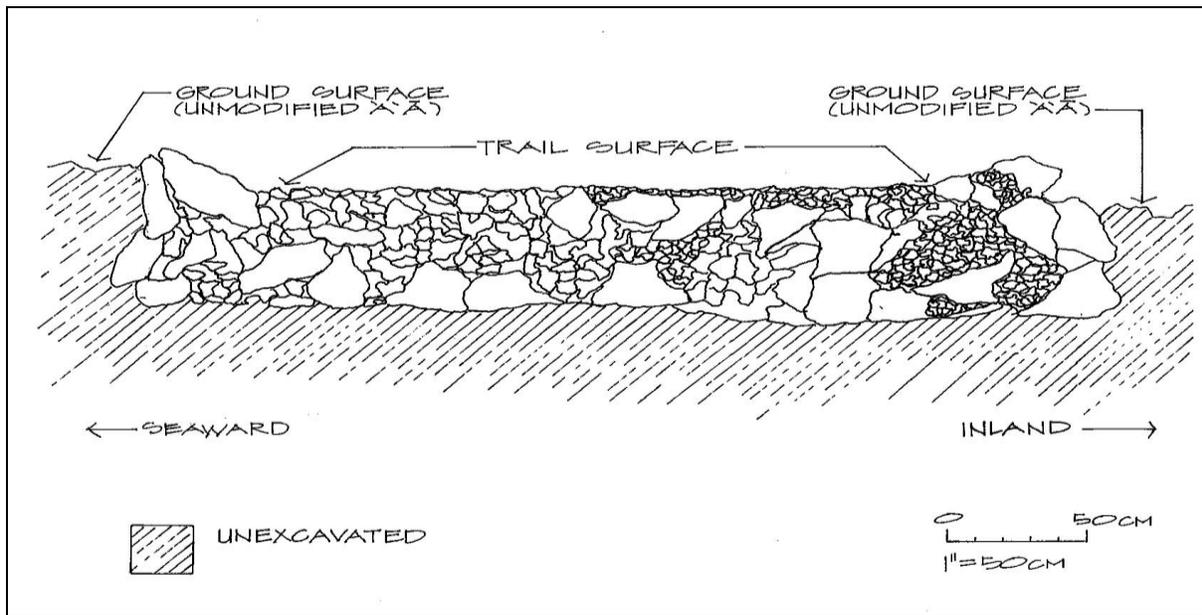


Figure 13. Cross-section view of Trench 2 excavated at the Māmalahoa Trail (SIHP # -00002), view to northwest

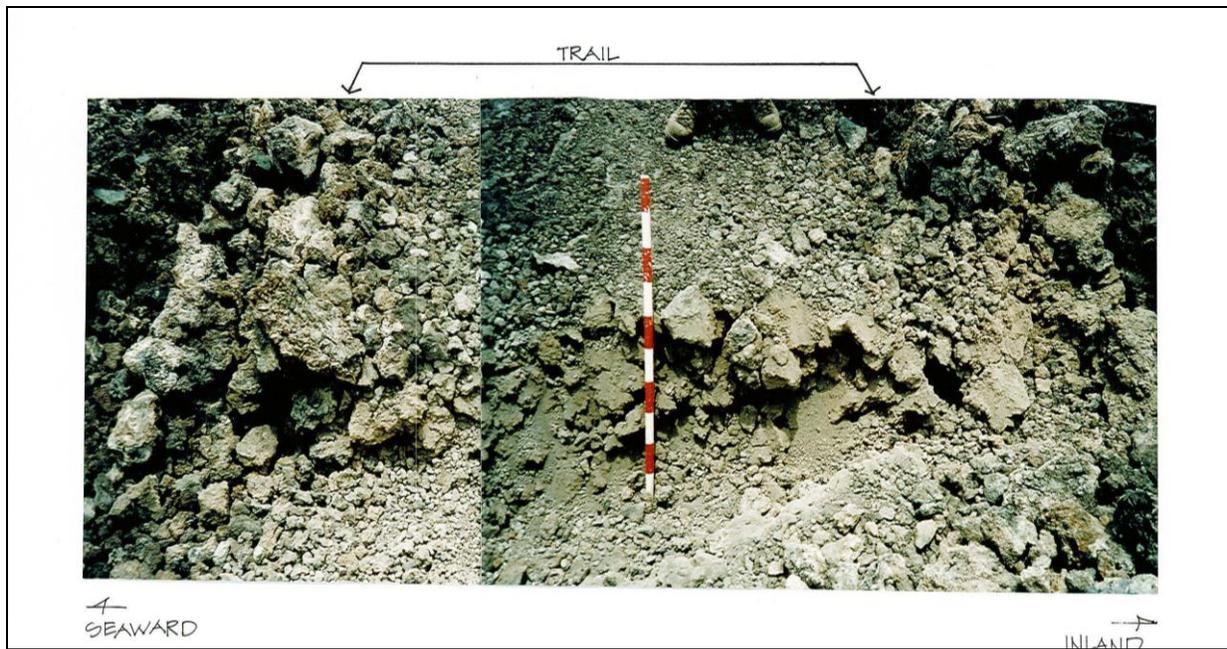


Figure 14. Profile photograph of Trench 2 excavated at the Māmalahoa Trail (SIHP # -00002), view to northwest

modified in the 1840s and called the *Alanui Aupuni* (Government Road), the King's Highway, or the Māmalahoa Trail. The government paid for the work or used prisoners to construct the road, which became straighter back from the coast and was paved and lined with stones in some areas. The Māmalahoa Trail extends both northwest and southeast outside the current project area and is bisected by numerous *mauka-makai* oriented trails, including four trails (SIHP #s -10714, -18099, -19953, and -29272) in the current data recovery project. SIHP # -19953 has already been discussed as part of the 1999 data recovery effort. The other three (SIHP #s -10714 [Road to the Sea], -18099 [Trail to Honokōhau], and -29272) were major *mauka-makai* routes that led from the coast to the uplands, allowing residents to move between different resource zones and places of habitation, recreation, ceremony, and agriculture.

A portion of SIHP # -00002 also extends through the Kaloko-Honokōhau National Historical Park, where SIHP # -00002 intersects with several *mauka-makai* oriented trails, including the aforementioned SIHP # -10714 (Road to the Sea), as well as SIHP #s -2183, -21539, and a Jeep trail associated with the NPS. Like SIHP # -10714, SIHP # -2183 extends both *mauka* of the Māmalahoa Trail, as well as *makai* toward Kaloko Fishpond and has been described as a "major *mauka-makai* trail, well worn, [which] runs mostly across smooth pahoehoe" (Renger 1971:28). SIHP # -21539, which intersects with SIHP # -00002 farther south, extends *makai* toward 'Aimakapā Fishpond.

The Māmalahoa Trail (SIHP # -00002) is depicted on many historic maps, including the 1928 Wall map of Hawai'i Island (see Volume I Figure 28) and the 1928 USGS map of Keāhole and Kailua Quadrangles (see Volume I Figure 27). It extended from Kawaihae to Kiholo, upslope to Huehue, and down again to Kaloko, Honokōhau, Kealakehe, and Kailua. It was considered a very safe means of travel, as it fell under the jurisdiction of Kamehameha I's "law of the splintered paddle," which directed that any traveler could use the highway without fear of being molested (Greene 1993). In fact, the name of the highway is said to come from this edict issued by Kamehameha I:

The Mamalahoa Highway takes its name from the edict of King Kamehameha, the great Hawaiian conqueror who united the Hawaiian islands. *Mamala hoe* (lit. 'the way or law of the broken canoe paddle'), popularly known as the 'Law of the Splintered Paddle,' guaranteed the safety of the highways to all travelers. During his travels on the Island of Hawaii, Kamehameha and his men came upon a fishing village in the Keaau region of the island; one of the fishermen, defending his territorial rights, hit the king with a wooden canoe paddle, shattering it into pieces. The king subsequently issued an edict that all men should be free to travel the roads of the islands unimpeded. An alternative interpretation suggests that Mamalahoa (lit. 'law of the friend') refers to the death of Kamehameha's guard at the hands of the king's supporters after failing to protect Kamehameha from the assault. The guard was killed by pulling a spear back and forth through his body, thus simulating the movement of a canoe paddle. Kamehameha, stricken by the death of his friend, consequently issued the famous edict. Kamehameha's edict established a precedent for contemporary state laws which ensure free access to areas traditionally accessible in pre-contact Hawaii, such as upland trails and coastal beaches. [MKE and Fung 2013:2–17 in Clark et al. 2014]

Archival research indicates the Māmalahoa Trail was used for commerce, troop movements, carrying messages, collecting taxes, and other government activities. However, as the population shifted to the agricultural zone along the inland trail, the Māmalahoa Trail on the lower barren shore was abandoned. By the time of J.S. Emerson's survey of homestead lands in Kekaha in 1888, the trail was noted as "Lower Govt. Road – little used" (Cordy et al. 1991:405).

2.1.1.3 Interim Protective Measures Implemented

Interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts (Figure 15 and Figure 16).



Figure 15. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -00002, view to west

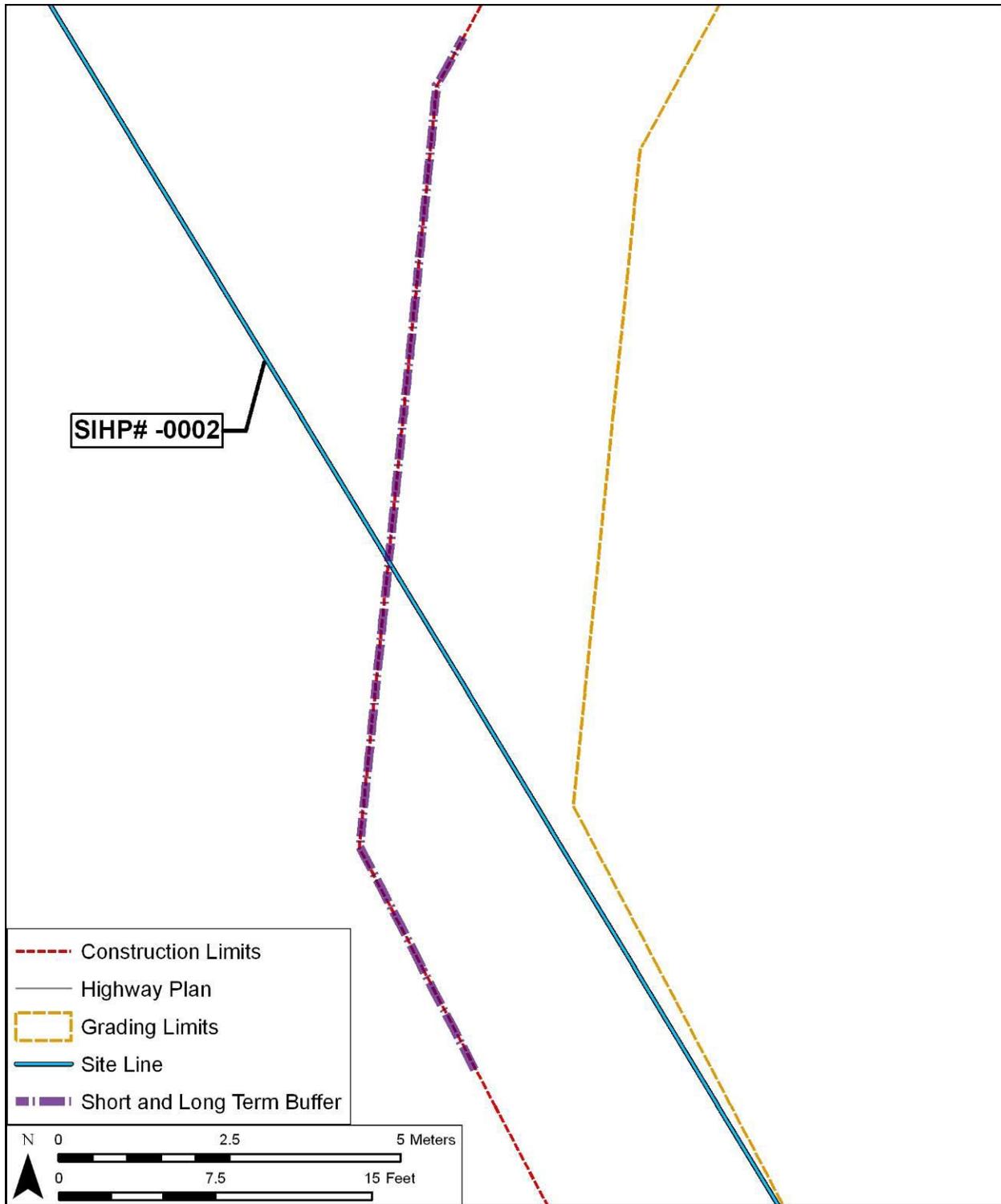


Figure 16. Preservation buffers for SIHP # -00002 (Shideler et al. 2012)

2.2 SIHP # 50-10-27-10714

Temp. Site No.: T-091010-4 (Feature A); T-091010-5 (Feature B); T-091010-9 (Feature C) (Monahan et al. 2012a)

Formal Type: Trail

No. of Features: 3

Function: Transportation

Age: Pre-Contact to twentieth century

Overall Dimensions: 56.6 m long (Feature A); 35.6 m long (Feature B); 30.4 m long (Feature C) (current project area)

Topography: Undulating *pāhoehoe* flow, level to slightly sloping

Elevation: 23 m (75 ft) AMSL (Features A and B) 89 ft (27 m) AMSL (Feature C) (current project area)

Description: Previous archaeological studies (Bell et al. 2009; Cordy et al. 1991; Renger 1971; Wolforth et al. 2005), as well as consultation with NPS trail specialists, suggested this trail is part of a more extensive trail complex sometimes referred to as the “Road to the Sea,” which generally follows the Kaloko/Kohanaiki *ahupua‘a* boundary and extends from the Kohanaiki Homesteads (*mauka*) to Kaloko Fishpond (at the coast); of note, certain NHOs in discussion with HDOT for the subject project have indicated that the name “Road to the Sea” may be inaccurate for this trail historic property. *Mauka* of the project area, this trail has been designated as SIHP # -10714 (Wolforth et al. 2005; see Figure 4). Within the current project area, CSH (Monahan et al. 2012a) identified three trail segments, which NPS trail specialists suggested should be considered part of SIHP # -10714. CSH concurred with this recommendation; therefore, the three trail segments were designated as SIHP # -10714 Features A through C.

Significance evaluation by Monahan et al. (2012a) recommended it eligible for inclusion in the National and Hawai'i Registers of Historic Places under Criteria C (“excellent example of a site type/work of a master”), D (“information content”), and E (“has traditional cultural significance to an ethnic group” (Hawai'i only)). The three segments (Features A–C) of SIHP # -10714 identified during the current project's AIS are described in detail below.

Feature A is a trail segment approximately 88 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway, within the portion of the project area adjacent to the Kaloko-Honokōhau National Historical Park. Within the project area, it is oriented roughly east/west (*mauka-makai*), measures 56.6 m long, and lacks any formal construction features such as stepping stones or curbing. It can be recognized by observing subtle wear pattern/color variation on the lava flow (Figure 17 through Figure 19).

Feature B is a trail segment approximately 130 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway within the portion of the project area adjacent to the Kaloko-Honokōhau National Historical Park. Within the project area, it is oriented roughly east/west (*mauka-makai*), measures 35.6 m long, and lacks any formal construction features such as stepping stones or curbing. It can be recognized by observing subtle wear pattern/color variation on the lava flow (Figure 20 and Figure 21).

Two stacked boulders located alongside (just north of) SIHP # -10714 Feature B may have served as a trail marker (Figure 22 and Figure 23). The two stacked *pāhoehoe* boulders are



Figure 17. Photograph of SIHP # -10714 Feature A, view to southwest



Figure 18. Close-up of color variation and wear pattern on *pāhoehoe* surface of SIHP # -10741 Feature A, view to west

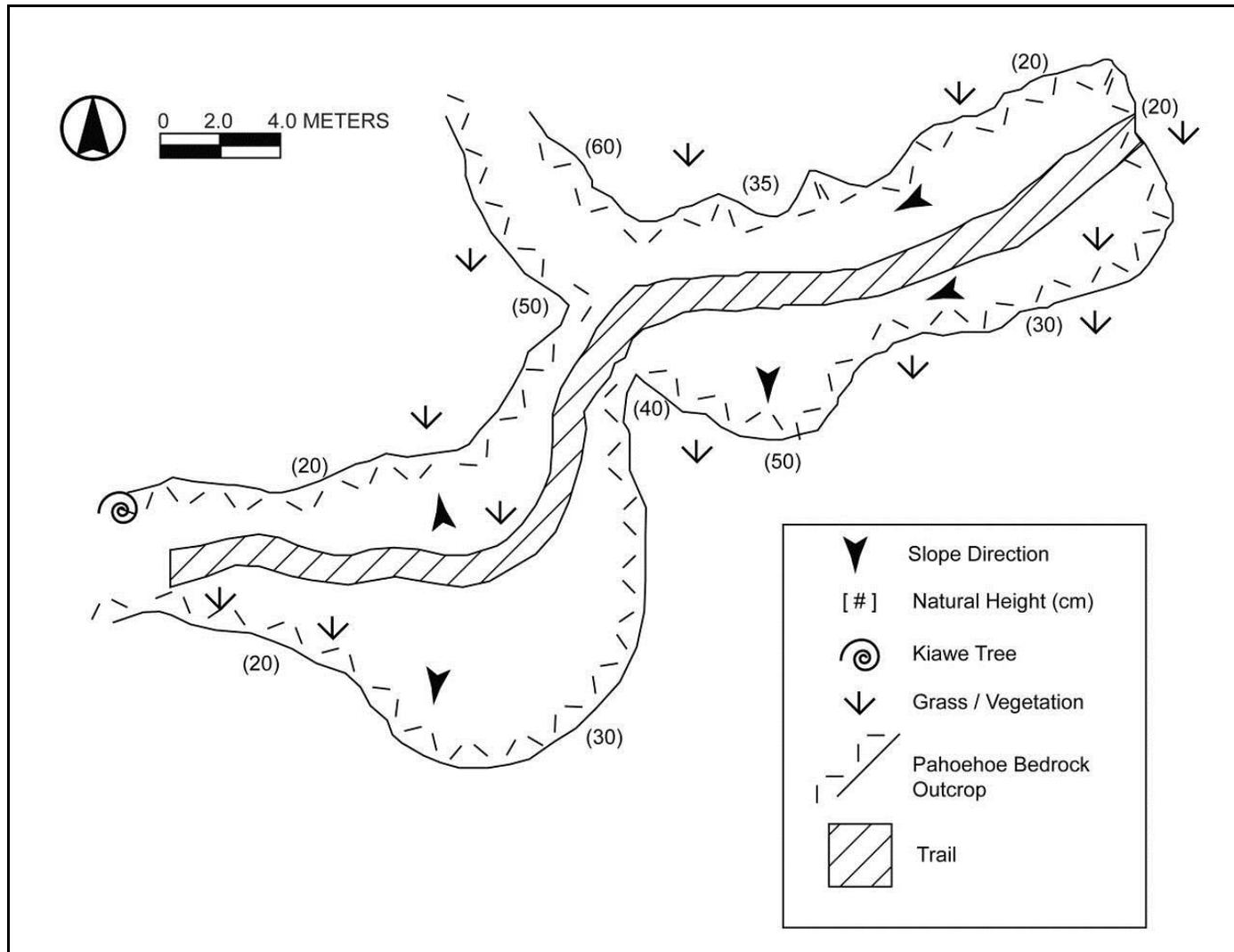


Figure 19. Plan view map of SIHP # -10714 Feature A

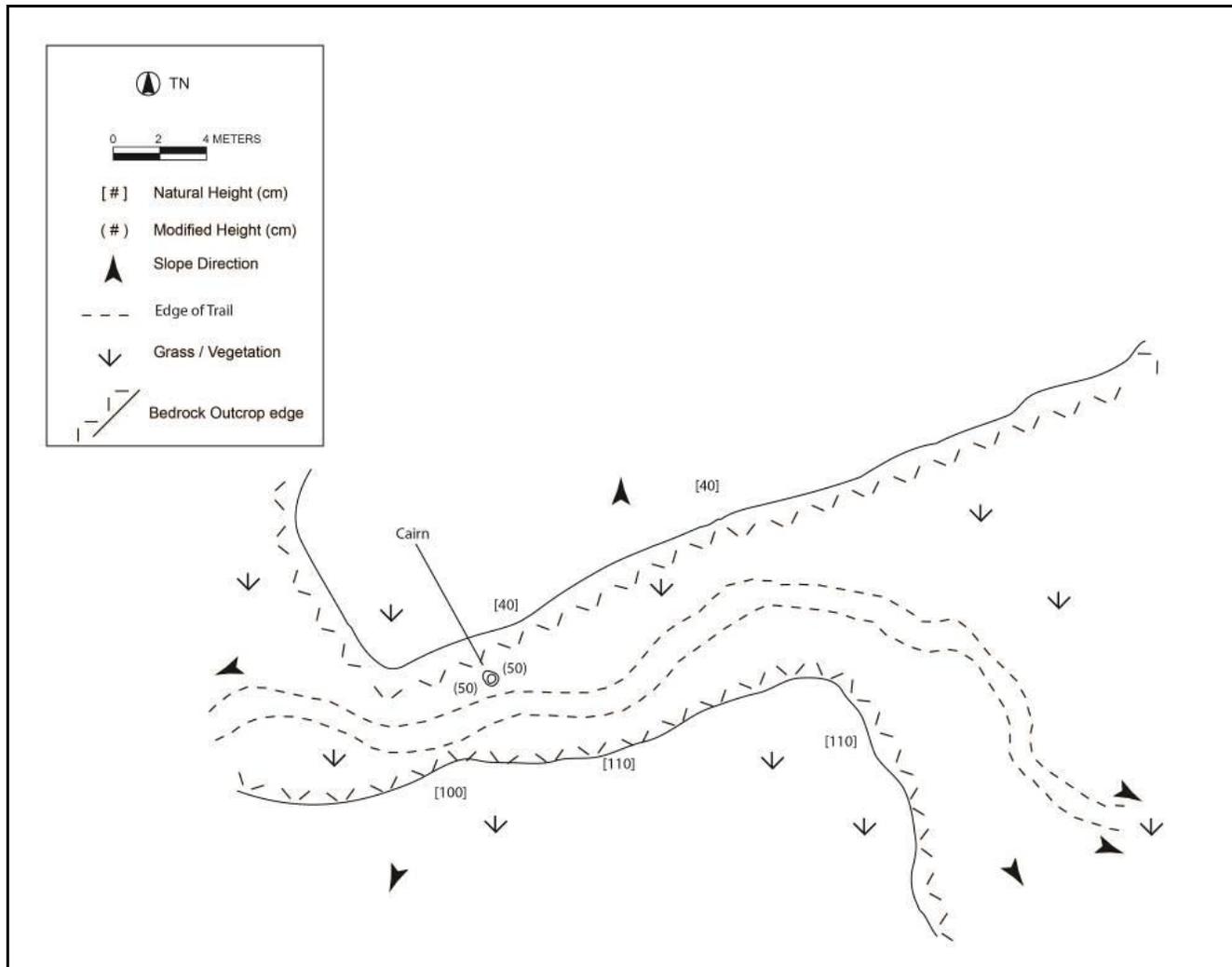


Figure 20. Plan view map of SIHP # -10714 Feature B



Figure 21. Photograph of SIHP # -10741 Feature B, view to east



Figure 22. Stacked boulders alongside SIHP # -10714 Feature B, view to north

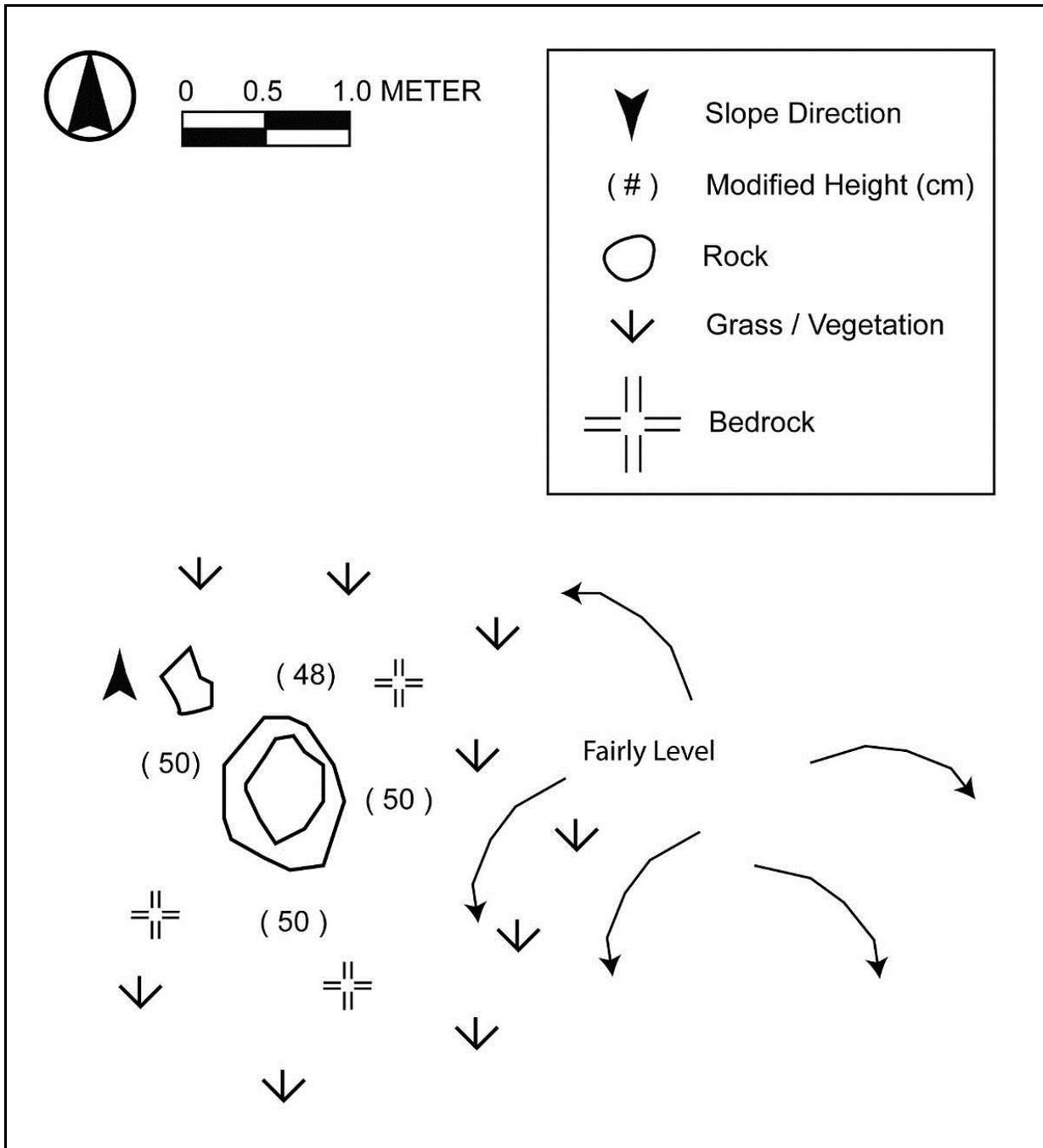


Figure 23. Plan view of two stacked boulders along SIHP # -10714 Feature B

situated atop a smooth, level *pāhoehoe* flow next to the trail; they measure 0.4 m north/south by 0.3 m east/west with a maximum height of 0.5 m above the adjacent ground surface. A third boulder in the immediate vicinity may have been displaced from the top of the mound.

Feature C is a trail segment approximately 200 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway within the portion of the project area adjacent to the Kaloko-Honokōhau National Historical Park. Within the current project area, it is oriented roughly east/west (*mauka-makai*), measures 30.4 m long, and lacks any formal construction features such as stepping stones or curbing. It can be recognized by observing subtle wear pattern/color variation on the lava flow (Figure 24 and Figure 25).

2.2.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation for SIHP # -10714. Because the project effect for SIHP # -10714 has not changed, it was not addressed in the latest revision of the ADRP (Hammatt and Shideler 2014). Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -10714 as a Type "A" trail. Type "A" trails generally span the width of one person and exhibit many turnings. Stepping stones may be used, and occasionally rock piles (such as the stacked boulders observed alongside Feature B) mark the trail.

As mentioned above, the three trail segments described here (SIHP # -10714 Features A–C) are part of an extensive network of trails. This network extends both *mauka* of the highway into the uplands, as well as *makai* into Kaloko-Honokōhau National Park, where it terminates near Kaloko Fishpond. Archival research indicates the Road to the Sea network of trails was used by local residents from the pre-Contact period into the twentieth century to move between different resource zones and places of habitation, recreation, ceremony, and agriculture. SIHP # -10714 is depicted on an 1882 Emerson Field Notebook map (see Volume I Figure 27), an 1882 Emerson map (see Volume I Figure 29), an 1891 Emerson map (see Volume I Figure 23), a 1928 USGS map (see Volume I Figure 27), and a 1959 USGS map (see Volume I Figure 31), where it is labelled a "jeep trail." In their 2005 study, Wolforth et al. interviewed three local residents with knowledge of SIHP # -10714, referred to in that report as the "Mauka-Makai Road." The interviews are summarized as follows:

Mr. Arthur Mahi, Ms. Elizabeth Malu'ihī Ako, and Mr. George Kinoulu Punihaole, Jr. had traveled on the Mauka-Makai road over 40 years ago.

Mr. Mahi mentioned that he had used the Mauka-Makai road to travel from Kohanaiki Homesteads to the ocean, and he called it the Kohanaiki Road . . . Mr. Mahi mentioned that the old Kohanaiki Road was along the border between Kaloko and Kohanaiki.

Mr. Kahanui mentioned that he had traveled the Mauka-Makai pathway, but all of his travels along the route were via motorized vehicles.

Ms. Ako lived in the next *ahupua'a* to the north of the project area, 'O'oma, as early as the late 1930s. As kids they used to use the 'Kohanaiki Road' (the



Figure 24. Photograph of SIHP # -10741 Feature C, view to southwest

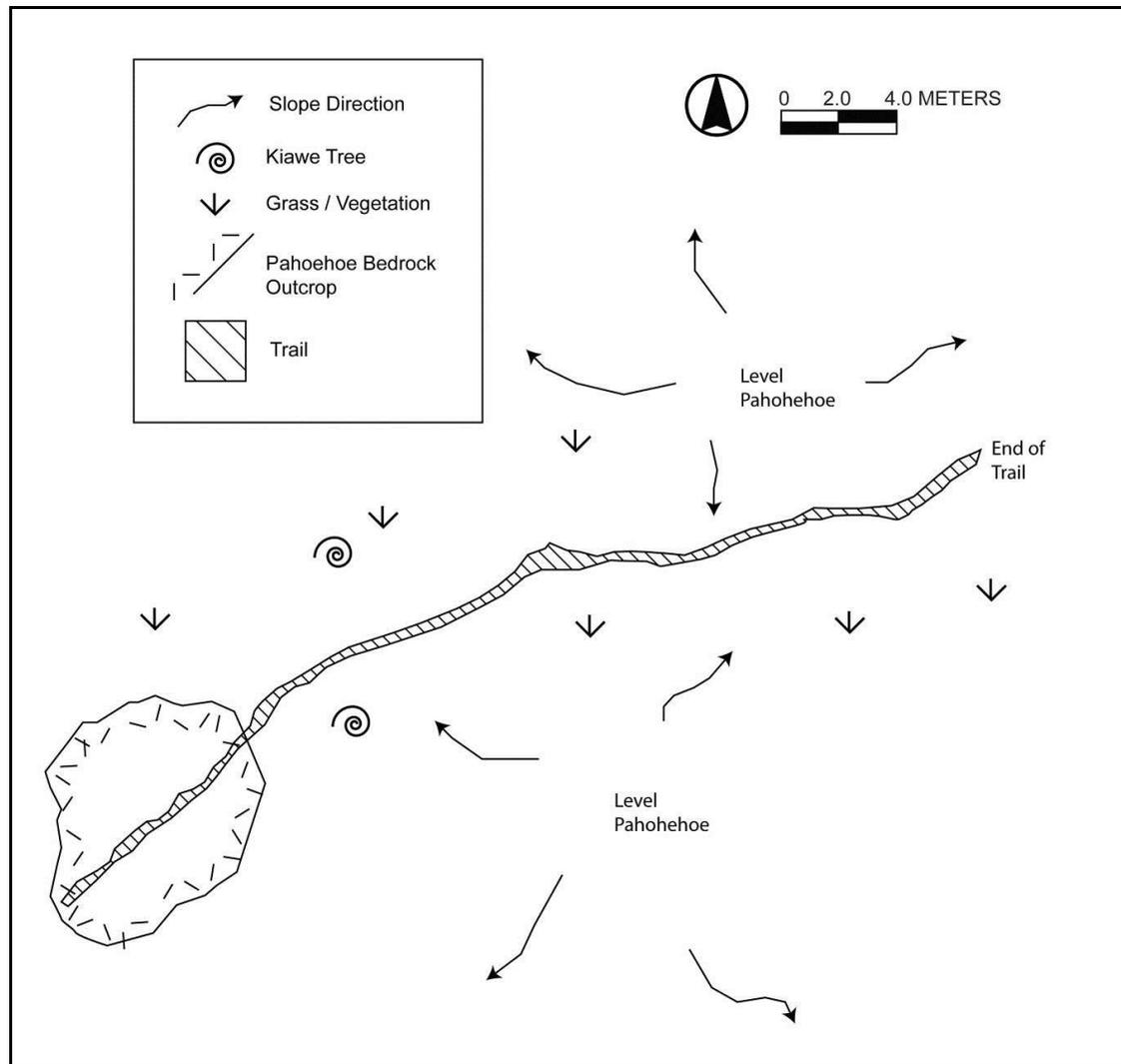


Figure 25. Plan view map of SIHP # -10741 Feature C

Mauka-Makai road) to go down to the ocean. At that time, the road was also referred to as 'Church of God Road,' but Ms. Ako emphasized that she preferred to use the label 'Kohanaiki Road' to acknowledge its 'original name.'

They would take a trail from 'O'oma over to the homesteads, then go down to the ocean from there. She recalled with some delight how donkeys and horses (they rode donkeys and horses, which she considered the Cadillacs of the day) would 'take their sweet time' going downhill, but moved rapidly uphill on their way home. They would carry fresh water and food down to the ocean, and would fish and drink brackish water down there when the fresh water ran out.

The trail prior to World War II was marked by *ahu* (cairns); there was no stone paving or stone kerbing along the pathway at that time. The pathway was worn slightly into the exposed surface rock. Also, the land had much fewer trees on it then. She recalls that there were some guava and large mango trees, but no Christmasberry or other trees then. The few trees that were there were small (except for the mango). The vegetation was so sparse that they could use the trail at night. In fact, travelling in the evening and at night was preferred, because it was much cooler traveling at that time. They started their journeys at dusk.

. . . She remembered that the Kohanaiki Road was also used by ranch cowboys. In addition, during WWII soldiers were stationed at the church yard within the Kohanaiki Homesteads. The soldiers decided to build up the pathway, and started to do so at the camp and working their way downhill from there. But they stopped building it 'about ¼ mile down,' because it was too much effort for the little return they got from it.

Ms. Lee characterized the pathway to the ocean as 'old trails,' because of the *ahu* and slightly worn shine on the ground surface. [Wolforth et al. 2005:29–30]

In addition, four people who had been interviewed for a different project but also spoke about the Road to the Sea trail were quoted in Wolforth et al.'s (2005) report:

Several people interviewed remembered traveling up and down the Kohanaiki Road. Agnes Puakalehua Nihi-Harp and Violet Leimomi Nihi-Quiddaen recall walking up that route from the ocean before 1940. Their older sisters took that path up the slope to school in Kalaoa (Maly and Maly 2002:27–29). Malaea Agnes Keanaaina-Tolentino recalls that back in the 1930s when her grandfather leased Kaloko Pond, they would 'go down the old trail from Kohanaiki to Kaloko, to work on the pond' (Maly and Maly 2002:139). Peter Keka, who was born in 1940, remembers traveling that route, also, and picking yams and mangoes along the way (Maly and Maly 2002:207). When asked if there were resting places along the route, Mr. Keka replied, 'well, not really' (Maly and Maly 2002:208).

George Kinoulu Kahananui, Sr. discussed how trails were modified during the 20th century '(b)ecause the war came up and the army opened up all the trails. Even that old Kohanaiki-Kaloko trail coming down, they made road for the jeep, coming down' (Maly and Maly 2003:A-166). The interviewer followed that with,

‘So they improved them because they were *ala hele wāwae* [sidewalk, pedestrian’s road] before,’ and Mr. Kahananui responded, ‘Yes.’ [Wolforth et al. 2005:30–31]

Although none of the informants explicitly described the characteristics of the trail, Wolforth et al. (2005) suggested certain aspects may be inferred from the reference to “*ala hele wāwae*” (sidewalk, pedestrian road), which indicates people who used the route either walked or used donkeys and/or horses when traveling.

SIHP # -10714 dates back to at least 1882 based on historic maps; however, the context of SIHP # -10714 “indicates the *ahu*-lined, non-paved path was probably being used for centuries prior to contact” (Wolforth et al. 2005:298). This is based on radiocarbon and hydration rind dates as well as previous archaeological studies. Prior to ca. 1800, the Road to the Sea would have been on bare lava with sparse vegetation in the vicinity. Stone *ahu* were situated at strategic places along the route to mark the pathway, and people used the trail to move between different resource zones. From ca. 1800–1940, the path was still in use and marked with *ahu*, although fewer people regularly used the route; the biggest change at that time was the decline in foot travel and the introduction of pack animals.

During World War II, U.S. soldiers were stationed at the church area of the Kohanaiki Homesteads (*mauka* of the current project area), and defensive gun installments were placed at the shoreline below. Soldiers traveling to and from the coast apparently decided to modify the trail to facilitate vehicular travel. Modifications were made at the soldiers’ encampment and continued *makai*, but were abandoned well *mauka* of the current project area. After World War II, vegetation expanded along the trail, and trees grew in and around the Road to the Sea. Pedestrian use of the trail was scanty post-1945, likely because nearby Jeep roads were being created that could facilitate *mauka-makai* travel (Wolforth et al. 2005).

2.2.2 Interim Protective Measures Implemented

Interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts (Figure 26 through Figure 29).



Figure 26. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -10714 Features A–C

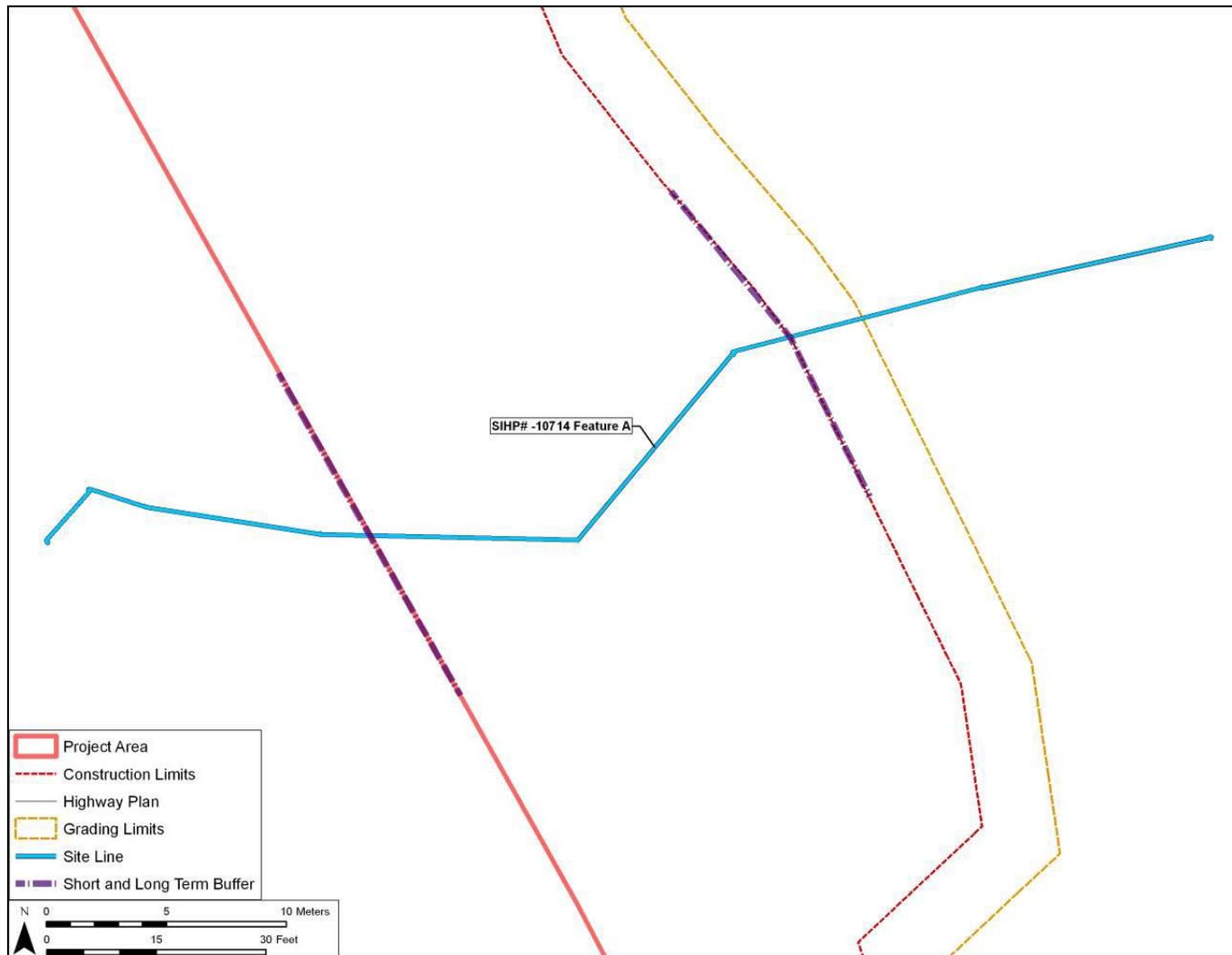


Figure 27. Preservation buffers for SIHP # -10714 Feature A (Shideler et al. 2012)

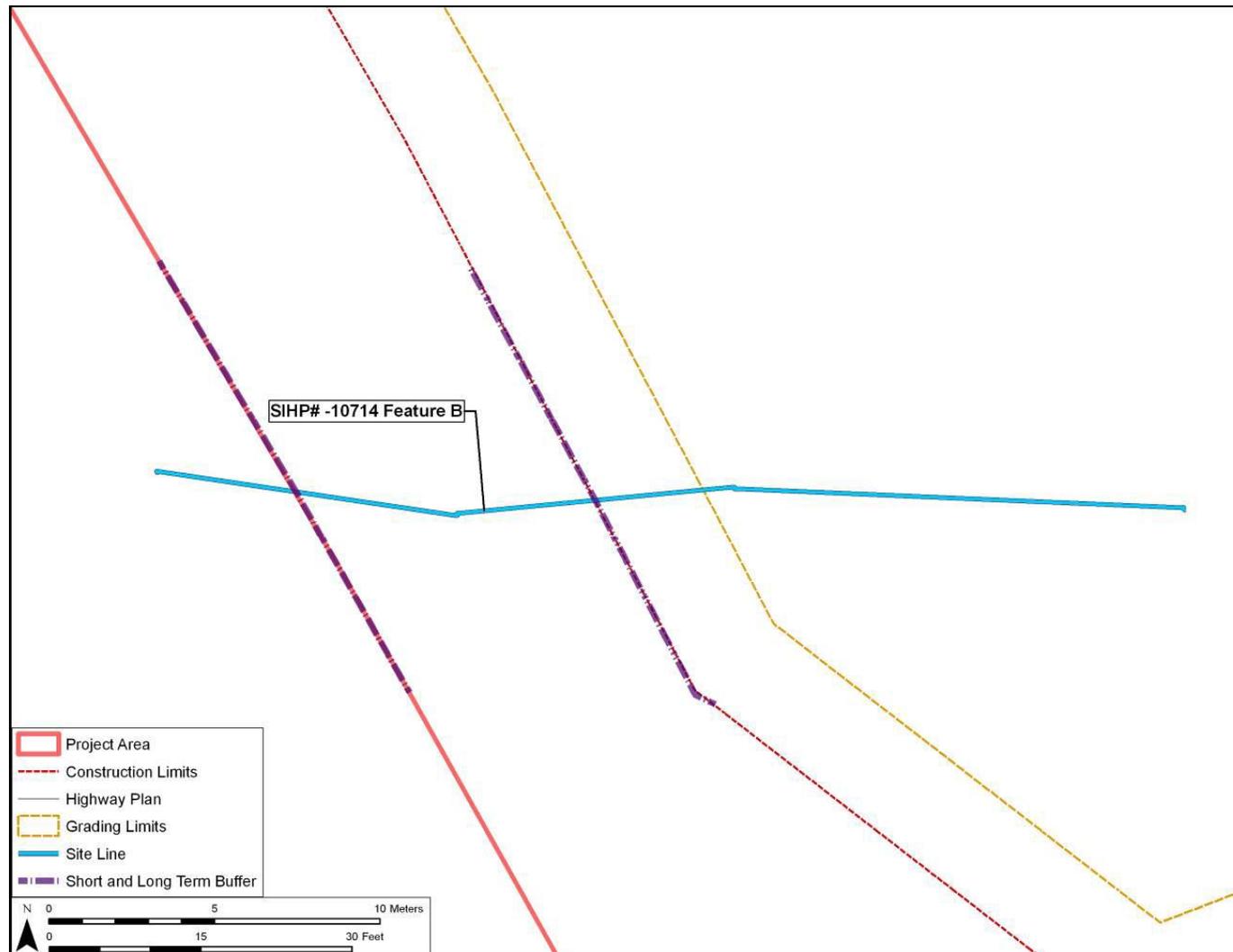


Figure 28. Preservation buffers for SIHP # -10714 Feature B (Shideler et al. 2012)

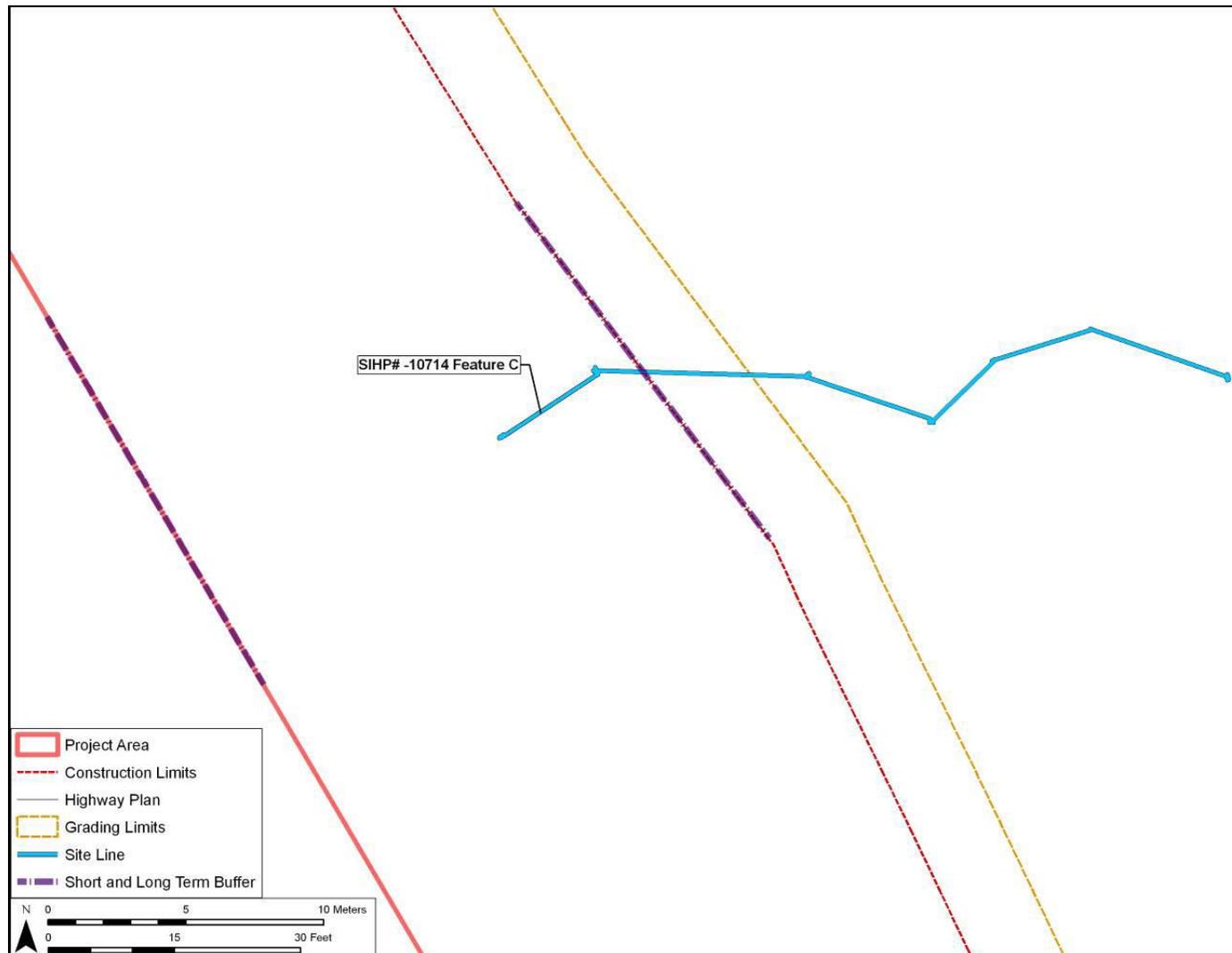


Figure 29. Preservation buffers for SIHP # -10714 Feature C (Shideler et al. 2012)

2.3 SIHP # 50-10-27-15324

Temp. Site No.: 1118-12 (PHRI); 6 (Walsh and Hammatt 1995)

Formal Type: Trail (*mauka-makai*)

No. of Features: 2

Function: Transportation

Age: Indeterminate; possibly pre- or early post-Contact

Overall Dimensions: 12 m long by 0.6 m wide (Feature A); 15 m long by 0.6 m wide (Feature B) (current project area)

Topography: Both 'a'ā and pāhoehoe sections

Elevation: 18–20 m (60–65 ft) AMSL (current project area)

Description: SIHP # -15324 is a trail network originally identified by Paul H. Rosendahl, Inc. (PHRI). In 1995, CSH (Walsh and Hammatt 1995:39) described SIHP # -15324 as follows:

. . . two converging trail segments designated Features A and B . . . Both trail segments extend in a roughly *mauka-makai* direction, but angle toward each other and converge into one trail that continues inland. The point where the two trails meet is located at the edge of the bulldozed portion of the present highway right of way, 164 feet (50 m.) from the *makai* edge of the highway pavement. Both trail segments were observed to continue over 300 feet (91 m.) *makai*. On the *mauka* side of the highway, the trail was observed at the edge of the bulldozed portion of the powerline (the new right-of-way boundary) and continuing inland at 65 degrees T.N. [true north] for at least another 100 feet (30 m.).

Both trail segments (Features A and B) average 0.6 m wide and consist of a trodden surface that meanders over pahoehoe and a'ā lava surfaces. A few isolated stepping stones consisting of pahoehoe slabs were observed along Feature B. Both trail segments are well worn and clearly visible, especially on the a'ā lava surfaces. The portion of Feature A within the new right-of-way is approximately 40 feet (12 m.) long, and the portion of Feature B within the new right-of-way is 50 feet (15 m.) long. [Walsh and Hammatt 1995:39]

Walsh and Hammatt (1995) recommended SIHP # -15324 eligible for inclusion in the National and State Registers of Historic Places under criterion D, for its information relevant to prehistory and history. It was recommended for preservation “to the extent possible within the proposed highway widening plans,” while “those portions . . . that cannot be avoided [should] be included in a program of data recovery” (Walsh and Hammatt 1995:57).

SIHP # -15324 was revisited during the current project's AIS (Monahan et al. 2012a) and was found to be in the same physical condition as in 1995 (Figure 30 and Figure 31).

2.3.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation for SIHP # -15324. During a revision of the ADRP (see Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of



Figure 30. Detail of a portion of SIHP # -15324, view to east (note stepping stone under the north arrow)

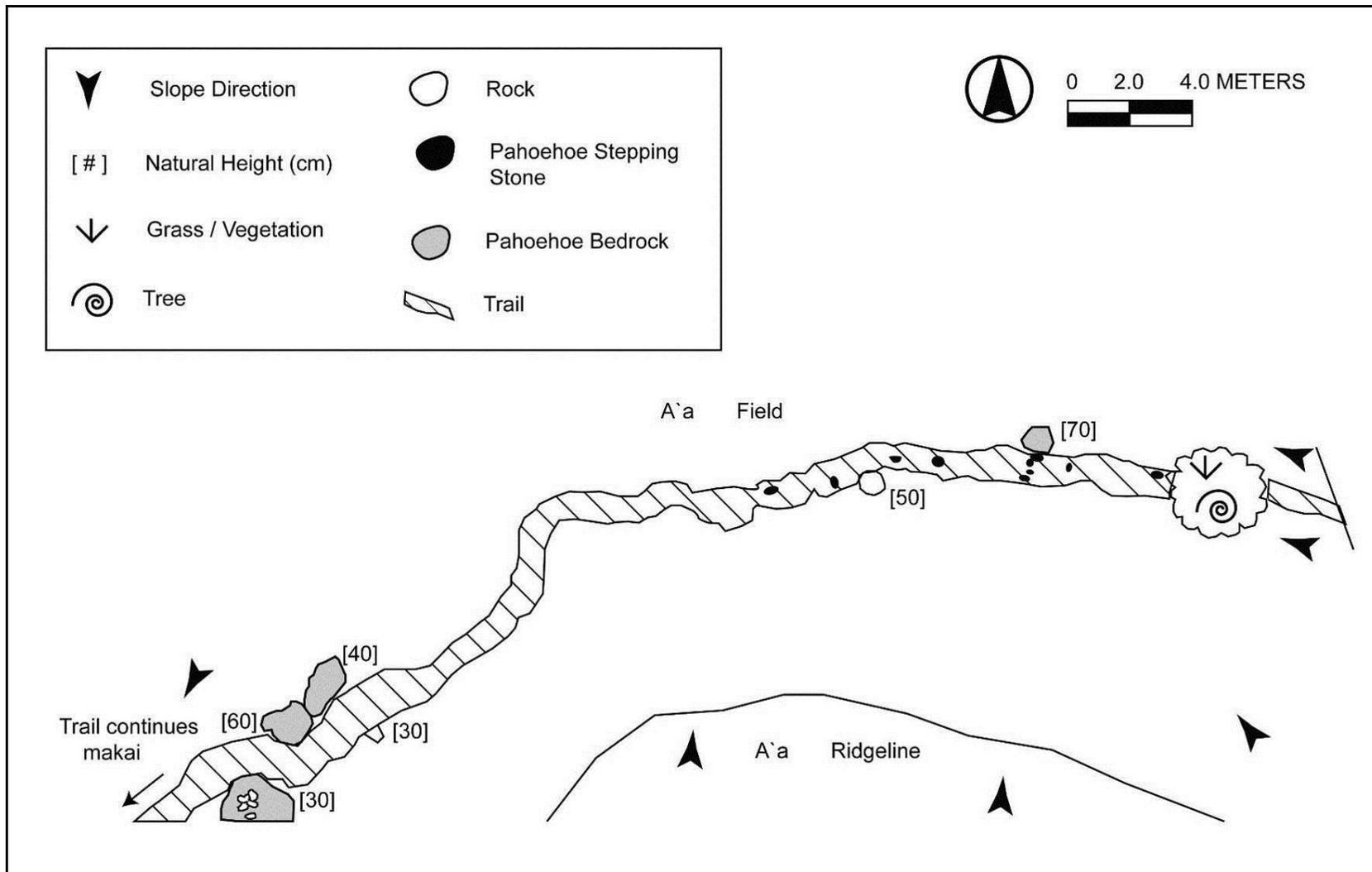


Figure 31. Plan view map of SIHP # -15324

the project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to be partially destroyed, including SIHP # -15324, will no longer be impacted by the project (see Table 1).

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -15324 as a Type "A" trail. Type "A" trails are generally the width of one person with many turnings. Stepping stones, such as the one visible in Figure 30, may also be used and occasionally piles of rocks (*ahu*) mark the trail. Although the precise age of SIHP # -15324 is undetermined, Type "A" trails normally date to the pre- or early post-Contact period. SIHP # -15324 was not depicted on any of the historic maps that were reviewed.

During a reconnaissance survey *makai* of the project area in Kohanaiki Ahupua'a, where SIHP # -15324 is located, Donham (1986) recorded only three trail segments and stated the following: "The low frequency of footpaths and trails located during reconnaissance . . . suggests either avoidance of the area due to the harsh environment, or for reasons that were perhaps social or religious in nature" (Donham 1986:10). One trail segment, SIHP # -14568 Feature B, identified by Donham (1986) is located *makai* of SIHP # -15324, west of the Māmalahoa Trail (SIHP # -00002). It is described as

the remnant of a footpath that apparently connected coastal and inland locales. It consists of a traffic-worn and partially filled path along aa and pahoehoe ridgelines. A section of the path approximately 0.5 km long could be followed; eastern and western ends of the section were obscured by ground cover. [Donham 1986:20]

Unfortunately, a map showing the full extent of the trail was not provided in Donham's (1986) report; however, based on the available information, it is possible SIHP # -15324 once extended to the coastline, connecting with SIHP # -14568 Feature B along the way.

2.3.2 Interim Protective Measures Implemented

Following the recommendations of the project APMP (Hammatt and Shideler 2014), interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts. The buffer zone is 5 m on all sides, except that nearest the project grading limits, where the buffer zone is approximately 0.6 m (Figure 32 and Figure 33). See Hammatt and Shideler (2014) for full preservation measures associated with SIHP # -15324.

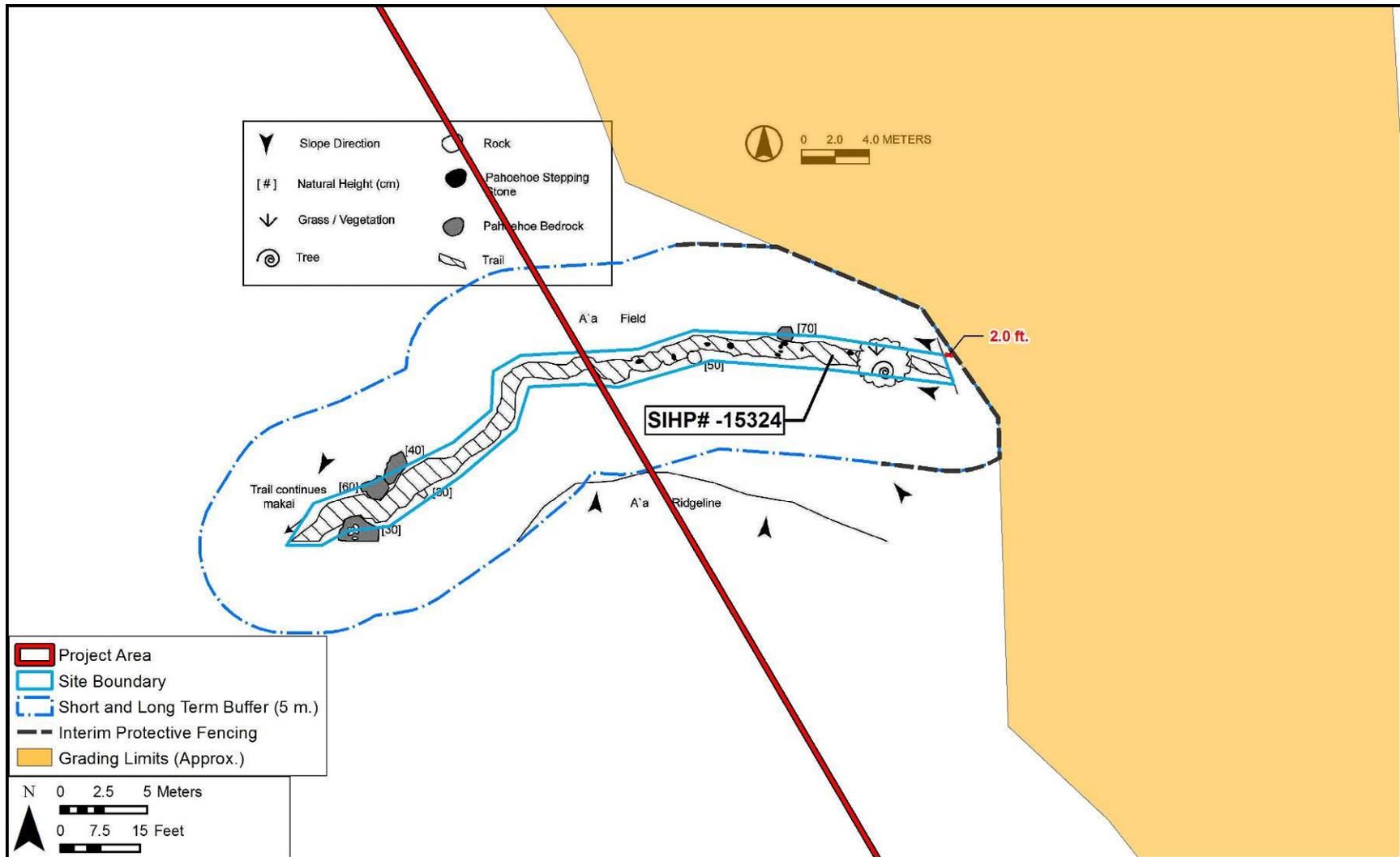


Figure 32. Preservation buffers for SIHP # -15324



Figure 33. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -15324

2.4 SIHP # 50-10-27-18099

Temp. Site No.: Trail 4 (Monahan et al. 2012a); 157-6 (Nelson and Gmirkin 2001)

Formal Type: Trail to Honokōhau (curbstone)

No. of Features: 0

Function: Transportation

Age: Likely pre- to post-Contact

Overall Dimensions: Minimally 3,066 m (10,120 ft) long (1.7 m N/S by 37.6 m E/W within the current project area)

Topography: Undulating *pāhoehoe* flow, level to moderately sloping

Elevation: 14–247 m (45–810 ft) AMSL (refers to entire trail)

Description: SIHP # -18099, also known as the Trail to Honokōhau, extends roughly east/west (*mauka-makai*) through the project area approximately 200 m south of the Kaloko-Honokōhau National Historical Park visitor center entrance within the portion of the project area adjacent to the National Park (Figure 34 through Figure 38). This trail has been previously identified within Honokōhau Ahupua'a on the *mauka* side of the existing highway during inventory surveys conducted by CSH (see Figure 4). Yucha and McDermott (2008) described SIHP # -18099 as follows:

In accordance to Russell A. Apple's classifications of Hawaiian land routes (Apple 1965), this type of curbstone trail is of the 'AB' trail type. 'AB' trails are generally defined as historic trails constructed for mule or horse travel over an existing prehistoric land route.

Where the trail crosses *pāhoehoe* outcrop it is usually characterized by a pebble pavement bound by parallel cobble and boulder alignments. The trail has an average width of 3.3 m and, when traversing prominent depressions, is constructed to a maximum height of 1.0 m. Along 'a'ā outcrop, the trail is distinguished by a trodden surface presently obscured by a dense grass growth and inset boulder curbing.

As was identified during a previous survey (Robins et al. 2000) and aerial photos, the trail begins at the south side of Aimakapa Pond (fishpond) along the coast of Honokōhau I Ahupua'a and extends *mauka* across the *ahupua'a*, intersecting the Māmalahoa Trail (SIHP # 50-10-27-2), and running parallel to a trodden 'a'ā trail (SIHP # 50-10-27-18122). The most *mauka* portion of the trail, beginning at approximately 690 ft. a.m.s.l., has evolved during the historic era into a road likely associated with ranching or historic agriculture activities in this region. Midden was observed over portions of the trail. [Yucha and McDermott 2008:26]

The portion of SIHP # -18099 that extends through the present project area consists of intermittent portions of curbstone alignments over solid *pāhoehoe* bedrock. Bulldozer track marks were observed in the vicinity of the trail. No artifacts or midden were observed in the area.

In the *ahupua'a* of Honokōhau 1, SIHP # -18099 is being preserved on the *mauka* side of the existing highway by West Hawaii Business Park, LLC. SIHP # -18099 has previously been recommended eligible for inclusion in the State Register of Historic Places under Criteria A, C, and D by CSH during two previous projects in Honokōhau 1 and 2 (Robins et al. 2000; Yucha



Figure 34. Photograph of SIHP # -18099 Section 1 within the project area, view to east



Figure 35. Photograph of SIHP # -18099 Section 2 within the project area, view to east



Figure 36. Photograph of SIHP # -18099 Section 3 within the project area, view to east

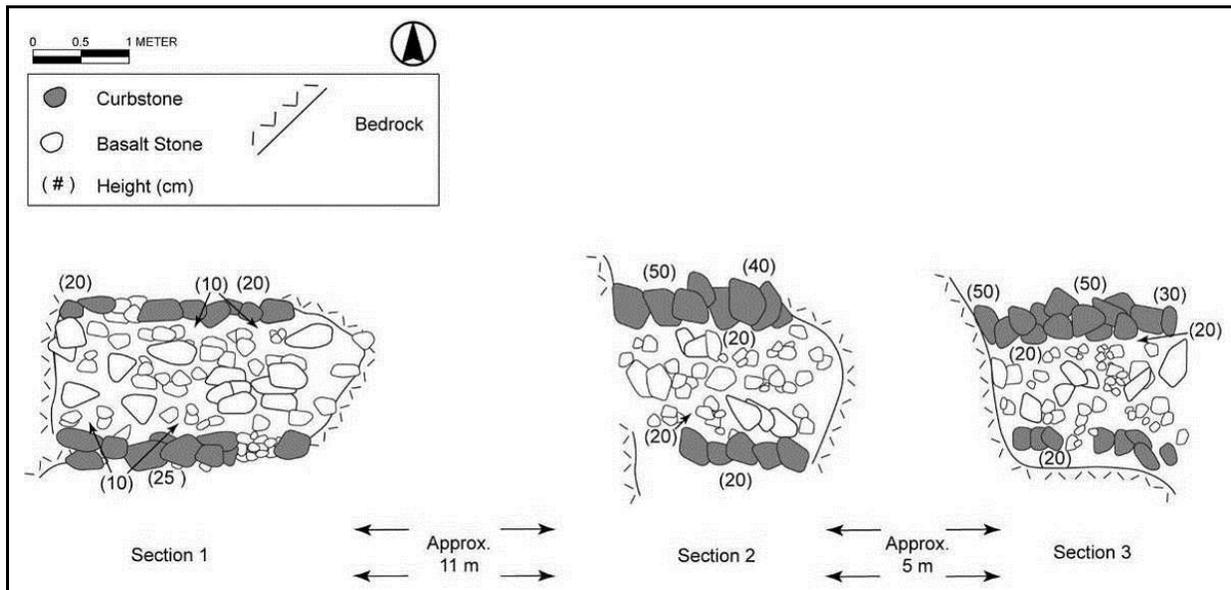


Figure 37. Plan view map of three sections of the portion of SIHP # -18099 located within the current project area

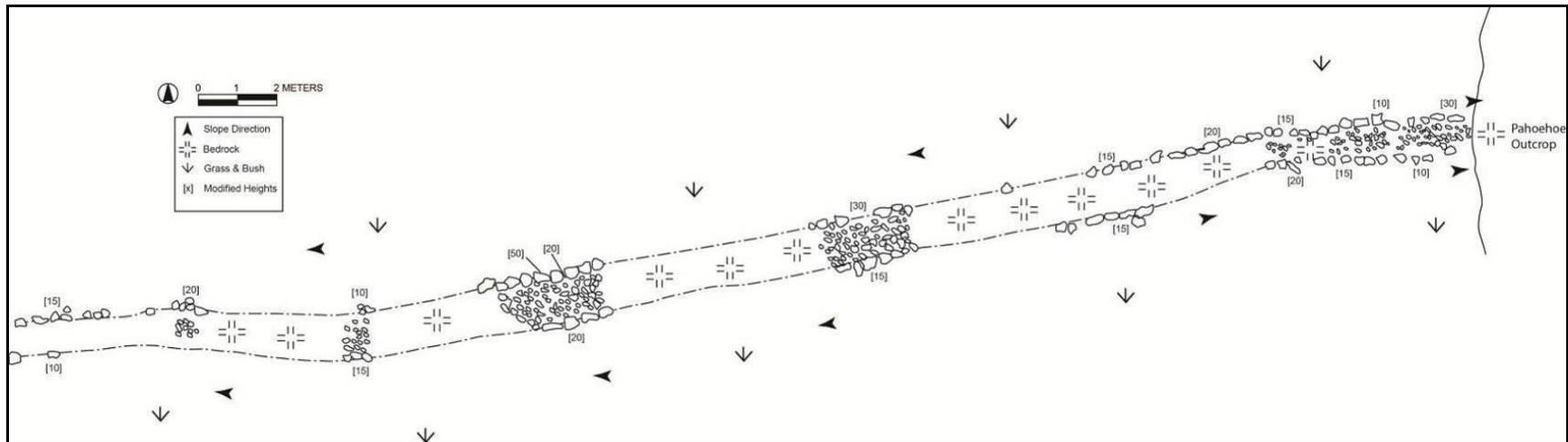


Figure 38. Plan view map of SIHP # -18099

and McDermott 2008). It is subject to protection and preservation under the Highways Act of 1892 (HRS §264-1[b]; Na Ala Hele DLNR 2008).

2.4.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation of SIHP # -18099. During a revision of the ADRP (Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to be partially destroyed, including SIHP # -18099, would no longer be impacted by the project (see Table 1).

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -18099 as a Type “AB” trail. Type “AB” trails are Type “A” trails that have been modified to accommodate horses. Modifications include widening the trail, creating areas of ramping, and the addition of curbstones. As mentioned above, the portion of SIHP # -18099 that extends through the present project area consists of intermittent portions of curbstone alignments over solid *pāhoehoe* bedrock. The trail begins at ‘Aimakapā Fishpond and extends *mauka* across the *ahupua‘a*, intersecting the Māmalahoa Trail (SIHP # -00002) and running parallel to a trodden ‘*a‘ā* trail (SIHP # -18122, not part of the current data recovery). Archival research indicates SIHP # -18099 was one of the primary *mauka-makai* trails in Honokōhau, where residents had a significant network of travel routes that provided access to, and exchange of, resources between the coast and upland regions. Furthermore, the modification of this Type “AB” trail attests to the fact that Honokōhau Ahupua‘a was commonly traversed during both the pre- and post-Contact periods (Robins et al. 2000:88).

During an inventory survey of an 803-acre parcel in Honokōhau Ahupua‘a *mauka* of the current project area, Robins et al. (2000:84) noted petroglyphs in the project area were associated with habitation sites and with the major trails in Honokōhau. Robins and colleagues (2000) proposed a possible distinction between personal and public significance for the petroglyphs, suggesting that while those displayed within a habitation cave may be significant mainly to the individual or family utilizing the cave, images displayed along trails may have been created for the general public and denote significance to the greater community. Yucha and McDermott (2008:26) recorded five pre-Contact and historic petroglyphs on outcrops and small portable boulders near SIHP # -18099 *mauka* of the current project area. The presence of both pre- and post-Contact petroglyphs suggests SIHP # -18099 functioned initially as a traditional Hawaiian land route and later as a historic trail. One petroglyph, SIHP # -18081, is located at the juncture of SIHP # -18099 and the Māmalahoa Trail (SIHP # -00002), just *mauka* of the current project area. Robins et al. (2000:84) propose that such images may demarcate the trail juncture for travelers, as well as serving as *kapu* markers for non-residents traveling the Māmalahoa Trail, to prevent them trespassing into Honokōhau Ahupua‘a.

Robins et al. (2000:86) note the two Type “AB” curbstone trails, SIHP #s -18099 and -18122, within their project area are associated with a network of Type “A” stepping stone trails. The stepping stone trails are likely spur trails that once diverted from a Type “A” trail, which was superimposed upon by the subsequent curbstone constructions. The Type “A” stepping stone trails in this area were likely associated with localized travel among habitation, animal pen, and agricultural sites. Furthermore, a number of permanent habitation sites as well

recurrent/temporary habitations were identified adjacent to, or in close proximity to, SIHP # -18099. In particular, Yucha and McDermott (2008:165) note the presence of permanent habitations in the “intermediate” zone of Honokōhau Ahupua‘a. Although permanent habitation is generally associated with the coastal and upland zones, the presence of habitation features in the intermediate zone suggests pre-Contact populations were living there year-round; the presence of SIHP # -18099 in the area may have facilitated this habitation by providing access to coastal and *mauka* resources.

Based on historic maps, SIHP # -18099 was used until at least 1928. It is depicted on an 1891 J.S. Emerson map (see Volume I Figure 23) and a 1928 USGS map of Keahole and Kailua quadrangles (see Volume I Figure 27). Upland portions of SIHP # -18099 are also depicted on a 1959 USGS map (see Volume I Figure 31). Although portions of SIHP # -18099 serve as a great example of a trail that once extended between the coastal and upland settlements of Honokōhau 1 and 2, the trail is in a state of disrepair, having been breached in a number of places by roaming cattle, pasture improvements, possible alteration by Japanese homesteaders, and major construction near the Queen Ka‘ahumanu Highway (Robins et al. 2000:151). For instance, Yucha and McDermott (2008:30) observed that approximately 80 m of the trail had been destroyed during the construction of a cattle wall. The portions of the trail that remain in fair condition are located in the upland portion of the *ahupua‘a* and are no longer contiguous with the segments at lower elevation.

2.4.2 Interim Protective Measures Implemented

Following the recommendations of the project APMP (Hammatt and Shideler 2014), interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts. The buffer zone is 5 m on all sides, except that nearest the project grading limits where the buffer zone is approximately 0.6 m (Figure 39 and Figure 40).

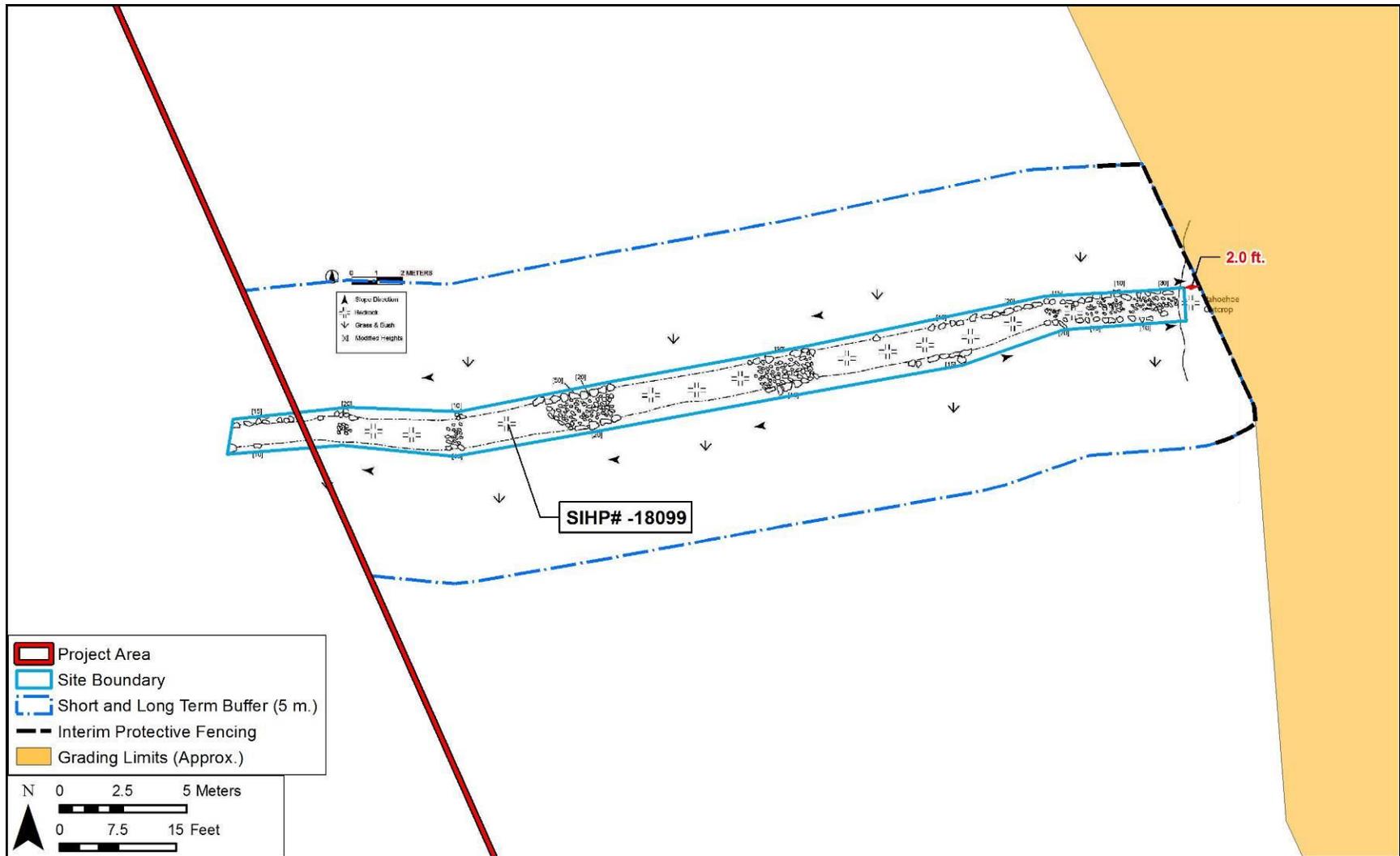


Figure 39. Preservation buffers for SIHP # -18099



Figure 40. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -18099

2.5 SIHP # 50-10-27-19946

Temp. Site No.: 5 (Walsh and Hammatt 1995)

Formal Type: Trail (*mauka-makai*)

No. of Features: 0

Function: Transportation

Age: Historic (possibly also pre-Contact)

Overall Dimensions: Approximately 13.1 m long E/W by 1.25–1.5 m wide N/S (current project area)

Topography: *'A'ā*

Elevation: 18–20 m (60–65 ft) AMSL (current project area)

Description: SIHP # -19946 is a trail approximately 44 m west of the Queen Ka'ahumanu Highway at the edge of bulldozer push, originally described by Walsh and Hammatt (1995) (Figure 41 through Figure 44). Matsuyama Market and the Pine Trees Café complex are across the highway to the southeast. The trail trends *mauka/makai* over a rough *'a'ā* flow and terminates at the edge of a *pāhoehoe* flow next to a cairn at its westernmost point, well outside the current project area. The trail terminates at its *mauka* end at a small pile of rubble at the edge of bulldozer push resulting from the initial construction of the highway. As a result of heavy foot traffic, the trail has settled approximately 10–50 cm below the surrounding *'a'ā* flow. The surface of the trail is fairly level and is composed of small cobbles of *pāhoehoe* and *'a'ā*. The portion of SIHP # -19946 within the current project area measures approximately 13.1 m in length (*mauka/makai*) and approximately 1.25–1.5 m in width.

The trail is well defined and in good condition. No cultural material was observed within the project area; however, outside the current project area, to the west on a rise in the trail, are the remains of a donkey. The bones are very weathered and sun-bleached. Based on the presence of donkey bones, as well as the trail width and lack of stepping stones, SIHP # -19946 appears to be a historic horse/donkey trail; however, it may have evolved from a traditional period foot trail.

Walsh and Hammatt (1995) recommended SIHP # -19946 eligible for inclusion in the National and State Registers of Historic Places under Criterion D, for its information relevant to prehistory and history. They also recommended future research on SIHP # -19946 to include a search for historical documentation, as well as an attempt to find linkages with trail sections identified in other archaeological studies both *mauka* and *makai*.

2.5.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation of SIHP # -19946. During a revision of the ADRP (see Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to be partially destroyed, including SIHP # -19946, would no longer be impacted by the project (see Table 1).

As mentioned above, SIHP # -19946 was originally identified by Walsh and Hammatt (1995). The segment described by Walsh and Hammatt (1995:59) was 58 m long, ranging from 1-1.5 m in width. It was described as a “partially cleared trodden surface of *'a'ā* bedrock, cobbles, and pebbles,” with no stepping stones or curbs observed. While that segment was considered



Figure 41. Photograph of SIHP # -19946, view to west



Figure 42. Photograph of SIHP # -19446, view to east

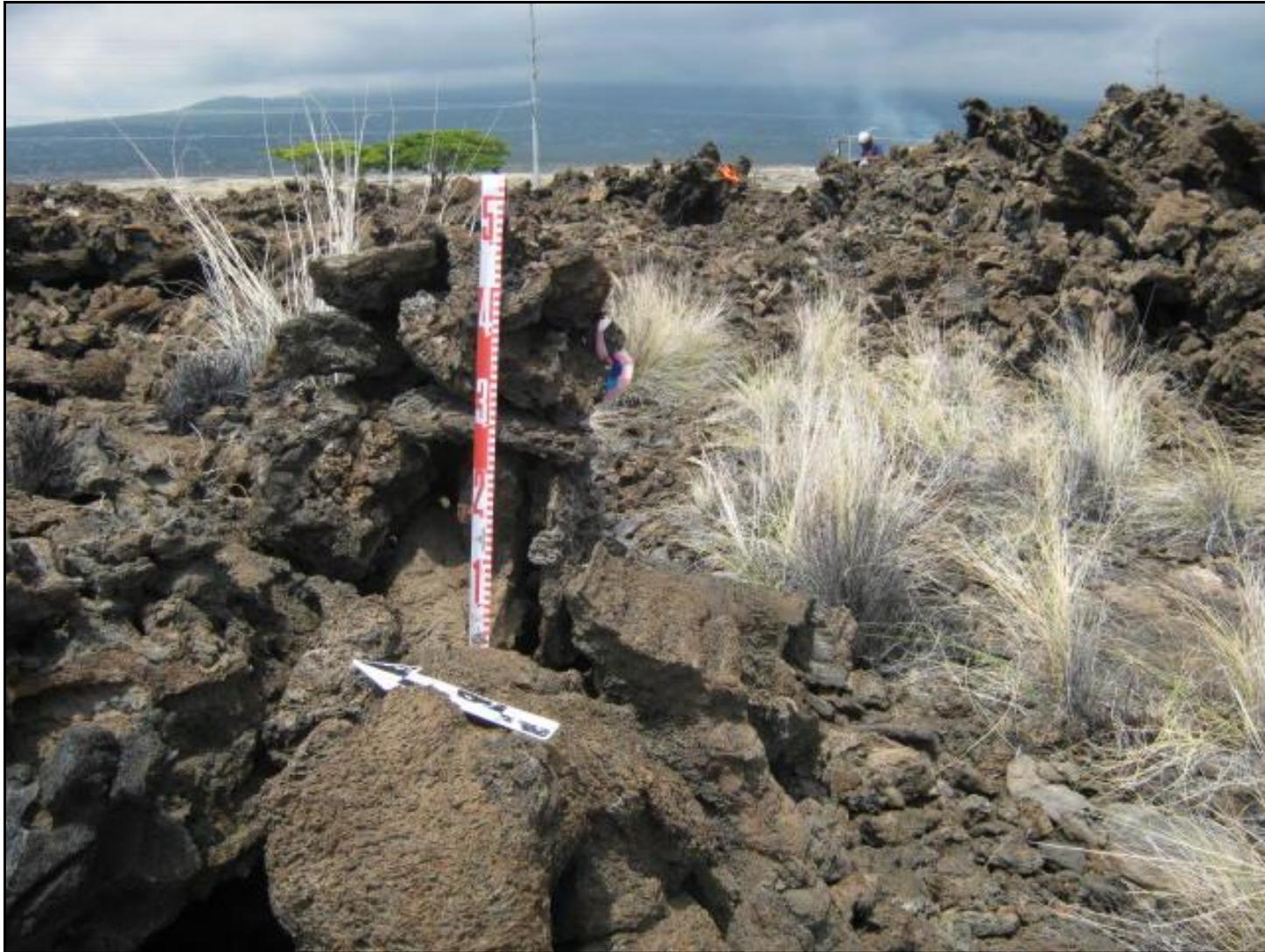


Figure 43. Photograph of the cairn at the *makai* portion of SIHP # -19446, view to northeast

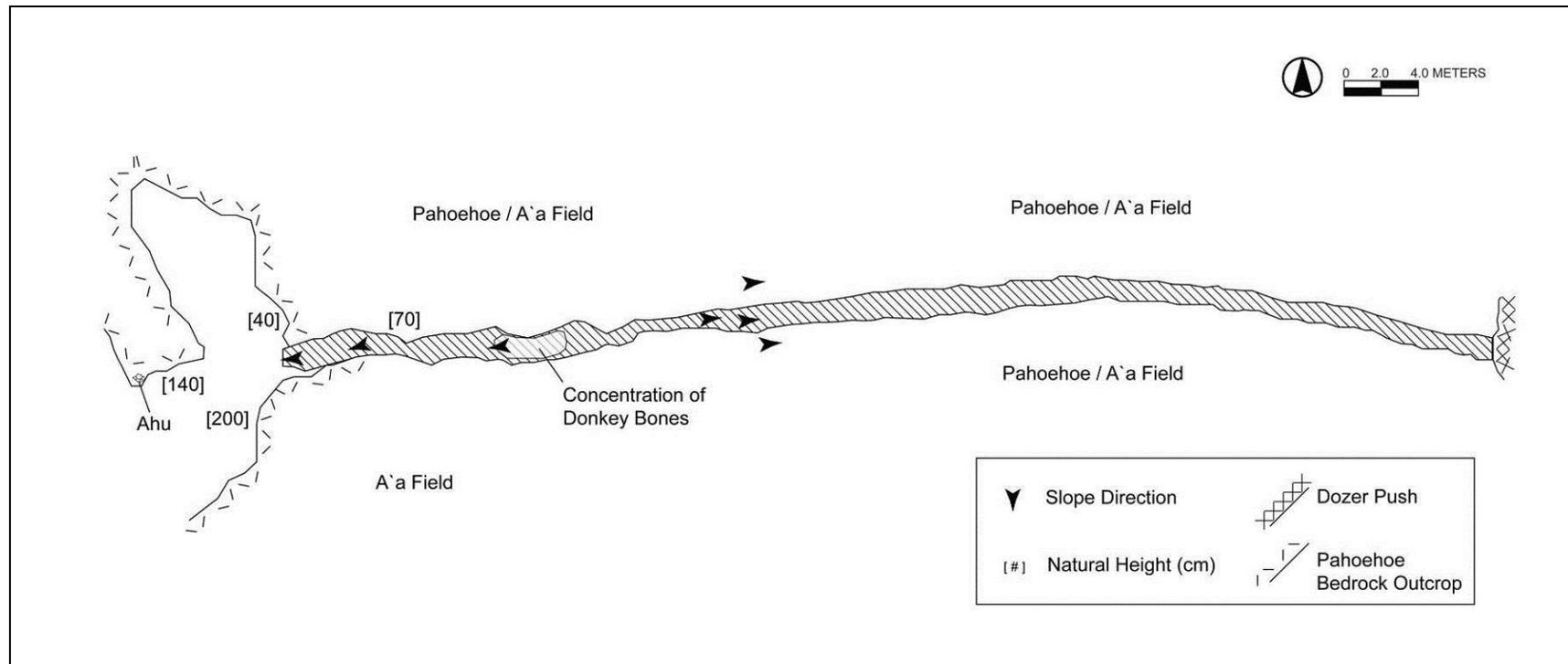


Figure 44. Plan view map of SIHP # -19446

to be a portion of a trail extending from the coast inland, the trail could not be discerned on the *pāhoehoe* terrain that continued *makai*, nor on the *mauka* side of the project area. The difficulty in identifying trails on *pāhoehoe* has been noted in several studies, including Colin et al. (1996), who point to the “uniformity of the terrain (usually consisting of undulating pahoehoe) surrounding the a‘a flows [which] negates the necessity of extensive trail construction” (Colin et al. 1996:43). Furthermore, Colin et al. (1996:43) suggest it is possible that “while the trails followed a single route over the a‘a flows once the trail exited the a‘a more than one path may have been traversed by travelers,” making it difficult or even impossible to follow the full route of an individual trail.

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -19946 as a Type “AB” trail. Type “AB” trails are Type “A” trails that have been modified to accommodate horses. Modifications include widening the trail, creating areas of ramping, and/or the addition of curbstones. Because Type “AB” trails usually develop from earlier footpaths; they were typically traversed during both the pre- and post-Contact periods. SIHP # -19946 was not depicted on any of the historic maps that were reviewed. Likewise, no trail segments from previous archaeological studies were found to connect with SIHP # -19946.

It is worth noting that a *pā kēkake*, or donkey corral, is situated on the *mauka* side of the beach at the Kohanaiki Golf Club (Figure 45). Its connection to the *mauka-makai* trails of Koahanaiki, including possibly SIHP # -19946 (see above discussion regarding the presence of a donkey skeleton on the trail), is described in the Kohanaiki Nature Guide (Koahanaiki Press 2015) as follows:

Mauka families traded with makai families for fish and other coastal resources. The makai families would trade for taro, sweet potato and other mauka goods. The mauka and makai regions connected by a series of trails. Initially they were travelled by foot and then as times changed by donkeys and surplus WWII Jeeps .
..

The descendants of Kohanaiki recount how they regularly traveled between the upper and lower areas and the patterns of these migrations are still evident at Kohanaiki.

Not far from the ocean, a rustic donkey corral built of lava rock still stands. The donkeys would be loaded up and taken to the trail. They would walk to their destination without riders or guides; they would be unloaded, loaded back up and pointed back to where they came from. [Koahanaiki Press 2015:2–3]

Furthermore, the use of trained donkeys to transport produce and other goods was apparently not limited to Kohanaiki Ahupua‘a. In their collection of oral histories on Kaloko and Honokōhau Ahupua‘a, Maly and Maly (2002) interviewed several informants who described similar practices, including the following account:

During Thanksgiving, Christmas, and New Year’s, our kūpuna looked forward to having awa and ‘anae in the pā‘ina. Old Polto used to catch the fish about ten o’clock in the night, and by two o’clock in the morning, he had it all packed up on the donkey, and they trained a dog and the donkey to transport the fish from



Figure 45. The donkey corral at Kohanaiki (Kohanaiki 2017)

Kaloko-Honokōhau to Kailua, at Henry Akona's market. [Maly and Maly 2002:11]

However, it is possible the donkey skeleton observed at SIHP # -19946 is from a feral donkey, rather than a trained donkey used for transporting goods. Donkeys have a historical connection to Kona coffee farms, as they were brought from Africa to work the coffee farms of Kona in the early 1900s. The sure-footed animals were ideal for such work, carrying up to 500 pounds of beans on the slopes of Mauna Loa. Although donkeys are social animals, many of the tiny, family coffee farms owned only one donkey. At night, the braying of lonely donkeys echoed up and down the mountain, earning them the name "Kona Nightingales." After World War II, when tractors and surplus Jeeps rendered the donkeys obsolete, some were turned loose to freely roam West Hawai'i's arid lava fields (McNarie 2011).

2.5.2 Interim Protective Measures Implemented

Following the recommendations of the project APMP (Hammatt and Shideler 2014), interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts. The buffer zone is 5 m on all sides, except that nearest the project grading limits, where the buffer zone is approximately 4.5 m (Figure 46 and Figure 47).

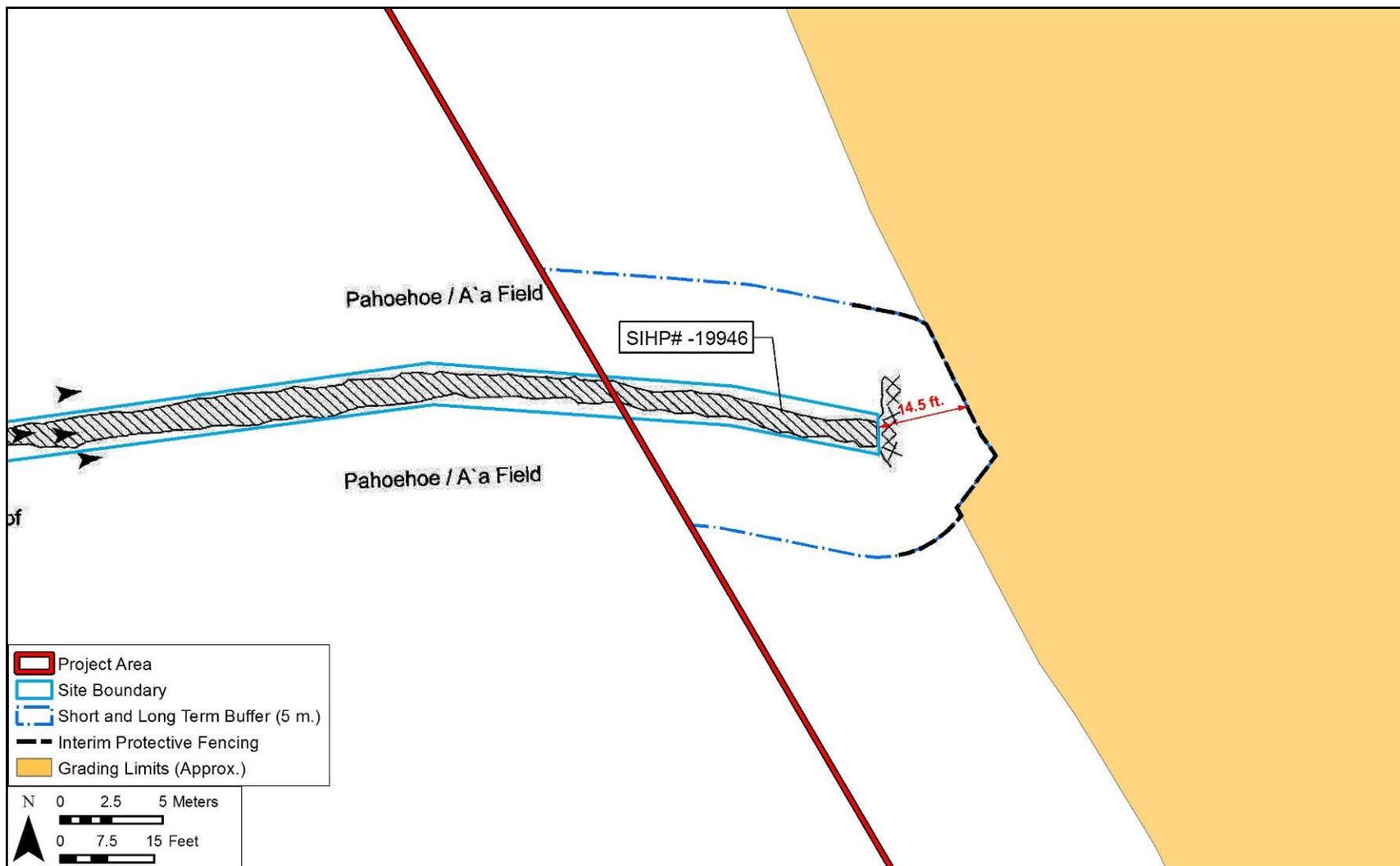


Figure 46. Preservation buffers for SIHP # -19946



Figure 47. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -19946

2.6 SIHP # 50-10-27-19952

Temp. Site No.: 13 (Walsh and Hammatt 1995)

Formal Type: Trail (*mauka-makai*)

No. of Features: 0

Function: Transportation

Age: Indeterminate, possibly pre- or early post-Contact

Overall Dimensions: Approximately 70 ft long (current project area)

Topography: 'A'a finger transitioning into *pāhoehoe* flow

Elevation: 23 m (75 ft) AMSL

Description: SIHP # -19952 was first formally described by CSH in 1995 (Walsh and Hammatt 1995) and revisited during the current project's AIS (Monahan et al. 2012a), when it was found to be in the same physical condition as in 1995 (Figure 48 and Figure 49). The intact *mauka* end of the trail (before it is truncated by previous ground disturbance associated with highway construction) is approximately 38 m from the edge of the existing highway. The trail was described by Walsh and Hammatt (1995) as follows:

Site 19952 consists of a *mauka-makai* oriented trail segment . . . The trail is discernible as a trodden surface roughly 1.0 m. wide extending over the finger of an a'a flow. The trail becomes increasingly faint as it continues *makai* over pahoehoe lava terrain. Some remnant curbstones were observed along the trail where it crosses the a'a.

The trail begins approximately 125 feet (38 m.) *makai* of the highway pavement edge (the extent of bulldozing for the construction of the present highway), and can be followed *makai* for roughly 200 feet (61 m.), beyond which becomes increasingly difficult to discern. The condition of the trail is poor and it appears to have been at least partially disturbed by modern construction activities. [Walsh and Hammatt 1995:51, 54]

Walsh and Hammatt (1995) recommended SIHP # -19952 eligible for inclusion in the National and State Registers of Historic Places under Criterion D, for its information relevant to prehistory and history.

2.6.1 Data Recovery Efforts

SIHP # -19952 was recommended for data recovery by Walsh and Hammatt (1995); however, the final archaeological treatment plan (1999) called for interim protection only, with no data recovery. In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation. Because the project effect for SIHP # -19952 has not changed, it was not addressed in the latest revision of the ADRP (Hammatt and Shideler 2014).

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -19952 as a Type "AB" trail. Type "AB" trails are Type "A" trails that have been modified to accommodate horses. Modifications include widening the trail, creating areas of ramping, and/or the addition of curbstones. Consequently, this trail may be a historic trail that developed from an earlier footpath. The trail extends *makai* for a short distance onto NPS property; however, it does not



Figure 48. Photograph of SIHP # -19952, view to west

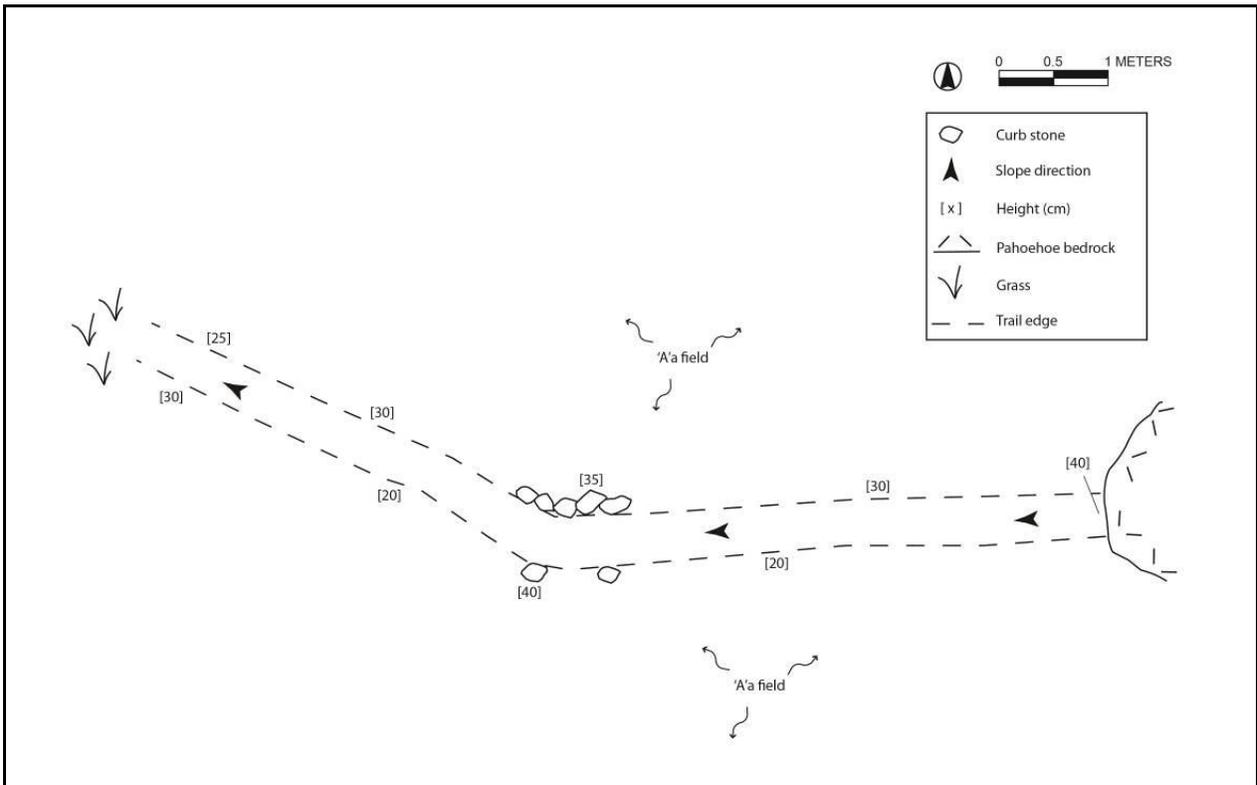


Figure 49. Plan view map of SIHP # -19952

connect with any other trails within the National Park. Archival research yielded no additional information on SIHP # -19952, which was not depicted on any of the historic maps that were reviewed. Likewise, no trail segments identified during previous archaeological studies were found to connect with SIHP # -19952.

SIHP # -19952 is located just north of SIHP # -28787 (see Section 2.14 for full historic property description). Although initially it seemed unusual to have two roughly parallel trails positioned so close to one another, this phenomenon has been documented in previous studies. For instance, during an inventory survey of a 224.3-acre parcel in Kaloko and Kohanaiki Ahupua'a, Bell et al. (2009) documented 21 historic trail properties and noted the following:

Among these transportation routes, something peculiar appears to be going on with the numerous short trails crossing a small 'a'a flow near the southern border of the project area ([SIHP #s] 13493, 20722, 20726, 20744, 20745). Here there appears to have been great need for crossing the 'a'a quickly without regard to the increased labor needed to build so many parallel trails. One explanation for this is that a larger *mauka-makai* route was nearby and that these trails converged upon it shortly after leaving the rugged flow. It may be that this hints at a route older than Kohanaiki Road, which could be either north or south of Hina Lani. [Bell et al. 2009:259]

Furthermore, Bell et al. (2009:202) point out that the "closely spaced and approximately parallel trails . . . [suggest] a relatively high degree of traffic in the area." A similar explanation may therefore apply to SIHP #s -19952 and -28787, which, like the trails referred to in the above quotations, are closely spaced, roughly parallel trails located on 'a'a flows within Kaloko Ahupua'a.

2.6.2 Interim Protective Measures Implemented

Interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts (Figure 50).

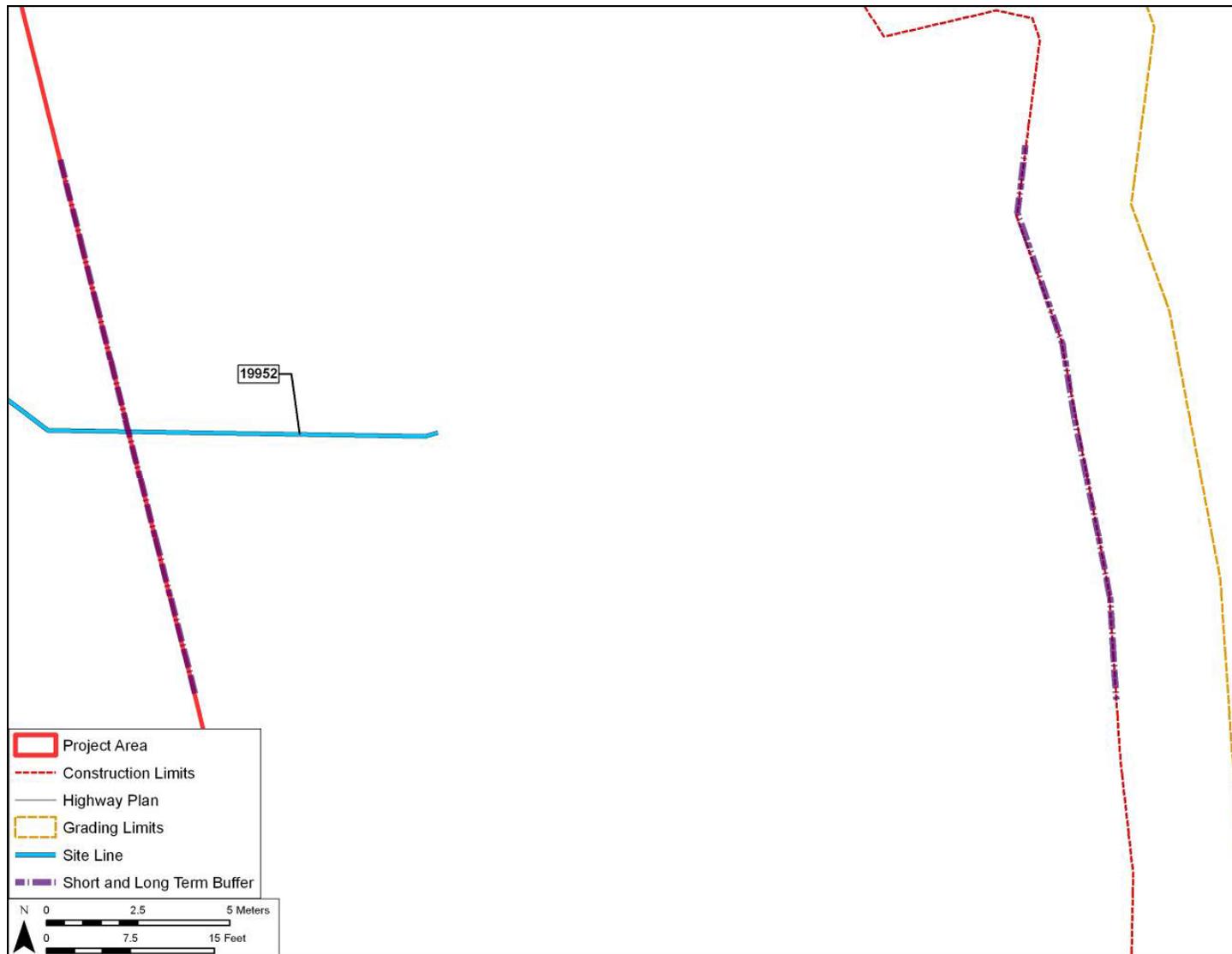


Figure 50. Preservation buffers for SIHP # -19952 (Shideler et al. 2012)

2.7 SIHP # 50-10-27-19953

Temp. Site No.: 14 (Walsh and Hammatt 1995)

Site Type: Trail (*mauka-makai*)

No. of Features: 0

Functional Interpretation: Transportation

Age: Pre- or early post-Contact

Overall Dimensions: Approximately 30.5 m (150 ft) long (current project area)

Topography: Gently sloping 'a 'ā terrain

Elevation: 17–18 m (57–60 ft) AMSL

Description: SIHP # -19953 was first formally described by CSH in 1995 (see Walsh and Hammatt 1995). It was revisited during the current project's AIS (Monahan et al. 2012a) and found to be in the same physical condition as in 1995 (Figure 51 through Figure 55). A waterworn cobble and surveyor's pin described in CSH's 1995 report were also observed during the 2012 AIS. The overall length of the trail and its *mauka* terminus (i.e., starting approximately 16 m from the existing highway pavement edge) have not changed since 1995. The trail was described by Walsh and Hammatt (1995) as follows:

Site 19953 consists of a slightly meandering, but generally *mauka-makai* oriented trail . . . The trail consists of a partially cleared and trodden surface over A'a lava terrain. The trail measures 0.5 to 0.6 m. wide. It begins 53 feet (16 m.) from the highway pavement edge and continues *makai* for at least 200 feet (61 m.) beyond the project area boundary. A roughly 20 foot (6 m.) section of the trail has been destroyed where it intersects with the Māmalahoa Trail at approximately 150 feet (46 m.) from the highway pavement edge.

The trail is in fair to good condition and has previously been identified and flagged, probably by National Park archaeologists who, we have been informed, have done some surveying in the area and have identified several inland-heading trails. The site has not been previously recorded however, and a state site number had not been previously assigned (personal communication with National Park archaeologist Catherine Glidden 6/27/95). [Walsh and Hammatt 1995:54]

The SHPD has pointed out (letter of 9 July 2012) that “this trail predates the Māmalahoa Trail.” Therefore, it likely dates to the pre-Contact or early historic period. Walsh and Hammatt (1995) recommended SIHP # -19953 as eligible for inclusion in the National and State Registers of Historic Places under Criterion D, for its information relevant to prehistory and history.

2.7.1 Data Recovery Efforts

SIHP # -19953 was recommended for data recovery by Walsh and Hammatt (1995). The final archaeological treatment plan (1999) called for data recovery of the portion of the trail that could not be saved (due to project-related construction) and interim protection of the remainder of the trail in the project area. In 1999, CSH (Hammatt et al. 1999) conducted data recovery of a portion of SIHP # -19953, as described below.



Figure 51. Photograph of the eastern portion of SIHP # -19953, at the intersection with the Māmalahoa Trail (SIHP # -00002), view to east



Figure 52. Photograph showing the eastern terminus of SIHP # -19953, view to east



Figure 53. Photograph of the western portion of SIHP # -19953 showing the upright, waterworn cobble just outside (*makai* of) the project area (in the lower right corner), view to east



Figure 54. Photograph of western portion of SIHP # -19953 in project area, view to west

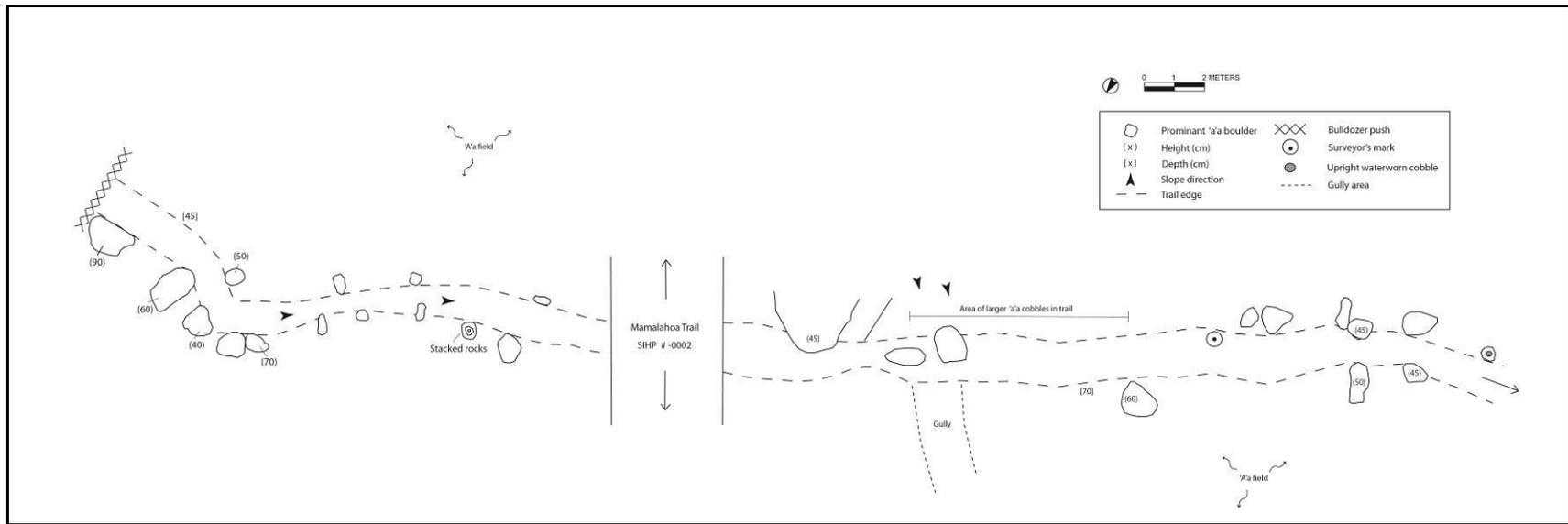


Figure 55. Plan view map of SIHP # -19953

2.7.1.1 1999 Data Recovery Efforts (Hammatt et al. 1999)

On 31 May 1999, CSH conducted data recovery fieldwork on a section of the Māmalahoa Trail (SIHP # -00002; see Section 2.1) and a bisecting *mauka-makai* trail (SIHP # -19953) that was to be partially destroyed by the project grading limits (Hammatt et al. 1999). Within the project area, SIHP # -19953 covered a length of approximately 51 m and a width of 0.6–1.5 m. Two trenches (Trenches 3 and 4) were excavated at SIHP # -19953, with photographs and cross-sectional drawings generated for each trench. The trenches were placed to provide representative cross-sections of the trail (see Figure 10) and are described below. Description of exposed stratigraphy was limited to the narrative discussions provided verbatim in Sections 2.7.1.1.1 and 2.7.1.1.2 (tabulated descriptions were not included in Hammatt et al. 1999).

2.7.1.1.1 Trench 3

Hammatt et al. (1999) describe the results of Trench 3 as follows:

Trench 3 was located approximately 13 meters southwest (seaward) of the Mamalahoa Trail on the unnamed seaward-inland trail (State Site # -19953). This trail was considerably less defined than the Mamalahoa Trail though obviously used as a path to the coastal area. The trench was placed on a portion of the trail that was approximately 0.9 m wide and moderately built up about 75 cm. The surface consisted of medium sized subangular boulders with small-medium cobbles and pebbles as fill. There was no pavement on this portion of the trail though discoloration from use helped define the course of the trail. The trail was built up about 1-3 courses, with no defining surface layer [Figure 56 and Figure 57]. No cultural materials were observed during trenching. [Hammatt et al. 1999:9]

2.7.1.1.2 Trench 4

Hammatt et al. (1999) describe the results of Trench 4 as follows:

Trench 4 was located approximately 16 meters northeast (inland) of the Mamalahoa Trail intersection on the unnamed seaward-inland trail (State Site # -19953). The trail was on a natural rise with little alteration to the natural state of the surface. The surface of the trail at this location was about 1 meter in width and consisted of medium sized 'a'ā pebbles (2-7 cm) in diameter. Lying beneath the surface was a thick stratum of weathered 'a'ā pebbles and sparse silt approximately 50 cm thick [Figure 58 and Figure 59]. One large boulder flanked the north side of the trail, but was in its natural state and not deliberately moved. Along this section of the trail several pieces of fine grained basalt with embedded (1 mm) olivine crystals were observed. No midden, artifacts, manuports or other cultural material were observed during trenching. [Hammatt et al. 1999:9, 18]

2.7.1.2 2015 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation of SIHP # -19953. During a revision of the ADRP (Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the

project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to be partially destroyed, including SIHP # -19953, would no longer be impacted by the project (see Table 1).

SIHP # -19953, was not depicted on any of the historic maps that were reviewed and was not found to connect with any trails *mauka* of the current project area. However, archival research indicates SIHP # -19953 extends *makai* onto NPS property, after crossing the Māmalahoa Trail, and continues toward 'Aimakapā Fishpond (see Figure 4). The portion within the National Park has previously been designated as SIHP # -21021 and intersects with SIHP # -22507, which is also part of the current data recovery investigation (see Section 2.10 for full historic property description).

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -19953 as a Type "AB" trail. Type "AB" trails are Type "A" trails that have been modified to accommodate horses. Modifications may include widening the trail, creating areas of ramping, and/or the addition of curbstones. Based on trail typology and consultation with SHPD (letter of 9 July 2012), SIHP # -19953 likely dates to the pre- or early post-Contact period. This is consistent with information provided by the NPS, who have noted the importance of the trail system within the National Park as follows:

Several trails are found in the Kaloko-Honokohau area, mostly short footpaths comprising a local trail system, used both in the prehistoric and early historic (pre-1840) periods . . .

These trails are an important component of the park's cultural landscape, providing data on the linkages between communities. They comprise a record of local movement and . . . are important in illustrating early communication, transportation, and commercial networks. Their importance to the prehistoric Hawaiian subsistence economy cannot be overlooked, because they were the lifelines for food exchange. They were a direct result of the belief that everyone had access rights to the products of the land and ocean for their sustenance. [Greene 1993: Chapter VIII]

2.7.2 Interim Protective Measures Implementation

Following the recommendations of the project APMP (see Hammatt and Shideler 2014), interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts. The buffer zone is 5 m on all sides, except that nearest the project grading limits, where the buffer zone is approximately 0.6 m (Figure 60 and Figure 61).

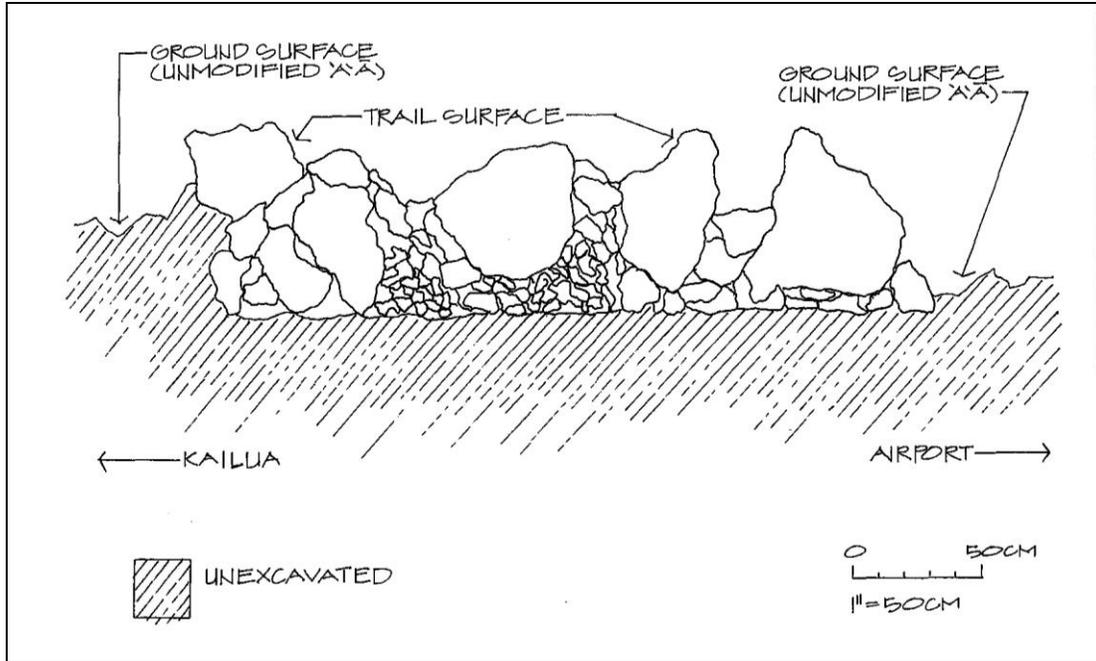


Figure 56. Cross-section view of Trench 3 excavated at SIHP # -19953, view to southwest

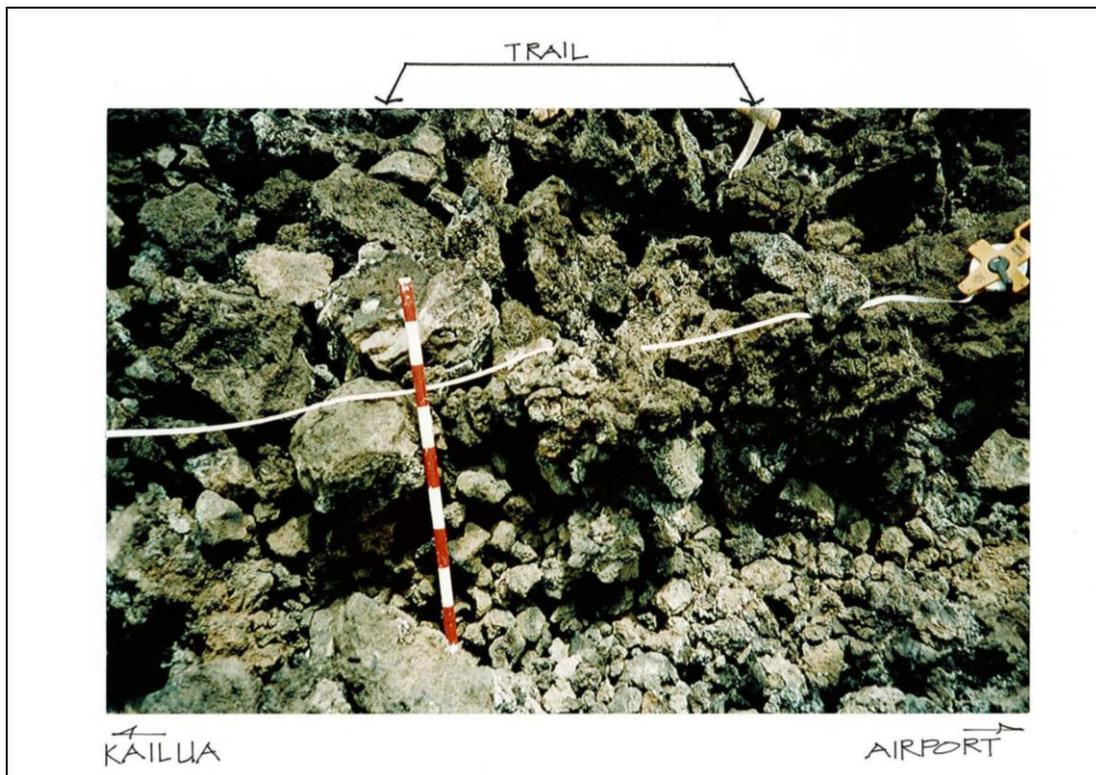


Figure 57. Profile photograph of Trench 3 excavated at SIHP # -19953, view to southwest

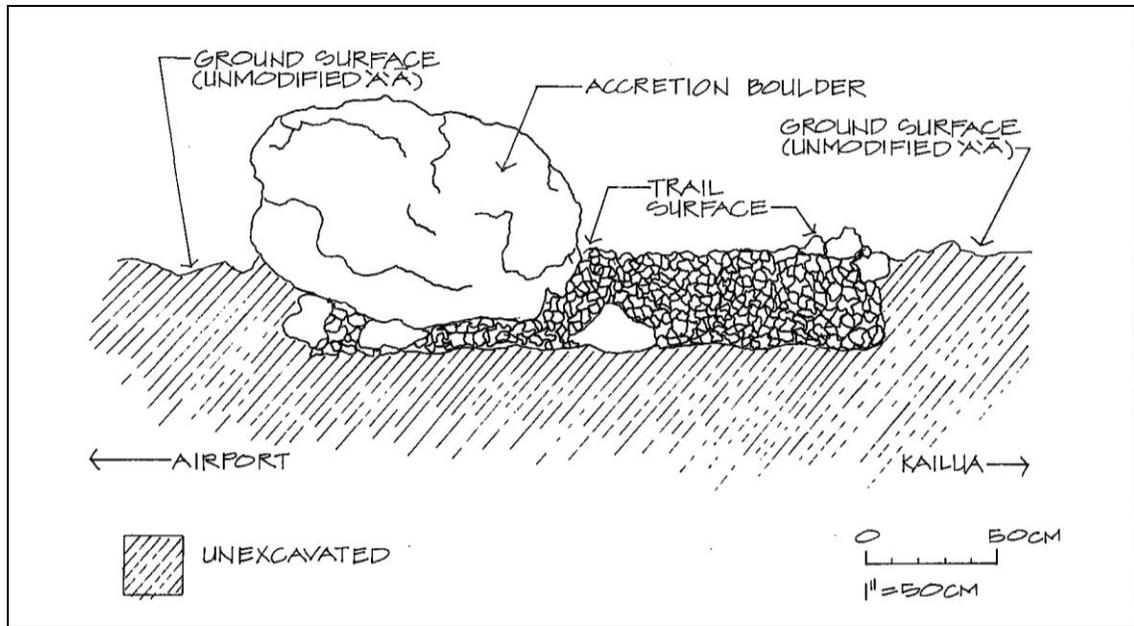


Figure 58. Cross-section view of Trench 4 excavated at SIHP # -19953, view to northeast

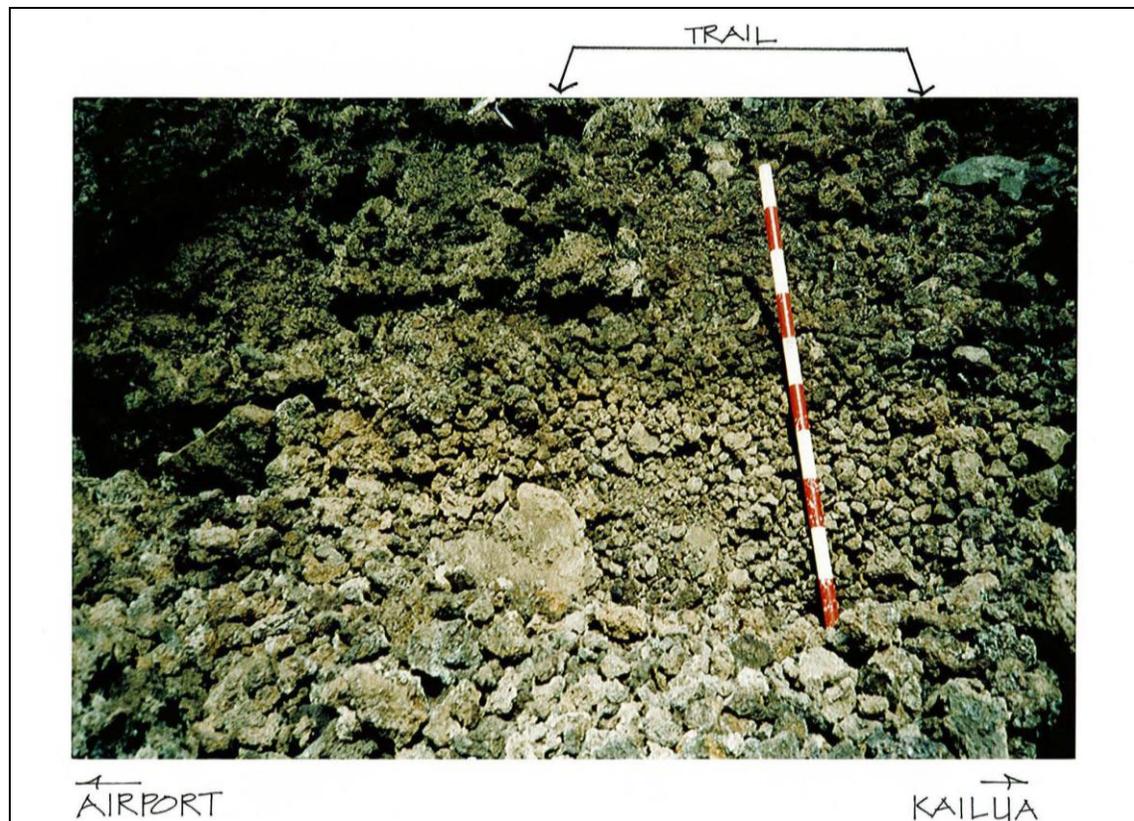


Figure 59. Profile photograph of Trench 4 excavated at SIHP # -19953, view to northeast

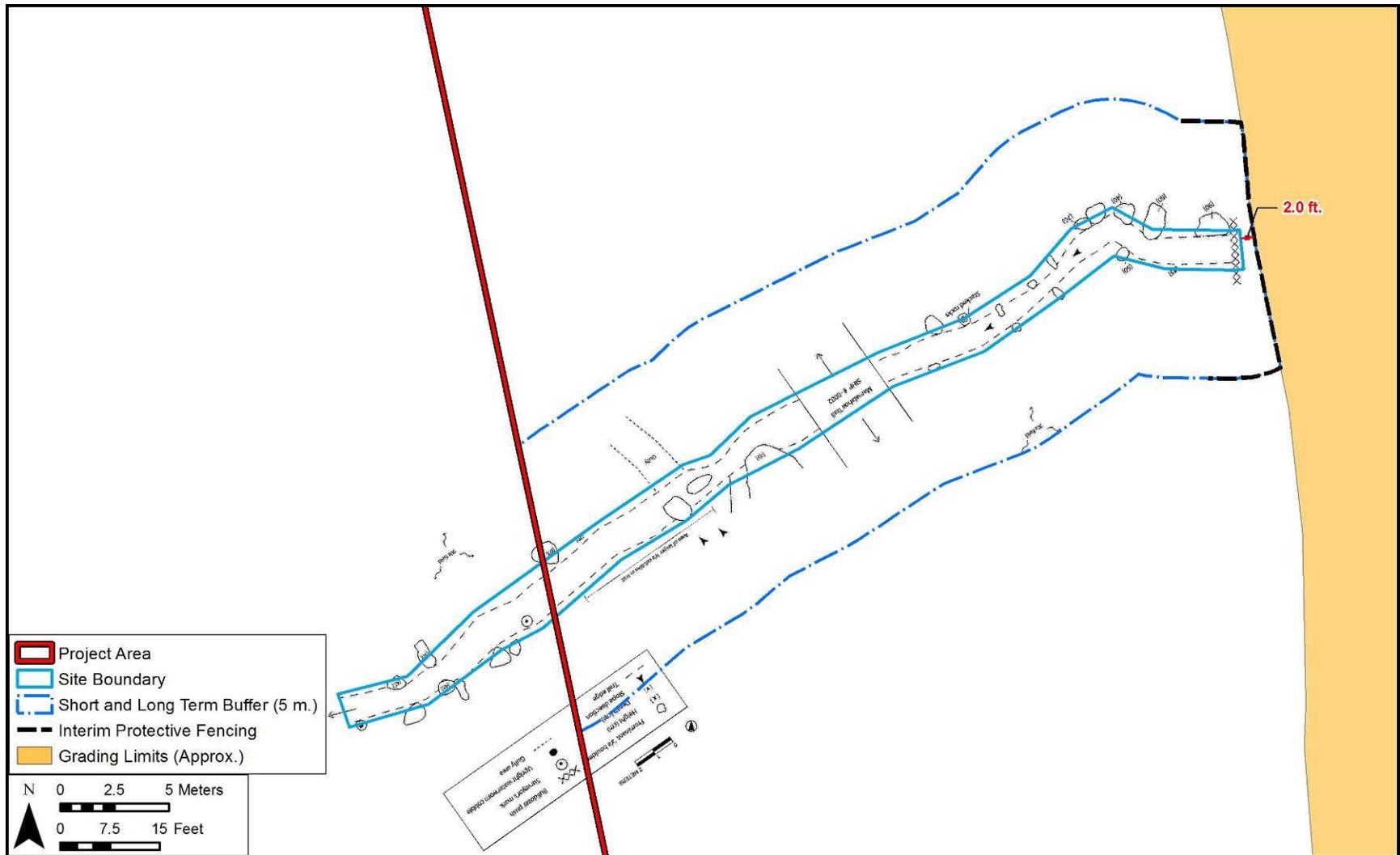


Figure 60. Preservation buffers for SIHP # -19953



Figure 61. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -19953, view to west

2.8 SIHP # 50-10-27-19954

Temp. Site No.: 15 (Walsh and Hammatt 1995)

Formal Type: Trail (*mauka-makai*)

No. of Features: 0

Function: Transportation

Age: Indeterminate; possibly pre- or early post-Contact

Overall Dimensions: Approximately 30.5 m (100 ft) long (current project area)

Topography: Trail meanders through 'a 'ā along the edge of a *pāhoehoe* flow

Elevation: 13 m (42 ft) AMSL

Description: SIHP # -19954 was first formally described by CSH in 1995 (Walsh and Hammatt 1995). It was revisited during the current project's AIS (Monahan et al. 2012a) and found to be in the same physical condition as in 1995 (Figure 62 through Figure 64). The overall length of the trail, as well as its *mauka* terminus (i.e., starting approximately 28 m from the existing highway pavement edge), have not changed since 1995. Walsh and Hammatt (1995) described the trail as follows:

Site 19954 consists of a *mauka-makai* oriented trail . . . The trail begins 93 feet (28m.) from the present highway pavement edge (extent of bulldozed portion of old right-of-way) and meanders through the A`a along the edge of a pahoehoe outcrop, then up and over an outcrop and continues *makai* beyond the project area boundary into the National Park. Some portions of the trail contain pahoehoe slabs placed as stepping stones, and it appears that the slabs were taken from the adjacent pahoehoe outcrop. The trail measures 0.4 to 0.5 m. wide. The trail is in fair to good condition and has previously been identified and flagged, probably by National Park archaeologists who, we have been informed, have done some surveying in the area and have identified several inland-heading trails. The site has not been previously recorded however, and a state site number had not been previously assigned (personal communication with National Park archaeologist Catherine Glidden 6/27/95). [Walsh and Hammatt 1995:54]

Walsh and Hammatt (1995) recommended SIHP # -19954 eligible for inclusion in the National and State Registers of Historic Places under Criterion D, for its information relevant to prehistory and history.

2.8.1 Data Recovery Efforts

SIHP # -19954 was recommended for data recovery by Walsh and Hammatt (1995). In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation of SIHP # -19954. During a revision of the ADRP (see Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to be partially destroyed, including SIHP # -19954, would no longer be impacted by the project (see Table 1).



Figure 62. Photograph of SIHP # -19954, showing *pāhoehoe* stepping stones, view to northeast



Figure 63. Detail of a portion of SIHP # -19954 showing stepping stones, view to southwest

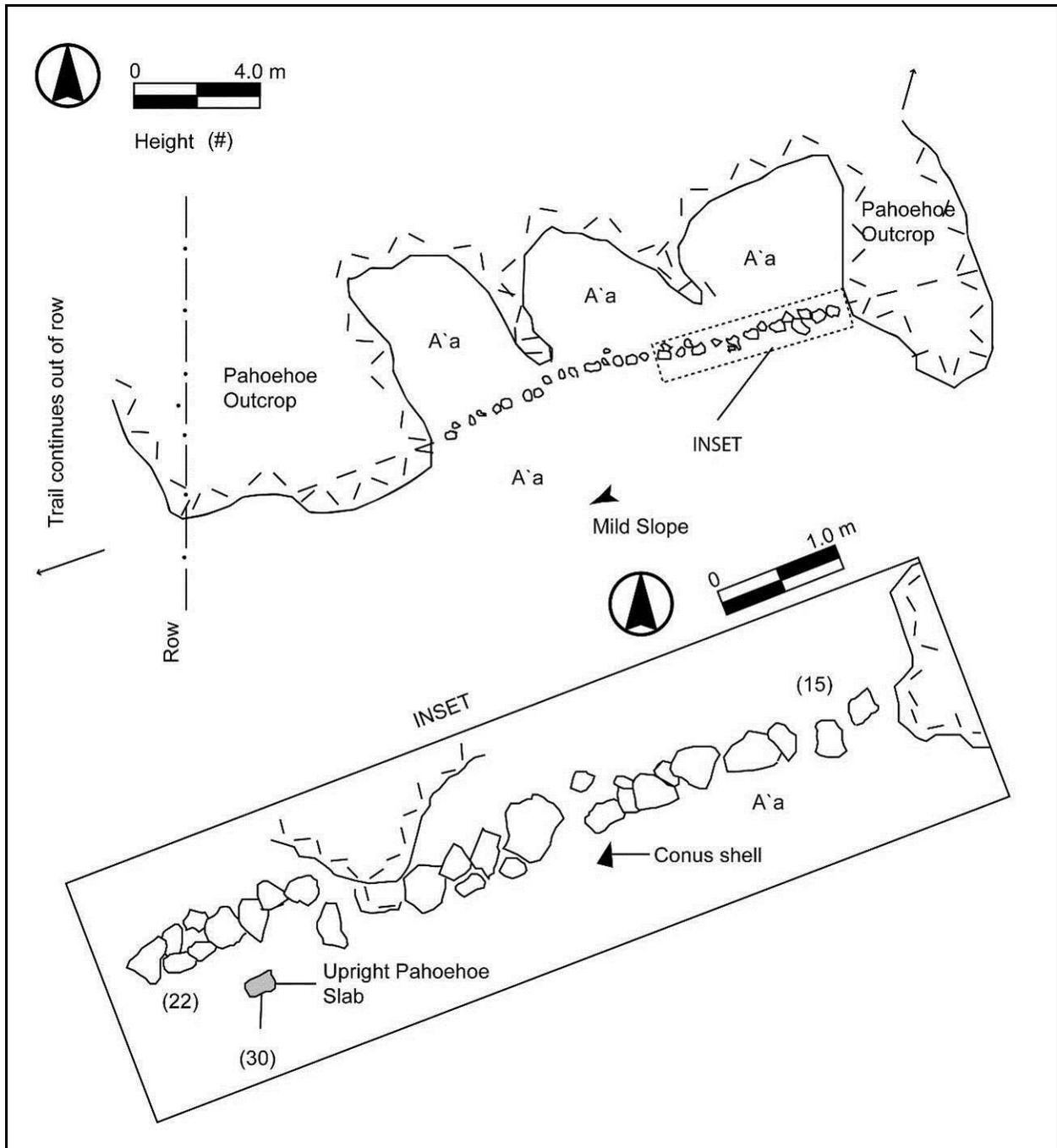


Figure 64. Plan view map of SIHP # -19954 showing trail segment within the project area and close-up inset of stepping stones

SIHP # -19954 extends *makai* from the current project area onto NPS lands for a short distance, where it crosses an unnamed trail (no SIHP #) that runs northwest-southeast, roughly parallel with the *mauka* NPS boundary. Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -19954 as a Type "A" trail. Type "A" trails are generally the width of one person with many turnings. Stepping stones can be used, and occasionally rock piles (*ahu*) mark the trail. Although the precise age of SIHP # -19954 is undetermined, Type "A" trails normally date to the pre- or early post-Contact period. SIHP # -19954 was not depicted on any of the historic maps that were reviewed. Likewise, no trail segments identified during previous archaeological studies were found to connect with SIHP # -19954 *mauka* of the project area.

2.8.2 Interim Protective Measures Implementation

Following the recommendations of the project APMP (Hammatt and Shideler 2014), interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts. The buffer zone is 5 m on all sides, except that nearest the project grading limits, where the buffer zone is approximately 1.5 m (Figure 65 and Figure 66).

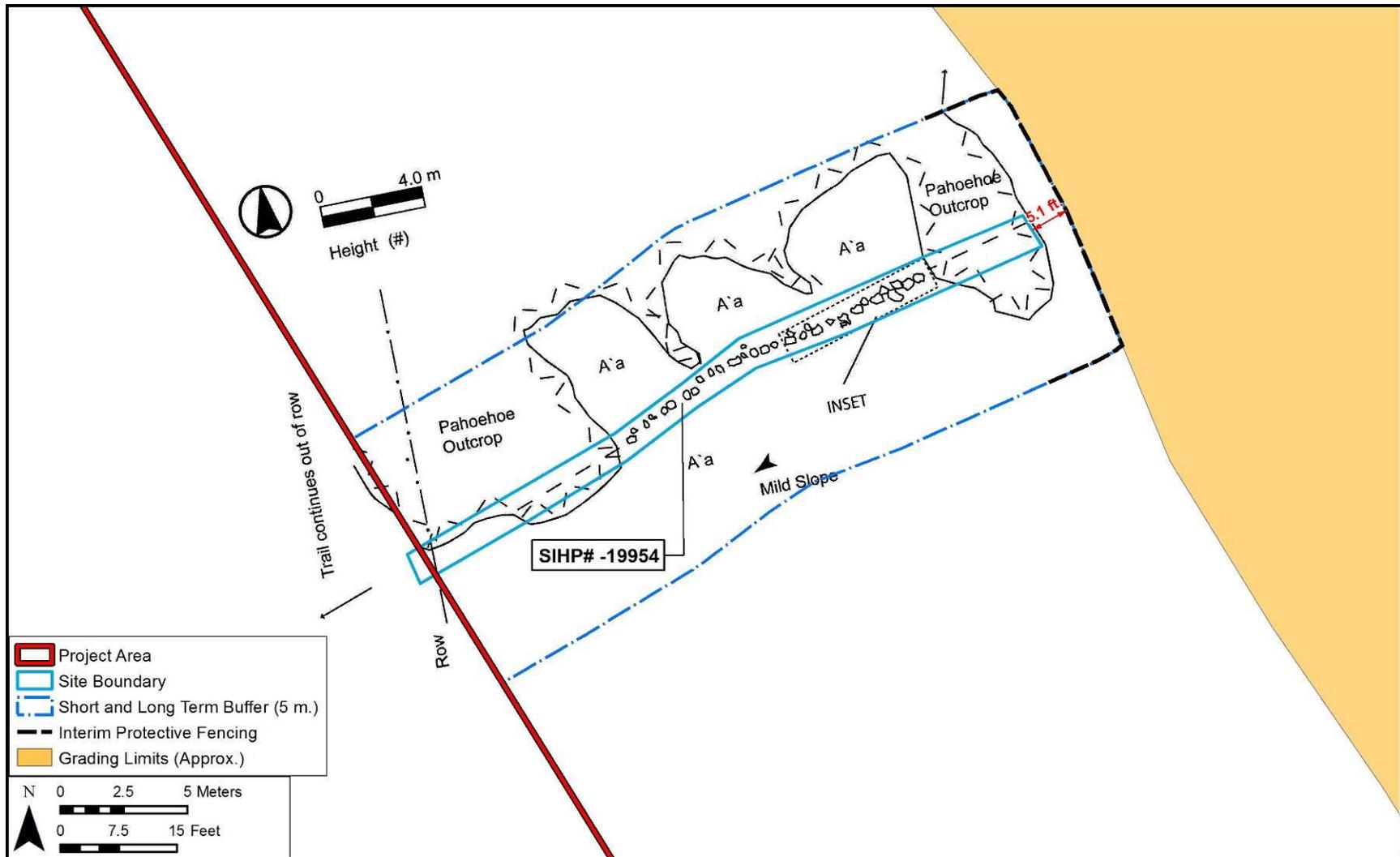


Figure 65. Preservation buffers for SIHP # -19954



Figure 66. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -19954

2.9 SIHP # 50-10-27-22418

Temp. Site No.: Trail 3 (Monahan et al. 2012a); 157-6A (Nelson and Gmirkin 2001)

Formal Type: Trail (*mauka-makai*)

No. of Features: 0

Function: Transportation

Age: Indeterminate, possibly pre- to post-Contact

Overall Dimensions: Approximately 22.6 m long (current project area)

Topography: Undulating *pāhoehoe* flow, level to moderately sloping

Elevation: 11 m (36 ft) AMSL

Description: SIHP # -22418 is a trail approximately 200 m southeast of the Kaloko-Honokōhau National Historical Park visitor center entrance within the portion of the project area adjacent to the National Park. Within the project area, the trail is oriented roughly east/west (*mauka-makai*), measures 22.6 m in length, and lacks any formal construction features such as stepping stones or curbing (Figure 67 and Figure 68). The trail can be recognized by observing subtle wear pattern/color variation on the lava flow.

SIHP # -22418 was previously identified by Nelson and Gmirkin (2001), who noted it both parallels and crosses/merges with SIHP # -18099 (see Section 2.4 for a full description of SIHP # -18099) outside (*mauka* of) the current project area. SIHP # -22418 has been assessed as significant under Criteria c, d, and e.

2.9.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and preservation of SIHP # -22418. During a revision of the ADRP (Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to be partially destroyed, including SIHP # -22418, would no longer be impacted by the project (see Table 1).

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -22418 as a Type “A” trail. Type “A” trails are generally the width of one person with many turnings. Stepping stones can be used and occasionally rock piles (*ahu*) mark the trail. Although the precise age of SIHP # -22418 is indeterminate, Type “A” trails normally date to the pre- or early post-Contact period. Furthermore, SIHP # -22418 is approximately 10 m from SIHP # -22417, a modified lava blister interpreted as a likely traditional Hawaiian planting pit. SIHP # -22418 was not depicted on any of the historic maps that were reviewed; however, as mentioned above, it both parallels and crosses/merges with SIHP # -18099 *mauka* of the current project area. SIHP # -18099, also known as the Trail to Honokōhau, was one of the primary *mauka-makai* trails in Honokōhau, where residents had a significant network of travel routes that provided access to, and exchange of, resources between the coast and upland regions. Based on trail typology, the proximity of a likely traditional Hawaiian feature, and its convergence with a major historic trail, it is likely SIHP # -22418 dates to the pre- or early post-Contact period, with use into the historic period as well.



Figure 67. Photograph of SIHP # -22418 showing the trail traversing a *pāhoehoe* outcrop, visible as subtle wear pattern and color variation, view to east

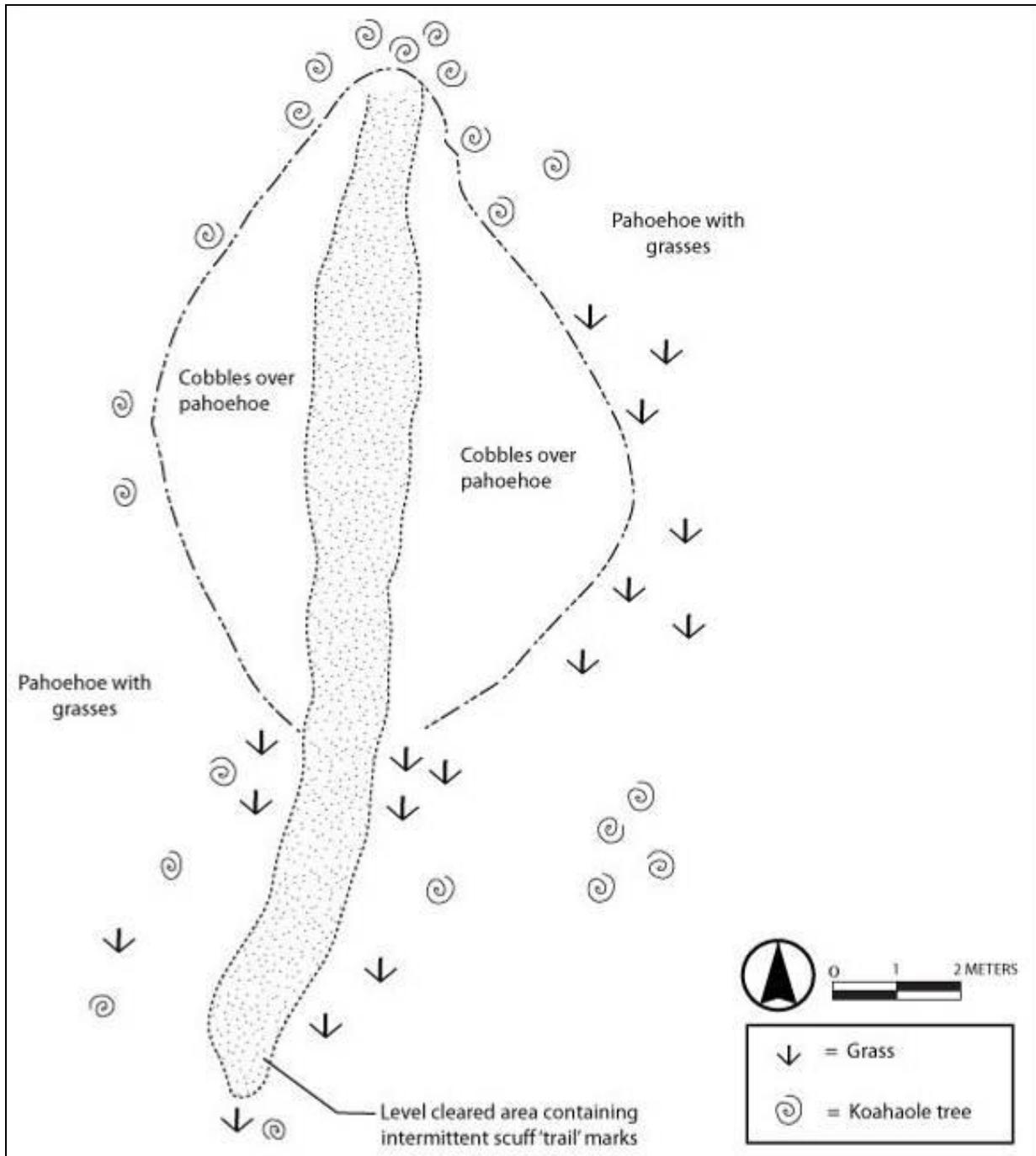


Figure 68. Plan view map of SIHP # -22418

2.9.2 Interim Protective Measures Implementation

Following the recommendations of the project APMP (Hammatt and Shideler 2014), interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts. The buffer zone is 5 m on all sides (Figure 69 and Figure 70).

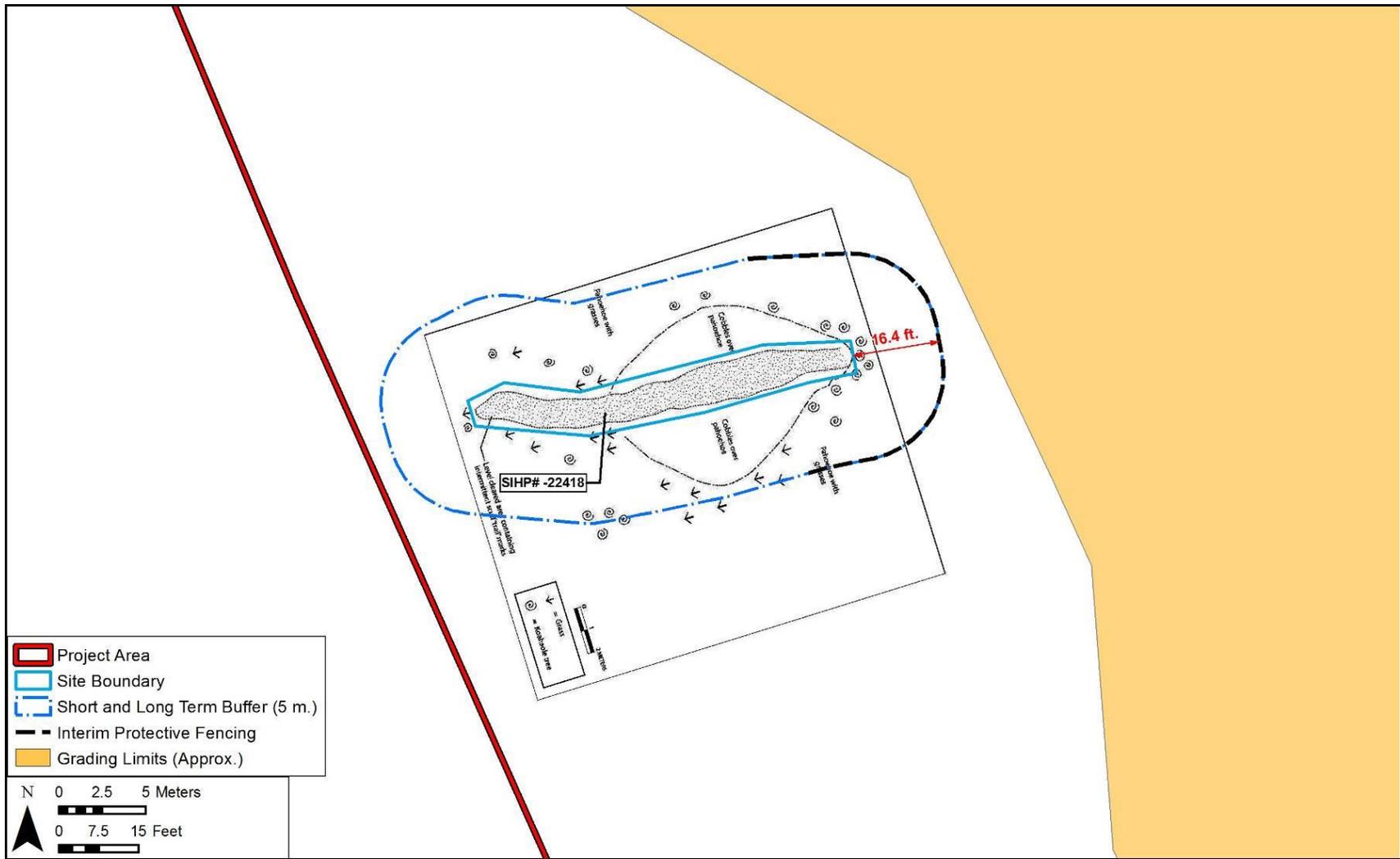


Figure 69. Preservation buffers for SIHP # -22418



Figure 70. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -22418

2.10 SIHP # 50-10-27-22507

Temp. Site No.: Trail 2 (Monahan et al. 2012a); 157-16 (Nelson and Gmirkin 2001)

Formal Type: Trail (*mauka-makai*)

No. of Features: 0

Function: Transportation

Age: Indeterminate, possibly pre- or early post-Contact

Overall Dimensions: Approximately 16.1 m long (current project area)

Topography: Undulating *pāhoehoe* flow, level to moderately sloping

Elevation: 11 m (36 ft) AMSL

Description: SIHP # -22507 is a trail approximately 325 m southeast of the Kaloko-Honokōhau National Historical Park visitor center entrance within the portion of the project area adjacent to the National Park. The trail is oriented roughly east/west (*mauka-makai*) and measures 16.1 m long within the current project area (Figure 71 and Figure 72). The trail terminates to the west along the edge of a modern gravel road and can be recognized within the project area by observing subtle wear pattern/color variation on the lava flow.

SIHP # -22507 has been assessed as significant under Criteria c, d, and e (Monahan et al. 2012a).

2.10.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation of SIHP # -22507. During a revision of the ADRP (Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to be partially destroyed, including SIHP # -22507, would no longer be impacted by the project (see Table 1).

SIHP # -22507 was not depicted on any of the historic maps that were reviewed, and no trail segments identified during previous archaeological studies were found to connect with SIHP # -22507 *mauka* of the current project area. However, archival research indicates SIHP # -22507 extends *makai* onto NPS land, where it crosses an unnamed trail (no SIHP #) that runs just *makai* of, and roughly parallel with, the NPS boundary. After initially heading west toward 'Aimakapā Fishpond, the trail turns north/northwest before reaching the pond and instead runs parallel to the coast (see Figure 4). It crosses several *mauka-makai* trail segments before terminating just north of Hu'ehu'e Ranch Road. The portion of SIHP # -22507 within the National Park has been designated as SIHP # -21533 and was mapped, but not formally described, by Cluff (1971). It was subsequently described by Nelson and Gmirkin (2001) as follows:

This site is a trail segment located within 1 meter on the north side of State Site 50-10-27-22425 [rock concentration or rough pavement consisting of loosely stacked *pāhoehoe* slabs and blocks]. This is a foot/h hoof worn trail on the *pāhoehoe* approximately 70 cm wide. The trail runs 284 degrees to the west and 120 degrees to the east. [Nelson and Gmirkin 2001:32]



Figure 71. Photograph of SIHP # -22507 showing the trail traversing a *pāhoehoe* outcrop, visible as subtle wear pattern and color variation, view to west

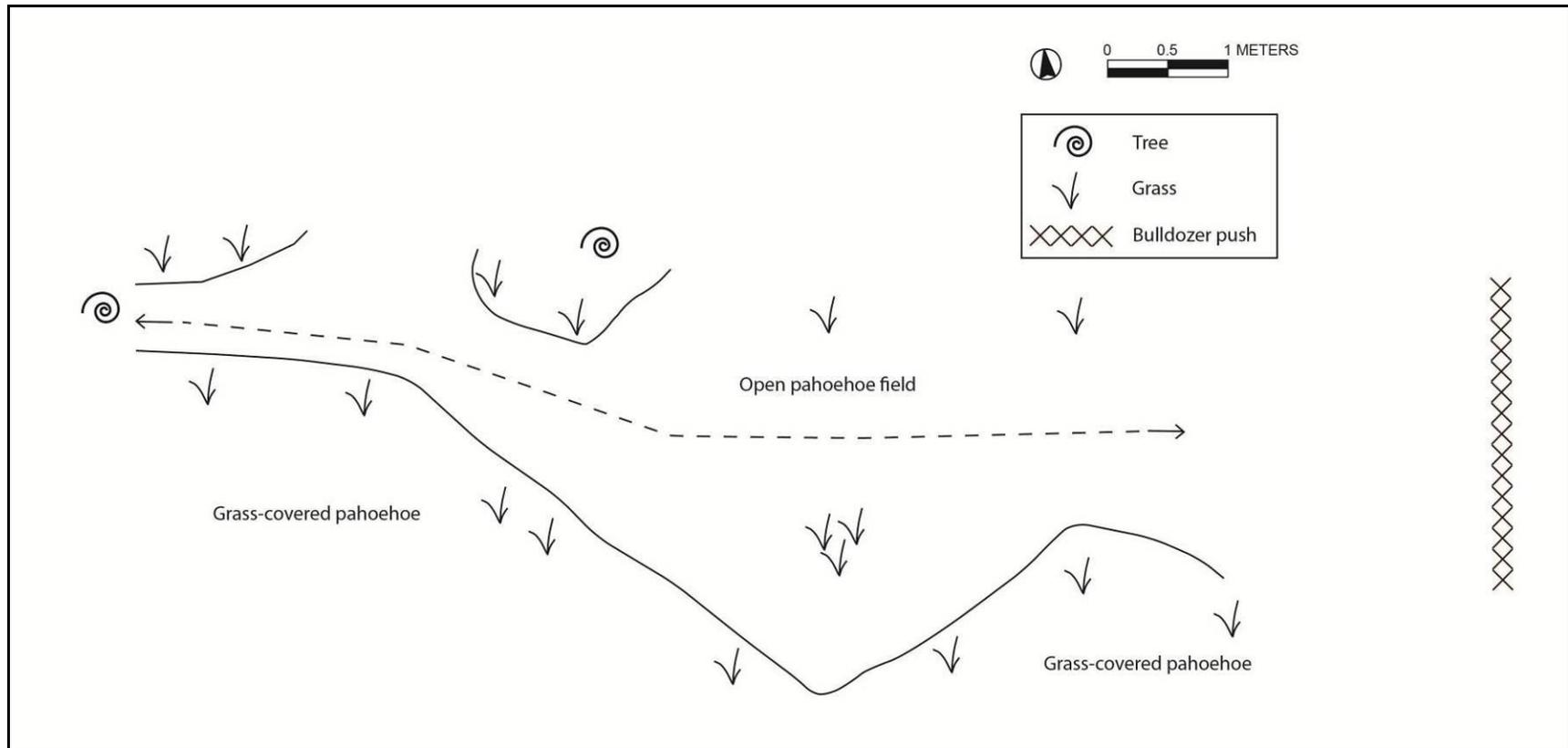


Figure 72. Plan view map of SIHP # -22507

The importance of the trail network within the National Park has been discussed by Greene (1993: Chapter VIII), who noted that “[i]n Kaloko-Honokohau the residents built a system of *mauka-makai* trails to travel and communicate with extended family members and friends. Other routes traversed the coast laterally to transport food and other goods to neighboring *ahupua‘a*.” Interestingly, SIHP # -22507 appears to serve as both a *mauka-makai* route and a lateral route traversing the coast.

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -22507 as a Type “A” trail. Type “A” trails are generally the width of one person with many turnings. Stepping stones can be used and occasionally rock piles (*ahu*) mark the trail. Based on typology, SIHP # -22507 may date to the pre- or early post-Contact period. This time frame is supported by the historic properties on both the north and south sides of SIHP # -22507, which include the rock concentration/pavement (SIHP # -22425) mentioned above, as well as a terrace (SIHP # -22421), lava tubes (SIHP #s -22416 and -22420), mound (SIHP #s -22419), and *ahu* (-22506).

2.10.2 Interim Protective Measures Implementation

Following the recommendations of the project APMP (Hammatt and Shideler 2014), interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts. The buffer zone is 5 m on all sides (Figure 73 and Figure 74).

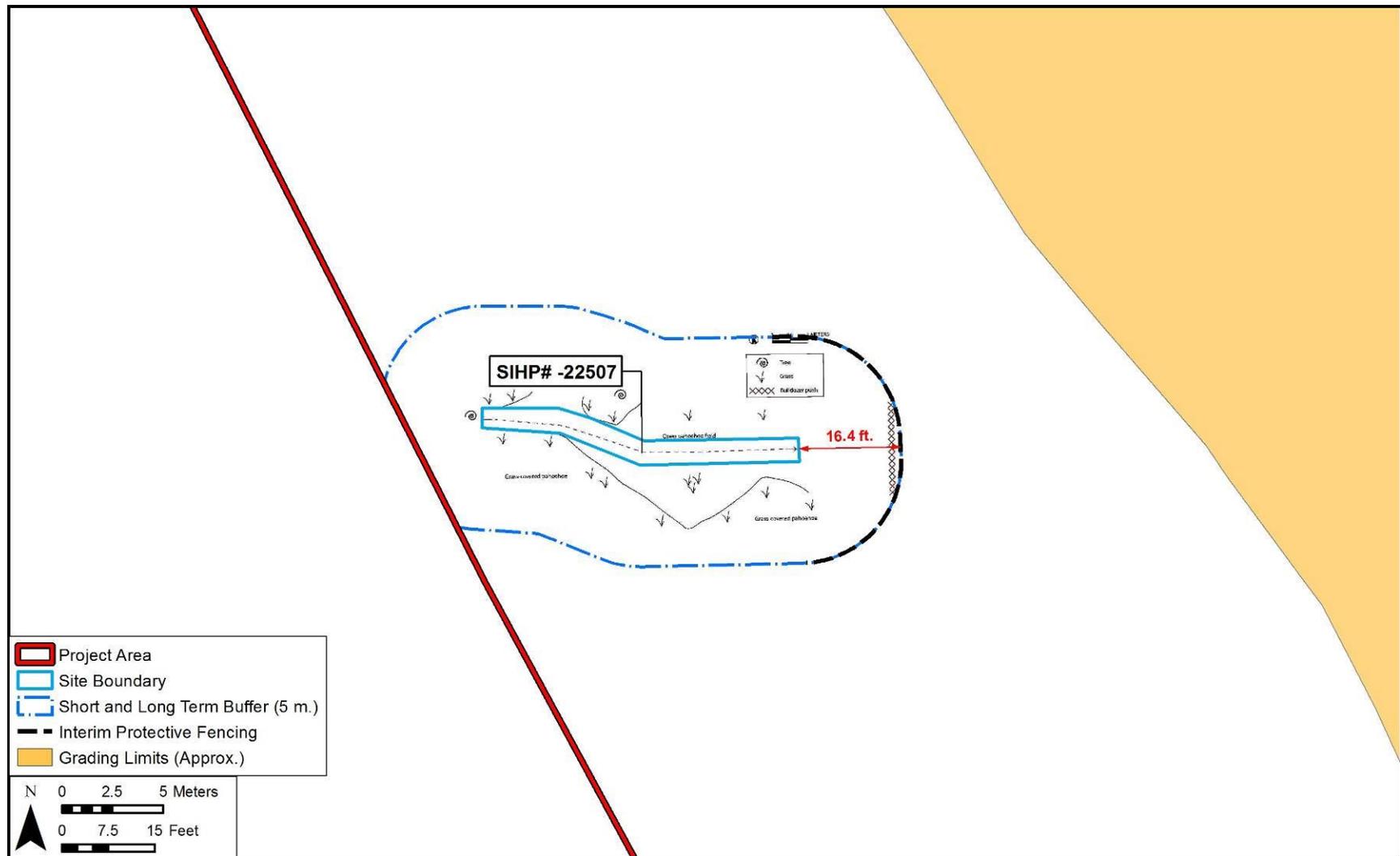


Figure 73. Preservation buffers for SIHP # -22507



Figure 74. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -22507

2.11 SIHP # 50-10-27-28774

Temp. Site No.: Trail 1 (Monahan et al. 2012a)

Formal Type: Trail (*mauka-makai*)

No. of Features: 0

Function: Transportation

Age: Historic (possibly also pre-Contact)

Overall Dimensions: Approximately 40.9 m long (current project area)

Topography: Undulating *pāhoehoe* flow, level to moderately sloping

Elevation: 45 ft (14 m) AMSL

Description: SIHP # 50-10-27-28774 is a trail approximately 515 m southeast of the Kaloko-Honokōhau National Historical Park visitor center entrance within the portion of the project area adjacent to the National Park. The trail extends along the northeastern edge of an area of modern disturbance and measures 40.9 m long within the current project area. This trail is one of several pointed out to CSH by NPS staff and can be recognized by observing subtle wear pattern/color variation on the lava flow (Figure 75 and Figure 76).

In a letter dated 25 April 2012, in reference to the recent supplemental AIS work in the southern segment of the project area (see Monahan and Yucha 2012), NPS archaeologists stated that another undocumented *mauka-makai* trail was in the vicinity of SIHP # -28774. On 1 May 2012, CSH archaeologist Olivier Bautista and NPS archaeologist Tyler Paikuli-Campbell traced the length of this trail, starting from within the National Park to the west (*makai*) of the current project area and heading east (*mauka*), where the trail terminated in a disturbed area prior to reaching the project area boundary. The trail was recorded using a survey-grade GPS device. According to the survey-grade GPS, the trail segment is not located in the current project area. When the data was processed in the laboratory the following day, it became clear that the newly recorded trail segment is very close to the previously identified SIHP # -28774. Therefore, it is possible that the trail segment mapped on 1 May 2012 represents another portion of SIHP # -28774.

During additional fieldwork on 9 July 2012, the area of SIHP # -28774 was relocated but, as was the case for the NPS, the trail could not be followed with certainty into the project area. Discolored *pāhoehoe* was identified in several directions, and it is possible that the trail was always quite braided and ill-defined in this area. Because of the difficulties in tracing the trail on the ground, no plan view was generated (the SHPD review of 9 July 2012 specifies “a plan view map is not necessary”).

SIHP # -28774 has been assessed as significant under Criteria C, D, and E (Monahan et al. 2012a).

2.11.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation of SIHP # -28774. During a revision of the ADRP (see Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to



Figure 75. Photograph of SIHP # -28774 showing the trail traversing a *pāhoehoe* outcrop, visible as subtle wear pattern and color variation, view to east



Figure 76. Close-up of SIHP # -28774, showing subtle wear pattern and color variation, view to east

be partially destroyed, including SIHP # -28774, would no longer be impacted by the project (see Table 1).

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -28774 as a Type "A" trail. Type "A" trails are generally the width of one person with many turnings. Stepping stones can be used, and occasionally rock piles (*ahu*) mark the trail. Although the precise age of SIHP # -28774 is unknown, Type "A" trails normally date to the pre- or early post-Contact period.

Archival research indicates the "undocumented *mauka-makai* trail" within the National Park referred to in the previous section appears to be SIHP # -23353 (see Figure 4), described by Gmirkin and Bond (2002) as follows:

This is a foot worn trail that runs *mauka-makai* through the project area. This feature is approximately 0.5 meters in width and conforms with the descriptions provided by Apple (1965) for "Type A" trails. This trail appears to originate at the coast between 'Ai'ōpio Fishtrap and 'Aimakapā Fishpond, intersects with State Site 50-10-27-21588, within Kaloko-Honokōhau N.P., crosses present day Māmalahoa Highway. On the *mauka* side of the highway in Lanihau (TMK # 373009021) the trail continues passing State Site 50-10-27-18091, a historic petroglyph that reads KEANINI. [Gmirkin and Bond 2002:16]

Based on historic maps, it appears SIHP # -23353 (and presumably, by extension, SIHP # -28774 with which it connects/merges) was in use until at least 1928. SIHP #s -23353 and the intersecting SIHP # -21588 (not part of the current data recovery project) are both depicted on the 1928 USGS map of Keahole and Kailua quadrangles (see Volume I Figure 27). It is worth noting that the portion of SIHP # -23353 identified by Gmirkin and Bond (2002) *mauka* of the Māmalahoa Trail is not depicted on the 1928 map, which shows SIHP # -23353 extending between the Māmalahoa Trail to the east and the coastline to the west.

In addition, a trail segment identified *mauka* of the current project area (see Donham 1990, Robins et al. 2000), designated as SIHP # -13006, may once have been connected to SIHP # -28774/-23353 (see Figure 4). Donham (1990:14) identified SIHP # -13006 between 300 and 330 ft AMSL and described it as a curbstone trail, oriented *mauka-makai*, and lined with boulders; some sections were also paved with cobbles. According to Donham (1990:14), SIHP # -13006 "probably intersected with Mamalahoa Trail, and . . . may have continued to the coast." Furthermore, Donham (1990:15) relates that "[i]t is quite possible that the Site 13006 trail continued *mauka* of the project area and passed by the McDougall residence." McDougall was a rancher who owned or leased land in Honokōhau and lived at an elevation of approximately 900 ft.

Donham (1990:A-22) describes the age of SIHP # -13006 as "Prehistoric/Historic." Similarly, it was subsequently described by Robins et al. (2000:86) as a Type "AB" trail "conform[ing] to the spatial distribution of presumably prehistoric or early historic habitation sites." According to Robins et al. (2000:88), SIHP #s -13006 and -18099 (the Road to Honokōhau, described fully in Section 2.4) were the two primary *mauka-makai* routes in Honokōhau. Along with the various spur trails in the area, they reveal that the residents "had a significant network of travel routes

that provided access to resources and exchange of resources between the coast and upland regions.” Like SIHP # -18099, SIHP # -13066 is also in a state of disrepair and is no longer contiguous with portions that may exist at lower elevation. Based on Apple’s (1965) classifications, most of the trails in Honokōhau likely date to the pre- or early post-Contact period, while continued use into the historic period led to modifications such as curbstone construction to facilitate horse travel (Robins et al. 2000:88); therefore, SIHP # -28774 may represent a short, unimproved section of a much longer *mauka-makai* route that once stretched from the uplands down to the coast.

2.11.2 Interim Protective Measures Implementation

Following the recommendations of the project APMP (Hammatt and Shideler 2014), interim protections including the installation of protective fencing demarcating the buffer zone were implemented during data recovery efforts. The buffer zone is 5 m on all sides (Figure 77 and Figure 78).

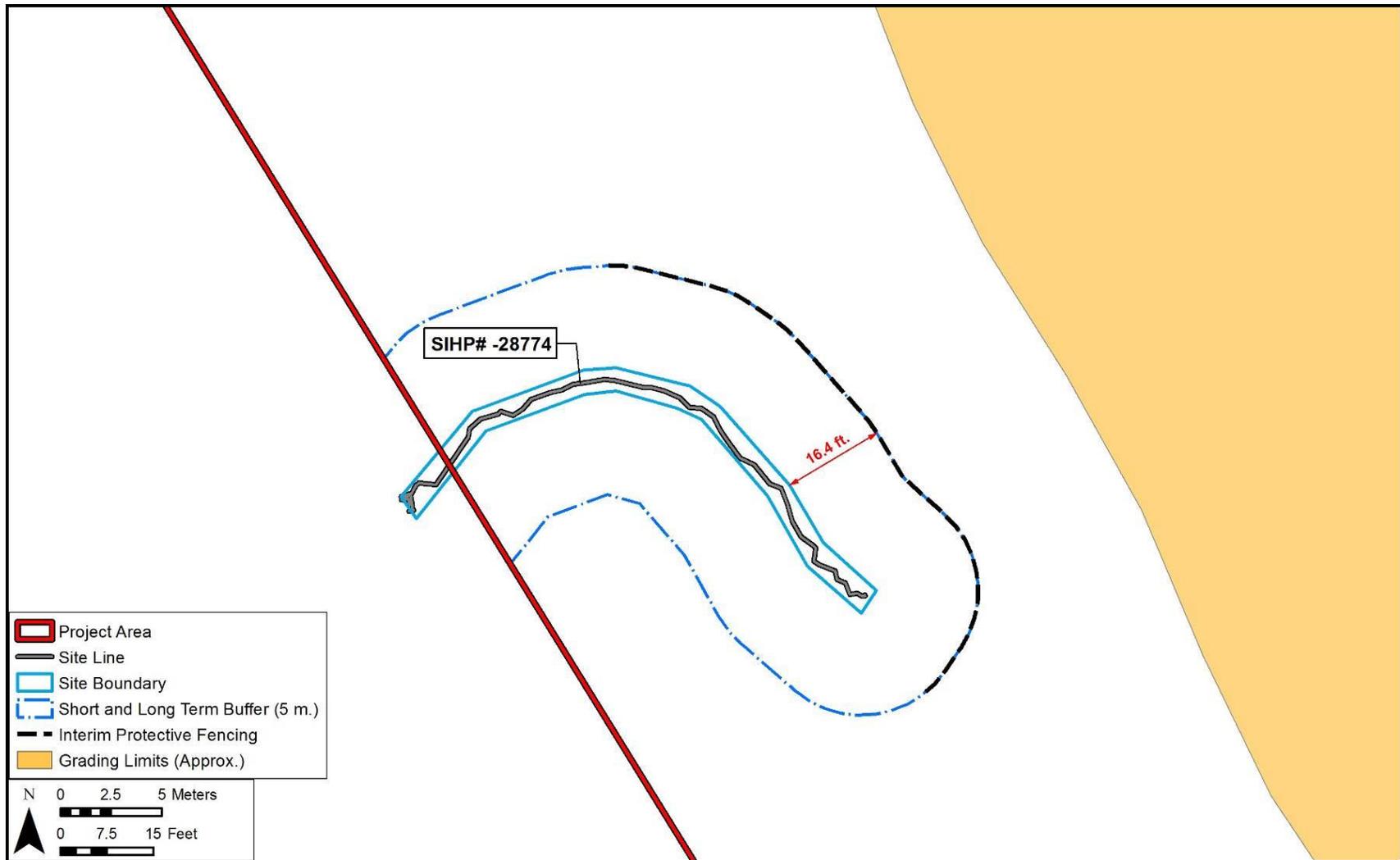


Figure 77. Preservation buffers for SIHP # -28774



Figure 78. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -28774

2.12 SIHP # 50-10-27-28782

Temp. Site No.: Trail 6 (Monahan et al. 2012a)

Formal Type: Trail (*mauka-makai*)

No. of Features: 0

Function: Transportation

Age: Indeterminate, possibly pre- or early post-Contact

Overall Dimensions: 42.4 m long E/W by 0.5–0.75 m wide N/S (current project area)

Topography: 'A'ā flow and adjacent 'a'ā tumulus, level to moderately sloping

Elevation: 24 m (79 ft) AMSL

Description: SIHP # -28782 is a trail that extends roughly east/west (*mauka-makai*) through the project area approximately 424 m north of the Kaloko-Honokōhau National Historical Park visitor center entrance within the portion of the project area adjacent to the National Park. The trail consists of a partially cleared, well-trodden 'a'ā pebble and cobble surface along the north side of the base of an 'a'ā tumulus (Figure 79 and Figure 80). A concentration of weathered coral pebbles and cobbles was observed along the edge of the trail beneath several large 'a'ā boulders (Figure 81 and Figure 82). The coral concentration may have served as a trail marker. No artifacts or midden were observed in the area. Unlike most other trails in the project area, this one is clearly observable and relatively well defined.

SIHP # -28782 has been assessed as significant under Criteria c, d, and e (Monahan et al. 2012a).

2.12.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation of SIHP # -28782. During a revision of the ADRP (see Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to be partially destroyed, including SIHP # -28782, would no longer be impacted by the project (see Table 1).

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -28782 as a Type "A" trail. Type "A" trails are generally the width of one person with many turnings. Stepping stones can be used and occasionally rock piles (*ahu*) mark the trail. Archival research yielded no additional information on SIHP # -28782, which was not depicted on any of the historic maps that were reviewed. Likewise, no trail segments identified during previous archaeological studies were found to connect with SIHP # -28782 *mauka* of the current project area. SIHP # -28782 does extend *makai* for a short distance onto NPS lands; however, it does intersect or connect with other trail segments within the National Park.

Although the precise age of SIHP # -28782 is indeterminate, Type "A" trails normally date to the pre- or early post-Contact period. This time frame is supported by the presence of at least one likely traditional Hawaiian feature (SIHP # -28783, interpreted as an agricultural complex) in the vicinity of SIHP # -28782. SIHP # -28783 is an excavated 'a'ā complex with six features,



Figure 79. Photograph of the central portion of SIHP # -28782 showing an 'a'ā ridge on the right, view to east

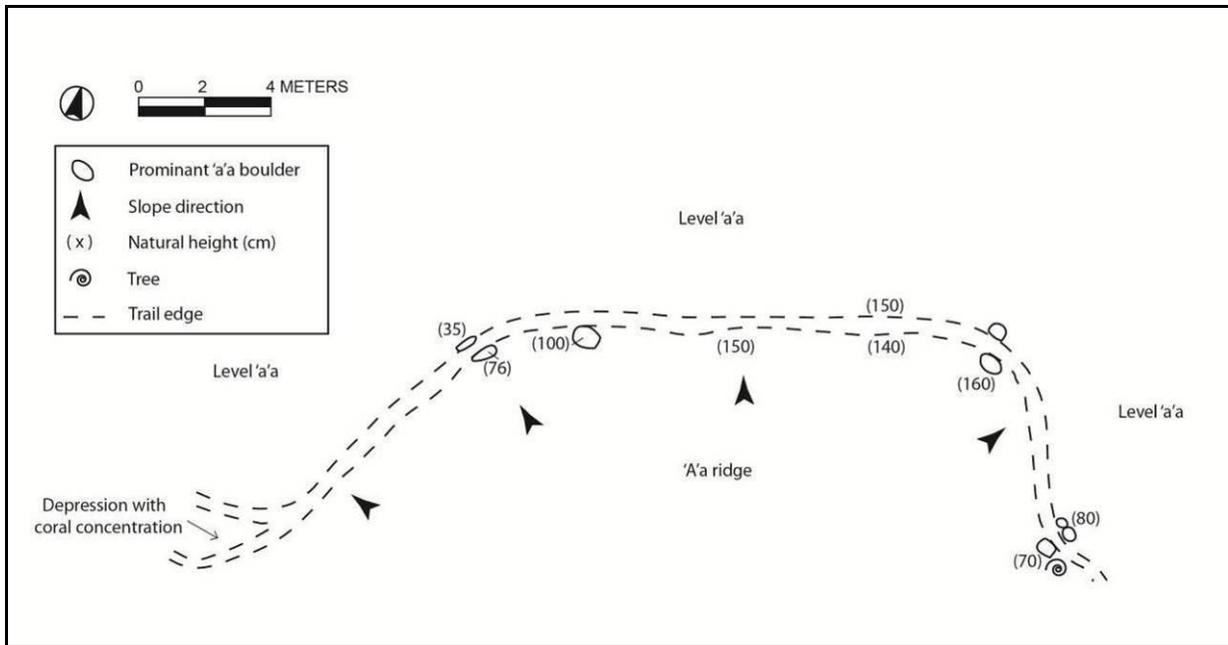


Figure 80. Plan view map of SIHP # -28782



Figure 81. Detail of coral concentration observed along the edge of SIHP # -28782, view to southeast

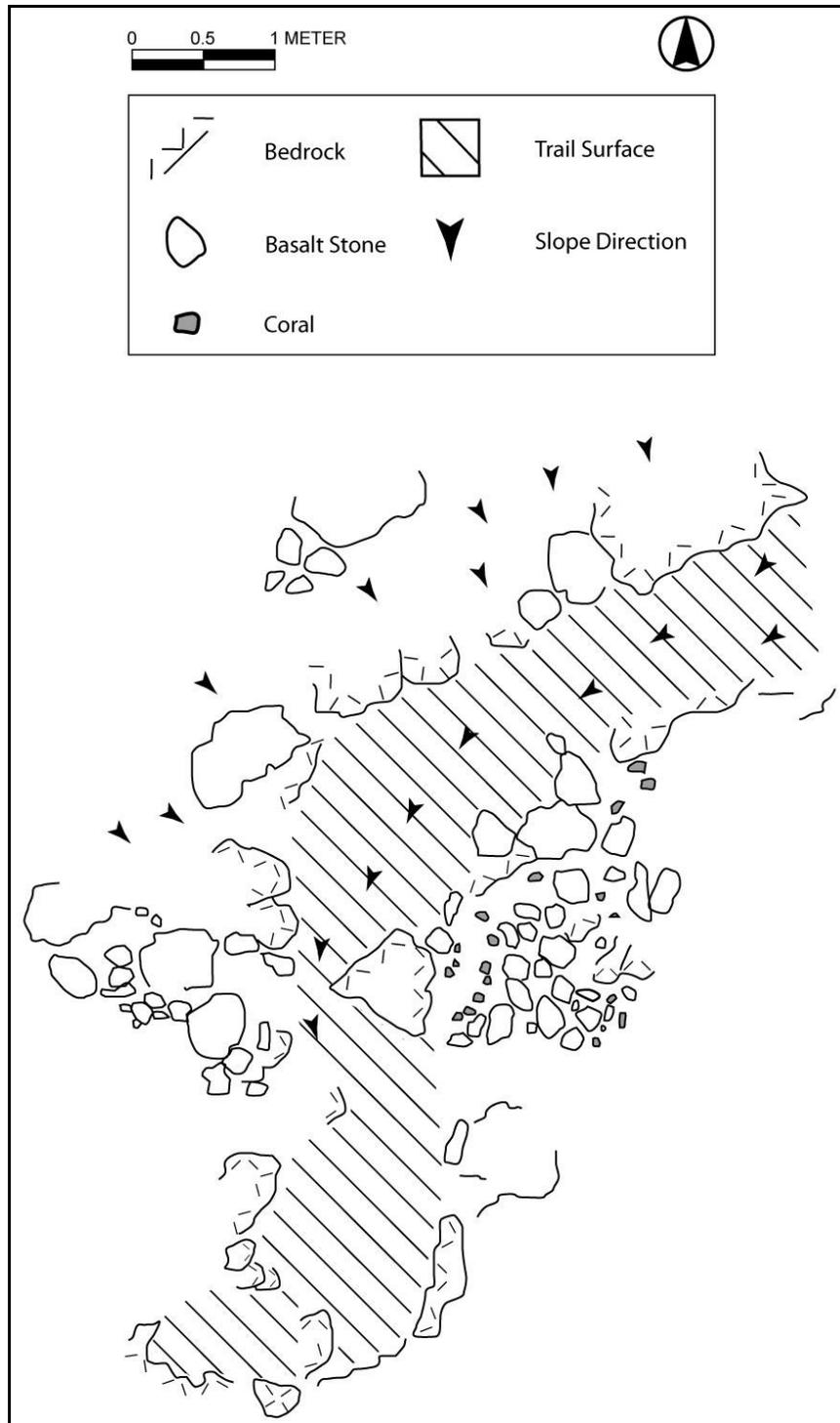


Figure 82. Plan view map of a portion of SIHP # -28782 showing the coral concentration observed along the edge of the trail

extending between SIHP #s -28782 and -28784 (discussed in the following section; see also Volume I Figure 11). In addition, several other historic properties were recorded just south of SIHP # -28782. These include SIHP #s -28781, a paved area interpreted as a possible agricultural clearing; -28780, an 'a'ā excavation initially interpreted as a possible burial; and -29343, an excavated pit interpreted as a possible quarry or sweet potato planter.

2.12.2 Interim Protective Measures Implementation

Following the recommendations of the project APMP (Hammatt and Shideler 2014), interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts. The buffer zone is 5 m on all sides, except that nearest the project grading limits, where the buffer zone is approximately 1.3 m (Figure 83 and Figure 84). See Hammatt and Shideler (2014) for full preservation measures associated with SIHP # -28782.

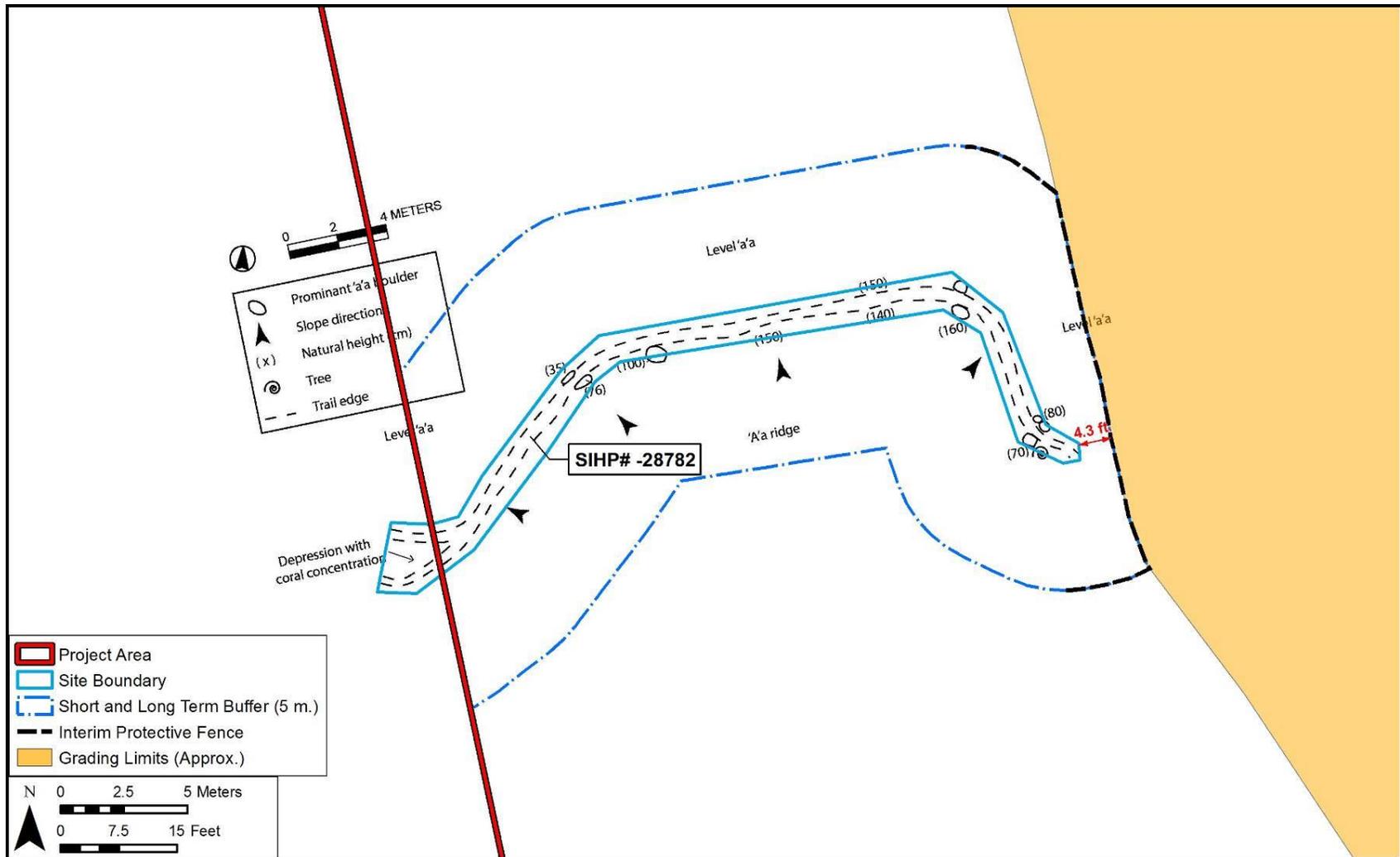


Figure 83. Preservation buffers for SIHP # -28782



Figure 84. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -28782, view to west

2.13 SIHP # 50-10-27-28784

Temp. Site No.: Trail 7 (Monahan et al. 2012a)

Formal Type: Trail (*mauka-makai*)

No. of Features: 0

Function: Transportation

Age: Indeterminate, possibly pre-Contact or early post-Contact

Overall Dimensions: Approximately 25.2 m long

Topography: Undulating 'a 'ā flow, level to slightly-sloping

Elevation: 23 m (75 ft) AMSL

Description: SIHP # -28784 is a trail approximately 280 m south of Kaloko Road within the portion of the project area adjacent to the Kaloko-Honokōhau National Historical Park. The trail is oriented east/west (*mauka-makai*) and measures 25.2 m long. A faint vehicular road within the 'a 'ā mostly obscures the trail within the project area; however, near the boundary of the project area ROW extending *makai*, the trail is quite visible and consists of subtle wear pattern/color variation on the 'a 'ā lava flow, interspersed with small, flat *pāhoehoe* cobbles (Figure 85 through Figure 87).

SIHP # -28782 has been assessed as significant under Criteria c, d, and e (Monahan et al. 2012a).

2.13.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation of SIHP # -28784. Because the project effect for SIHP # -28784 has not changed, it was not addressed in the latest revision of the ADRP (see Hammatt and Shideler 2014).

SIHP # -28784 was not depicted on any of the historic maps that were reviewed. Likewise, no trail segments identified during previous archaeological studies were found to connect with SIHP # -28784 *mauka* of the current project area. SIHP # -28784 continues *makai* for a short distance onto NPS land. Like nearby SIHP # -28782, it extends toward, but terminates short of, the Māmalahoa Trail (SIHP # -00002); it does not connect or intersect with any other trails within the National Park.

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -28784 as a Type "A" trail. Type "A" trails are generally the width of one person with many turnings. Stepping stones can be used and occasionally rock piles (*ahu*) mark the trail. Although the precise age of SIHP # -28784 is indeterminate, Type "A" trails normally date to the pre- or early post-Contact period. This time frame is supported by the presence of a likely traditional Hawaiian feature in the vicinity of SIHP # -28784. As mentioned in Section 2.12, SIHP # -28783, an excavated 'a 'ā complex interpreted as an agricultural complex, extends between SIHP #s -28782 and -28784 (see also Volume I Figure 11).

2.13.2 Interim Protective Measures Implemented

Interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts (Figure 88 and Figure 89).



Figure 85. Photograph of SIHP # -28784 showing the trail just outside the boundary of the project area, with *pāhoehoe* slabs, view to southwest



Figure 86. Photograph of vehicular road at the eastern terminus of SIHP # -28784, view to east

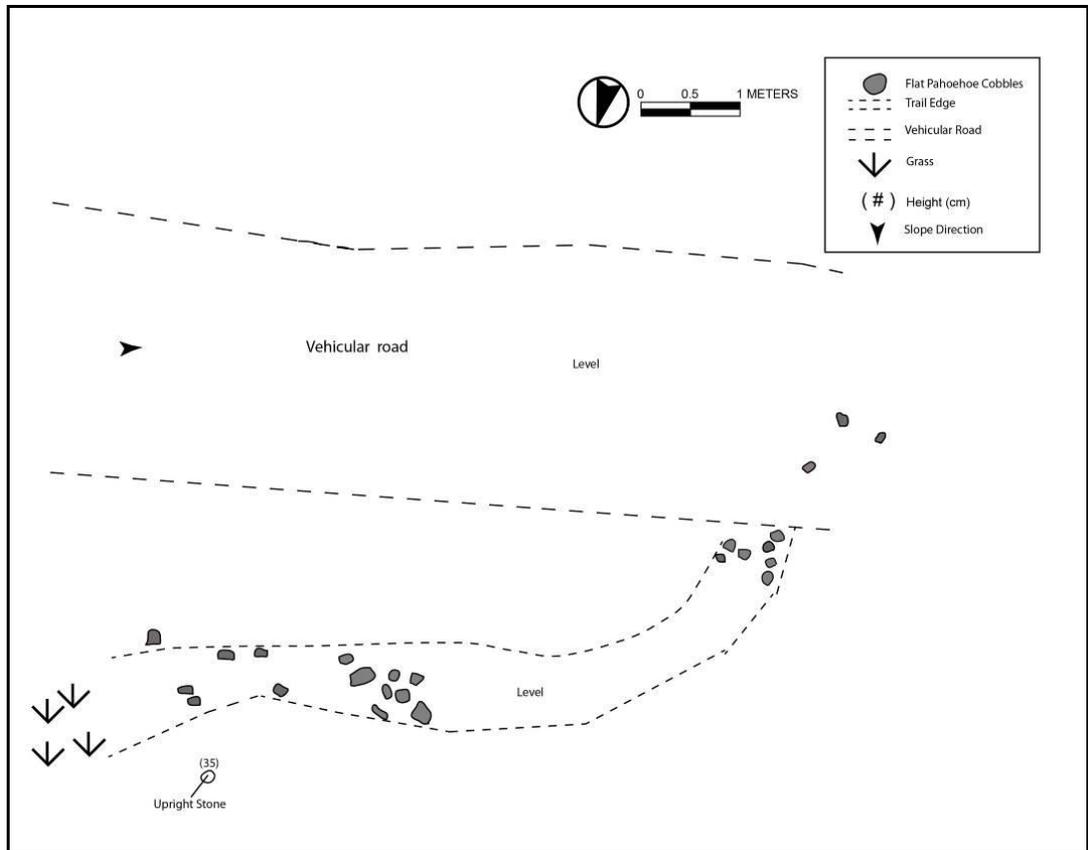


Figure 87. Plan view map of SIHP # -28784

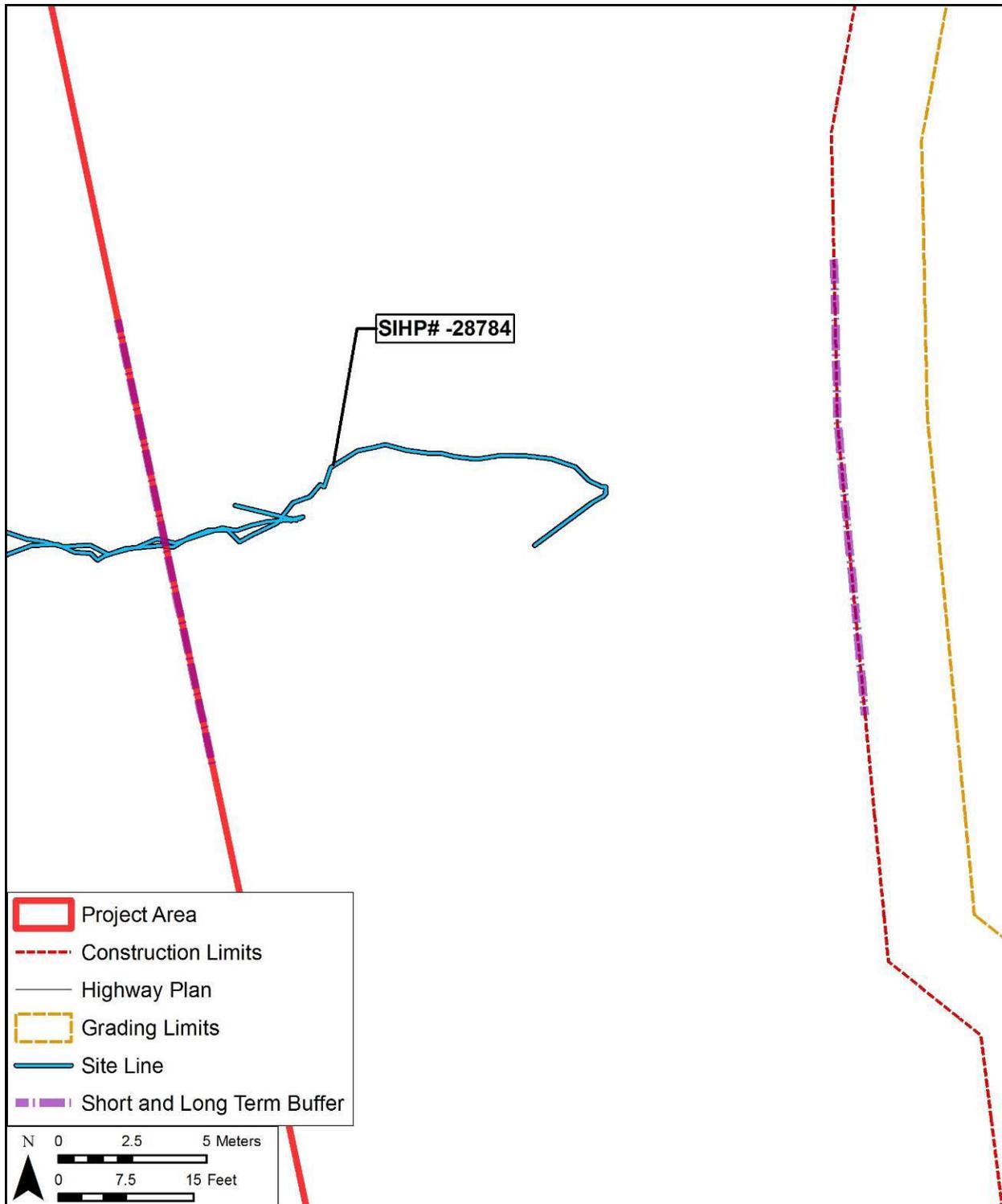


Figure 88. Preservation buffers for SIHP # -28784 (Shideler et al. 2012)



Figure 89. Photograph showing the protective fence demarcation of the interim buffer zone for SIHP # -28784, view to west

2.14 SIHP # 50-10-27-28787

Temp. Site No.: Trail 8 (Monahan et al. 2012a)

Formal Type: Trail

No. of Features: 0

Function: Transportation

Age: Indeterminate, possibly pre- or early post-Contact

Overall Dimensions: Approximately 8.0 m long (current project area)

Topography: Undulating 'a 'ā flow

Elevation: 23 m (75 ft) AMSL

Description: SIHP # -28787 is a trail approximately 40 m south of Kaloko Road within the portion of the project area adjacent to the Kaloko-Honokōhau National Historical Park. The trail is oriented roughly northwest/southeast and measures 8.0 m in length (Figure 90 and Figure 91). The trail can be recognized within the project area by observing subtle wear pattern/color variation on the lava flow.

SIHP # -28782 has been assessed as significant under Criteria c, d, and e (Monahan et al. 2012a).

2.14.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and partial preservation of SIHP # -28787. Because the project effect for SIHP # -28787 has not changed, it was not addressed in the latest revision of the ADRP (Hammatt and Shideler 2014)

SIHP # -28787 was not depicted on any of the historic maps that were reviewed. Likewise, no trail segments identified during previous archaeological studies were found to connect with SIHP # -28787 *mauka* of the current project area. Although SIHP # -28787 extends *makai* for a short distance onto NPS property, it does not connect with any other trails within the National Park.

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -28787 as a Type "A" trail. Type "A" trails are generally the width of one person with many turnings. Stepping stones can be used and occasionally rock piles (*ahu*) mark the trail. Although the precise age of SIHP # -28787 is undetermined, Type "A" trails normally date to the pre- or early post-Contact period; however, NPS staff have pointed out that trails such as this one, which lack formal attributes within the project area, may exhibit formal features elsewhere (i.e., outside the project area). This scenario is particularly plausible when only a short segment (in this case, 8.0 m) of what once may have been a longer trail is identified.

SIHP # -28787 is just south of SIHP # -19952 (see Section 2.6 for full historic property description). Although initially it seemed unusual to have two roughly parallel trails positioned so close to one another, this phenomenon has been documented in previous studies. For instance, during an AIS of a 224.3-acre parcel in Kaloko and Kohanaiki Ahupua'a, Bell et al. (2008) documented 21 historic trail properties and noted the following:

Among these transportation routes, something peculiar appears to be going on with the numerous short trails crossing a small 'a 'a flow near the southern border



Figure 90. Photograph of SIHP # -28787, view to northwest

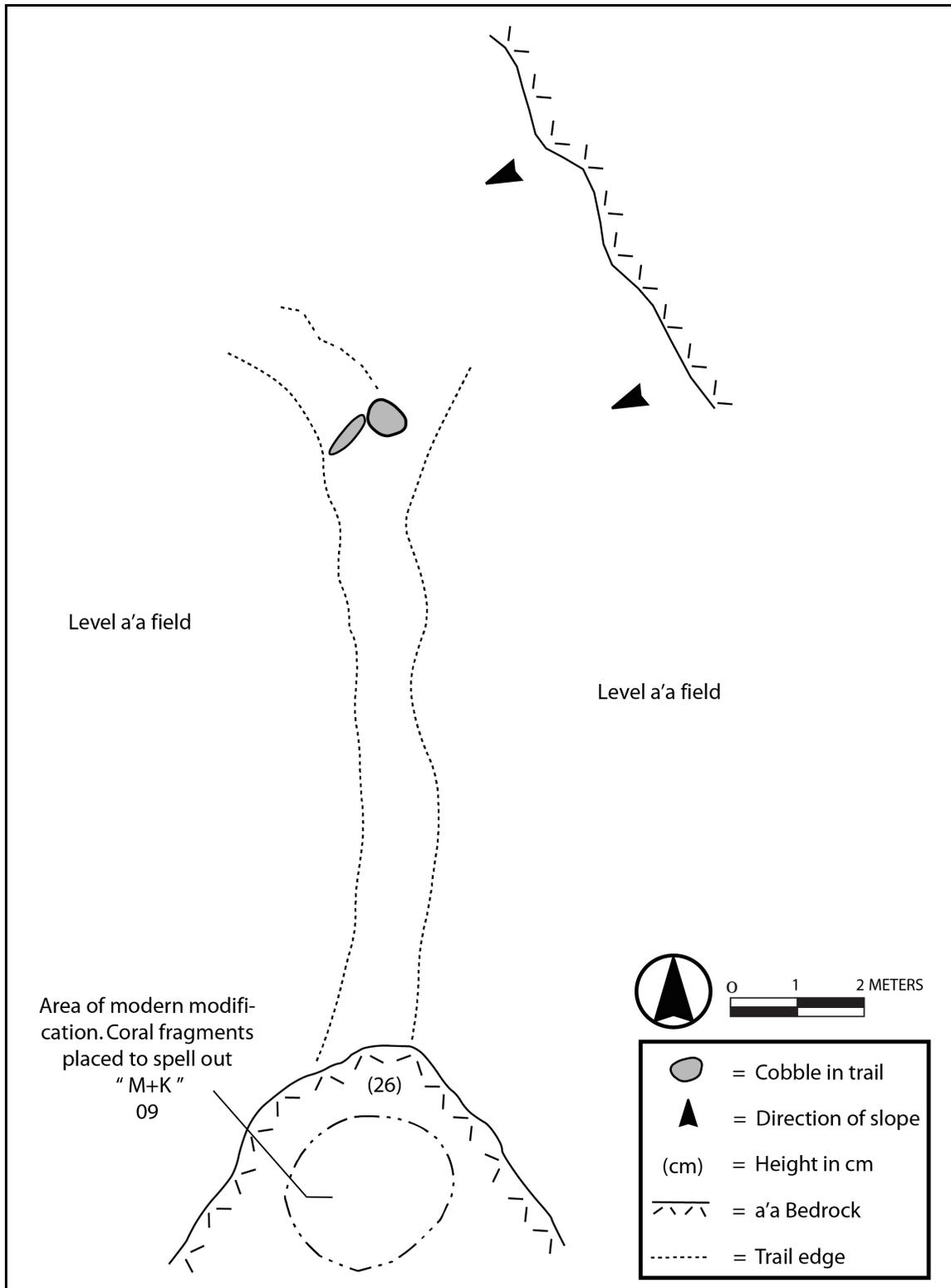


Figure 91. Plan view map of SIHP # -28787

of the project area ([SIHP #s] 13493, 20722, 20726, 20744, 20745). Here there appears to have been great need for crossing the 'a'ā quickly without regard to the increased labor needed to build so many parallel trails. One explanation for this is that a larger *mauka-makai* route was nearby and that these trails converged upon it shortly after leaving the rugged flow. It may be that this hints at a route older than Kohanaiki Road, which could be either north or south of Hina Lani. [Bell et al. 2008:259]

Furthermore, Bell et al. (2008:202) point out that the “closely spaced and approximately parallel trails . . . [suggest] a relatively high degree of traffic in the area.” A similar explanation may therefore apply to SIHP #s -19952 and -28787, which, like the trails referred to in the above quotation, are closely spaced, roughly parallel trails located on 'a'ā flows within Kaloko Ahupua'a.

2.14.2 Interim Protective Measures Implementation

Interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts (Figure 92 and Figure 93).

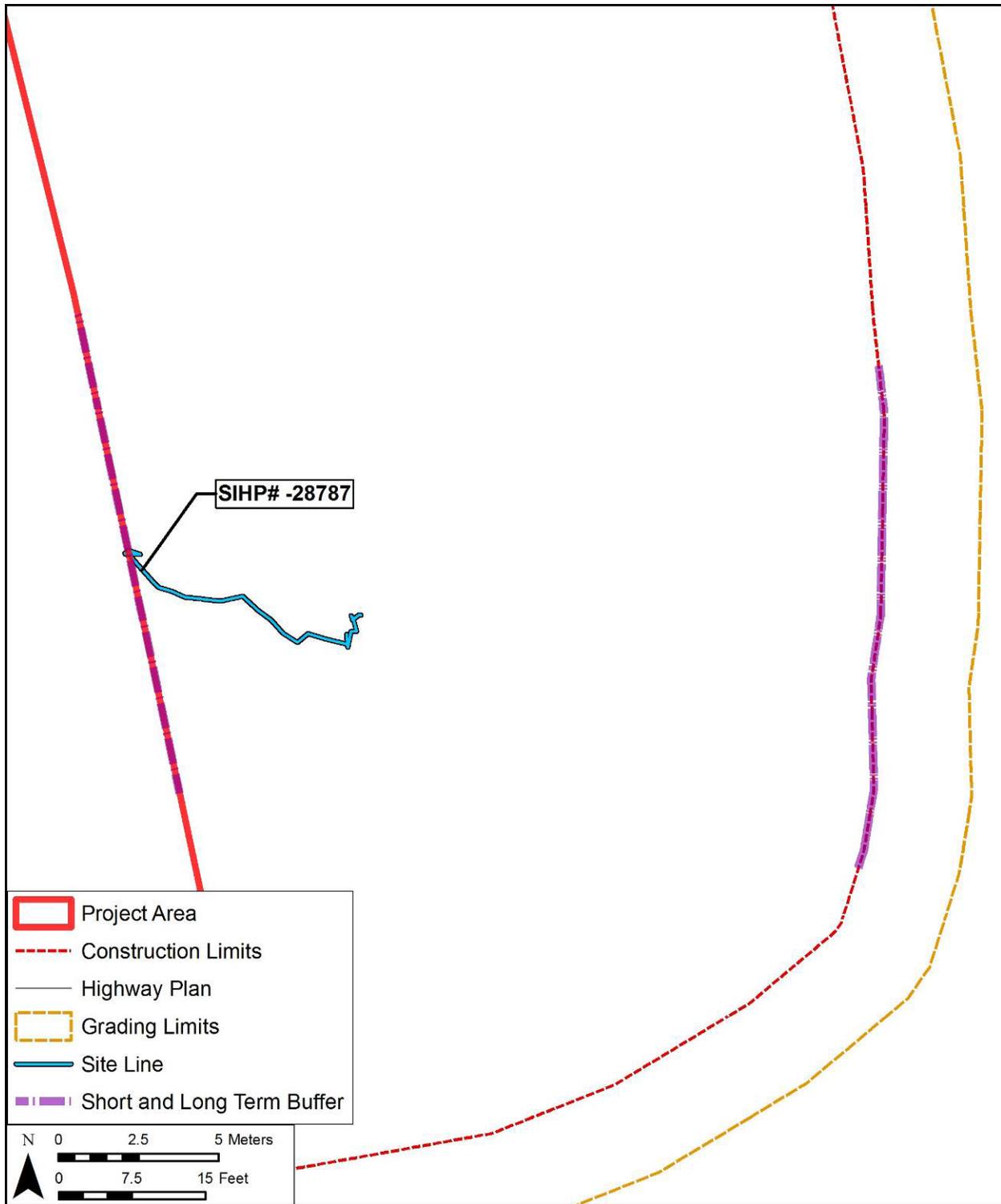


Figure 92. Preservation buffers for SIHP # -28787



Figure 93. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -28787, view to west

2.15 SIHP.SIHP # 50-10-27-28791

Temp. Site No.: Trail 11 (Monahan et al. 2012a)

Formal Type: Trail

No. of Features: 0

Function: Transportation

Age: Likely pre- or early post-Contact

Overall Dimensions: Approximately 9.2 m long

Topography: Undulating *pāhoehoe* flow, level to slightly-sloping

Elevation: 23 m (75 ft) AMSL

Description: SIHP # -28791 is a trail approximately 150 m southwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway within the portion of the project area adjacent to the Kaloko-Honokōhau National Historical Park. The trail is oriented roughly northeast/southwest (*mauka-makai*) and measures 9.2 m in length. The trail can be recognized within the project area by observing subtle wear pattern/color variation on the lava flow (Figure 94 and Figure 95).

SIHP # -28791 was identified during the current project's AIS (Monahan et al. 2012a) and is associated with a petroglyph, SIHP # -28792. The petroglyph has been engraved onto a smooth, level *pāhoehoe* surface and consists of a hollow circle with a central dot adjacent to an L-shaped line and a small, linear-pecked depression (Shideler et al. 2012:167). It was assessed as significant under Criteria c, d, and e.

2.15.1 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of archival research and preservation of SIHP # -28791. Because the project effect for SIHP # -28791 has not changed, it was not addressed in the latest revision of the ADRP (Hammatt and Shideler 2014).

SIHP # -28791 was not depicted on any of the historic maps that were reviewed. Likewise, no trail segments identified during previous archaeological studies were found to connect with SIHP # -28791 *mauka* of the current project area. SIHP # -28791 does extend *makai* for a short distance onto NPS property, but does not intersect or connect with any other trails within the National Park. A trail previously identified by Renger (1971) and designated as Site D13-81 (no SIHP #), appears to have run just north of, and parallel to, SIHP # -28791 (Figure 4). Renger (1971:28) described Site D13-81 as a "major mauka-makai trail, well worn, [which] runs mostly across smooth pahoehoe." It crossed the Māmalahoa Trail (SIHP # -00002) before continuing toward the south end of Kaloko Fishpond. Although archival research indicates a portion of Site D13-81 was within the current project area at the time of Renger's (1971) survey, it was not identified during the current project's AIS; therefore, it remains unclear if SIHP # -28791 is directly related to Site D13-81. Based on the available evidence, it is possible SIHP # -28791 once connected with that "major mauka-makai trail."

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -28791 as a Type "A" trail. Type "A" trails are generally the width of one person with many turnings. Stepping stone can be used and occasionally rock piles (*ahu*) mark the trail. Although the precise age of SIHP # -28791 is undetermined, Type "A" trails normally date to the pre- or early



Figure 94. Photograph of SIHP # -28791, view to west

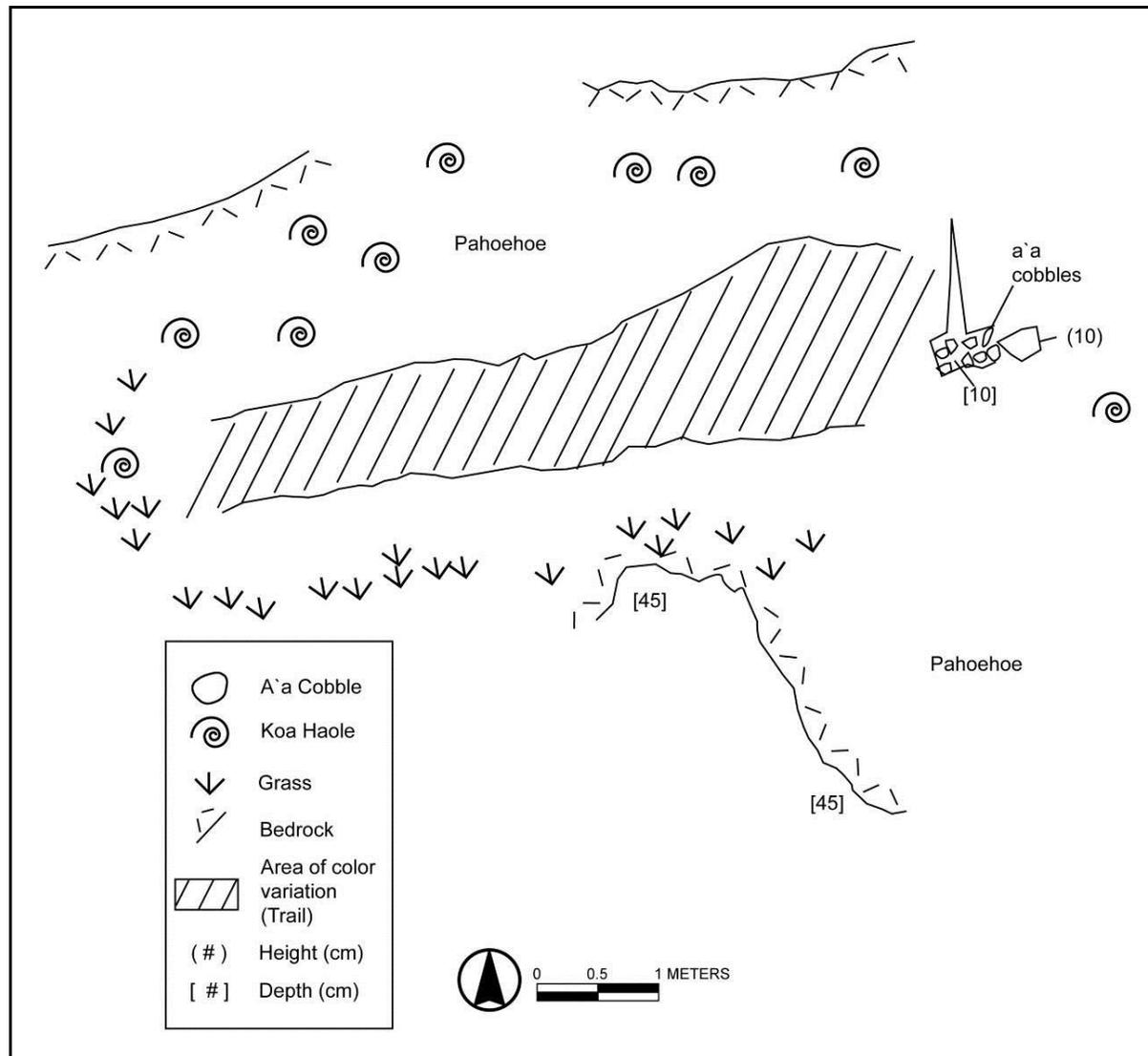


Figure 95. Plan view map of SIHP # -28791

post-Contact period; however, NPS staff has pointed out that trails such as this one, which lack formal attributes within the project area, may exhibit formal features elsewhere (i.e., outside the project area). This scenario is particularly plausible when only a short segment (in this case, 9.2 m) of what once may have been a longer trail is identified.

The interpretation of SIHP # -28791 as a traditional footpath is supported by its association with a traditional Hawaiian petroglyph, SIHP # -28792. During an inventory survey of an 803-acre parcel in Honokōhau (the *ahupua'a* immediately south of Kaloko, where SIHP # -28791 is located), Robins et al. (2000:84) noted petroglyphs primarily were associated with habitation sites and with trails. Robins and colleagues (2000) proposed a possible distinction between personal and public significance for the petroglyphs, suggesting that while those displayed within a habitation cave may be significant mainly to the individual or family utilizing the cave, images displayed along trails may have been created for the general public and denote significance to the greater community.

2.15.2 Interim Protective Measures Implementation

Interim protections, including the installation of protective fencing demarcating the buffer zone, were implemented during data recovery efforts (Figure 96 and Figure 97).

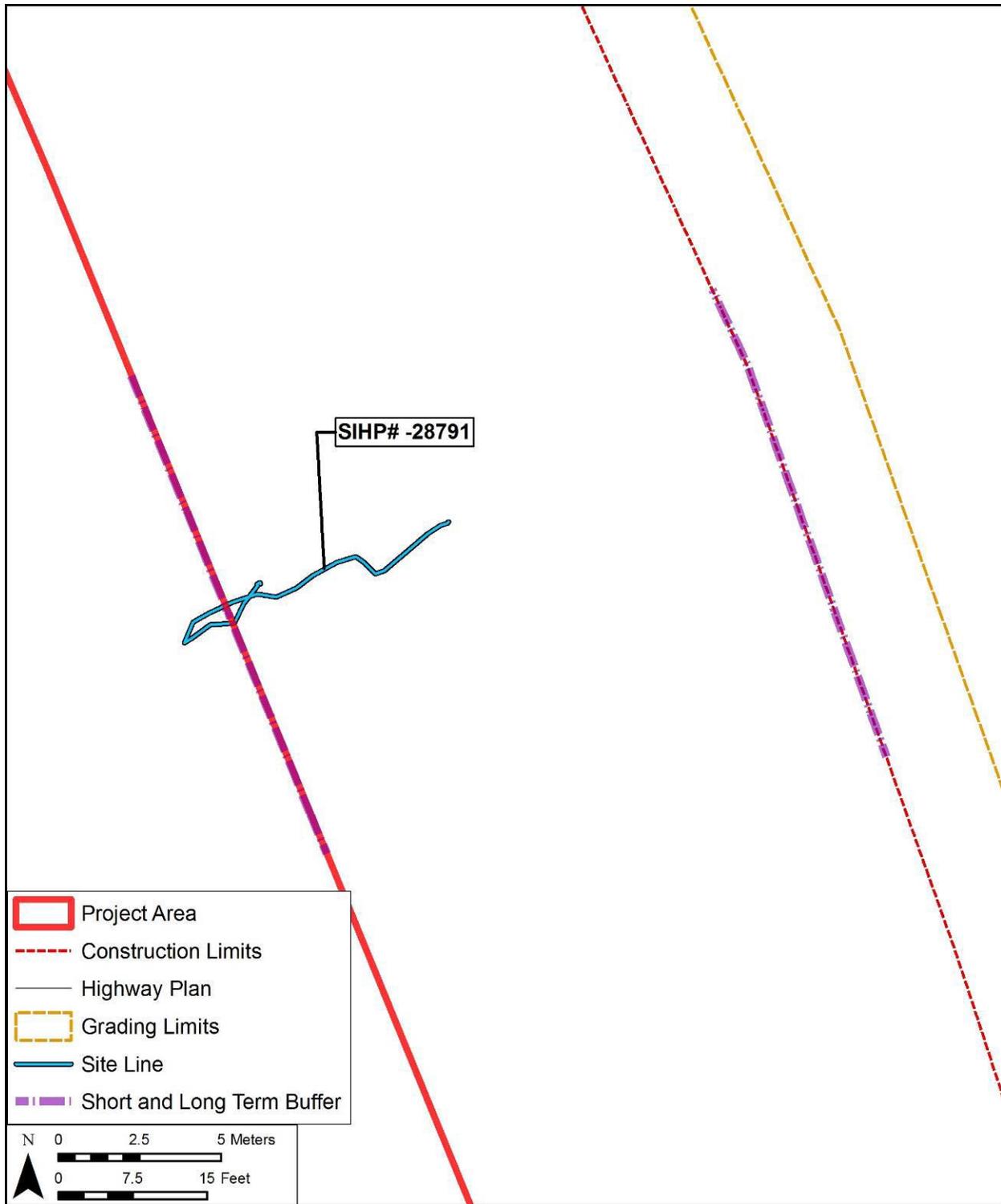


Figure 96. Preservation buffers for SIHP # -28791 (Shideler et al. 2012)



Figure 97. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -28791

2.16 SIHP # 50-10-27-29272

Temp. Site Designation: Coral frags (Harp 2011)

Formal Type: Level area (Feature A) with *mauka-makai* trail (Feature B)

No. of Features: 2

Function: Possible resting place (Feature A); transportation (Feature B)

Age: Likely pre- to post-Contact

Overall Dimensions: 6.5 m E/W by 5.5 m N/S (level area)

Topography: Undulating *pāhoehoe* terrain, sloping gently *makai*

Elevation: 36 m (114 ft) AMSL

Description: SIHP # -29272 Feature A is a level area of rounded but “fresh” looking basalt cobbles and small boulders with some rounded coral pieces (mostly less than 5 cm in diameter) in a low area at the edge of a *pāhoehoe* outcrop (Figure 98 through Figure 104). Cowrie (*Cypraeidae* sp.) and ‘*opihi* (*Cellana* sp.) shell were on the surface of the level area. Several 1970s-era bottles and beverage cans, as well as other trash and a rusted horseshoe, were scattered around the area. The western side of the feature has a clear but informal edge about 30 cm high. Grasses surround the feature, which was pointed out to CSH by NHO representative Isaac Harp. The feature was inspected and assessed as part of the supplemental survey of the northern segment of the current project area (see Monahan and Wilkinson 2012).

While working with CSH archaeologists, Isaac Harp identified a relatively faint trail (SIHP # -29272 Feature B) oriented *mauka-makai* leading into the area of Feature A from the west. CSH archaeologists were skeptical about this trail, which they considered to be relatively difficult to observe in the field; nonetheless, GPS coordinates for the trail were obtained in order to map its location. Subsequent to CSH’s fieldwork with Isaac Harp, the SHPD informed CSH that a more formal section of this trail had been identified in an adjacent project area to the west (see Rechtman and Clark 2012 and Figure 3). Rechtman and Clark (2012:67) described “a cleared, widened (up to 3.7 meters) and in places cobble paved thoroughfare; low kerbing in spots; and a constructed (10.3 meters long x 3.7 meters wide) bridge.” Rechtman and Clark (2012) concluded the effort put into improving the trail suggests it was a primary *mauka-makai* transportation route in historic times, while the heavily worn central footpath points to pre-Contact use as well.

SIHP # -29272 has been assessed as significant under Criteria c, d, and e (Monahan et al. 2012a).

2.16.1 Archaeological Inventory Survey Excavations (Monahan et al. 2012a)

In order to investigate the age and function of SIHP # -29272, three 1-sq-m test units were excavated during the current project’s AIS (Monahan et al. 2012a). Two test units (TU-1 and TU-2) were excavated within the main level area (Feature A). TU-1 was relatively shallow and culturally sterile, while TU-2 yielded a small quantity of midden. A third excavation (TU-3) was placed in a nearby area identified as a possible “filled-in” area by Isaac Harp. TU-3 yielded no cultural materials or features.

Monahan et al. (2012a) concluded SIHP # -29272 appears to be a constructed ramp to allow for travel across uneven terrain, with a primary function of transportation; however, it may

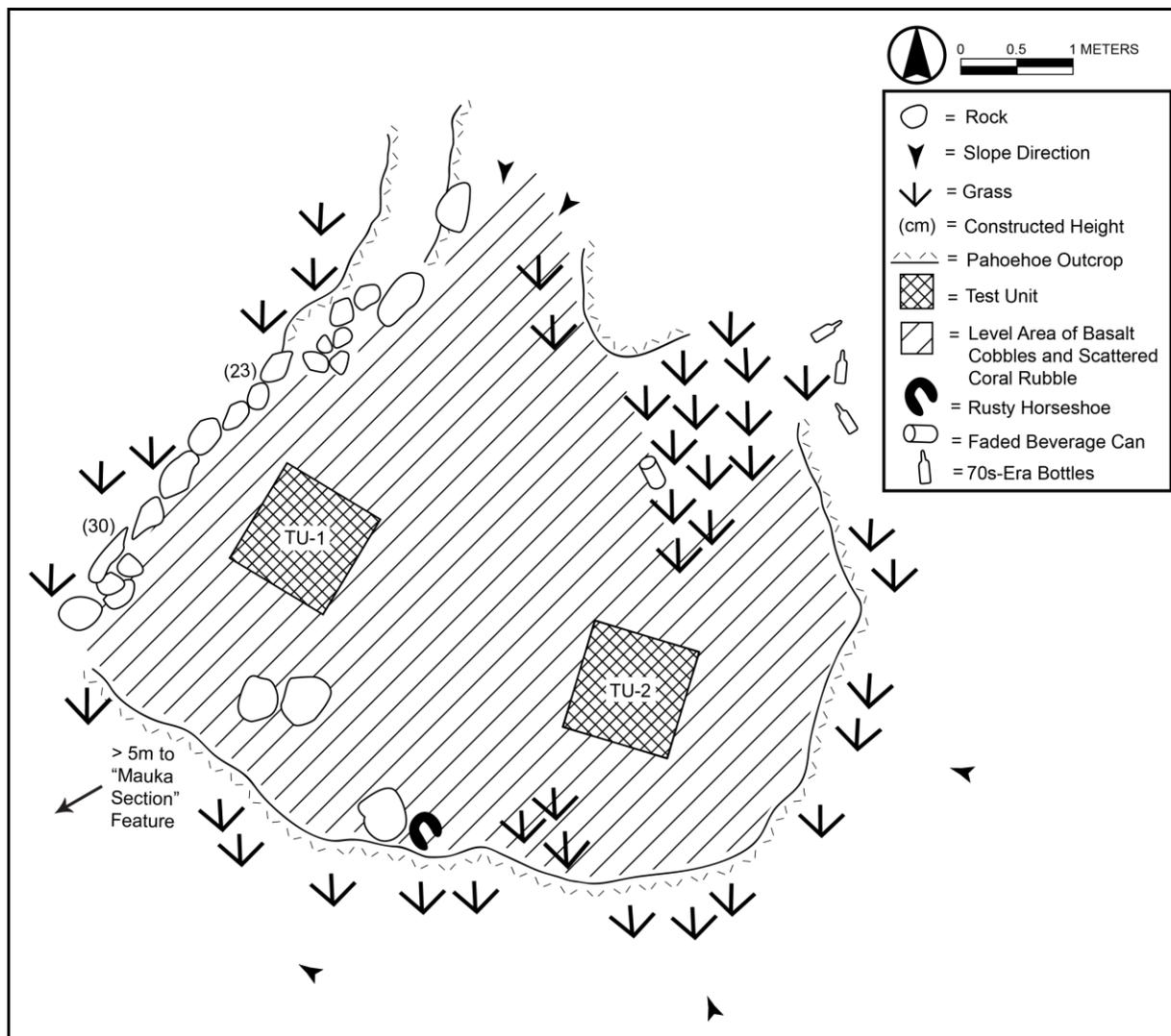


Figure 98. Plan view map of SIHP # -29272 Feature A



Figure 99. Level area of cobbles with coral (SIHP # - 29272 Feature A), view to northwest



Figure 100. Section of trail (SIHP # -29272 Feature B), identified by Isaac Harp, leading to Feature A, view to west



Figure 101. Post-excavation overview of TU-1 at SIHP # -29272 Feature A, view to east



Figure 102. Post-excavation overview of TU-2 at SIHP # -29272 Feature A, view to southeast

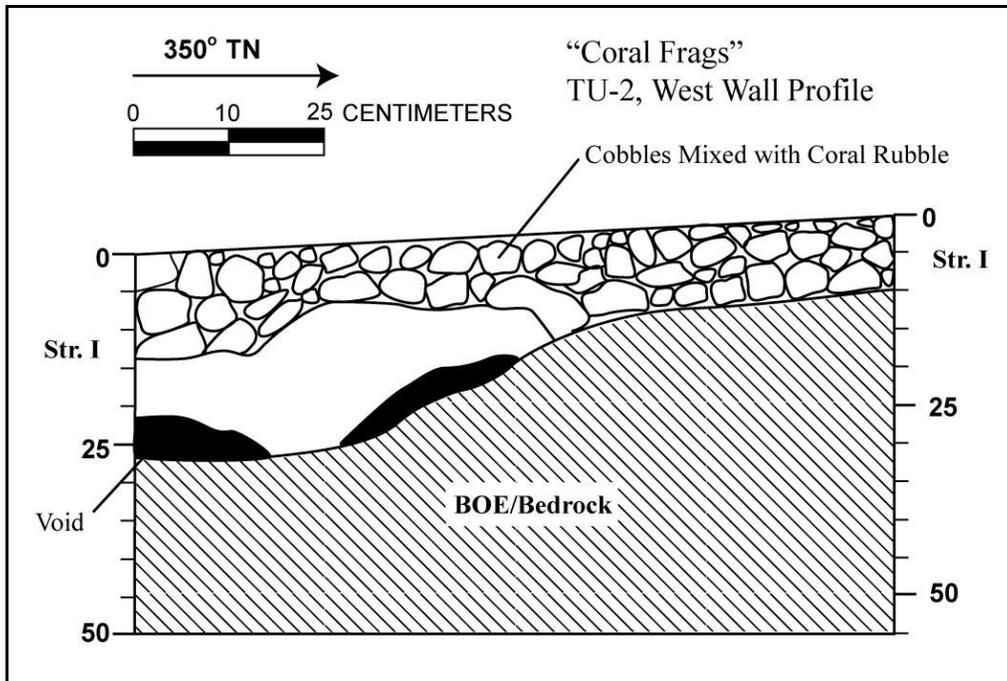


Figure 103. Profile of TU-2 west wall at SIHP # -29272 Feature A



Figure 104. Post-excavation overview of TU-3, view to east

also have been used as a resting place.

2.16.2 Data Recovery Efforts

In the ADRP for the current project, Shideler et al. (2012) recommended data recovery in the form of excavation for SIHP # -29272 Feature A (level area), as well as archival research and preservation for SIHP # -29272 Feature B (trail portion). During a revision of the ADRP (Hammatt and Shideler 2014), it was decided to effectively move the *makai* edge of the project *mauka* in an effort to secure ACHP support. As a result, ten trails that were going to be partially destroyed, including SIHP # -29272, would no longer be impacted by the project (see Table 1). Two planned additional 1-sq-m test units were therefore deferred in favor of further archival research.

SIHP # -29272 is notable within the current project area for being the only trail identified within roughly the northern half. Archival research revealed an archaeological assessment by Henry et al. (1993) was conducted *mauka* of SIHP # -29272. Three *pāhoehoe*-lined trails crossing 'a'ā flows (SIHP #s -18449, -18458, and -18469) were recorded during the study, although none of these appear to connect with SIHP # -29272. The fact that transportation features (i.e., trail segments) were the least common functional type observed during the Henry et al. (1993) study was contrary to expectations. Henry et al. (1993:85) assert these findings “support Hammatt’s [1987] contention that coastal-upland interaction patterns in North Kona and South Kohala were fairly irregular and informal in nature.” However, given the numerous *mauka-makai* trails recorded in Kaloko and Honokōhau Ahupua'a to the south, Henry et al. (1993) acknowledge transportation features may have been under-represented in their study; specifically, they point to the difficulty in detecting trails over *pāhoehoe* flows. Similarly, Bell et al. (2008:259) concluded in their AIS study of a 224.43-acre parcel in Konahaiki and Kaloko Ahupua'a to the south that the “location of trails only on 'a'ā suggests less modified, braided trails crossed the *pāhoehoe*.” SIHP # -29272 Feature B, located on *pāhoehoe*, is one such trail and accordingly was described during the current project’s AIS as being relatively faint and difficult to observe.

Site typology, based on criteria presented by Apple (1965:65), classifies SIHP # -29272 Feature B as a Type “A” trail. Type “A” trails are generally the width of one person with many turnings. Stepping stones can be used and occasionally rock piles (*ahu*) mark the trail. As mentioned, a more formal section of SIHP # -29272 was identified in a project area to the west (*makai*). Rechtman and Clark (2012) concluded the effort put into improving that portion of the trail, which was cobble-paved with low curbing in places, suggests it was a primary *mauka-makai* transportation route during historic times, while the heavily worn central footpath pointed to pre-Contact use as well. A review of historic maps indicates SIHP # -29272 is depicted on a 1928 USGS map of Keahole and Kailua quadrangles (see Figure 27 of Volume I), which shows the *mauka-makai* trail running through Kalaoa 5 and 'O'oma Homesteads and intersecting with the Māmalahoa Trail (SIHP # -00002) west of the current project area. It is also depicted on a 1959 USGS map (see Volume I Figure 31), where it is labelled a “jeep trail.” This provides further evidence of historic-era improvements made to the trail, and shows it was still in use during the mid-twentieth century.

2.16.3 Interim Protective Measures Implementation

Following the recommendations of the project APMP (Hammatt and Shideler 2014), interim protections including the installation of protective fencing demarcating the buffer zone were implemented during data recovery efforts. The buffer zone is 5 m on all sides, except that nearest the project grading limits, where the buffer zone is approximately 0.6 m (Figure 105 and Figure 106).

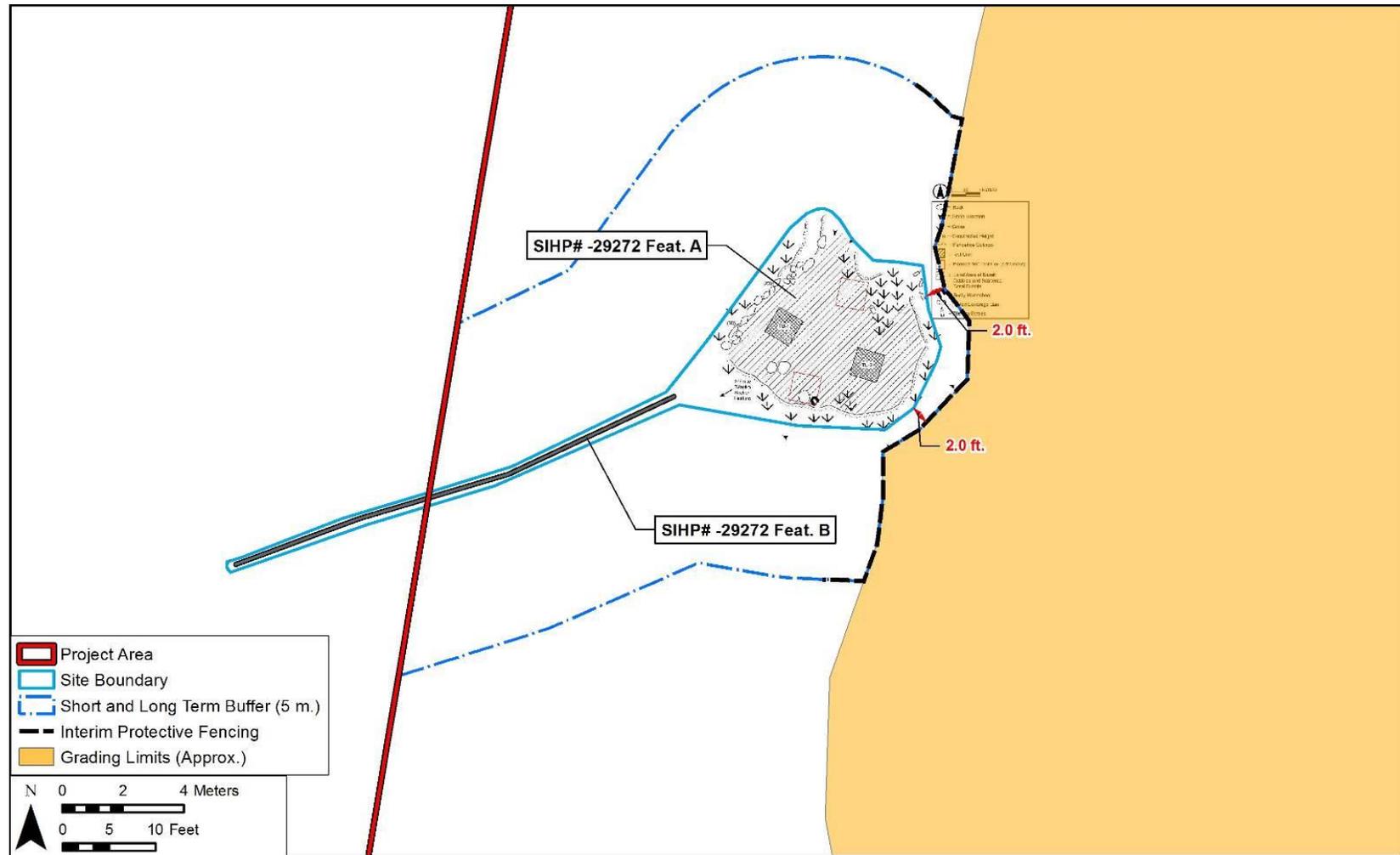


Figure 105. Preservation buffers for SIHP # -29272



Figure 106. Photograph showing protective fence demarcation of the interim buffer zone for SIHP # -29272

Section 3 References Cited

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