Section 1 Introduction

1.1 Project Background

At the request of R.M. Towill Corporation, Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this archaeological monitoring plan for the Mākaha Bridges 3 and 3A replacement project, located within Mākaha Ahupua‘a, Wai‘anae District, Island of O‘ahu. The approximately 3.7-acre project area comprises portions of tax map key (TMK) (1) 8-4-001:012, 8-4-2:047, 45, 8-4-018:014, 122, 123, 8-4-08:018, 019, 020, and is located along the Farrington Highway corridor, approximately 500 feet (150 m) *mauka* of the shoreline at Mākaha Beach Park, at the intersection of Kili Drive and Farrington Highway. This area is depicted on the 1998 Wai‘anae U.S. Geological Survey topographic 7.5-minute quadrangle map, a TMK map, and an aerial photograph (Figure 1, Figure 2, and Figure 3).

Within this area, the Hawai‘i Department Of Transportation (HDOT) proposes to demolish and replace the two existing Farrington Highway bridge structures with new bridge structures that meet current standards. Bridge 3 is located just south of Kili Drive and Bridge 3A is located just north of Kili Drive. The approximately 3.7-acre project area is comprised of private, City and County of Honolulu, and State of Hawai‘i lands.

This HDOT and Federal Highways Administration (FHWA) funded bridge replacement project [FHWA Aid Project No.: BR-093-1(20)] will require construction of a temporary detour road and temporary bridge structures on the *makai* (southwestern) side of Farrington Highway. Additionally, drainage improvements along both bridges will be made, including construction of erosion control measures to reduce discharges of sediment in storm water runoff.

This project’s historic preservation review includes compliance with Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and HAR Chapter 13-13-275. Additionally, with FHWA funding, the project is a federal undertaking requiring compliance with Section 106 of the National Historic Preservation Act (NHPA), National Environmental Protection Act (NEPA), and the Department of Transportation Act (DTA). As part of this historic preservation review compliance, CSH conducted an archaeological inventory survey of the project area (McDermott and Tulchin 2006), which was reviewed and approved by SHPD (SHPD correspondence, LOG NO: 2006.0731 DOC NO: 0603CM59—refer to Appendix B).

The FHWA Section 106 review of the Mākaha Bridges Replacement Project determined that the project will have an adverse effect on historic properties. The State Historic Preservation Division (SHPD) concurred with this determination and, per their HAR 6E-8 review, determined that a project effect determination of “effect with proposed mitigation commitments” was warranted for this project. This archaeological monitoring plan is a mitigation component of the project’s Memorandum of Agreement (MOA) between HDOT, FHWA, and SHPD.

This archaeological monitoring program was prepared in consideration of the Secretary of the Interior’s Standards and Guidelines for Archaeology and Historic Preservation, and should be implemented to mitigate the effect on known historic properties, facilitate the identification and treatment of any burials that may be discovered during subsurface disturbance, and to mitigate the project’s effect on any non-burial archaeological deposits that may be uncovered during

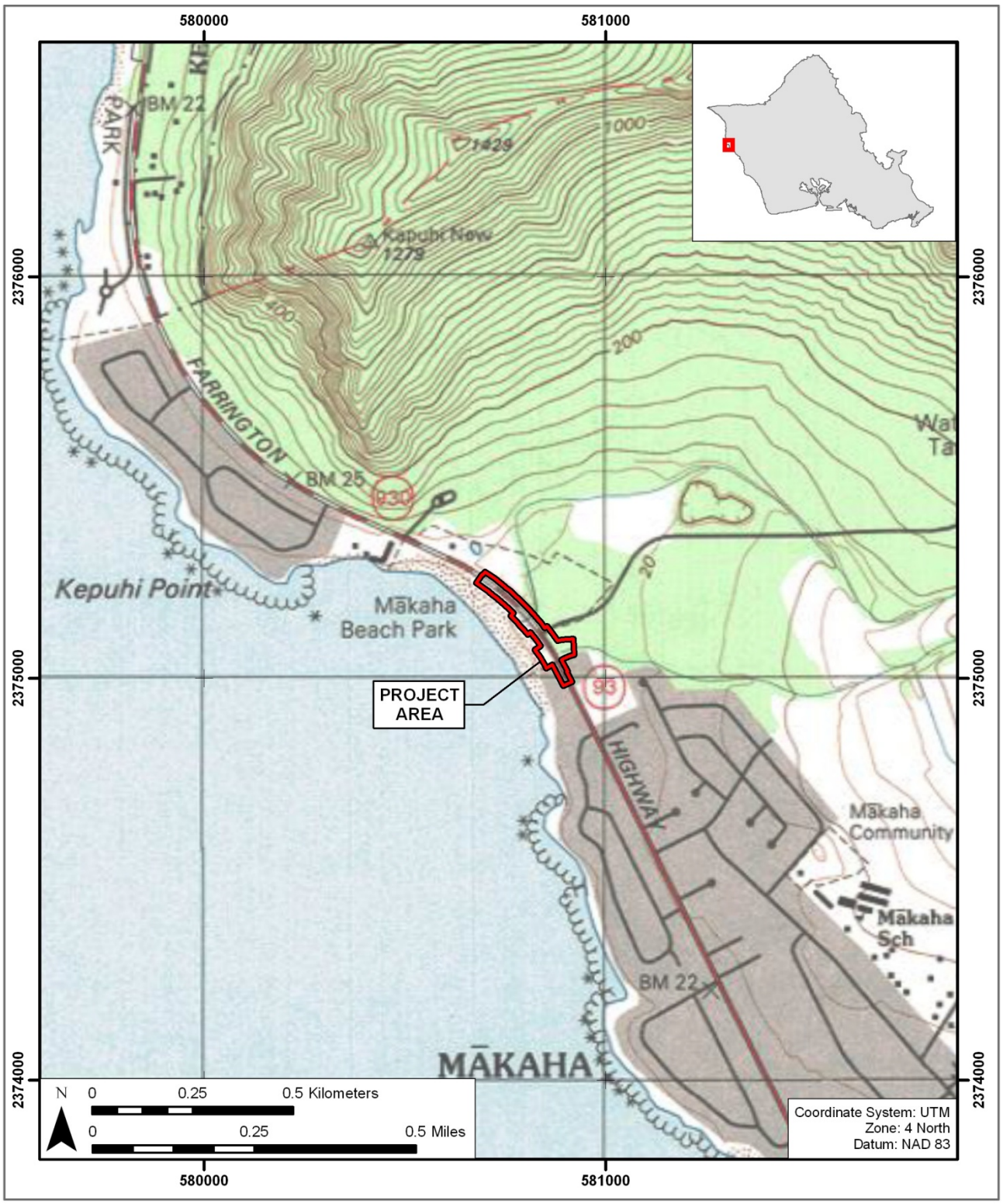

Figure 1. Portion of the 1998 U.S. Geological Survey 7.5-minute series Wai‘anae quadrangle topographic map showing the project area

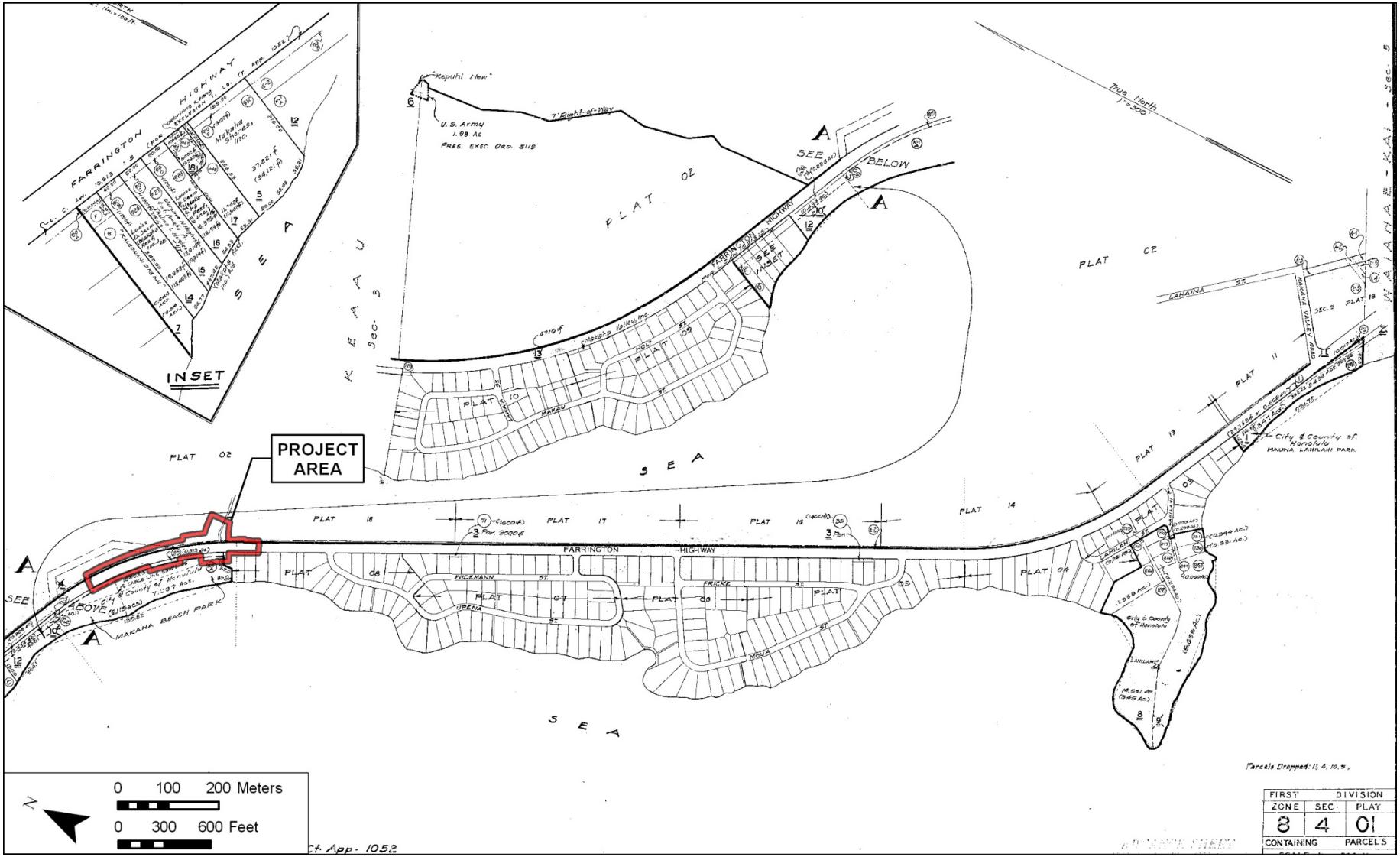

Figure 2. Portion of TMK 8-4-01 showing the location of the current project area

Figure 3. Aerial photograph showing location of current project area (U.S. Geological Survey Orthoimagery 2005)

project construction. In consultation with SHPD, this monitoring plan is designed to fulfill state requirements for monitoring plans [HAR Chapter 13-279-4].

The project's earlier archaeological inventory survey conducted by CSH in 2005 (McDermott and Tulchin 2006) identified and documented five historic properties. State Inventory of Historic Properties (SIHP) # 50-80-7-6825 is a buried A-horizon with cultural material from pre-contact and historic land use, and previously disturbed human skeletal remains determined to be most likely Native Hawaiian. Following the provisions of the project's MOA, this historic property is the focus of a data recovery program, the plan for which was written by CSH (Groza et al. 2010) and approved by SHPD (SHPD Correspondence LOG NO: 2010.0313, DOC NO: 1002NM39; see Appendix B).

The four other historic properties are all currently in-use or remnant historic transportation infrastructure. They include SIHP # 50-80-7-6824, Farrington Highway; SIHP # 50-80-7-6822, Mākaha Bridge 3; SIHP # 50-80-7-6823, Mākaha Bridge 3A; and SIHP # 50-80-12-9714, the remnants of the OR&L Railroad. Based on the inventory survey results, it was determined that no project related mitigation was required for SIHP # 50-80-7-6824, Farrington Highway, because the project consists of routine maintenance to an in-use historic property that is consistent with the Secretary of the Interior's standards for the treatment of historic properties (36 CFR part 68). Pursuant to the project's MOA, the three remaining historic properties (the two bridges and the OR&L remnants) will be documented in architectural studies as a form of mitigation. This architectural Historic American Engineering Record (HAER) documentation is currently underway by Mason Architects.

In compliance with Hawaii State Burial Law (HRS Chapter 6E-43 and HAR Chapter 13-300) a burial treatment plan was prepared by CSH (Tulchin and McDermott 2006) to address the treatment of the project's previously identified human skeletal remains. These remains, which consist of a human hand phalanx and a rib fragment, are a component of SIHP # 50-80-7-6825. These human remains were previously disturbed (prior to the current project) by past land use. The O‘ahu Island Burial Council (OIBC) was asked to approve the relocation of the human remains to an acceptable reinterment site because preservation in place was not possible under the current construction design. At its October 11th, 2006 meeting, the OIBC voted to relocate the human remains associated with SIHP No. 50-80-07-6825 and SHPD subsequently approved the project's final burial treatment plan (SHPD correspondence LOG NO: 2006.3522 DOC NO: 0610PC04 and LOG NO: 2007.2400 DOC NO: 0707MC07, respectively, see Appendix B). Disinterment of the human remains and implementation of the project's burial treatment plan will take place prior to any project-related construction activity and will occur during the project's data recovery when SIHP # 50-80-7-6825 will be further investigated (refer to Groza et al. 2010: 52).

1.2 Environmental Setting

1.2.1 Natural Environment

Based on U. S. Department of Agriculture soils survey data, soils within the project area consist of Halei‘wa Silty Clay, 0 to 2 Percent Slopes (HeA). Hale‘iwa Silty Clay is described by Foote (et al. 1972) as a moderate to poorly drained clay occurring in alluvial fans and drainage ways (Figure 4). Based on subsurface testing results, the seaward-most portions of the project

area, near the active beach, have marine Jaucas sands beneath terrigenous silty sediments. Also based on subsurface testing results, underlying the fine grain sediments in the inland portion of the project area are Pleistocene coral reef remnants. Elevation in the project area is approximately 20 feet (6 m) above mean sea level (AMSL).

Rainfall is less than 20 inches (500 mm) annually along the Wai‘anae Coast and winter storms are the major source of precipitation. December through February are relatively wet months for the region (Armstrong 1973). The project area is generally without relief, with the exception of minor topography associated with the two drainages that pass through the project area, Mākaha Stream’s north and south branches. These are intermittent drainages that are usually blocked from the sea by the active sand beach berm. During the archaeological inventory survey, the only water in these drainages consisted of a small, shallow, somewhat stagnant pond located immediately upstream of Bridge 3A.

Vegetation along the Wai‘anae Coast is sparse. With 20 inches (500 mm) or less of rain annually, only the hardiest plants adapted to coastal environments can thrive. The vegetation is typical of dry seashore environments in Hawai‘i and is dominated by alien species. Indigenous species include *hau* (*Hibiscus tiliaceus*), *kou* (*Cordia subcordata*), *kamani* (*Calophyllum inophyllum*), *naupaka* or *naupaka kahakai* (*Scaevola sericea*), *pa‘u o Hi‘iaka* (*Jacquemontia ovalifolia sandwicensis*), the native beach morning glory or *pohuehue* (*Ipomea pes-caprae*) and the coconut or *niu* (*Cocos nucifera*). Introduced species found bordering Farrington Highway include sea grape (*Coccoloba uvifera*), *kiawe* trees (*Prosopis pallida*), Madagascar Olive trees (*Noronhia emarginata*), and *koa haole* (*Leucaena leucocephala). Kiawe*, *koa haole*, and various grasses were dominant within the project area.

1.2.2 Built Environment

The built environment within and in the immediate vicinity of the project area consists of paved roads, graded, unpaved road-shoulder pull-off/parking areas, residential development, historic bridges, and remnants of the OR&L Railroad.

Paved roads are located both within and in the immediate vicinity of the project area. Farrington Highway is present through the project area, running roughly north-south, and continues in both directions. As part of this investigation, this portion of Farrington Highway has been designated SIHP # 50-80-07-6824 because the highway alignment is clearly older than 50 years. Kili Drive intersects Farrington Highway in the middle of the project area.

Graded parking areas are located within the northwestern and southwestern borders of the project area. The northwestern parking area consists of a level unpaved area on the makai (west) side of Farrington Highway and is utilized by patrons of Mākaha Beach Park. The parking area in the southwestern portion of the project area is also located on the makai (west) side of Farrington Highway and is similar in construction to the northwestern parking area. The parking area is utilized by the City and County as a bus stop. A small bench and shelter has been constructed in this area for bus patrons. Residential development, in the form of residential housing and access roads, is located immediately south of the project area. Mākaha Bridge 3 (designated SIHP # 50-80-07-6822) and Bridge 3A (designated SIHP # 50-80-07-6823), are present in this portion of Farrington Highway within the project area. Both bridges are

constructed over streams leading into the ocean, and serve as a means of keeping this portion of Farrington Highway level and protected from stream overflow.

Remnants of the OR&L Railroad (previously designated SIHP # 50-80-12-9714) are located within the western boundary of the project area, *makai* of Farrington Highway. The remains consist of rectangular concrete slabs, and stone and mortar railroad berm, which were utilized to minimize slope and maintain a level railroad track.

Figure 4. Aerial photo with a soil overlay showing soils present in the project area (Foote et al. 1972; U.S. Department of Agriculture 2001)