



FEB 08 2011

STATE OF HAWAII
DEPARTMENT OF EDUCATION

P.O. BOX 2360
HONOLULU, HAWAII 96804

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OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

January 21, 2011

TO: Mr. Herman Tuiolosega, Acting Administrator
Office of Environmental Quality Control
Department of Health

FROM: Michael H. Shigetani, Public Works Manager *MHS*
Facilities Development Branch, Project Management Section

SUBJECT: Noelani Elementary School
Multi-Purpose Play Court
Job No. P00149-06
Tax Map Key 2-9-023: 023
Manoa, Oahu, Hawaii

The Department of Education, State of Hawaii, has reviewed the Draft Environmental Assessment for the subject project and anticipates a Finding of No Significant Impact (FONSI) determination. Please publish this determination in the next Environmental Notice.

One printed copy of the Draft Environmental Assessment and a CD with the document in .pdf format are attached. The Environmental Notice publication form will be e-mailed to OEQC.

Please contact Mr. Ryan Yamamoto of my staff at 586-0966 if you have any questions.

MS:RY:lh

Enclosures

c: Pacific Architects, Inc.
FDB/Project Management Section (RY)

DRAFT ENVIRONMENTAL ASSESSMENT

***NOELANI ELEMENTARY SCHOOL
MULTI-PURPOSE PLAYCOURT***
Mānoa, Honolulu, Hawai'i

Prepared for

Department of Education
State of Hawai'i
Facilities Development Branch
Project Management Section
1151 Punchbowl Street, Room 431
Honolulu, Hawai'i 96813

December 2010

DRAFT ENVIRONMENTAL ASSESSMENT

***NOELANI ELEMENTARY SCHOOL
MULTI-PURPOSE PLAYCOURT***
Mānoa, Honolulu, Hawai'i

Prepared in Partial Fulfillment of the Requirements of Chapter 343, Hawai'i Revised Statutes and Title 11-200, Hawai'i Administrative Rules, Department of Health, State of Hawai'i

Prepared for

Department of Education
State of Hawai'i
Facilities Development Branch
Project Management Section
1151 Punchbowl Street, Room 431
Honolulu, Hawai'i 96813

Prepared by

Gerald Park Urban Planner
95-595 Kanamee Street #324
Mililani, Hawai'i 96789

and

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawai'i 96826

December 2010

PROJECT PROFILE

Proposed Action: Noelani Elementary School
Multi-Purpose Playcourt
DOE Job No. P00149-08

Location: Honolulu, Hawai'i

Proposing Agency: Department of Education
Facilities Development Branch
1151 Punchbowl Street, Room 431
Honolulu, Hawai'i 96813

Accepting Authority: Department of Education
Facilities Development Branch
1151 Punchbowl Street, Room 431
Honolulu, Hawai'i 96813

Tax Map Key: (1) 2-9-023: 023
Land Area: 8.57 acres
Landowner: City and County of Honolulu

Existing Use: Public Elementary School
State Land Use Designation: Urban
Development Plan Area: Primary Urban Center
Land Use Map (PUC-East): Residential
Zoning: R-7.5
Special Management Area: Not Within Special Management Area

Need for Assessment: Use of State lands and funds §11-200-5 (b)

Anticipated Determination: Finding of No Significant Impact

Contact Person: Ryan Yamamoto
Department of Education
Facilities Development Branch
1151 Punchbowl Street, Room 431
Honolulu, Hawai'i 96813

Telephone: 586-0966

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The Department of Education, State of Hawai'i, proposes to construct a multi-purpose playcourt at Noelani Elementary School located in Mānoa, City and County of Honolulu, Hawai'i. The school is bounded by Woodlawn Drive on the north, residential uses on the west and south, and part of the University of Hawaii Agricultural Experiment Station on the east. A Location/Vicinity Map is shown in Figure 1.

The school site bears Tax Map Key: (1) 2-9-023: 023 encompassing an area of 8.57 acres. The City and County of Honolulu is identified as the property owner. A Tax Map is shown in Figure 2.

A. Purpose and Need for the Project

Manoa Valley is well known for its lush greenery and wet conditions. Rainfall originates in the Koolau Mountain and passes through the valley falling on to the Manoa community and sprinkling other neighborhoods at its mouth. The "Manoa Mist" is an almost daily occurrence affecting outdoor recreation activities at Noelani Elementary School. The proposed playcourt will provide a covered space for outdoor activities during inclement weather.

B. Technical Characteristics

1. Playcourt

A building site on the west side of the campus adjacent to an existing playcourt has been selected for the site of the proposed project. An area of approximately 15,700 square feet has been delineated around the proposed playcourt and is referred to as the building site and/or project limits for this Assessment (See Sheet 1-1.2, Site Plan).

A covered playcourt of approximately 7,300 square feet (approximately 100' X 70') is proposed. The facility will enclose a regulation basketball court (to be shared with a regulation volleyball court) and four half-size basketball courts. The building includes space for two portable stage locations for school activities and assemblies but there will be only one stage. Space is set aside on the western half for boy's and girl's restrooms, a general utility closet, storage room, and an electrical/storage room. Three sides of the building will be faced with chain link fencing for ventilation and security. Swinging chain link gates will provide access. The court surface will be asphalt concrete.

The single-story structure is approximately 30'-0" in height measured from finished grade to top of roof vent (See Sheet A-4.1, Exterior Elevations). The building height exceeds the height limit for the zoning district by 5+ feet and a height Waiver will be applied for from the Department of Planning and Permitting, City and County of Honolulu.

In general the structure will be supported on steel posts and trusses, framed with metal siding, and topped with a pitched metal roof. Restroom and storage areas will be framed with cement masonry units. Translucent panels on each side will allow natural light to enter the covered space.

A covered, concrete walkway will be constructed from the east end of Building "A" to both the existing and proposed playcourts.

2. Circulation and Off-Street Parking

The project does not propose change to existing on-campus vehicle circulation and parking.

3. Demolition and Grading

Approximately 15,700 square feet of lawn area will be disturbed for the new playcourt, walkways, landscaping, drainage control, and associated improvements such as water and wastewater lines. Of the area to be disturbed, grading work is estimated at approximately 6,500 square feet to include earthwork quantities of 78 cubic yards for excavation and 59 cubic yards for embankment.

The lawn area on the north and west sides of the new playcourt will be graded to convey surface flow to a drain inlet located approximately 40 LF to the west of the existing playcourt near Building "A".. Flow will be conveyed by a grass swale rather than underground piping to the drain inlet.

A Demolition, Erosion Control, and Grading Pplan is shown on Sheet C1.1.

No buildings will be demolished as a result of the proposed action.

4. Infrastructure

Domestic water service will be provided from a new 2" line connected to an existing 3" service lateral inside the school grounds. Water use is estimated at 4,200 gallons per day and can be supplied by the existing on-site system.

Wastewater will be discharged into an on-site 15" sewer through a new 6" sewer lateral. Wastewater generation is estimated at 4,200 gallons per day. The new playcourt is sited to avoid a 10-foot wide sewer easement crossing through the existing playcourt.

Roof runoff will discharge into a new 6" roof drain and conveyed to an existing drain inlet for discharge into the municipal drainage system. The existing drain inlet is located in a lawn area approximately 40 LF to the west of the existing playcourt near Building "A"..

Electrical power will be routed in underground conduits from the existing on-campus electrical system.

A Site and Utility Plan is shown on Sheet C1.2.

5. Landscaping

An underground irrigation system will be installed in the areas to be landscaped. Irrigation water will be drawn from an existing irrigation system. A section of approximately 135 LF of existing irrigation line on the west side of the new playcourt will be relocated and reconnected to the existing irrigation system.

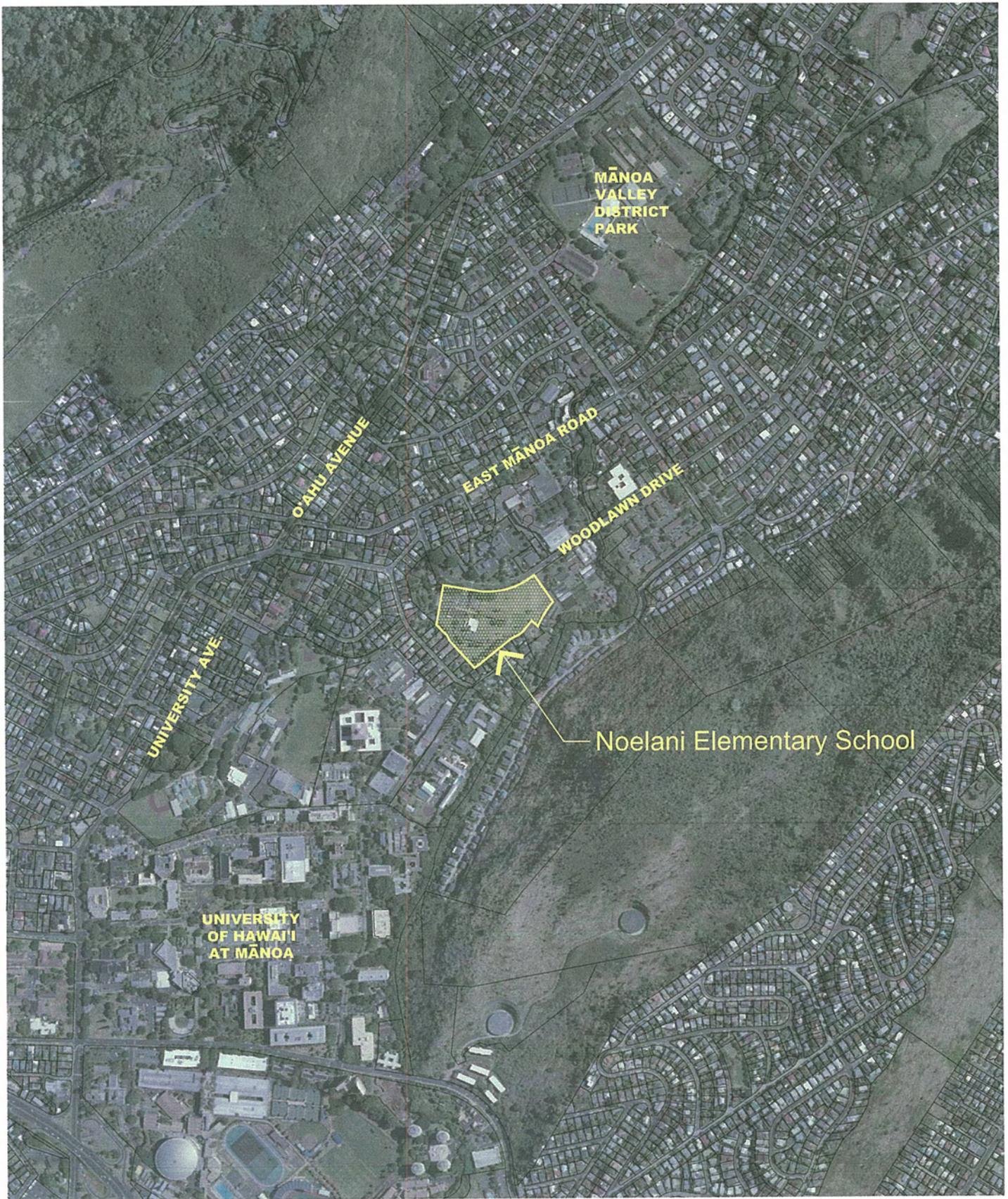
6. Accessibility

Walkways and bathrooms will be designed in compliance with Americans with Disabilities Act ("ADA") requirements.

C. Economic Characteristics

Construction costs are estimated at \$1.6 million and will be funded by the State of Hawai'i.

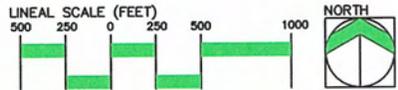
Construction will commence after all design plans are approved and construction permits received. Construction is projected to take 200 calendar days with start-up in June 2011 and completion by December 2011.



Source: USGS National Map Viewer & C&C of Honolulu Website

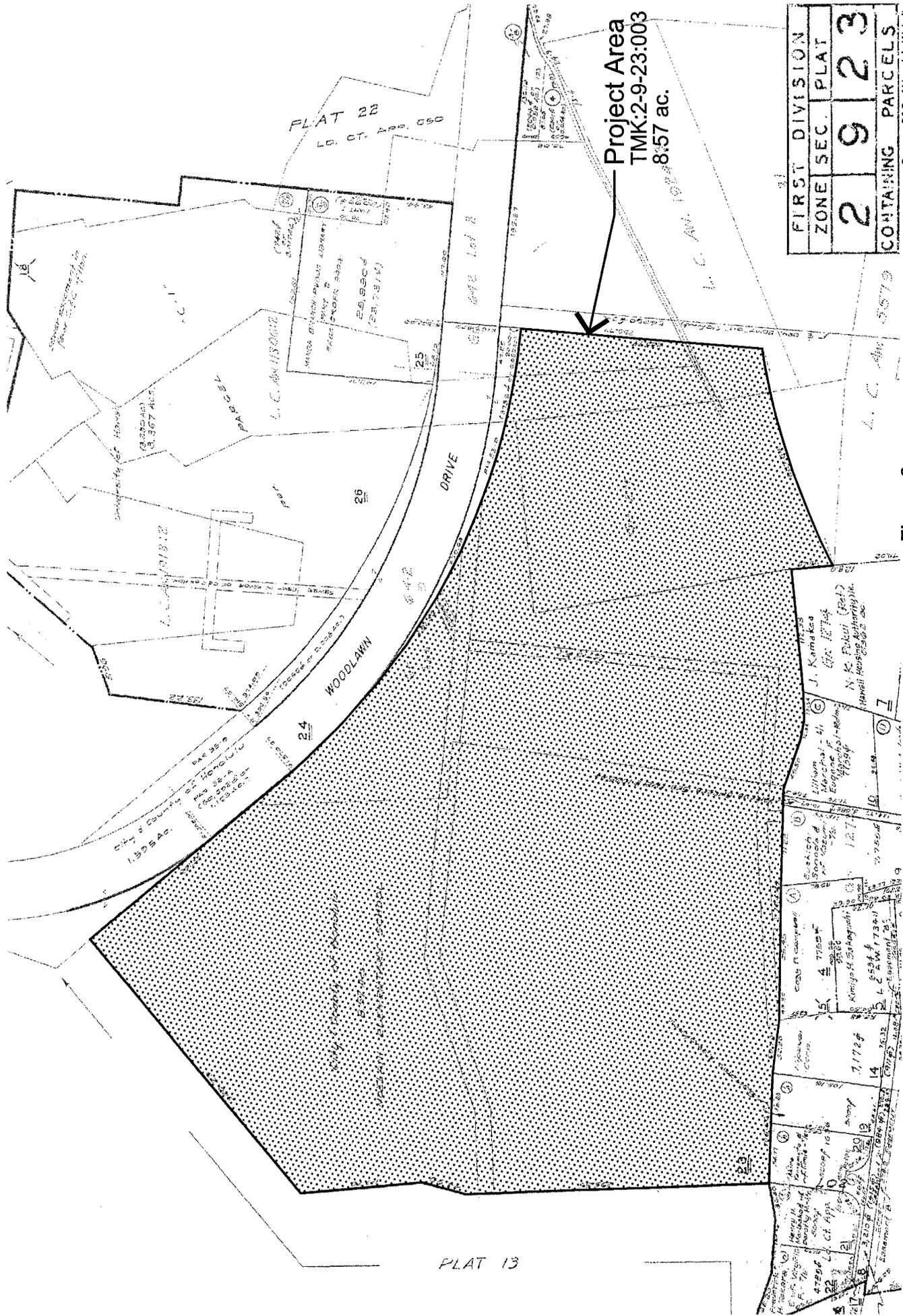


Gerald Park
Urban Planner
August 2010



Mānoa, O'ahu

Figure 1
Vicinity Map
Noelani Elementary School Multi-Purpose Playcourt



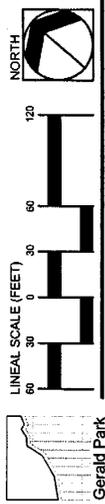
FIRST DIVISION	
ZONE	2
SEC.	9
PLAT	23
CONTAINING PARCELS	

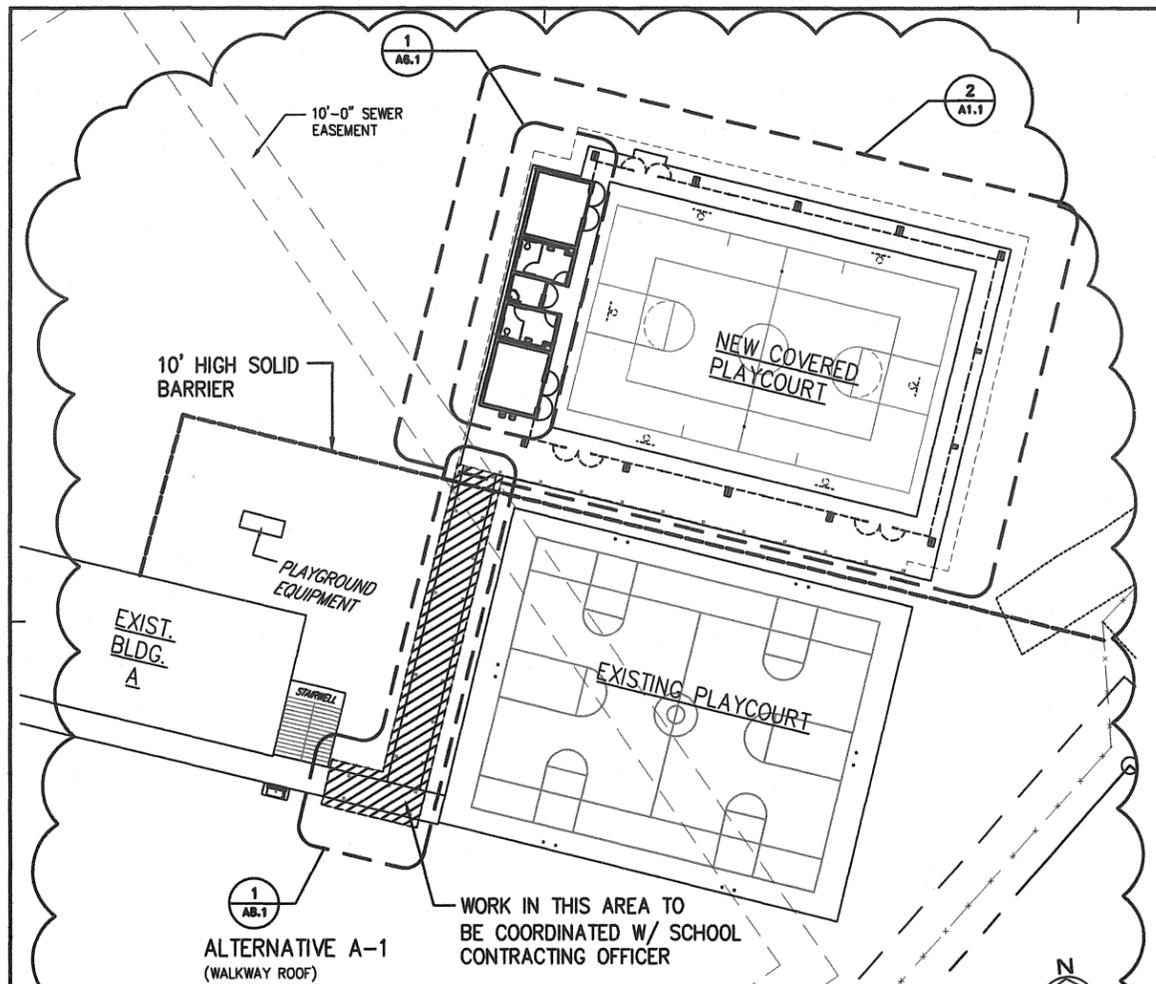
Source: C&C of Honolulu Website

Figure 2
Tax Map

Noelani Elementary School Multi-Purpose Playcourt

Department of Education, State of Hawaii





1 DETAILED SITE PLAN
A1.1 SCALE: NOT TO SCALE

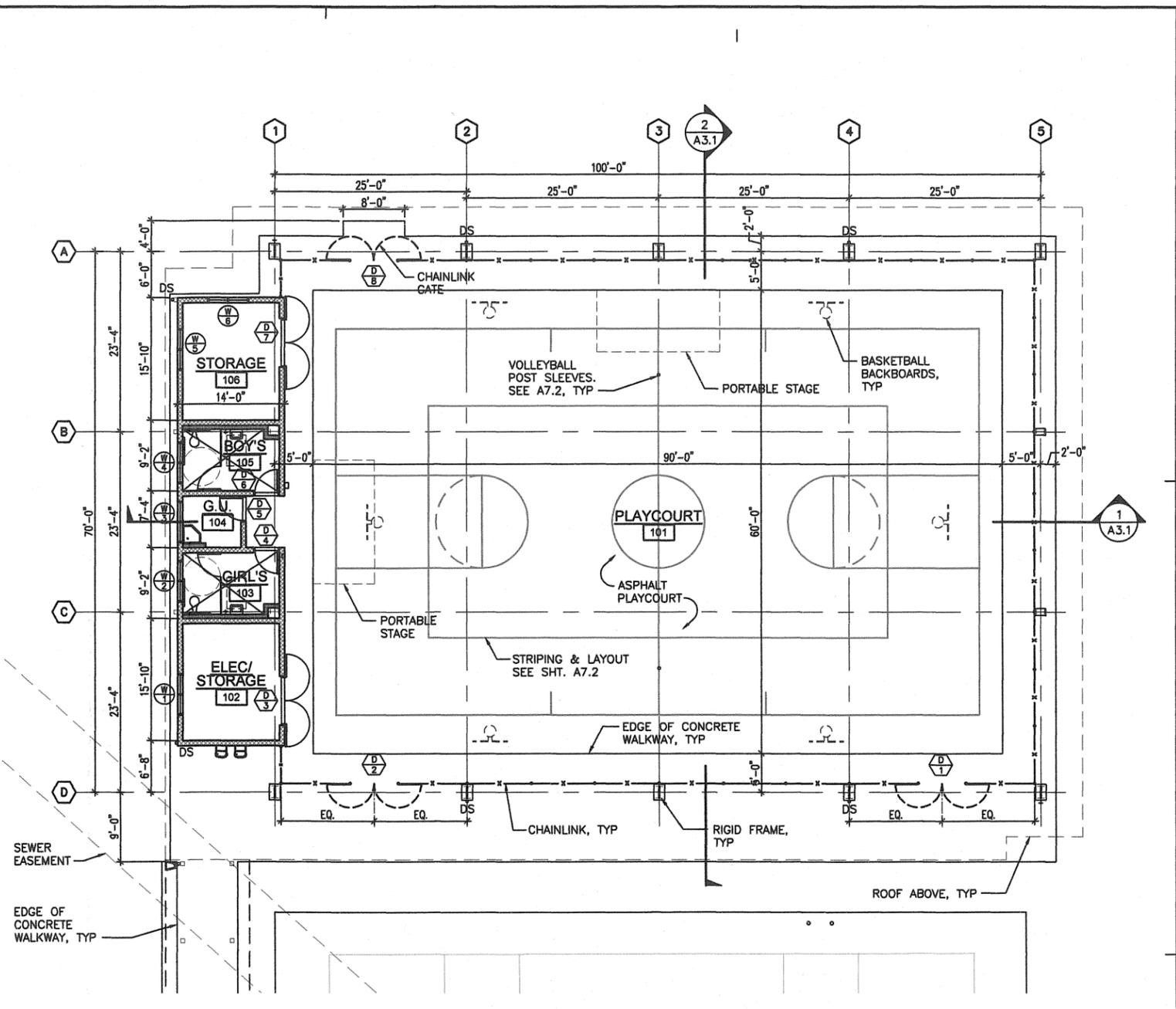
CONSTRUCTION NOTES:

1. WORK ON SITE WHILE SCHOOL IS IN SESSION SHALL NOT OCCUPY THE EXISTING PLAYCOURT OR AREA SURROUNDING THE EXISTING PLAYGROUND EQUIPMENT ADJACENT TO BUILDING 'A'. THE CONTRACTOR SHALL ERECT A MINIMUM 10' HIGH CONTINUOUS, SOLID, BARRIER, SEGREGATING THE EXISTING PLAYCOURT AND PLAYGROUND EQUIPMENT FROM THE CONSTRUCTION AREA, IN APPROXIMATE LOCATION WHERE INDICATED. CONTRACTOR SHALL MAKE ADJUSTMENTS TO THE BARRIER ALIGNMENT AS REQUIRED OR AS DIRECTED BY THE CONTRACTING OFFICER AS CONSTRUCTION REQUIRES OR FOR THE PROTECTION OF THE STUDENTS, FACULTY, AND STAFF. BARRIERS SHALL BE DESIGNED BY A LICENSED STRUCTURAL ENGINEER TO WITHSTAND WIND AND LATERAL FORCES. SAFE ACCESS SHALL FURTHER BE PROVIDED AT ALL TIMES TO AND FROM THE EXISTING PLAYCOURT AND PLAYGROUND EQUIPMENT.

BARRIER SHALL BE CONSTRUCTED TO PREVENT CONSTRUCTION DEBRIS, EQUIPMENT, PERSONNEL, ETC., FROM ENTERING THE PLAYCOURT AND PLAYGROUND AREAS. BARRIER SHALL ALSO BE CONSTRUCTED TO PREVENT STUDENTS, FACULTY, STAFF, PLAY EQUIPMENTS (BALLS, ETC.) FROM ENTERING THE CONSTRUCTION AREA. SUBMIT BARRIER DESIGN AND CONSTRUCTION TO THE CONTRACTING OFFICER FOR APPROVAL PRIOR TO ERECTIONS.

2. STAGING, ONSITE PARKING, AND STORAGE SHALL BE COORDINATED AND LOCATED AS DESIGNATED BY THE CONTRACTING OFFICER.

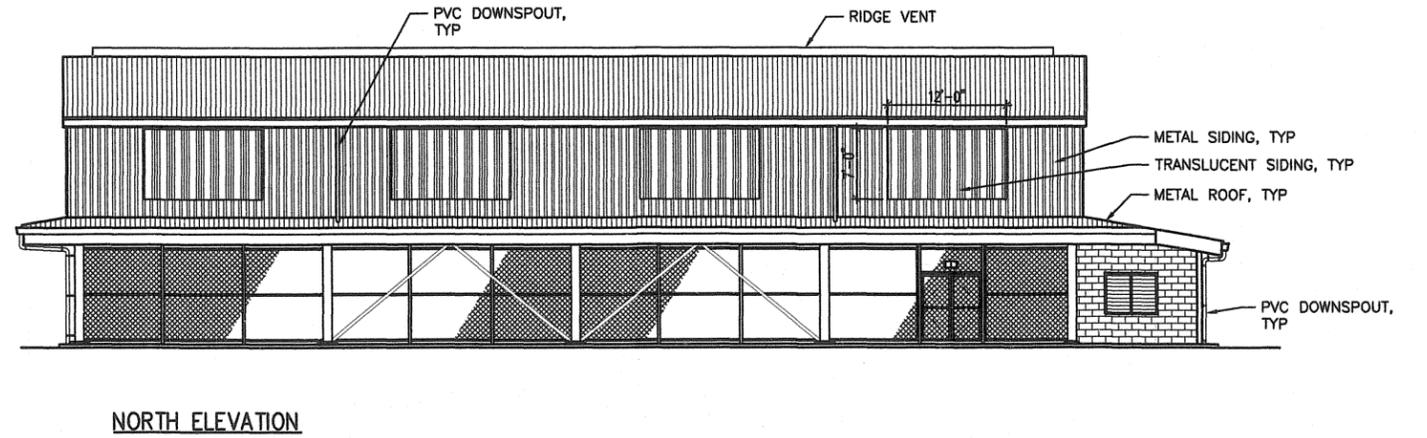
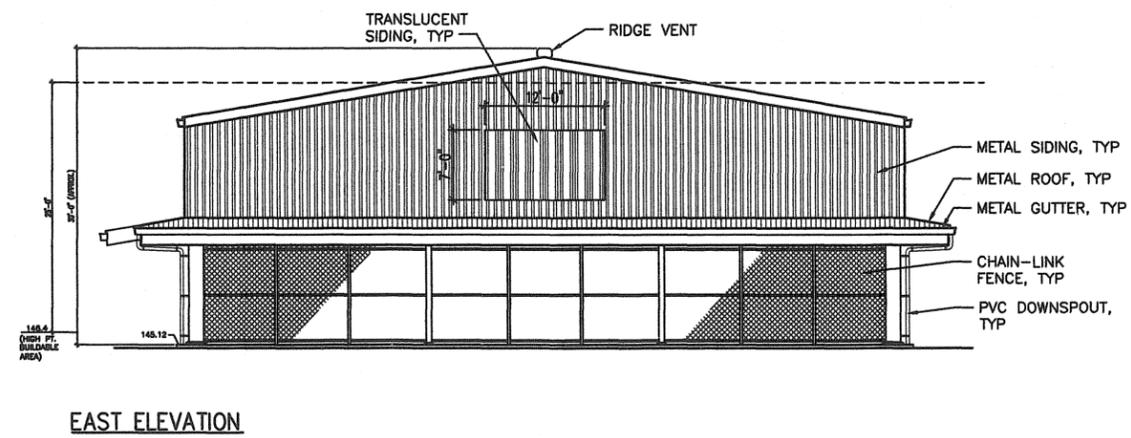
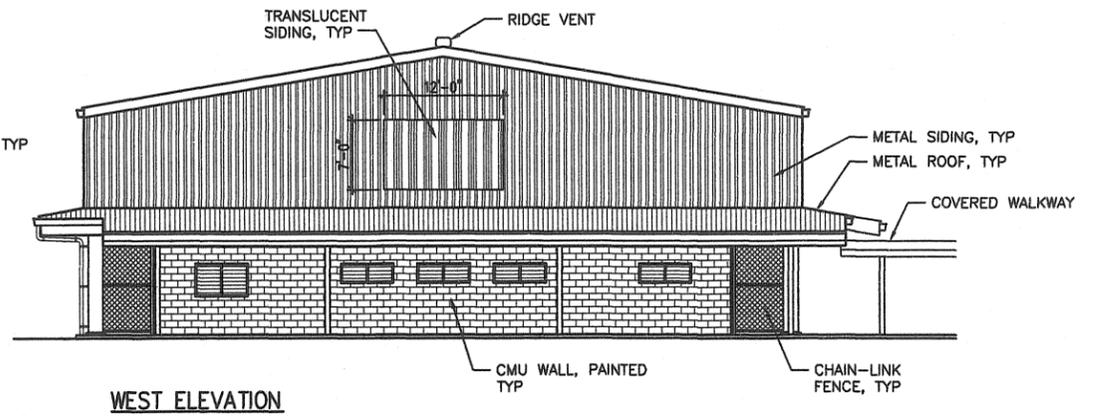
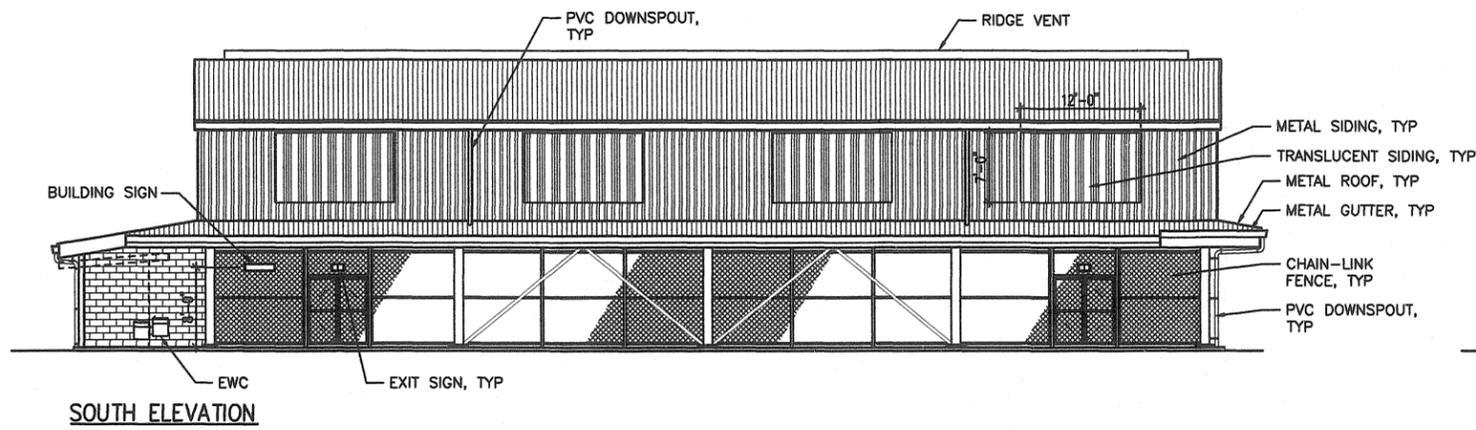
3. UNLESS PERMITTED BY THE CONTRACTING OFFICER, ALL CONSTRUCTION ON-SITE SHALL BE BARRICADED TO PREVENT STUDENTS, FACULTY, STAFF, AND PUBLIC FROM ENTERING THE SITE. LOCATION AND METHOD OF BARRICADED SHALL BE AT THE DISCRETION OF THE CONTRACTOR WITH THE APPROVAL OF THE CONTRACTING OFFICE.



2 PLAYCOURT - FLOOR PLAN
A1.1 SCALE: 1/8" = 1'-0"

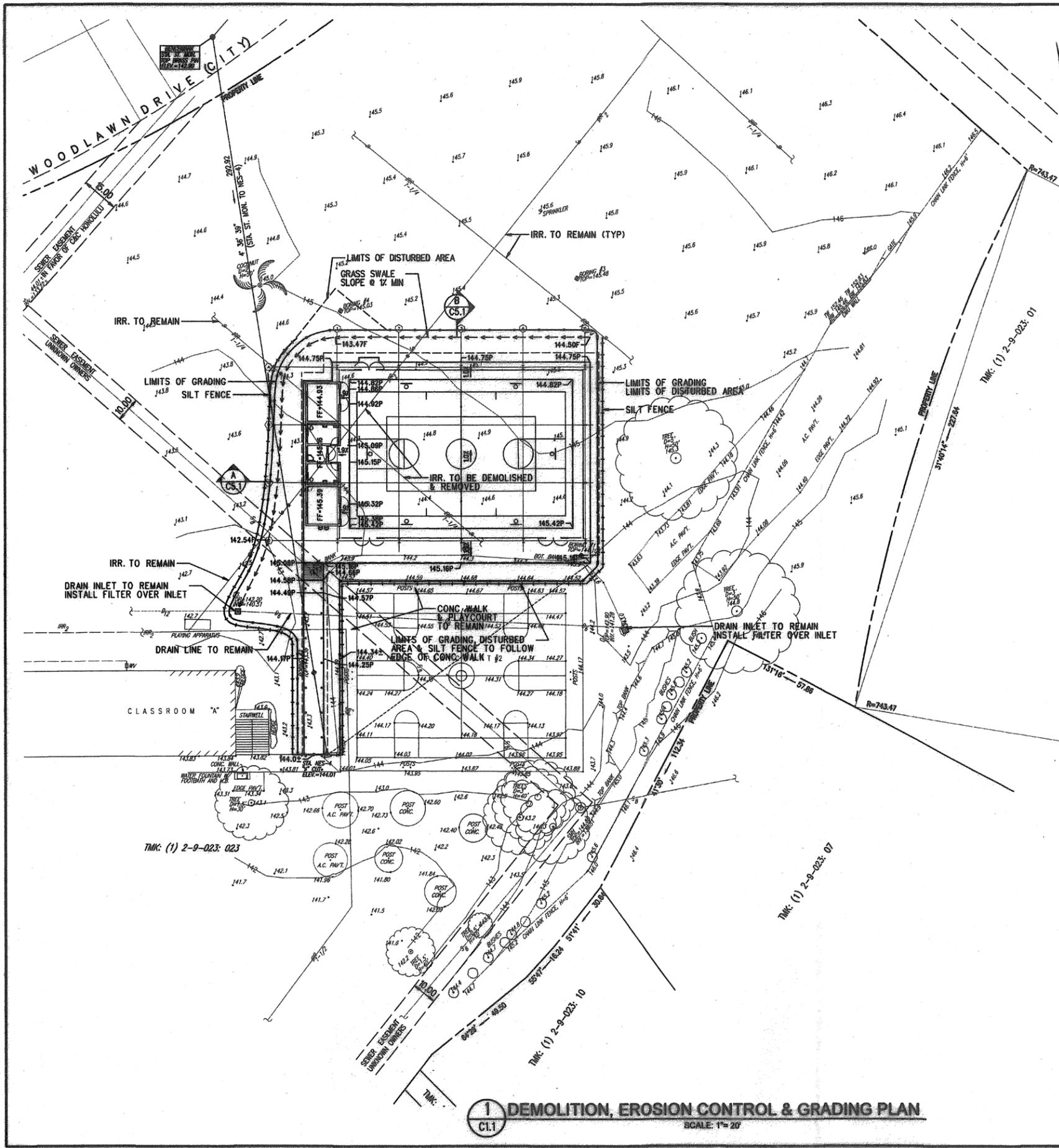
AREA TABULATION		
ROOM NO.	ROOM NAME	SQ. FT.
101	PLAYCOURT	6668 SF
102	ELECTRICAL/STORAGE ROOM	192 SF
103	GIRL'S	100 SF
104	GENERAL UTILITY	52 SF
105	BOY'S	100 SF
106	STORAGE ROOM	192 SF
TOTAL		7304 SF

1	ADDENDUM #1	5/17/10
REVISION NO.	SYMBOL	DESCRIPTION
		DEPT. OF EDUCATION STATE OF HAWAII NOELANI ELEMENTARY SCHOOL MULTI - PURPOSE PLAYCOURT HONOLULU OAHU HAWAII
DETAILED SITE PLAN, FLOOR PLAN & PROGRAM AREA TABULATION		
DESIGNED BY: CKM	DATE: APRIL 2009	DRAWING NO.: A1.1
DRAWN BY: CKM	APPROVED BY: CKM	SHEET: 1 OF 1
Signature: _____ License Exp. 4/30/2012		PROJECT NO.: P00148-06 DATE: APRIL 2009 SCALE: AS SHOWN



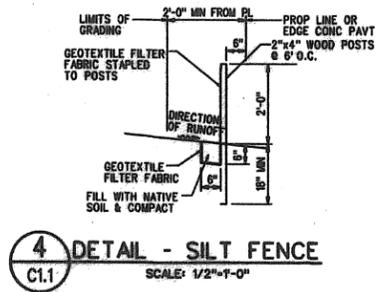
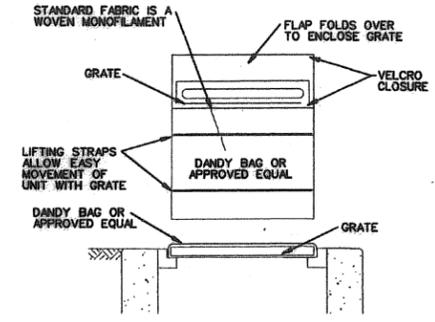
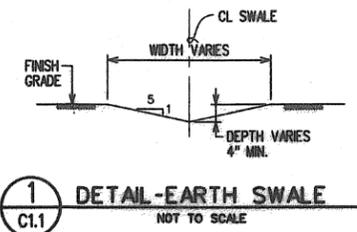
1 EXTERIOR ELEVATIONS
A2.1 SCALE: 1/8" = 1'-0"

1	1	DCAB COMMENTS	2/10/10
REVISION NO.	BY	DESCRIPTION	DATE
			APPROVED: STATE PUBLIC WORKS ADMINISTRATOR
DEPT. OF EDUCATION STATE OF HAWAII NOELANI ELEMENTARY SCHOOL MULTI-PURPOSE PLAYCOURT HONOLULU OAHU HAWAII			
EXTERIOR ELEVATIONS			
PACIFIC ARCHITECTS, INC. DESIGNED BY:		DOE PROJECT NO: P00148-06	DRAWING NO: A2.1
CHECKED BY: CKM		DATE: APRIL 2009	SHEET: OF 01
DRAWN BY: CKM		APPROVED BY: CKM	SCALE: AS SHOWN
Signature License Exp. 4/30/2012			



- BEST MANAGEMENT PRACTICE (BMP) NOTES:**
- INSTALL TEMPORARY SILT FENCES AS SHOWN TO MINIMIZE EROSION FROM STORM RUNOFF DURING GRADING WORK.
 - WORK AREAS WILL BE WATERED AND KEPT MOIST OR A GRANULAR BLANKET PROVIDED FOR DUST CONTROL.
 - THE CONTRACTOR SHALL INSPECT THE EROSION CONTROL FACILITIES NOT MORE THAN EVERY 7 CALENDAR DAYS OR WITHIN 24 HOURS OF A STORM OF 0.5 INCHES OR MORE IN DEPTH. DAMAGES TO TEMPORARY SILT FENCES SHALL BE REPAIRED.
 - AREAS OPENED FOR GRADING AND LEFT EXPOSED FOR MORE THAN 14 DAYS SHALL BE GRASSED.
 - STABILIZED CONSTRUCTION ACCESS SHALL BE CONSTRUCTED. THE ACCESS LOCATION SHALL BE COORDINATED WITH THE CONTRACTING OFFICER. THE STABILIZED ENTRANCE SHALL CONSIST OF AN 8-INCH THICK #2 CRUSHED ROCK LAYER WITH A WIDTH OF 20 FEET AND A LENGTH OF 20 FEET TO REMOVE MUD, DIRT OR ROCK WHICH MAY BE TRACKED ONTO OR OFF THE CONSTRUCTION ACCESS ROUTE.
 - MUD SHALL BE CLEANED FROM ALL VEHICLE TIRES BEFORE THE VEHICLE CAN EXIT ONTO PAVED ROADS.
 - INSTALL GEOTEXTILE FILTER FABRIC AROUND DRAIN INLET GRATINGS.

- LEGEND**
- 10.4, 10.4±E SPOT ELEVATION, EXISTING
 - 10.10 P SPOT ELEVATION, FINISH TOP PAVEMENT
 - 10.10TC, BC SPOT ELEVATION, TOP CURB, BOTTOM CURB
 - 11.0 F SPOT ELEVATION, FINISH GROUND
 - CONSTRUCTION ACCESS, 20'x20' THICK, #2 ROCK
 - LIMITS OF GRADING
 - LIMITS OF DISTURBED AREA
 - SILT FENCE
 - PROPERTY LINE

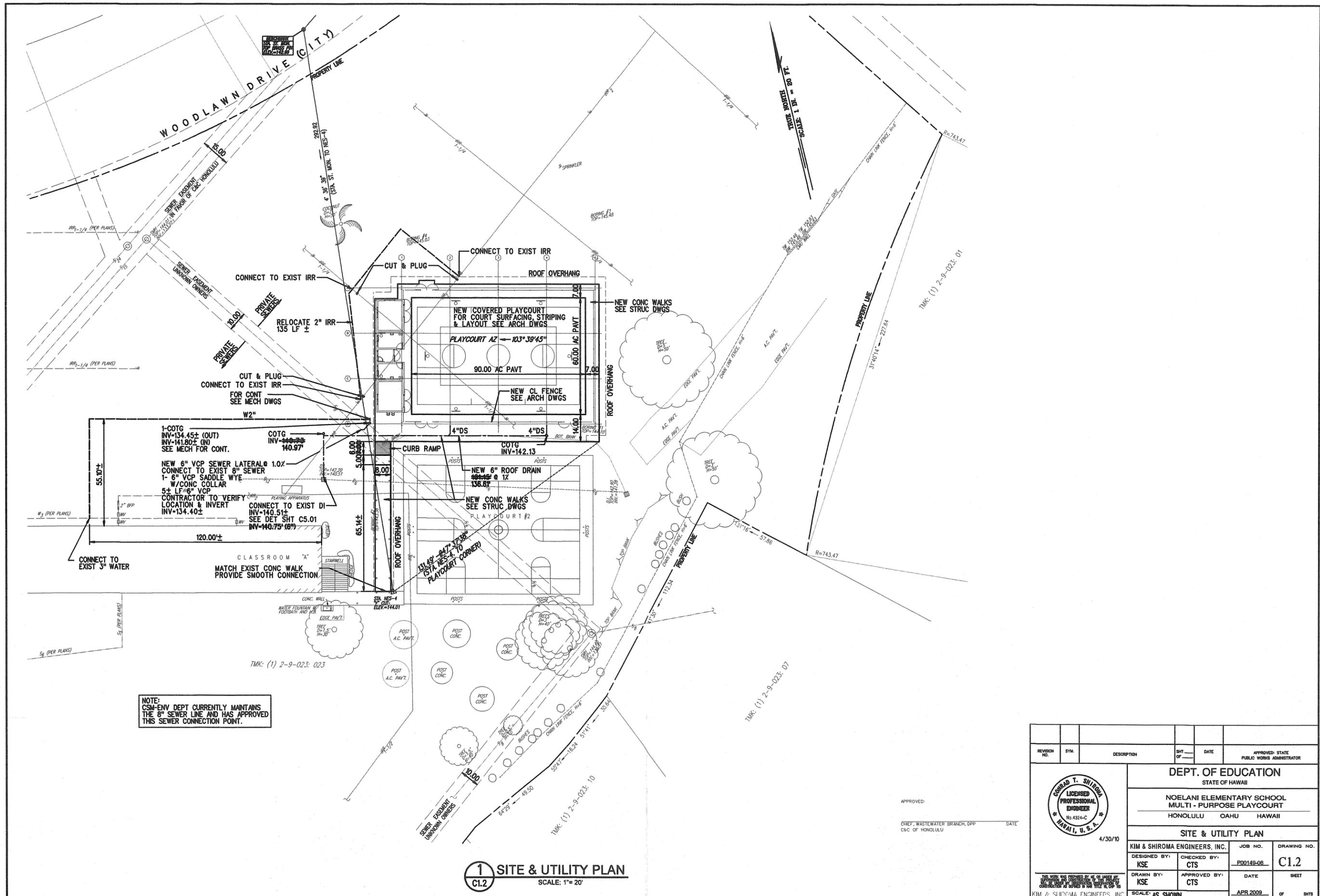


EARTHWORK SUMMARY

EXC=	78	C.Y.
EMB=	59	C.Y.
AREA TO BE GRADED=	0.15	AC
AREA DISTURBED=	0.25	AC

NOTE:
 QUANTITIES SHOWN ARE FOR GRADING PERMIT PURPOSES ONLY AND DO NOT INCLUDE TRENCH OR STRUCTURAL EXCAVATION AND BACKFILL. THE CONTRACTOR SHALL VERIFY ALL EARTHWORK QUANTITIES.

REVISION NO.	SYL	DESCRIPTION	SHT. OF	DATE	APPROVED STATE PUBLIC WORKS ADMINISTRATOR
DEPT. OF EDUCATION STATE OF HAWAII					
NOELANI ELEMENTARY SCHOOL MULTI - PURPOSE PLAYGROUND HONOLULU OAHU HAWAII					
DEMOLITION, EROSION CONTROL & GRADING PLAN					
DESIGNED BY: KSE		CHECKED BY: CTS		JOB NO. P00149-08	DRAWING NO. C1.1
DRAWN BY: KSE		APPROVED BY: CTS		DATE APR 2009	SHEET OF SHTS
SCALE: AS SHOWN					
FILE _____ DRAWER _____ FOLDER _____					



NOTE:
CSM-ENV DEPT CURRENTLY MAINTAINS
THE 8" SEWER LINE AND HAS APPROVED
THIS SEWER CONNECTION POINT.

1 SITE & UTILITY PLAN
SCALE: 1" = 20'

APPROVED: _____ DATE: _____
CHIEF, WASTEWATER BRANCH, DPP
C&C OF HONOLULU

REVISION NO.	SYL.	DESCRIPTION	SHT. OF	DATE	APPROVED: STATE PUBLIC WORKS ADMINISTRATOR

DEPT. OF EDUCATION STATE OF HAWAII	
NOELANI ELEMENTARY SCHOOL MULTI - PURPOSE PLAYCOURT HONOLULU OAHU HAWAII	
SITE & UTILITY PLAN	
KIM & SHIROMA ENGINEERS, INC.	JOB NO. P00149-06
DESIGNED BY: KSE	CHECKED BY: CTS
DRAWN BY: KSE	APPROVED BY: CTS
DATE: APR 2009	SHEET: C1.2
SCALE: AS SHOWN	OF SHEETS:

A. Existing Uses and Structures

Noelani Elementary School opened for instruction in 1962 with one classroom building. Today there are 6 buildings comprising the campus in addition to off-street parking. All the improved structures are located on the western two-thirds of the property. The eastern third which includes an existing outdoor multi-purpose court is in open space and devoid of permanent structures.

All standing architecture is less than 50 years old (Cultural Surveys Hawaii, 2010). None of the structures are old enough to meet the criteria for a historic building.

Noelani Elementary School is one of seven elementary schools, two middle schools, and one high school comprising the Roosevelt Complex. The school had an enrollment of 468 elementary school children in Grades K-6 for school year 2009-2010. Forty-five administrators, elementary teachers, and support personnel staff the school.

In 1967, the sitting President of the United States, Barack H. Obama, attended Noelani Elementary School kindergarten. He is the most famous alumnus of the school to date.

In 2009, Mānoa Public Library was relocated to a site at Noelani Elementary School during construction of a new library. The library collection is temporarily housed in portable buildings placed between Building "A" and Woodlawn Drive. A paved off-street parking lot is part of the library facility.

Site conditions are shown on the Site Photographs.

B. Climate

Temperature and precipitation measurements for Mānoa are collected at Lyon Arboretum in the back of valley and at the University of Hawaii. Average temperatures range from 69.4 to 75.2 degrees Fahrenheit at Lyon Arboretum and 20 to 58 inches per year at the University of Hawaii at the head of the valley. Trade winds which are typical of the Hawaiian Islands blow predeominantly from a northeast direction and average approximately seven miles per hour. Rainfall and temperatures at Noelani School is probably similar to that at the University of Hawaii and significantly lower than at Lyon Arboretum (Facility/Technics Hawaii, 1996).

C. Topography

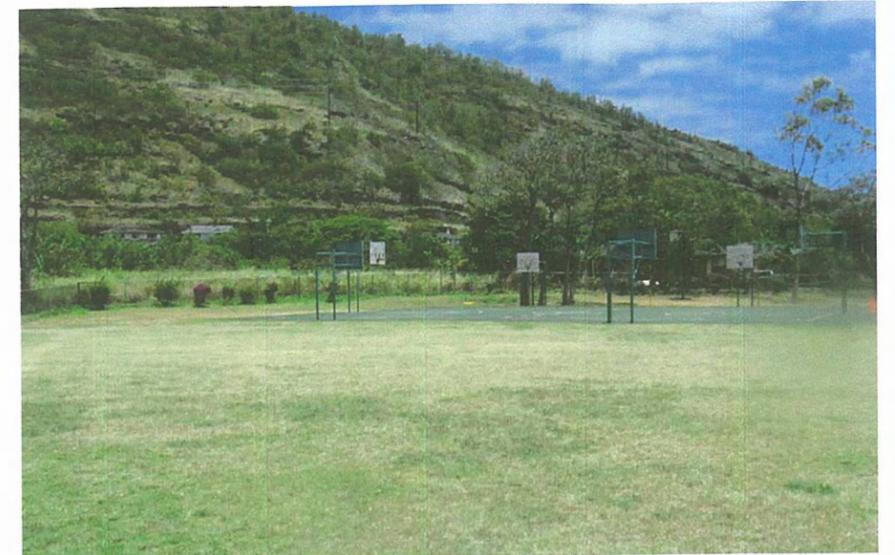
Most of the school grounds are at about elevation 140 feet above mean sea level. The site of the proposed playcourt is level and was previously graded and grassed.

D. Soils

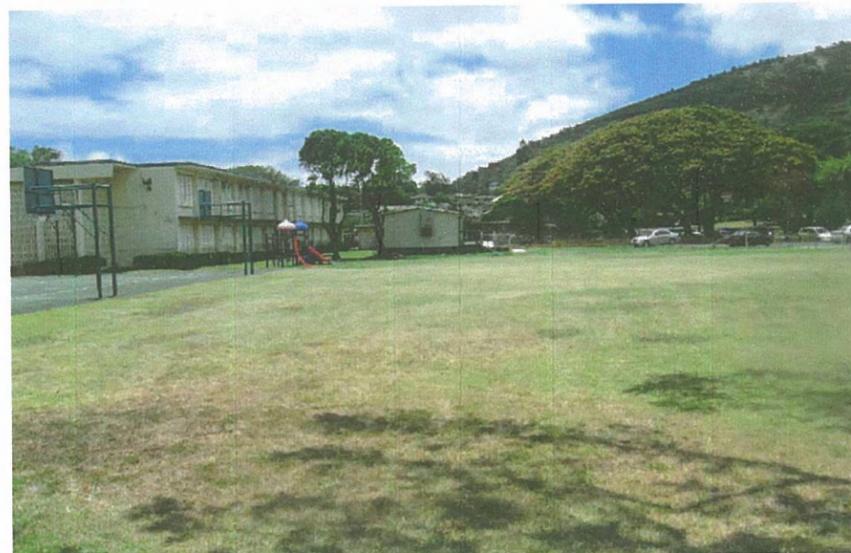
The Soil Conservation Service (1972) maps a single soil type---Hanalei silty clay, 0 to 2 percent slopes (HnA)--for the entire school. Hanalei silty clay developed in material derived



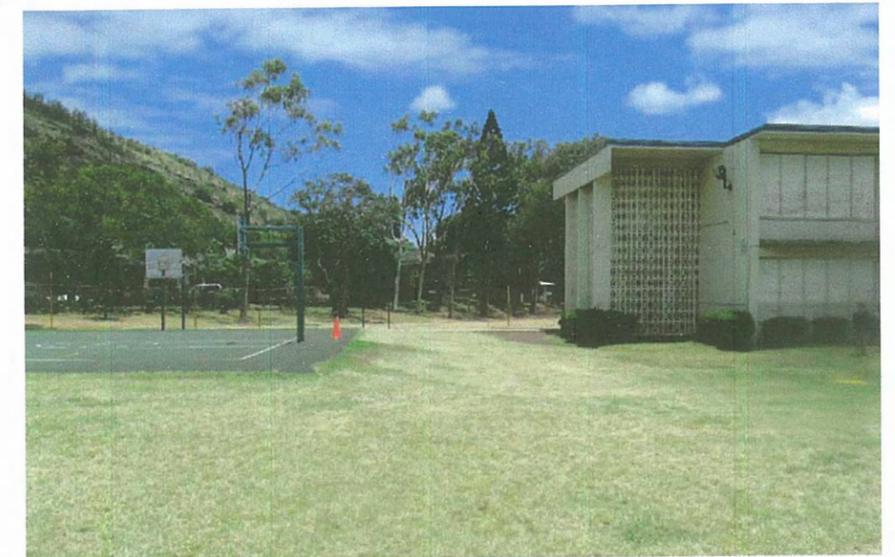
Photograph 1



Photograph 2



Photograph 3



Photograph 4

Aerial: USGS National Map Viewer
Photographs: Gerald Park



Photo Key Map

GRAPHIC SCALE IN FEET
200 100 0 200 400

Photograph 1. View of Building Site Looking East.

Photograph 2. Site of Covered Playcourt in Foreground. Existing Play Court in Background.

Photograph 3. View of Building Site Looking West.

Photograph 4. Location of Proposed Grass Drainage Swale between Existing Playcourt on the Left and Building "A" on the Right.



Mānoa, O'ahu

Site Photographs
Noelani Elementary School Multi-Purpose Playcourt

Department of Education, State of Hawai'i

from basic igneous rock and found on stream bottoms and flood plains. The soil is moderately permeable, runoff is very slow, and the erosion hazard is no more than slight.

Owing to the extensive and long development period for Noelani School, more than likely much of the Hanalei silty clay soils have been replaced and covered by engineered fill and/or top soil.

E. Water Resources

1. Surface Water

There are no streams, lakes, ponds, open bodies of water, or wetlands on the premises. Mānoa Stream, located about 250 feet to the east of and outside the school grounds, flows *mauka* to *makai* behind the UH Magoon Research and Instructional Facilities and residential lots on Hipawai Place.

2. Ground Water

According to groundwater maps prepared by Mink and Lau (1990), Noelani Elementary School is positioned over a section of the Palolo aquifer of the Honolulu aquifer sector. Characteristics of the Palolo aquifer are presented in Table 1.

Table 1. Aquifer Classification System

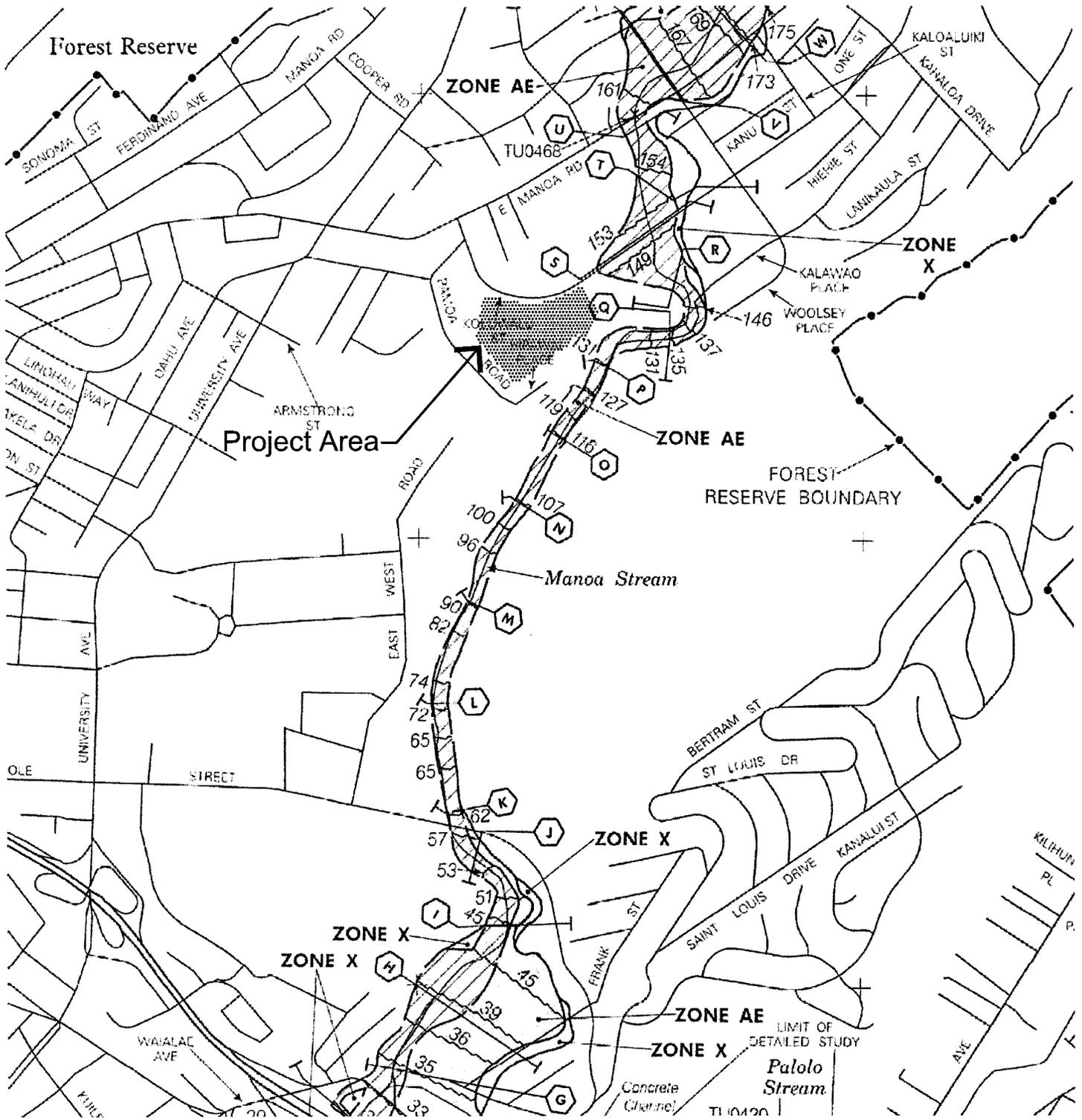
Aquifer Code	30101146	30101121
Island Code	3 - Oahu	3 - Oahu
Aquifer Sector	01 - Honolulu	01 - Honolulu
Aquifer system	01 - Palolo	01 - Palolo
Aquifer Type, hydrogeology	1 - Basal	1 - Basal
Aquifer Condition	1 - Unconfined	2 - Confined
Aquifer Type, geology	6 - Sedimentary	1 - Flank
Status Code	23321	11113
Developmental Stage	2 - Potential Use	1 - Currently Used
Utility	3 - Neither	1 - Drinking
Salinity (in mg/L Cl ⁻)	3 - Moderate (1,000-5,000)	1 - Fresh (<250)
Uniqueness	2 - Replaceable	1 - Irreplaceable
Vulnerability to Contamination	1 - High	3 - Low

Source: Mink and Lau, 1990.

The Palolo aquifer is characterized by an unconfined sedimentary aquifer above a confined flank aquifer. The sedimentary aquifer is comprised of moderately brackish water, has potential use (but not for drinking water), and is highly vulnerable to contamination. The flank-confined aquifer is used for drinking water, has a low vulnerability to contamination, and is irreplaceable.

F. Flood Hazard

Noelani Elementary School is located in Flood Hazard Zone "X" (See Figure 3) which is defined as areas "determined to be outside the 0.2% annual chance floodplain (Federal Emergency Management Agency, 2004)."



Source: Federal Emergency Management Agency
 Flood Insurance Rate Map
 Map Number 15003C0370F
 Date: Sept. 30, 2004.

Legend

- | | |
|--|--|
| <ul style="list-style-type: none"> Special Flood Hazard Zone Subject to Inundation by the 1% Annual Chance Flood Zone A No Base Flood Elevation Determined. Zone AE Base Flood Elevation Determined. Zone AO Flood Depths of 1 to 3 Feet (Usually Sheet Flow on Sloping Terrain); Average Depth Determined. For Areas of Alluvial Fan Flooding, Velocities also Determined. | <ul style="list-style-type: none"> Zone X Areas of 0.2% Annual Chance Flood; Areas of 1% Annual Chance Flood with Average Depths of Less than 1 foot or with Drainage Areas less than 1 Square Mile; and Areas Protected by Levees from 1% Annual Chance Flood. Zone X Areas Determined to be Outside the 0.2% Annual Chance Floodplain. |
|--|--|



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 August 2010

Mānoa, O'ahu

Figure 3
 Flood Insurance Rate Map
 Noelani Elementary School Multi-Purpose Playcourt

G. Historic Resources

An archaeological field investigation (Cultural Surveys Hawaii, 2010) did not reveal the presence of archaeological features within a land area slightly larger than but including the project limits.

The consulting archaeologists pointed out that Hipawai Heiau (or remnants of the *heiau*), a Hawaiian temple of human sacrifice, is located approximately 120 meters south of the proposed playcourt (or closer if measured from the school's south property line). The *heiau* is located on private property and was not accessed as part of this project.

The consulting archaeologists also reported that Hipawai is also the name of a cave. Hipawai Cave, a large underground cavern, has its location under the area of the U.H. Institute of Astronomy across Woodlawn Drive. The cave was not investigated as part of this project.

H. Cultural Resources

A more comprehensive discussion of archaeological and cultural resources associated with Noelani Elementary School and Mānoa Valley is found in Appendix A of this environmental Assessment.

1. Plant Resources

Handy's (1940) description of Mānoa; suggests the valley was once home to a substantial Hawaiian population supported by vast taro gardens:

In upper Mānoa the whole of the level land in the valley bottom was developed in broad taro flats. The terraces extended along Mānoa Stream as far as there is a suitable land for irrigating...About 100 terraces are still being cultivated [in the 1930s], but these do not constitute more than one tenth of the total area capable of being planted...Bennett...described the upper valley as "checquered with taro patches." (Handy, 1940).

Legendary accounts also mention a variety of cultivars grown in Mānoa; one recounts the story of Kihanuilūmoku-wahine who---in the company of mermaids and *menehune*---went to her garden of taro, sweet potatoes, bananas, *hō'i'o*, bamboo, *kī*, *hala*, ginger, *lehua*, and other plants. As they worked they chanted, the mermaids singing as they came from the central spings of Manoa Valley to the mountain freshets, all of which would provide water to the 'auwai used to grow crops (Bouslog et al, 1994). One version of the Legend of the Princess of Mānoa refers to the *maile* and fern gatherers fo Mānoa and Nu'uanu (Nakuina, 1904). An *oli* to honor chief Kūali'i and recount his exploits refers to the "yellow ti leaf on the heights of Wa'ahila {Wa'ahila Ridge}" (Fornander, 1917). *Ti* or *kī* (*Cordyline fruiticosa*), is a Polynesian introduction, had and has multiple ethnobotanical uses; the roots can be baked as a comestible and used to make the distilled drink, 'okolehao; various parts of the plant are used in hula, fishing, thatching and healing (Abbott, 1992).

While there may be no taro pondfields (*lo'i*) presently in or near Noelani Elementary School, old terraces have been noted in the forested uplands of the vicinity. In addition, the school campus is almost entirely in lawn and landscaping, with school buildings and pavements.

2. Streams and Fresh Water

Given its abundant natural resources---including five tributary streams ('Aihualama, Waihi Nāniu'apo, Lua'alaea, and Waiakeakua) that feed into the main stream and several *pūnāwai* ---Mānoa Valley has been an attractive place to settle and garden for as long as people have lived on O'ahu. Lower Mānoa Valley, within which the Noelani Elementary School campus is located, represents the prime wet-taro-growing area and agricultural heartland of the entire valley. The school campus lies approximately 200 meters west of Mānoa Stream and it

3. Trails

The approximate present alignment of Mānoa Road and East Mānoa Road follow ancient Hawaiian trails. Noelani Elementary School is set back approximately 150 meters south of East Mānoa Road. It seems probable that there were paths serving Hipawai Heiau just to the east but these access routes are uncertain.

4. Wahi Pana

The vast majority of the historic properties once located in Mānoa Valley have been destroyed and/or partially or entirely covered over by modern development including the construction of the university campus in the lower valley and residential and commercial centers elsewhere. Noelani Elementary School is located in what used to be a prime wet-taro-growing area but little trace of that landscape now remains.

Of the *heiau* in Mānoa, Hipawai Heiau was in closest proximity to the school. The Archaeological Literature Review and Field Inspection (Hammatt and Shideler, 2010) summarizes the available information regarding Hipawai Heiau and concludes it may be located 120 meters south of the proposed playcourt project area on the bank of Mānoa Stream.

Hipawai is also the name of a cave believed to have existed in the vicinity of Noelani Elementary School.

There are a number of storied places (*wahi pana*) in the vicinity including the rock formation called Ka U'i o Mānoa, in Waileele, which is the Mid-Pacific School area, that is referred to in the myths of Kahalaopuna---the beauty of Mānoa. The valley is also home to many *pu'u* peaks, ridges and caves---all associated with *m'olelo* and legendary accounts; these include Waahila Ridge (which defines the eastern border of the valley) and its six peaks [Keanapoi, Pu'u Pia, Pūkele, Paliluahine (also known as Kapaliluahine or Pali Luahine), Akā'ka, and Kumanuna], Ulumalu, P'uueo, and Pu'u Mānoa.

Ka Papa Lo'i o Kānewai is perhaps the best known cultural site in the general vicinity noted for its ongoing and active practice of *kalo* cultivation. From the time the *lo'i* were reopened in 1980, Kānewai has been a *puuhonua* (place of refuge) for plants, people, and culture. Ka Papa Lo'i o Kānewai also serves as a living storehouse of different varieties of taro that are today utilized by farmers throughout the islands.

5. Burials

No human burials have been documented from the immediate vicinity of Noelani Elementary School. The nearest traditional Hawaiian burials documented were near Keller Hall

approximately a kilometer SSW of the project area and along Dole Street immediately adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies, approximately 1.2 kilometers SSE of the project area. Both burials were located on or near the UH at Mānoa campus.

Thrum described the neighboring Hipawai Heiau as of “*po’okānaka* class” suggesting human sacrifice occurred there. Thrum also indicates that after Hipawai Heiau was partly destroyed it was “then used as a place of burial.” This has never been verified.

I. Botanical Resources

The building site is covered by lawn. Single specimens of coconut palm and African tulip stand to the north and east of the building site, respectively. A row of bougainvillea grows along a fence line separating the school from a vacant lot to the east.

J. Wildlife Resources

Wildlife resources were not observed during a field investigation. Mynah bird and barred were the only two avian species recorded.

K. Hazardous Materials

No hazardous materials were observed or known to be associated with the building site.

L. Land Use Controls

Pursuant to Chapter 205 HRS, the Hawaii Land Use Law, the State Land Use Commission classifies all land in the State of Hawaii into one of four classifications: Urban, Agricultural, Conservation, or Rural. Noelani Elementary School is within an urban district. Uses and activities in the urban district are regulated by the respective counties.

The Primary Urban Center Development Plan (2004) designates the school grounds “Residential”.

The property is zoned R-7.5 for residential uses with a minimum lot size of 7,500 square feet. Elementary schools are a permitted use in the R-7.5 zoning district. The height limit for the zoning district is 25 feet and a height Waiver will be requested to exceed the building height.

The property is not located within the County delineated Special Management Area.

M. Public Facilities

1. Circulation

Woodlawn Drive, a two-lane, two-way all weather surface road passes to the north of the school. The road is fully improved with curbs, gutters, and sidewalks on both sides. The posted speed limit fronting the school is 25 miles per hour.

Street parking is permitted on Woodlawn Drive fronting Noelani Elementary School and the University of Hawai’i Institute of Astronomy across the street.

2. Water

The Board of Water Supply supplies potable water to the school from a 12" cast iron water line in Woodlawn Drive. Water service is metered through a 2" water meter.

Fire flow is provided from fire hydrants along Woodlawn Drive.

3. Sewer

Wastewater discharges into several sewer lines of varying size (24", 15" and 8") crossing the school grounds in sewer easements. The two larger lines are part of the Manoa Trunk Sewer and Manoa Trunk Relief Sewer.

4. Power and Communication

Electrical power and communication systems are available from underground systems along Woodlawn Drive.

5. Protective Services

Police protection originates from the Honolulu Police Department headquarters building on Beretania Street.

Fire service is provided from the Manoa Fire Station (Station 22) on East Mānoa Road. The Station is located less than one-half mile from the school.

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MEASURES TO MITIGATE ADVERSE EFFECTS

The scope of the project was discussed with the consulting architect, members of the design team, and staff of the Facilities Development Branch, Department of Education. State and County agencies were contacted for information relative to their areas of expertise. Time was spent in the field noting site conditions and conditions in the vicinity of Noelani Elementary School. The sum total of the consultations and field investigations helped to identify existing conditions and features that could affect or be affected by the project. These conditions include:

- The new playcourt will be constructed at lawn area adjacent to an existing uncovered playcourt;
- There are no rare, threatened, or endangered flora or fauna on the building site;
- There are no archaeological resources on the building site;
- There are no on-going cultural practices associated with the building site and school grounds;
- The school is not located in a flood hazard area;
- There are no streams, ponds, or wetlands on the school site;
- Water and sewer systems are available to accommodate the proposed use.

A. Short-term Impacts

Site work, a necessary function to prepare the land for building the temporary and permanent improvements to follow, is the first and probably the most disruptive construction activity on the environment. Approximately 0.25 acres will be cleared and grubbed. Grubbing will remove vegetation and grading will establish preliminary and final design elevations. The single coconut palm and African tulip tree will remain *in situ*.

Site work is a persistent source of fugitive dust. Site contractors are aware that fugitive dust is a nuisance to construction workers, people living and working near work sites, and in this instance school age children and staff. Because the project is proposed on school grounds, it is imperative for the contractor to maintain stringent dust controls. Water sprinkling is probably the most effective dust control measure given the size of the project site and the scale of the proposed improvements. The contractor, however, may choose to implement other measures and best management practices based on their experience with similar projects and job site conditions.

The contractor will be responsible for general housekeeping of the site and for keeping adjacent streets free of dirt, mud, and construction litter and debris. Pollution control measures shall comply with Chapter 60.1, Air Pollution Control regulations of the State Department of Health.

Site work will expose soil thus creating opportunities for erosion and construction-related runoff. Site work will involve excavation and grading to achieve the desired finish elevation. An area of approximately 6,500 square feet will be graded. Grading quantities are estimated at 78 cubic yards excavation and 59 cubic yards of fill. Site work impacts can be mitigated by complying with Best Management Practices ("BMPs") specified in

An NPDES permit for storm water runoff associated with construction activities will not be required because less than one acre of the total land area will be disturbed during construction.

Schools are considered noise sensitive facilities. Construction noise may be audible in classrooms and buildings near the site but exposure is expected to vary in volume, frequency, and duration. Noise will vary also by construction phase, the duration of each phase, and the type of equipment used during the different phases. For this project, noise will be most pronounced during the early stages when the site is grubbed, graded, and building foundations poured. Noise will diminish as the structure is erected and roofed.

Community Noise Control regulations establish a maximum permissible sound level for construction activities occurring within (acoustical) zoning districts. Land zoned residential is placed in the Class A zoning district. The maximum permissible sound level for excessive noise sources (to include stationary noise sources and construction and industrial activities) in the Class C zoning district is 55 dBA all day (7 a.m. to 10 p.m) and 45 DBA at night (Chapter 46, Community Noise Control, 1996). Construction activities often produce noise in excess of the permissible daytime noise level and a variance (or Noise Permit) may be needed. The contractor will be responsible for obtaining the variance and complying with applicable conditions.

Construction also can be scheduled when school is not in session. This form of mitigation would preclude dust, noise, and construction vehicle traffic from adversely affecting daily school activities and provide for the safety of students, parents, and school staff.

The project is proposed in an area that has been significantly altered by construction activities and improvements. Should excavation unearth subsurface archaeological sites, artifacts, or cultural deposits, work in the immediate area will cease and the proper authorities notified for disposition of the finds. If *iwi kupuna* are uncovered and appear to be less than 50 years old, the County of Maui Police Department will be notified. If the burials appear to be more than 50 years old, then the State Historic Preservation Officer will be notified. As a matter of protocol, both agencies will be notified for inspection and proper disposition of the finds.

Archaeological monitoring is recommended by the consulting archaeologists as an appropriate mitigating measure.

Road construction and/or utility connections within the right-of-way of Woodlawn Drive are not required thus there should be no direct impact on traffic circulation. Vehicles carrying workers and material will contribute to traffic on Woodlawn Drive and streets leading into Mānoa Valley.

Construction material will be off-loaded on the school grounds and will not affect traffic circulation on Woodlawn Drive.

B. Long-term Impacts

The principal impact of the project is to provide a multi-purpose space for recreation classes, free play, and school gatherings and functions. The covered structure will protect students from rain during inclement weather and the sun and heat on “hot” days thus providing for their health and safety.

Noise associated with use of the covered playcourt should not be significantly different or “louder” than noise now emanating from use of the open play court. Noise will not be constant throughout the school day but occur when the playcourt is in use for court sports and school gatherings. The hours of use will be determined by school administrators.

Average demand for water is estimated at 4,200 gallons per day. Wastewater flow is estimated at 4,200 gallons per day. Both water demand and wastewater flow can be accommodated by the respective system.

Electrical power will be provided from the on-site power system. Electrical consumption and associated costs will be reduced through the use of energy efficient fixtures, natural lighting, and natural ventilation.

The covered playcourt will present a new object to be seen on campus and from off-campus areas. At one-story in height, it will be at about the same height as many campus buildings. Trees and shrubs planted near or alongside the building will “soften” its mass and add a vertical element to its form. Over time, the playcourt will be seen and visually accepted as another structure at Noelani Elementary School.

A. No Action

A no action alternative would maintain the status quo of the site thus precluding the occurrence of all environmental impacts, short and long-term, beneficial and adverse described in this Assessment. Resources committed to plan and build the facility will be foregone and the purpose of the project not achieved.

B. Alternative Location

The site for the playcourt discussed in this environmental assessment is the best available for the proposed use. At the proposed location, the facility will help to centralize sport court activities at a central school location. The site is also quite distant from classrooms thus recreation type noises should not interrupt classroom instruction.

Permits required for the project and responsible authorities are identified below. Additional permits and approvals may be required depending on final construction plans.

State of Hawai'i

Department of Health

Variance from Pollution Controls (Noise Permit)

City and County of Honolulu

Department of Planning and Permitting

Waiver (Building Height)

Building, Electrical, and Plumbing Permits

Grubbing, Grading, Excavation and Stockpiling Permit

6

AGENCIES AND ORGANIZATIONS TO BE CONSULTED

State of Hawaii

Department of Health
Department of Land and Natural Resources
State Historic Preservation Division

City and County of Honolulu

Board of Water Supply
Department of Planning and Planning
Fire Department

Organizations

Hawaiian Electric Company
Manoa Neighborhood Board
Mānoa Public Library (Placement)

Chapter 200 (Environmental Impact Statement Rules) of Title 11, Administrative Rules of the State Department of Health, establishes criteria for determining whether an action may have significant effects on the environment (§11-200-12). The relationship of the proposed project to these criteria is discussed below.

1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;

Natural or cultural resources are not associated with the building site and Noelani Elementary School.

2) Curtails the range of beneficial uses of the environment;

The building site is used and maintained as a school yard lawn. The large lawn area on the western side of the school grounds contributes to open space and also serves a recreation function. Converting a small portion of the open lawn area to a covered playcourt will serve a recreation function and protect users from inclement and/or hot weather conditions. The one-story structure will not adversely affect views across the open space and over time will be visually accepted as another structure on campus.

3) Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, Hawaii Revised Statutes, and any revisions thereof and amendments thereto, court decisions or executive orders;

The project does not conflict with long-term environmental policies, goals, and guidelines of the State of Hawaii.

4) Substantially affects the economic or social welfare of the community or State;

The project is not anticipated to substantially affect the economic or social welfare of the community or the State.

5) Substantially affects public health;

Public health will not be adversely affected. Short-term environmental impacts in the form of fugitive dust, noise from construction equipment, and minor erosion can be expected during construction. These impacts can and will be mitigated by measures described in this Assessment and measures, such as best management practices for erosion control, to be submitted with construction plans and documents.

For the safety of children and adults, construction areas will be fenced to control pedestrian access.

6) Involves substantial secondary impacts, such as population changes or effects on public facilities;

Substantial secondary impacts are not anticipated.

7) Involves a substantial degradation of environmental quality;

Environmental quality will not be substantially degraded.

8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;

The project does not involve a commitment for larger actions that would affect the environment or school.

9) Substantially affects a rare, threatened or endangered species, or its habitat;

Flora and fauna observed within the project limits are not listed or candidates for rare, threatened or endangered status. All observed species are common to the State of Hawai'i.

10) Detrimentially affects air or water quality or ambient noise levels;

Ambient air quality will be affected by fugitive dust and combustion emissions during construction but can be controlled by measures stipulated in this Assessment. Construction noise may be pronounced during site preparation work but should diminish once the structural improvements are completed. All construction activities will comply with air quality and noise pollution regulations of the State Department of Health.

Erosion control measures will be prescribed in grading plans and best management practices prepared for the project.

Construction noise will be audible at different parts of the school for the duration of construction. Construction will commence during summer 2011 when school is not in session and most if not all site work and utility installation should be completed in 2-3 months. The remainder of the construction schedule will coincide when school is back in session but noise will not be as pronounced as during the site work stage.

The contractor will notify and coordinate all construction work with the DOE and the school administration.

11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

Noelani Elementary School is not located in an environmentally sensitive area.

12) Substantially affects scenic vistas and view planes identified in county or state plans or studies, or;

The one-story playcourt will not affect scenic vistas and view planes. Following construction, it will be viewed as a new structure but over time it will become one of the permanent campus buildings.

13) Requires substantial energy consumption.

An increase in energy consumption is anticipated because the cafeteria is a larger space than the temporary cafeteria and the cafeteria that was destroyed by fire. Design measures stipulated in this assessment will aid in energy conservation.

REFERENCES

General

- Department of Health, State of Hawai'i. September 1996. *Title 11, Hawai'i Administrative Rules, Department of Health, Chapter 46, Community Noise Control.*
- Department of Planning and Permitting, City and County of Honolulu. June 2004. *Primary Urban Center Development Plan.*
- Federal Emergency Management Agency. September 2004. *Flood Insurance Rate Map. Community Panel 15003C370F.*
- Hammatt, Hallett H. and David W. Shideler. 2010. *Archaeological Literature Review and Field Inspection Report for the Noelani Elementary School Playcourt Project, Mānoa [Waikīkī] Ahupua'a, Kona District, O'ahu Island, TMK [1] 2-9-023: 023.* Cultural Surveys Hawaii, Kailua, Hawai'i.
- Mink, John F. and L. Stephen Lau. February 1990. *Aquifer Identification and Classification for O'ahu: Groundwater Protection Strategy for Hawai'i.* Technical Report No. 179. Water Resources Research Center, University of Hawaii at Manoa. Honolulu, Hawaii.
- U.S. Department of Agriculture Soil Conservation Services. August 1972. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* In Cooperation with The University of Hawaii Agricultural Experiment Station. U.S. Government Printing Office, Washington D.C.

Cultural Resources

- Abbott, Isabella A. 1992. *La'au Lapa'au Hawai'i: Traditional Hawaiian Uses of Plants.* Bishop Museum Press, Honolulu, HI.
- Bouslog, Charles, and other Mānoa Valley Residents. 1994. *Mānoa, The Story of a Valley.* Mutual Publishing, Honolulu, Hawai'i.
- Fornander, Abraham. 1917. *Fornander Collection of Hawaiian Antiquities and Folklore.* T.G. Thrum edit., Memoirs of the Bernice Pauahi Bishop Museum (Vol. IV, Part II), Bishop Museum Press, Honolulu.
- Handy, Craighill. 1940. *The Hawaiian Planter, Volume 1.* Bishop Museum Bulletin 161, Bishop Museum Press, Honolulu.
- Nakuina, Emma M. 1904. *Hawaii, Its People, Their Legends.* Hawaii Promotion Committee, Honolulu.
- Thrum, Thomas G. 1907. *Heiaus and Heiau Sites Throughout the Hawaiian Islands. Hawaiian Almanac and Annual for 1908.* Honolulu, Hawai'i.

Archaeological Literature Review and Field Inspection Report for the Noelani Elementary School Playcourt Project, Mānoa [Waikīkī] Ahupua‘a, Kona District, O‘ahu Island, TMK [1] 2-9-023: 023.

**Archaeological Literature Review and Field Inspection
Report for the Noelani Elementary School Playcourt Project,
Mānoa [Waikīkī] Ahupua‘a, Kona District, O‘ahu Island
TMK [1] 2-9-023:023**

**Prepared for
Gerald Park Urban Planner**

**Prepared by
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**Cultural Surveys Hawai‘i, Inc.
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(Job Code: MANOA 29)**

November 2010

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Management Summary

Reference	Archaeological Literature Review and Field Inspection Report for the Noelani Elementary School Playcourt Project, Mānoa [Waikīkī] Ahupua'a, Kona District, O'ahu Island TMK [1] 2-9-023:023.
Date	November 2010.
Project Number (s)	Cultural Surveys Hawai'i (CSH) Job Code MANOA 29.
Investigation Permit Number	The field inspection component of this Literature Review and Field Inspection Report was carried out under archaeological permit number 10-10 issued to Cultural Surveys Hawai'i, Inc. (CSH) by the Hawai'i State Historic Preservation Division/ Department of Land and Natural Resources (SHPD/DLNR), per Hawai'i Administrative Rules (HAR) Chapter 13-282.
Project Location	The Noelani Elementary School Playcourt Project is located in the east/central portion of the Noelani Elementary School campus located at 2655 Woodlawn Drive in southeast Mānoa Valley, O'ahu, Hawai'i. The project area is depicted on a U.S. Geological Survey topographic map, Honolulu 1998 quadrangle (see Figure 1).
Land Jurisdiction	Department of Education, State of Hawai'i.
Agencies	Hawai'i State Historic Preservation Division (SHPD).
Project Description	The project involves the creation of a new multi-purpose playcourt on the north side of an existing playcourt and the construction of a new covered walkway to connect the playcourts to the main campus buildings of Noelani Elementary School.
Project Acreage	The Noelani Elementary School campus (the study area) is approximately 8.57 acres. The specific project area involves approximately 0.5 acres in the east/central portion of the campus.
Historic Preservation Regulatory Context	This Archaeological Literature Review and Field Inspection Report is intended for the consideration of the SHPD in determining appropriate cultural resource management efforts (if any) and for possible inclusion in an environmental assessment for the project.

<p>Historic Properties Identified in the Vicinity</p>	<p>No historic properties were located within the project area. The Noelani Elementary School (understood as having opened in 1962) is not a historic property at this time. It is uncertain whether the association with President of the United States, Barrack Obama, who is understood as having been in attendance in Miss Sakai's Kindergarten Class of 1967 at Noelani Elementary School, will influence future historic preservation considerations for the campus.</p> <p>Hipawai Heiau was designated by McAllister (1933) as "Site 63," (State Inventory of Historic Properties or SIHP No. 50-80-14-63). CSH staff recently visited the posited location of the Hipawai Heiau, which was accessed by way of UH's agricultural research facility (the "Magoon Property"), adjacent to Woodlawn Drive near the southern tip of TMK [1] 2-9-023:001 and southeast of Noelani Elementary School. What appears to be a very old remnant of a traditional Hawaiian style stone wall (i.e., built in the traditional dry-stacked, core-filled style) was observed located just outside of (and abutting) the chain-link fence defining the <i>makai</i> boundary of UH's "Mauka Campus" in the approximate indicated location of Hipawai Heiau.</p> <p>Hipawai Cave is a posited large underground cavern in the vicinity of the UH Astronomy Institute on Woodlawn Drive across the street from the Noelani Elementary School campus: "People went down into the cavern in former times" [Mary Pukui, cited in Sterling and Summers 1978:287].</p> <p>The project area has been previously disturbed by the construction of the World War II-era Mānoa War Housing and more recently by the construction of the Noelani Elementary School campus.</p> <p>Archaeological studies have recorded the presence within Mānoa of subsurface historic properties – including cultural deposits and human burials – of both pre-contact Hawaiian and post-western contact provenance. These deposits had remained intact despite the years of construction activity that have altered the entire Mānoa area.</p>
<p>Mitigation Recommendations</p>	<p>Based on the findings of this study, an archaeological monitoring program is recommended. It may be appropriate that an initial program of on-site archaeological monitoring attend project-related ground disturbance activities below 12" (30 cm). In the absence of any significant finds, spot-check monitoring may be appropriate.</p>

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Section 1 Introduction

1.1 Project Background

At the request of Mr. Gerald Park, Urban Planner, Cultural Surveys Hawai'i, Inc. (CSH) prepared this Archaeological Literature Review and Field Inspection Report in support of the Noelani Elementary School Playcourt Project.

The study area consists of the entire approximately 8.57-acre Noelani Elementary School campus [TMK parcel TMK [1] 2-9-023:023] located at 2655 Woodlawn Drive in southeast Mānoa [Waikīkī] Ahupua'a, Kona District, Hawai'i (Figures 1 through 3). The project area consists entirely of State of Hawai'i-owned land.

The project involves the creation of a new multi-purpose playcourt on the north side of an existing playcourt and the construction of a new covered walkway to connect the playcourts to the main campus buildings (Figure 4 & Figure 5). The project area is approximately 0.5 acres in the east/central portion of the campus.

1.2 Scope of Work

Scope of Work

1. Historical research including study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.
2. Limited field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This assessment is to identify any sensitive areas that may require further investigation or mitigation before the project proceeds.
3. Preparation of a report to include the results of the historical research and the limited fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. The report is to also provide mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.
4. Conversion of the Literature Review and Field Inspection into an Archaeological Monitoring Plan, if appropriate.

1.3 Environmental Setting

1.3.1 Natural Environment

Mānoa Valley was formed during the volcanic eruptions that formed the Ko'olau Mountains 2.2 to 2.6 million years ago. This volcanic activity and the following erosion caused amphitheater-headed, deep V-shaped valleys on the southeast coast of O'ahu, which are separated by sharp, high ridges. The Ko'olau volcano reactivated approximately 250,000 years

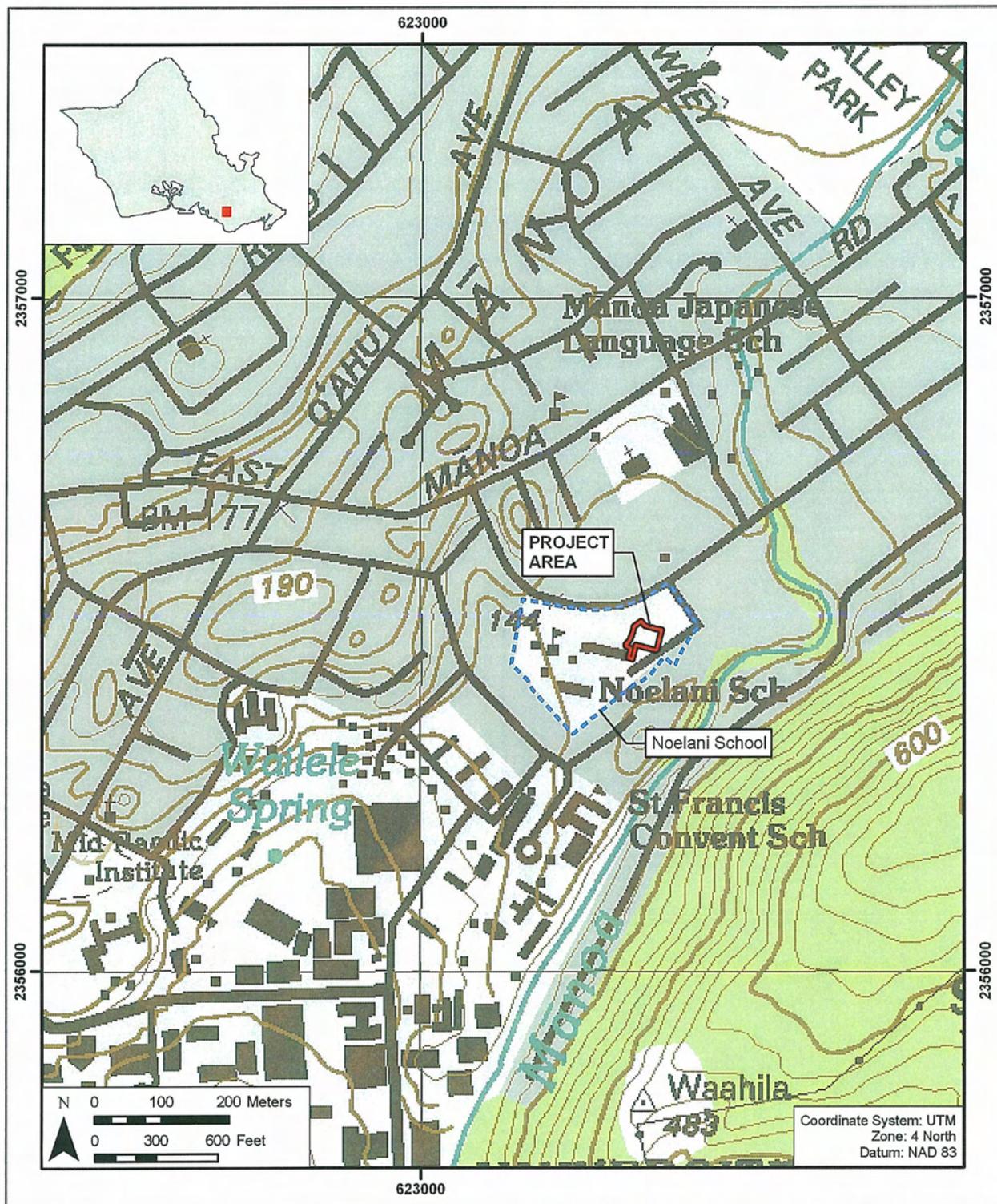


Figure 1. Portion on U.S. Geological Survey topographic map, Honolulu 1998 quadrangle, showing project area

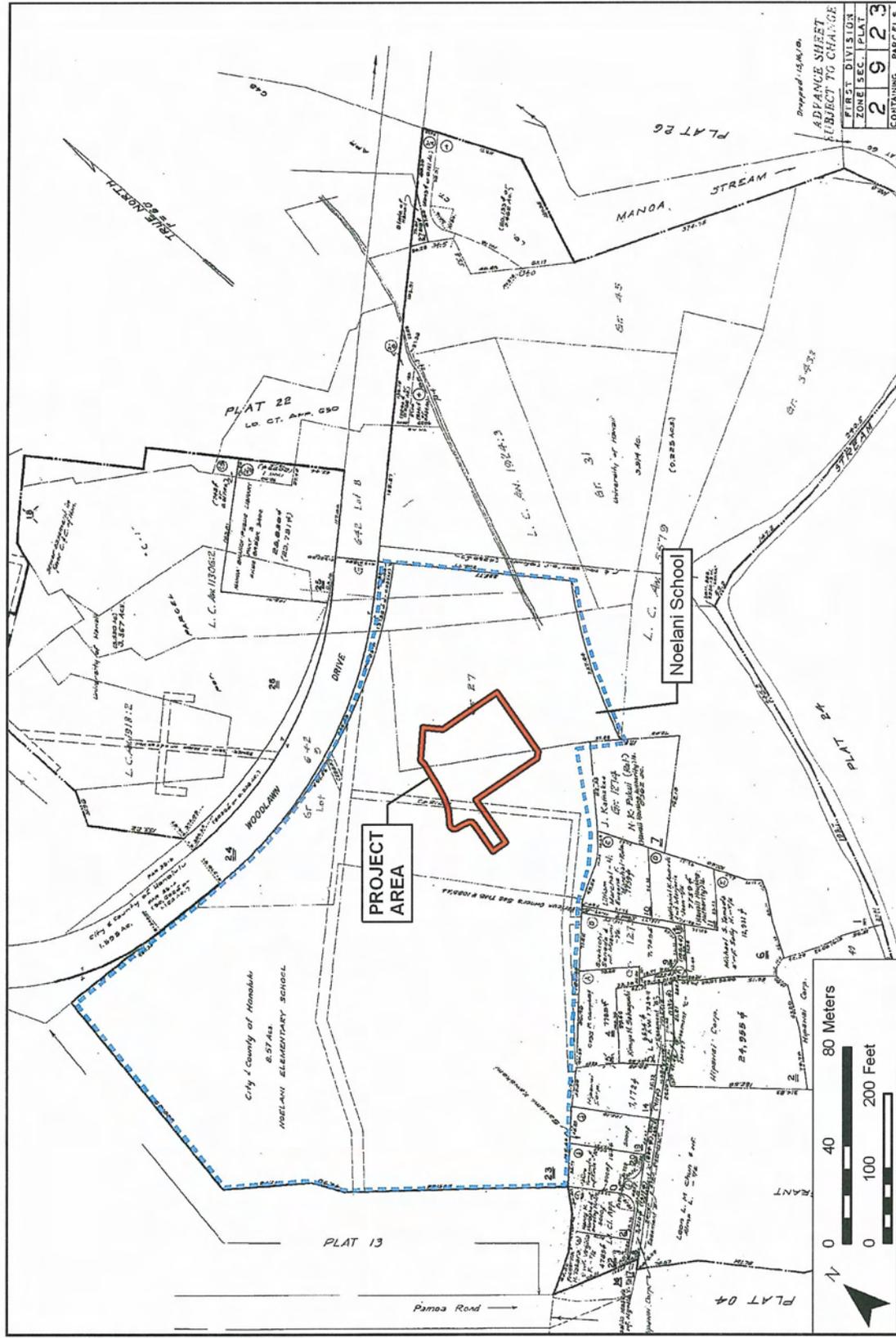


Figure 2. Tax Map Key [1] 2-9-23 showing location of project area

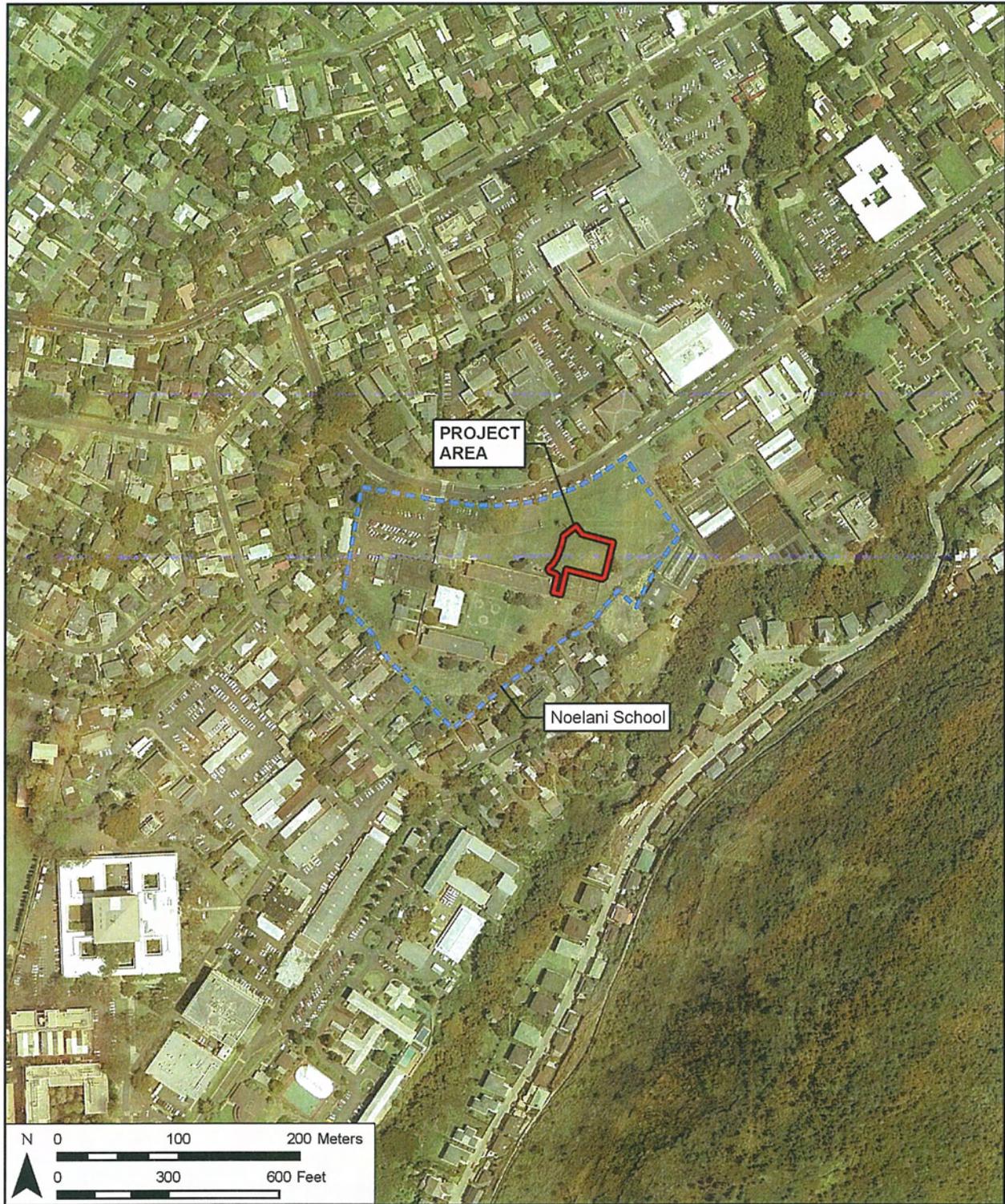


Figure 3. Aerial photograph of project area

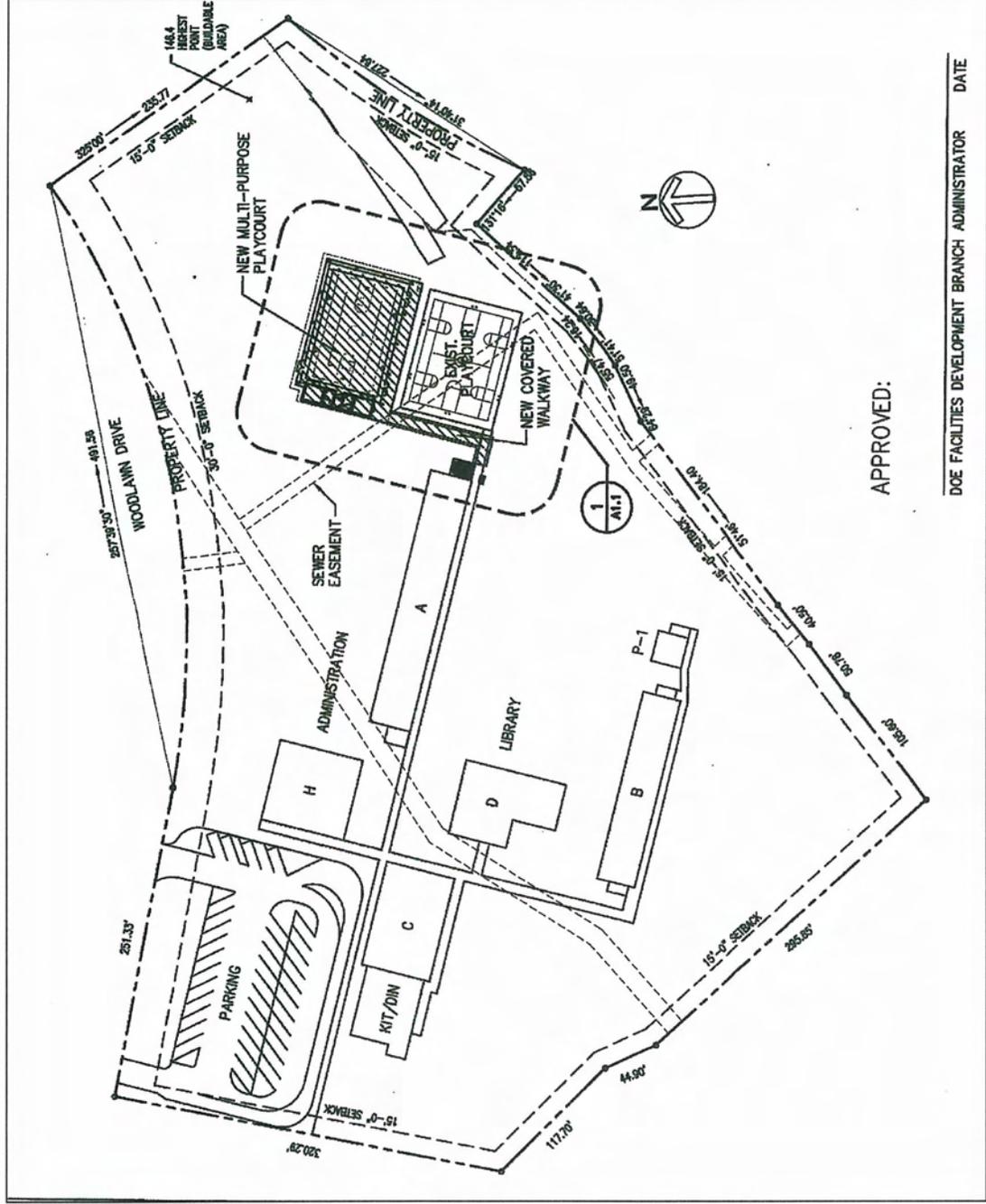


Figure 4. Project Area shown on Noelani Elementary School campus map

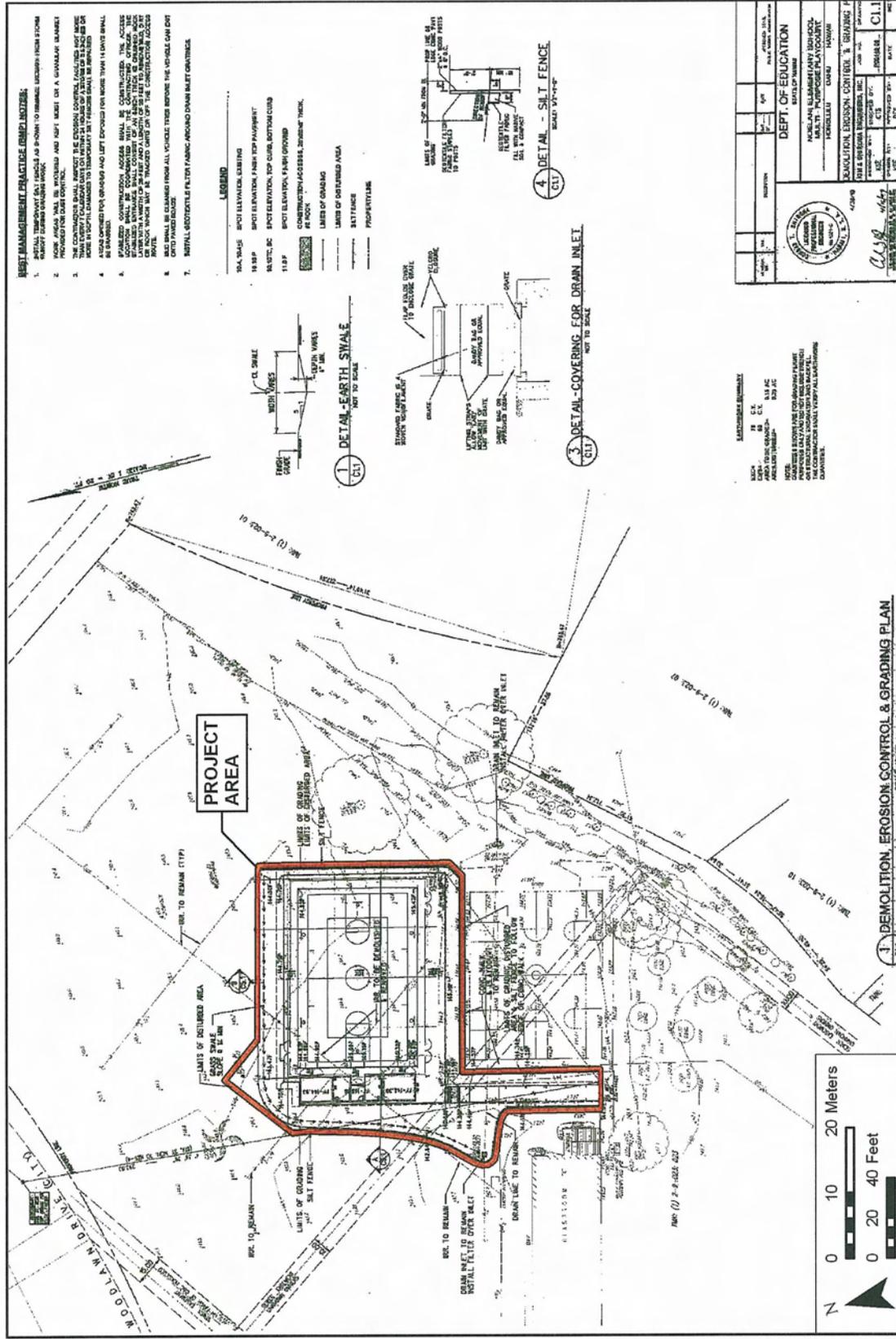


Figure 5. Client supplied project plans for Noelani Elementary School

ago, pouring lava into the valley. This eruption built up new cones, including Pu'u 'Ōhi'a (Tantalus) in the upper valley, and lower down the smaller cones of Pu'u Kākea (Sugar Loaf), Pu'u 'Ualaka'a (Round Top) and Pu'u o Mānoa (Rocky Hill). The erupted lava cascaded down the western ridge of Mānoa Valley. This filled in the V-shaped valley, giving it a more rounded U-shaped appearance (Bouslog et al. 1994:4-5).

According to Foote et al. (1972), soils within the project area are Makiki Stony Clay Loam (MIA) (Figure 6). A notable feature of Makiki Stony Clay is “that there are enough stones to hinder cultivation” making up 15% of the soil by volume (Foote et al. 1972:92).

The Mānoa sub-basin watershed covers 6,150 acres and includes 12 miles of stream. 'Aihualama, Waihi, Lua'alaea, Nāniu'apo, Wa'aloe, and Waiakeakua are the tributary streams in the upper valley that merge at an elevation of 400 feet into the main Mānoa Stream. Half-way down the center of the valley, the Sugar Loaf eruption has pushed the streambed to the extreme east of the valley. Mānoa Stream lies approximately 100 m southeast of the project area. Before the construction of the Ala Wai Canal, the lower portion of the stream, called Kālia Stream, flowed in a westerly direction, then made a wide bend to the east where it joined the Pālolo Channel in the general vicinity of the present-day Date Street near the *mauka* side of the Ala Wai Golf Course.

Annual rainfall at the head of Mānoa Valley can reach up to 160 inches per year. At the lower boundary, rainfall is only 35 inches per year. The valley is often swept with strong winds that bring rain, including *ala'eli*, the “cool wind of the land,” and *kākea*, a “stormy wind” (Bouslog et al. 1994:6).

Before Hawaiian settlement, the slopes of Mānoa's ridges were probably covered with a dense forest, dominated by *'ōhi'a lehua* (*Metrosideros macropus*), *koa* (*Acacia koa*), and *loulou* (the native fan palm, *Pritchardia* spp.). The undergrowth would have included shrubs such as *naupaka kuahiwi* (*Scaevola* spp.), ferns such as *hāpu'u* (*Cibotium splendens*), *'ama'u* (*Sadleria* spp.), and *pala'ā* (also known as *palapala'ā*, *Sphenomeris chinesis* syn. *chusana*), and vines such as *'ie'ie* (*Freycinetia arborea*) (Bouslog et al. 1994:8). Mānoa, due to its broad, well-watered valley, was probably settled early by the Hawaiians, who likely cleared much of the lower areas near streams for wetland taro cultivation.

1.3.2 Built Environment

Noelani Elementary School opened in 1962 with one school building and today includes six buildings (see Figure 4)

Vegetation in the project area is limited to lawn with some landscaping with non-native Hawaiian ornamental plants.

All standing architecture within the study area is less than 50 years old. No surface historic properties were observed within the project area.

The parcel appears to have been graded level

On the south and west sides Noelani Elementary School is bounded by single family homes along Hipawai Place and Pamoia Road. To the northwest there are single family homes accessed off of Kolowalu Street and a long private driveway extending south from Kolowalu Street. The

long arc of Kolowalu Street, that effectively becomes Woodlawn Drive to the east, bounds the north side of the campus. A University of Hawai'i at Mānoa tropical agriculture research station lies east of the Noelani campus.

1.4 Methods

Numerous published and unpublished accounts, surveys, maps and photographs found in public and private collections pertaining to Mānoa Valley were investigated by CSH. Historical documents, maps and existing archaeological information pertaining to sites in the vicinity of this project were researched at the SHPD library, CSH library, and the University of Hawai'i's Hamilton Library.

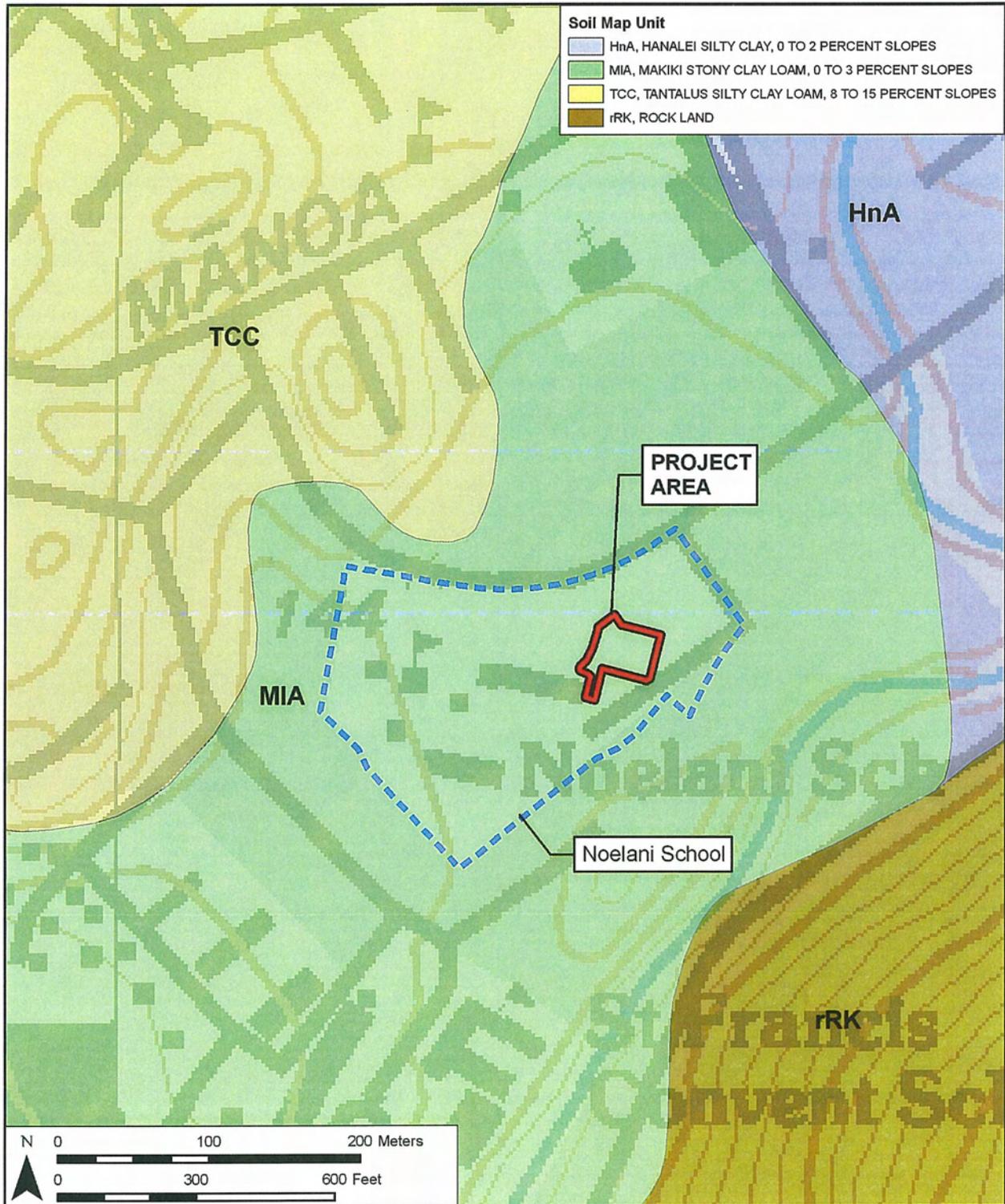


Figure 6. Portion on U.S. Geological Survey topographic map, Honolulu 1998 quadrangle, with overlay of soils within the project area and its vicinity (Foote et al. 1972)

2.2 Agriculture in Mānoa Valley

Handy's (1940) description of Mānoa suggests it was once home to an extensive Hawaiian settlement supported by vast taro gardens:

In upper Manoa the whole of the level land in the valley bottom was developed in broad taro flats. The terraces extended along Manoa Stream as far as there is a suitable land for irrigating...About 100 terraces are still being cultivated, but these do not constitute more than one tenth of the total area capable of being planted...Bennett...described the upper valley as "checquered with taro patches" [Handy 1940:77].

Mānoa was home to kings and commoners as documented in legends, land records, and early maps of Honolulu. The "Indices of Awards" lists 74 Land Commission Awards in 21 named localities at Mānoa, which suggests a substantial population. Kamehameha I was attracted to Mānoa for the cultivation of food for his army. He had one house near Roundtop:

The places Kamehameha farmed and the houses he lived in at those farms were show places. His farmhouses in Nuuanu stood several hundred fathoms away from the right side of Kapahala, a knoll on the western side of Nuuanu Street and Hanaiakamalama House. Perhaps the location was chosen to enable him to look both inland and seaward to his food patches. Some elevated houses seem to have been for that purpose. So it was with Puupueo [Roundtop, in west Mānoa Valley], directly below Ualakaa [ʻĪʻĪ 1959:69].

Thrum also stated that Kamehameha often stayed in Mānoa Valley:

It is evident that Manoa has for several generations past, been held in high esteem by Hawaiians of rank. Kamehameha I was no stranger to the valley, and it early became the favorite resort of his immediate household and followers [Thrum 1892:113].

2.3 Legendary Associations

Mānoa is associated with many legendary accounts, a full description of which is beyond the scope of the current document. What follows here is a brief abstract of the numerous legendary accounts.

2.3.1 Legends Associated with Streams, Springs, and *Pōhaku*

Mānoa is watered by five streams that merge into the lower Mānoa Stream: 'Aihualama (*lit.* eat the fruit of the *lama* tree), Waihī (*lit.* trickling water), Nāniu'apo (*lit.* the grasped coconuts), Lua'alaea (*lit.* pit [of] red earth), and Waiakeakua (*lit.* water provided by a god). There are seven waterfalls in the back of Mānoa Valley, named Wai'ihī'iki (*lit.* small trickling water), Wai'ihī'nui (*lit.* big trickling water), Lua'aulaia, Nāniu'apo, Wa'aloa, Kahuwai'iki (*lit.* little water tender) and Waiakeakua (*lit.* water [used] by the god) (Pukui et al. 1974).

There are many *mo'olelo* (oral histories) and legendary accounts dealing with the numerous fresh-water springs (*pūnāwai*) of Mānoa. Many of these springs are directly associated with the

exploits of two primary Hawaiian gods, Kāne and Kanaloa, who were together responsible for originating many of these *pūnāwai*. These springs include Kānewai (location of the current Kānewai Cultural Garden), Hualani, Wailele—located near the present day athletic field of the Mid-Pacific Institute and associated with Kūka'ō'ō Heiau, Punahou (a.k.a. Kapunahou), Ka'aipū, Wa'aloa and Waiakeakua.

2.3.2 Legends Associated with Hills, Peaks, Ridges and Caves

There are numerous hills, mountain peaks, and caves in Mānoa Valley that have legendary associations. On the *mauka* border in the Ko'olau Mountain range are the peaks, Pu'u Lepalepa, Awāwaloa (“Mount Olympus”) and Kōnāhuanui. The word *lepalepa* means “to hang in fringes or tatters” (Pukui and Elbert 1986:203). Awāwaloa means “long valley or gulch” (Pukui and Elbert 1986:35, 209). Kōnāhuanui, the home of the gods Kāne and Kanaloa, is the highest peak in the Ko'olau Mountains. The place name means “large, fat innards” and refers to a story about a giant who threw his testicles (*kona hua nui*) at a woman who escaped from him (Pukui et al. 1974:117).

Hills, peaks and caves with associated *mo'olelo* and legendary accounts include Wa'ahila Ridge and its six peaks: Keanapoi, Pu'u Pia (*lit.* arrowroot hill), Pūkele (*lit.* muddy), Paliluahine, Akāka and Kumauna (these latter two are associated with “The Princess of Mānoa” (Kahala-o-Puna), Kapaliluahine and Pali Luahine (which is associated with Kamehameha I), 'Ulumalu, Pu'u Pueo (“Roundtop”) and Pu'u Mānoa.

2.3.3 Other Legendary Associations

Mānoa is associated with a variety of other *mo'olelo* and legends, including Pikoī the Rat Killer, Maluae and the Underworld, and the Woman Who Died and Came Back to Life; and famous events and people of the early historic era, including Kamehameha I (and his famous dog Poki), Ka'ahumanu and Boki.

Section 3 Historical Background

In 1892, before it was urbanized, the beauty of Mānoa Valley was described:

Manoa is both broad and low, with towering hills on both sides that join the forest clad mountain range at the head, whose summits are often hid in cloud land, gathering moisture there from to feed the springs in the various recesses that in turn supply the streams winding through the valley, or watering the vast fields of growing taro, to which industry the valley is devoted. The higher portions and foot hills also give pasturage to the stock of more than one dairy enterprise.

For nearly a mile the road leads by or along pasture fields with no vestige of tree or shrub other than the lantana pest and an occasional algeroba (*kiawe*), and passes along Round top or Ualakaa . . .

At this summit of the road the whole valley opens out to view, the extensive flat area set out in taro, looking like a huge checker-board, with its symmetrical emerald squares in the middle ground, surrounded by pasture fields on the slopes at the base of the guarding hills. Here and there 'mid sheltering trees, humble dwellings dot the scene around, while up the rugged slopes the almost endless shades of green with black worn seams of rock oft times lightened by 'silvery thread of torrent', forms the background to one of the most charming pictures, either in the clear sunlight, heightened as it often is by cloud shadows chasing rifts of sunshine down the mountain sides; or, as frequently, may be, to watch the drifting mist or rain sweep down one side of the valley, while the other basked in the sun, throwing over its weeping neighbor a "bow of promise" so radiant and bright that its-double, or even triple, reflection is no rarity [Thrum 1892:110-111].

Mānoa Valley was a favored spot of the *ali'i*, including Kamehameha I, Chief Boki (Governor of O'ahu), Ka'ahumanu, Ha'alilio (an advisor to King Kamehameha III), Princess Victoria, Kana'ina (father of King Lunalilo), Lunalilo, Ke'elikōlani (half sister of Kamehameha IV), and later Queen Lili'uokalani.

The site of the various houses that once sheltered Haalilio and his retinue is pointed out just above the old Ehu homestead, known later as the 'Charley Long' premises and, till very recently, part and parcel of Montana's Kaipu Dairy [approximately 300 m NW of Noelani School]. Rev. H. Bingham, of early Hawaiian Mission fame, is also referred to by old timers as having had a residence adjoining the Haalilio premises, though his history makes no mention thereof [Thrum 1892:114].

3.1 Early Ownership and Use of Mānoa Valley

Mānoa was given to the Maui chief Kame'eiamoku by Kamehameha I after his conquest of O'ahu. After Kame'eiamoku's death, the land was inherited by his son Ulumāheihie (or Hoapili), who became the governor of Maui during the reigns of Kamehameha II and Kamehameha III. Liliha, the daughter of Hoapili, inherited the lands in 1811 and brought them with her to her marriage with the high chief Boki, governor of O'ahu. They had a residence at Punahou in

Mānoa Valley which they often used (Bouslog et al. 1994:14-15). As noted previously, the entire floor of Mānoa Valley was a “checkerboard of taro patches.”

Boki traveled with Kamehameha II on his ill-fated trip to England. While there, Boki met John Wilkinson, a British agriculturalist who had once been a planter in the West Indies. Boki and Wilkinson traveled back to Hawai‘i on the English ship *Blonde*. In 1825, Wilkinson planted seven acres atop Punahou Hill (Pu‘u Pueo) with sugar cane, sometimes said to have been the first sugar plantation in the Hawaiian Islands.

I ka makahiki 1826, ua hoomaka ia ke kanu koana ma Manoa, he haole Bertiania ka mea nana i hana. O Boti a me Kekuanaoa kekahi mau alii kokua nui i ka mahi ko, a o ia paha ka hoomaka mua ana o ka wili ko ma Hawaii nei. A i ka haalele ana o ka haole, ua lilo ka wili ko ia Boti, a o Kinepu ke kanaka nana e hooponopono. Ua kukulu ia ka hale puhi ko ma loko o ke kulanakauhale o Honolulu, ma ka pa kokoke i kahi o Keolaloa Summuner ma e noho nei. He mau hana maikai keia a Boti [Kamakau, Ka Nūpepa Kū‘oko‘a, May 23, 1868].

Translation:

In 1826 the cultivation of sugar was begun in Manoa valley by an Englishman. Boki and Ke-ku anao‘a were interested in this project and it was perhaps the first cane cultivated to any extent in Hawaii. When the foreigner gave it up Boki bought the field and placed Kinepu in charge. A mill was set up in Honolulu in a lot near where Sumner (Keolaloa) was living. For this action Boki is to be commended [Kamakau 1976:278].

Following Wilkinson’s death in 1826, the mill for the sugar was moved to Honolulu, and Boki lost interest in the endeavor. In 1828, he sold the sugar plantation and sugar mill to (or took as partners) four Honolulu businessmen: William French, Stephen Reynolds, John C. Jones, and John Ebbets (Kuykendall 1938:172). French encouraged Boki to turn the sugar mill into a distillery. When Ka‘ahumanu heard of this, she was outraged and took the Punahou lands away from Boki and gave them to Hiram Bingham and his wife as a base for mission work.

John Wilkinson was also the first to try to grow coffee in the islands.

At the foothills just above Kaipu [Ka‘aipū – in the general vicinity of Ka‘aipū Ave. in central Mānoa], is the reputed location of the first Coffee nursery of the islands, also the work of John Wilkinson, with plants brought by him in the *Blonde*, from Rio de Janeiro. All the shady recesses and glens at the head of the valley show evidences, to-day, of this early agricultural effort, but to no pecuniary or commercial advantage, for it is all neglected and overgrown [Thrum 1892:114].

The sugar cane plantation was destroyed, but some of the coffee plants were used to start coffee cultivation on the islands of Kaua‘i and Hawai‘i (Bouslog et al. 1994:15). The only remaining structures associated with this endeavor noted by Thrum in 1892 were a few filled-in cisterns and wells, and stones marking the western side of the sugar house foundation.

Captain John Kidwell brought a variety of pineapple to the islands called Smooth Cayenne in 1885. He conducted experiments with 31 varieties of pineapples on his farm, in the vicinity of

current UH Mānoa campus. Smooth Cayenne worked best, and this variety became the standard for the pineapple industry.

Ka'ahumanu had a great estate in the upper valley that included the lands of Pu'ulena. After the deaths of Boki, Liliha, and finally Ka'ahumanu in 1832, many of these royal lands were given to Charles Kana'ina, the father of King William Lunalilo. Kamehameha II was also said to have maintained a summer house in Wai'oli and Ka'aipū. Lunalilo gave some of these lands to Kapōkini, who gave them to Ha'alilio. When Ha'alilio went on a diplomatic mission to England, he returned the lands to Kamehameha III (Bouslog et al. 1994:16).

An 1817 map by Otto Kotzebue (Figure 8) and an 1855 map by La Passe (Figure 9) show a dense concentration of population in Mānoa Valley. In 1836, French missionaries visited Mānoa, counting 50 houses. If each house contained five people, this would put the population at 250 Hawaiians. The general population of Honolulu and the coastal plain was about 6-7,000 people (Coulter and Serrao 1932:109), which probably represented only a small percentage of the total population of the area that existed before the Hawaiian people were decimated with war, exotic diseases, and the disruption caused by the influx of Westerners and Asians, and their influence on the economy and culture of Hawai'i. An 1847 record lists 34 eligible landowners; only two were non-Hawaiian. An 1849 tax list includes 195 Hawaiian names, meaning the population of Mānoa was probably about 1,000.

3.2 Mid Nineteenth Century and Land Commission Awards

A total of 68 commoners were granted *kuleana* (Land Commission) awards in Mānoa *mauka* of King Street, totaling 332.26 acres (Table 1). Twenty-seven awards were less than an acre; 31 awards were less than five acres, four awards were less than 10 acres; and one award was for more than 10 acres (to Akahi, a *wahine* [female] cousin of Bernice Pauahi Bishop, in Kaipua 'Ili, LCA 5368:1, RP 1262, 10.25 acres); five awards were for more than 30 acres (J. Stevenson [Ka'aipū, 34.96 acres, and Nāniu'apo, 30.17 acres], Kalaiheana, 66.59 acres, Kaunuohua, 35.40 acres, and Beckley, G. for heirs, 36.10 acres). Victoria Kamāmalu received most of Kānewai 'Ili. C. Kana'ina (father of King W.C. Lunalilo) received the 'ili 'āina of Kolowalu and Pāmoa, and all of Kukuio and Kalehua. The largest grant went to the American Board of Commissioners for Foreign Missions who received a total of 301.68 acres; this became the campus for Punahou School (Bath and Kawachi 1990:3-5). Chief Boki gave Hiram Bingham this piece of land in 1829 (DeLeon 1978:3).

The Land Commission documents suggest that most of the agriculture and habitation at Mānoa was in the east-central part of the valley (along Mānoa Stream) between the present-day Mid Pacific Institute and the Chinese cemetery. There were a few claims and awards in the far northern part of the valley, as well as at Punahou, and additionally a few in the Kānewai/Kalaepōhaku area. An 1882 map by E. D. Baldwin, places Noelani School in Pamoā/Hipawai (Figure 10) in an area of dense habitation and agriculture (Figure 11).

Land use documentation for some of the residents and neighbors of the present Noelani School location is given in Appendix A and a brief summary is provided below (see Figure 11 for locations of LCAs discussed below within and in the immediate vicinity of Noelani Elementary School).

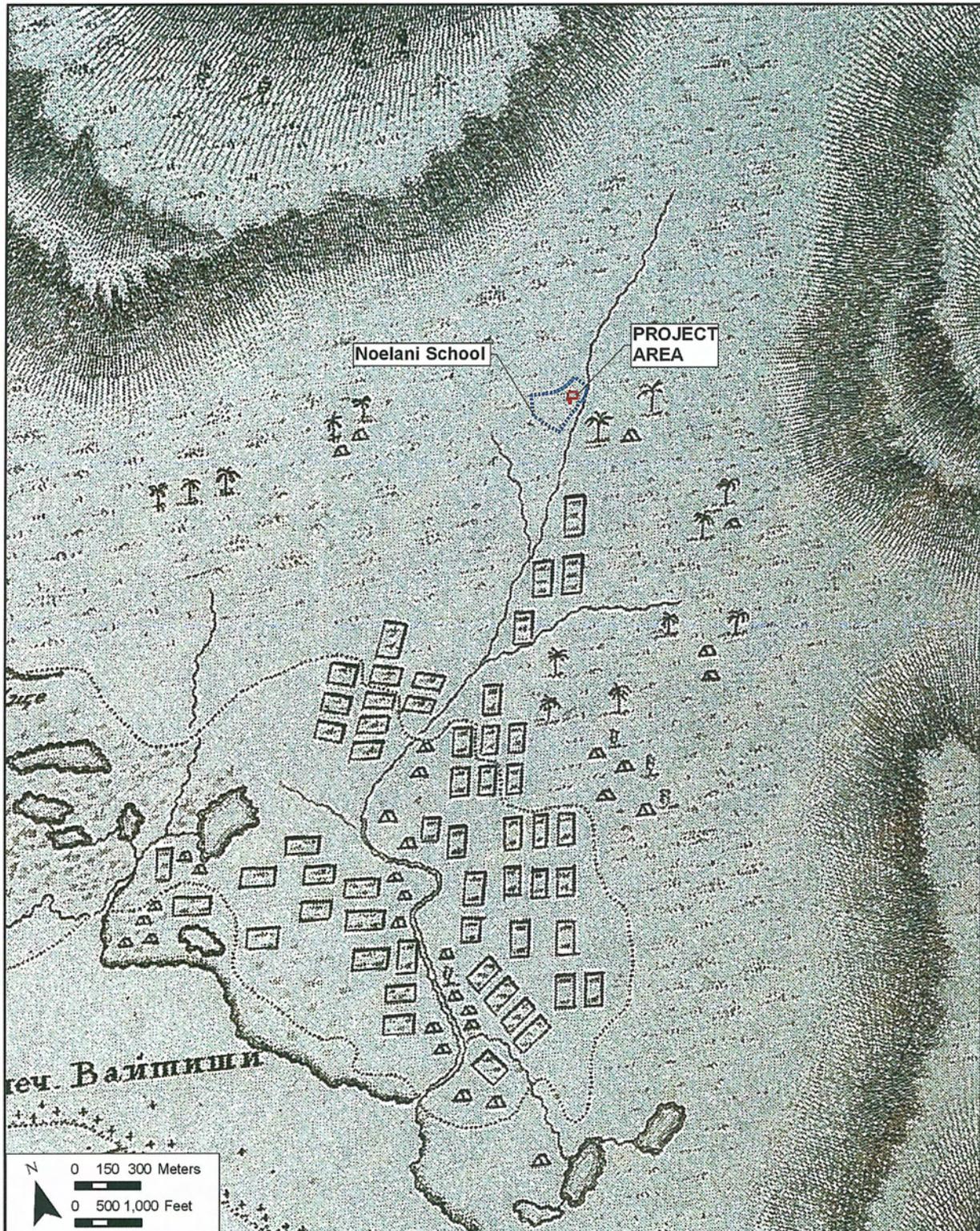


Figure 8.1817 Kotzebue map of Honolulu to Pearl Harbor showing approximate location of project area (map should be understood as a “sketch”)

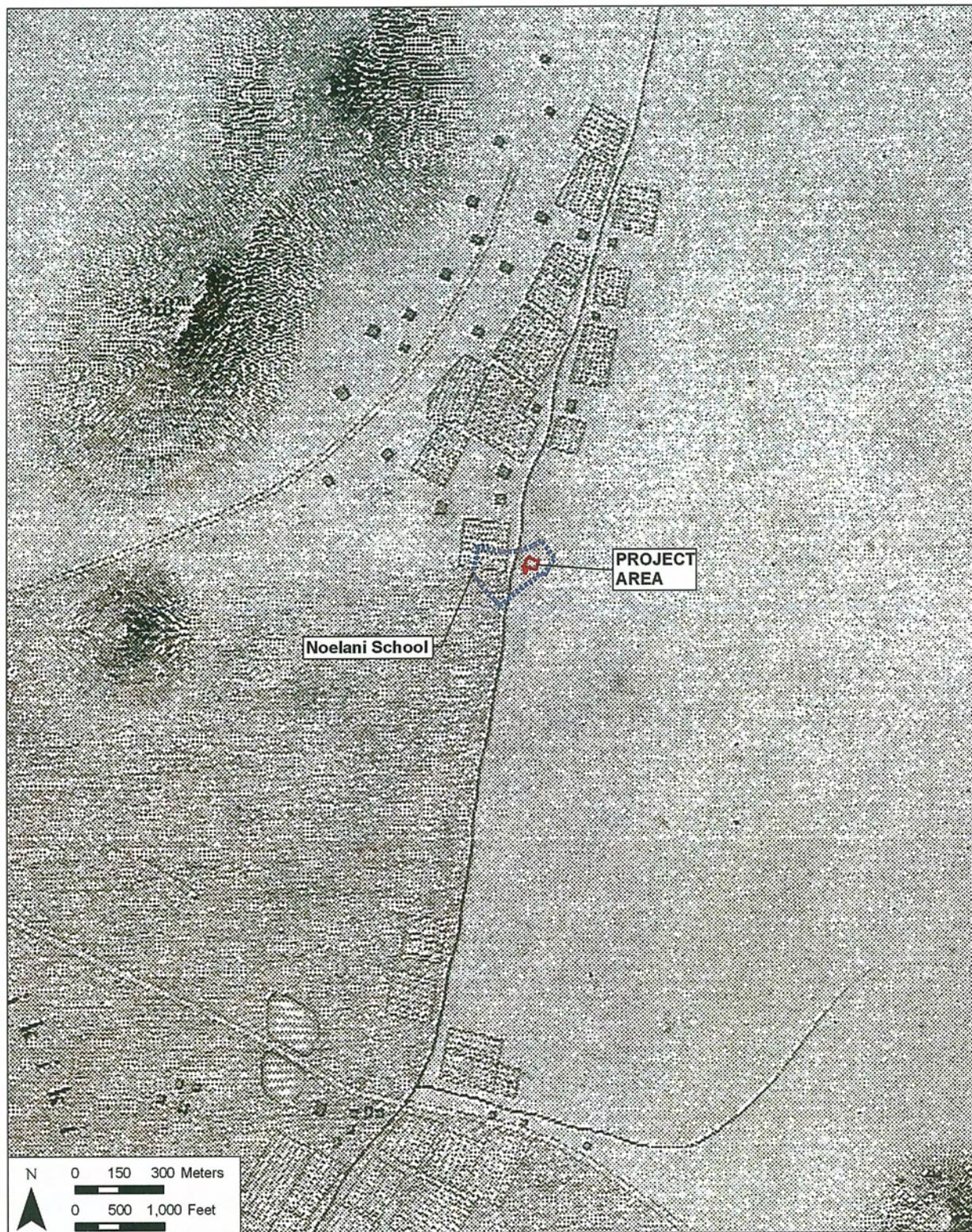


Figure 9. 1855 LaPasse map of Honolulu showing approximate location of project area (map should be understood as a “sketch”)

Table 1. Land Commission Awards for Mānoa Ahupua'a

Claim	Claimant	Location	Notes
17	Jones, Eli	Beretania St.	House
40	Kai, D.	Ka'ahaloa	<i>Māhele</i> Award
42	Maioret, Louis	Waialele	
228	Kaleiheana	Kānewai	Kānewai Pool
387	ABCFM (mission)	Punahou	Received from chief Boki: spring, house
707	Kaiaina		Received land from Kamehameha
819	Beckley, George	Waialele	Farm called "Kawailele"
1130			House, 2 patches, pasture
1267	Kawela	Pa'akea	3 'āpana: taro lo'i; taro lo'i; house
1273	Spear	King St.	
1274	Hulilau	Piliamo'o	Dry taro, 12 taro lo'i, hala trees
1356	Namaka	Piliamo'o	2 taro lo'i
1525	Kuaana	Piliamo'o	2 taro, house, pasture
1617	Kenao	Piliamo'o	4 taro, 1 ditch, 2 houses
1627	Keonea	Kānewai	
1636	Haole	Pa'akea	2 'āpana: house, fence; house, fence
1728	Kuikuikahi	Halelena, Waialele	3 'āpana: pāhale; lo'i ma hale lena; taro lo'i, pasture
1733	Kaheenalū	Halelena	4 lo'i
1734	Kauhi	Hamamakawaha, Hipawai	2 'āpana; house enclosed; 6 taro lo'i
1744	Hakuole	Waialele	5 taro lo'i
1748	Ono	Kānewai	Houselot
1751	Aea	Piliamo'o	3 'āpana: house; taro lo'i; taro lo'i
1755	Kaluaapana, Peter	Hamamakawaha	
1769	Malaihi	Hamamakawaha, Kahamama	Taro lo'i
1806	Hinai	Kānewai	3 taro lo'i
1813	Keaka, I.	Piliamo'o	2 taro lo'i
1816	Kaaha	Pa'akea	2 'āpana: 6 taro, pasture; taro lo'i
1825	Kuewa	Kānewai	'Āpana 3-4 - Pasture with 2 houses; 'āpana 5 - taro
1827	Wahahee	Waialele	6 taro lo'i
1828	Ewaloa	Waialele	3 'āpana: taro lo'i; taro lo'i, house
1829	Hoohoku	Waialele	8 taro lo'i
1831	Mamala	Pāmoa	3 'āpana, 8 taro lo'i, 'auwai, house; taro lo'i; house
1906	Kaumakaokea	Hamamakawaha	House at Kolowalu
1908	Kalaau	Kamo'olepo	4 lo'i
1909	Kaianui	Kolowalu	'Auwai, 6 taro lo'i, houselot
1910	Apiki	Hamamakawaha, Kolowalu	'Auwai, pili, taro for konohiki
1911	Naihe	Hamamakawaha	Taro, house
1918	Kamahiai	Kolowalu	2 'āpana: pāhale; 6 lo'i

1920	Paaluhi	Pu'ulena	3 taro <i>lo'i</i> , pasture, house
1921	Moku	Kahawai	9 taro <i>lo'i</i> , <i>kula</i> , house
1922	Nawaanui	Kali'i	13 <i>lo'i</i> , sweet potato
1923	Kekua	Kaho'iwai	6-8 <i>lo'i</i> , 'auwai, house
1924	Kealohapauole	Kauala'a	3 'āpana; 7 taro <i>lo'i</i> ; taro <i>lo'i</i> , house on south side; pasture
1925	Paniani	Koloalu, Koloaluiki	'Auwai, <i>pili</i> , pasture, 2 houses
1925	Koi	Kolowalu	<i>Pili</i> , taro, land sinking in
1926	Nanauki	Kolowalu	1 'āpana: pasture, house; taro
1927	Nawaakakele	Pāmoa	12 <i>lo'i</i> , <i>kula</i> , house
1928	Aiia	Pu'ulena	4 taro, pasture with house
1929	Kaanaana	Pu'ulena	<i>Lo'i</i> for <i>konohiki</i> , 'auwai, pasture
1930	Kaaea	Pu'ulena	2 'āpana: taro <i>lo'i</i> , pasture, house; <i>lo'i</i> for <i>konohiki</i>
1931	Kaiwi	Pu'ulena	9 taro, pasture, house
1935	Puuwae wae	Kamamakoaha, Hamamo	7-8 taro <i>lo'i</i>
1937	Kahalepohaku	Pu'ulena	6 taro <i>lo'i</i> , pasture, house
1938	Lupe	Kamo'olepo	2-4 taro <i>lo'i</i>
1940	Upepe	Pu'ulena	Taro <i>lo'i</i> , pasture
1944	Maemae	Komoawaa	14 taro <i>lo'i</i> , <i>kula</i>
1945	Kamaikaaloa	Komoawaa	6 taro <i>lo'i</i>
1946	Makalii		16 taro <i>lo'i</i> , <i>kula</i> , house; lot
1947	Puuki	Komoawaa	6 taro <i>lo'i</i> , <i>kula</i> , house; lot
1948	Ma	Komoawaa	7 taro <i>lo'i</i> , <i>kula</i> , house; lot
1949	Kipi	Hipawai	13 taro <i>lo'i</i> , <i>kula</i>
1950	Kalua	Hipawai	3-4 taro <i>lo'i</i>
1951	Nui	Kaho'iwai	Taro <i>lo'i</i> , house
1980	Haole	Piliamo'o	
2209	Keaulana	Kaipuluna	<i>Kalo</i> taro & <i>kula</i> ; pasture named
2216	Kaohē	Pāmoa	2 'āpana: 16 taro, watercourse; house site near taro
2218	Kaawahua	Pāmoa	4 'āpana: taro <i>lo'i</i> and pasture in each
2219	Keawe	Kamo'olepo	2 taro <i>lo'i</i>
2209	Keaulana		<i>Kalo</i> taro & <i>kula</i> ; pasture named
2362	Kaaimoa	Pa'akea	2 taro <i>lo'i</i> , pandanus, house
2530	Kaahu	Piliamo'o	
3028	Kauhi	Punahou	
3322	Tute, T.	Haliimaile	Garden farm with stone wall
3906	Neki, K.	Kolowalu	<i>Heiau</i> of Kūka'ō'ō, fence; house in
4211	Kaululaau	Kaahaloa iki, Manuahi	10 taro patches & pasture in one
4294B	Kalaweaumoku	Pāmoa, Ka'ahaloa	2 'āpana
4605	Hakau, wahine	Kaho'iwai, Kaluohau, Hokeulu, Pi'inaio	6 'āpana: 5 taro <i>lo'i</i> ; 3 taro <i>lo'i</i> ; pasture; 1 ditch; 1 ditch; 1 fish pond
5368	Akahi	Ka'aipū	8 taro <i>lo'i</i>

5579	Kahapapa	Hipawai	5 taro <i>lo'i</i> , Kahawai Stream
5937	Paukuwahie	Piliamo'o	
6450	Kaunuohua	Pu'ulena	Loko Kūwili
6616	Nuuanu	Kānewai	
6712	Paikau	Kalena, Wailele, Pu'ulena	3 'āpana: 2 <i>lo'i</i> , <i>kula</i> house; mountain land; 28 <i>lo'i</i> , <i>kula</i> , house
7713	Kamamalu, Victoria	Kānewai	
8555	Kaina, M.	Maka'ilio	4 <i>lo'i</i> , 'auwai, pasture
8559	Kanaina, C.	Kukuhio, Pāmopa	2 'āpana: taro; 'ili of Kalowalu
8957	Kuhaumea	Ka'ahaloa	5 taro <i>lo'i</i> , house 2 <i>hala</i> trees
8958	Kahele	Ka'ahaloa	1 taro <i>lo'i</i> , <i>kula</i> , house
8959	Kuamoo	Ka'ahaloa	8 taro <i>lo'i</i> , sweet potatoes
10289	Namokae	Halelepa (Halelena)	2 'āpana: 6 taro patches, pasture
11029	Stevenson, John	Ka'aipū, Kapo, Kukona, Kamakela	3 'āpana: <i>pali</i> , pasture (22 acres); pasture, <i>kalo</i> , stream (9 acres); <i>kalo</i> (2 acres)
11306	Kalama	Halelena, Kolowalu	2 'āpana
11307	Kea	Kolowalu	9 <i>lo'i</i> , house site

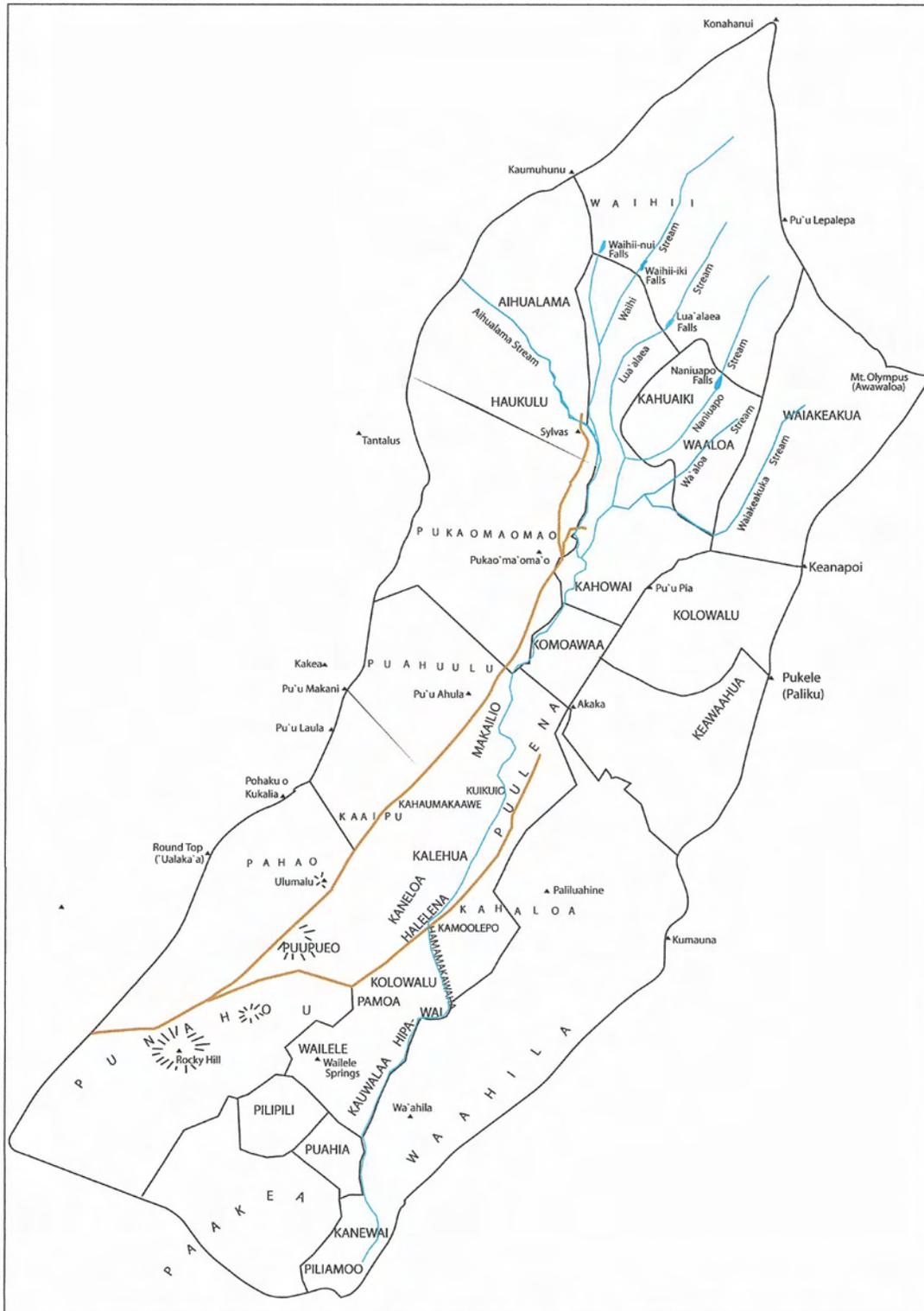


Figure 10. Major place names on 1882 map by E. D. Baldwin, showing topographic points and traditional land units in Mānoa Valley. Noelani School is in Pamoia/Hipawai

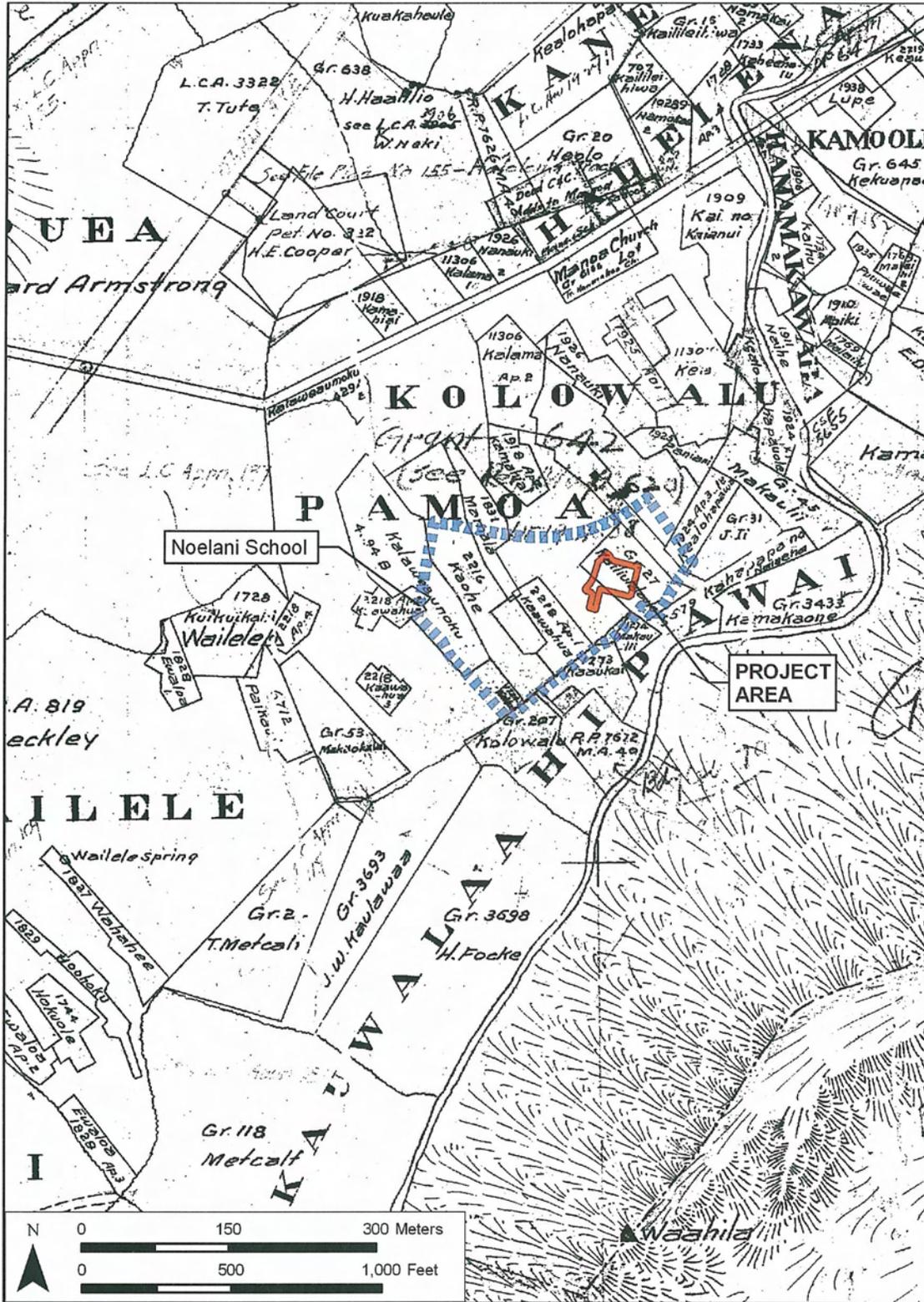


Figure 11. 1882 Close-up of Baldwin Manoa Valley map (R. M. No. 1068) in vicinity of Noelani School

LCA 1831 awarded to Mamala extended into the north central part of the Noelani School campus (see Figure 11). His lands (associated with the place name "Pamoa") included 9 *lo'i* and a house lot.

LCA 1918 awarded to Kamahiai included a parcel (*'āpana*) located immediately north of the Noelani Elementary School campus (see Figure 11). His lands (associated with the place name "Kolowalu") included 6 *lo'i* and a house lot.

LCA 1924 O awarded to Kealohapauole included a parcel (*'āpana*) that extended into the east corner of the Noelani Elementary School campus (see Figure 11). His lands (associated with the place name "Kaulaa") included 6 *lo'i* and a house lot.

LCA 2216 awarded to Kaohe occupied much of the southwest portion of the Noelani Elementary School campus (see Figure 11). His lands (associated with the place name "Pamoa") included 16 *kalo* patches, a house lot and 2 pieces of *kula* (dry land cultivation areas or pasture).

LCA 2218 awarded to Kaawahua included two parcels (*'āpana*) one adjacent to the west corner of the Noelani Elementary School campus and one in the southeast/central portion of the campus (see Figure 11).

LCA 4294B awarded to Kalaweaumoku occupied the west corner of the Noelani Elementary School campus (see Figure 11). Kalaweaumoku was awarded three parcels, all in Pamoa, that included eighteen patches, three potato lands and two house lots one of which included a store house.

LCA 5579 awarded to Kahapapa included a parcel (*'āpana*) that was adjacent to the east corner of the Noelani Elementary School campus (see Figure 11). His lands (associated with the place name "Hipawai") included 5 *lo'i*, a *māla* (garden) and a house lot.

LCA 11306 awarded to Kalama included a parcel (*'āpana*) that was located just north of the Noelani Elementary School campus (see Figure 11). His lands (associated with the place name "Kolowalu") included 15 *lo'i* and two house lots.

Although there are no references to irrigation channels (*'auwai*) it seems probable the ponded taro fields formerly extant within the present Noelani School grounds were irrigated by *'auwai* connecting to Mānoa Stream.

3.2.1 Agricultural and Residential Development

Hawaiians and Chinese continued to grow taro on the floor of Mānoa Valley in the late nineteenth century (Figure 12). However, disease, out-migration to the centers of population, the loss of traditional culture, and other factors led to a decimation of the resident Hawaiian population. By the end of the century, half of the taro lands in Mānoa Valley were cultivated by Chinese. They also raised other vegetables and bananas. For a time pineapples were raised on the lower slope between Pu'u Pia and Wa'ahila Ridge (the eastern boundary of the *ahupua'a*) (Emery 1956:57).

In the early part of the nineteenth century, the Japanese began to move in to the upper valley to start truck farms, growing strawberries, vegetables, such as Japanese dry-field taro, Japanese burdock, radishes, sweet potatoes, lettuce, carrots, and soy beans, and flowers to sell to the



Figure 12. Checkerboard taro fields on the floor of Mānoa Valley (Hawai'i State Archives)

Honolulu markets. Bananas were grown on the northeastern slopes of the valley (Emery 1956:57, 62).

Rice cultivation was attempted in Mānoa Valley by 1882, but the project was unsuccessful.

Though the valley is under almost complete cultivation of taro, largely by Chinese companies, an effort was made by them in 1882 to divert it to the growth of rice, but after two years struggle with high winds, cold rains and myriads of rice birds it was abandoned. In the spring of 1884 a north wind, with the local appellation of Kakea, visited the valley, which blasted all the taro, withered all the growing rice, moved a number of houses bodily and demolished several entirely. This is said to have terminated the rice industry of Manoa, since which time its fields have been devoted to taro, as it had been for many preceding generations. Sweet potatoes and bananas are also cultivated in a limited measure, and some attention is being given to fruit culture . . . [Thrum 1892:116].

Several dairies were also opened in the area, including the first opened by William Harrison Rice in 1844. The result of the presence of these dairies was that many previously forested slopes were denuded by the grazing cattle (Emery 1956:57, 62).

In 1879, Benjamin Franklin Dillingham, who would later be instrumental in the establishment of the Oahu Railway and Land Co., purchased a 14½-acre lot in Mānoa at the corner of Beretania and Punahou Streets, which extended up to the lower boundary of the Punahou School pasture land. He built a family cottage in this area, which he named “Woodlawn,” and used the remainder of the acreage as a small farm that included a small herd of dairy cows that he kept on an adjoining leased 30-acre parcel (Yardley 1981:79-80). In 1880, Dillingham leased the Punahou pasture lands, moving most of the dairy operations to this area. He formerly incorporated the Woodlawn Dairy and Stock Co. in 1884. By 1886, the Woodlawn Dairy held 513 acres of pasture land in Mānoa Valley, with a herd of 600 head in Mānoa and Nu‘uanu Valleys. Woodlawn Drive, bordering Noelani School, is named after the dairy.

3.3 1900s to Present

In the 1903-04 Honolulu City Directory, 148 names are listed for Mānoa including: 107 *haole* (Caucasian), 11 Chinese, 9 Japanese, and 21 Hawaiians. In 1932, the valley had 1,000 homes (with an estimated population of 5,000), about 300 Caucasian, 173 Japanese, ten Chinese, ten Portuguese, six Hawaiian, five Puerto Rican, two Filipino and one Spanish (Coulter and Serrao 1932:109). By 1944, the population of Mānoa was 15,000. By the year 2000, Mānoa had a population of 21,112 (City and Co. of Honolulu 2000).

The well-watered, fertile and relatively level lands of Mānoa Valley supported extensive wet taro cultivation well into the twentieth century (Figure 13). Handy and Handy (1972:480) estimated that in 1931 “there were still about 100 terraces in which wet taro was planted, although these represented less than a tenth of the area that was once planted by Hawaiians.”

3.3.1 Development within the Project Area and its Vicinity

The Woodlawn Dairy and Stock Co. was terminated in 1910 when the government condemned and destroyed many of the cows (Yardley 1981:95-96). Dillingham sold the

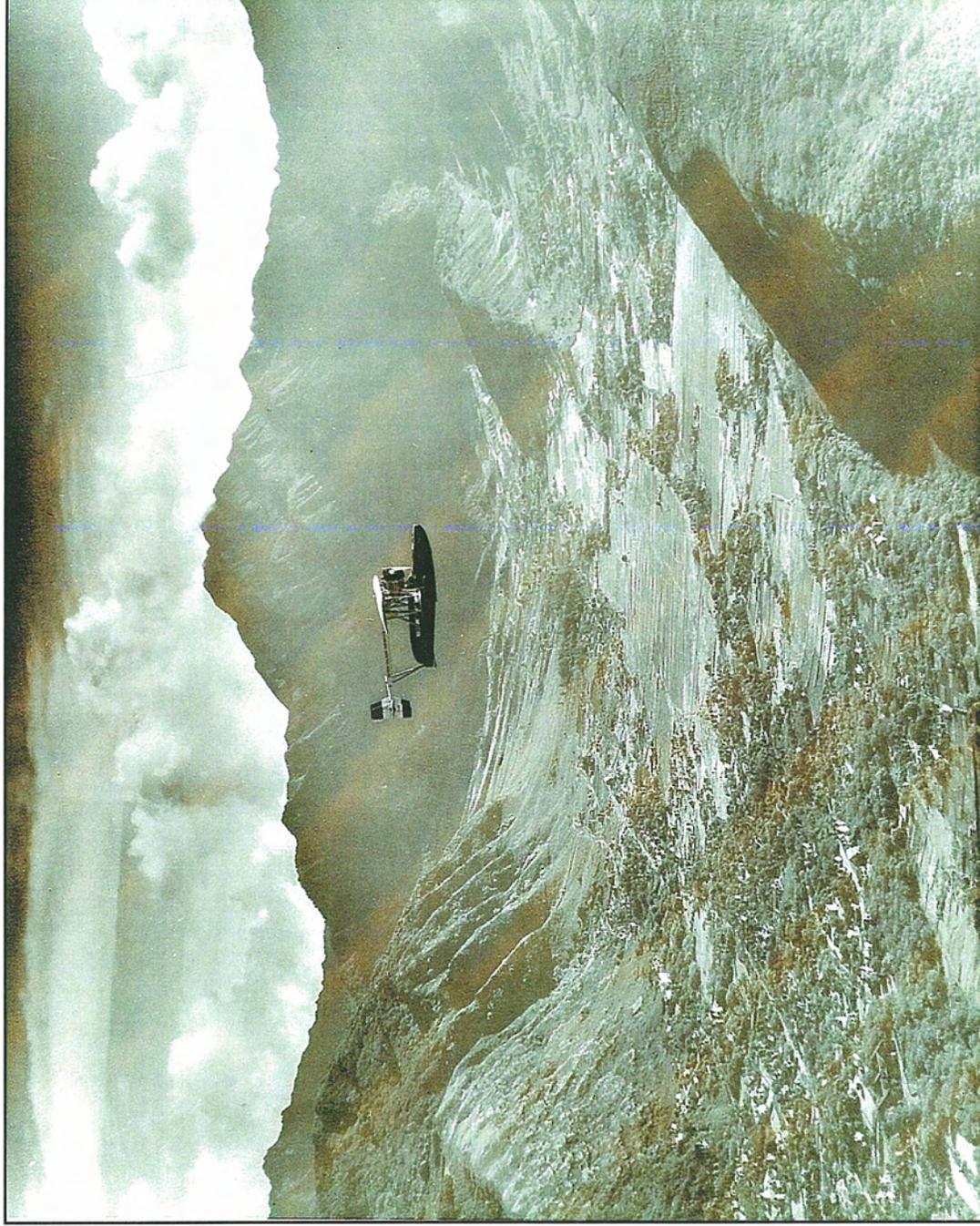


Figure 13. 1929 Photograph of the Inter-Island Airway's amphibian plane, *Hawaii*, passing over Mānoa Valley (Hawai'i State Archives)

remainder of the stock and divided the Mānoa land into house lots. The house lots were first advertised in the *Pacific Commercial Advertiser* on July 7, 1912, which described the one-acre lots as “the most beautiful and exclusive residence section where the winds blow lightly and continuously . . . Happiness is where the health is” (cited in Bouslog 1994:188). The Woodlawn subdivision is north of the current project area.

Figures 14 through 18 show the growth of roads and residential areas in Mānoa in the early twentieth century (from 1919 to 1956). These maps show the immediate vicinity of the Noelani School campus as quite rural and undeveloped with only two to four scattered houses up to WWII. Of particular note on the 1919 map (Figure 14) is a stone wall configuration immediately south of the present Noelani Elementary School campus that has been suggested to be the ruins of Hipawai Heiau.

After the attack on Pearl Harbor in 1941, the Mānoa War Housing was constructed to house the flood of military and civilian defense workers who came to O‘ahu. This housing ran from the east side of East Mānoa Road, across Woodlawn Drive and as far *mauka* (inland) as Kahaloa Drive (Bouslog et al. 1994:141). These were mostly duplex units on 55 by 68 foot lots spaced 50 feet apart providing housing for about 4,000 people. One unit could be built in 45 days. A 1954 aerial photograph (see Figure 19) shows this massive WWII housing project which is believed to have covered the Noelani School campus. The 1956 Army Map Service map (Figure 18) indicates that Woodlawn Drive had been extended along the north side of Noelani Elementary School and that a V-shaped road ran through the campus. This V-shaped road is believed to have been of short duration servicing the Mānoa War Housing complex (see Figure 19). It appears likely the entire Noelani Elementary School campus was graded level for the Mānoa War Housing complex serviced by this road. These Mānoa War Housing barracks were quickly constructed and quickly demolished following the end of the war. In 1956 the houses began to be torn down, due to protests from other residents in the area, although Bouslog et al. (1994:141-142) note that:

A school with 18 wooden classrooms serving 706 students and a community center that had both been part of the housing project were eventually used in 1962 by the new Noelani School. . . . In 1964, the wooden buildings were replaced with fireproof concrete classrooms

The 6,500 square feet Mānoa Public Library was completed in 1966. The building, designed by architect Louis Purcell, is constructed with lava rock walls and a metal mansard roof (Bouslog et al. 1994:143).

In 1967 Noelani Elementary School greeted its most famous alumnus with the enrollment of future President of the United States and Nobel Peace Prize winner, Barack Obama, in Miss Sakai’s Kindergarten Class (Figure 20). It is unclear at this time whether this association will influence future historic preservation considerations for the campus.

The core area of the University of Hawai‘i at Mānoa was expanded in 1968, when approximately 30 acres were obtained near the Mānoa Library. This land was developed in 1975 for the present Astronomy Institute at 2680 Woodlawn Drive.

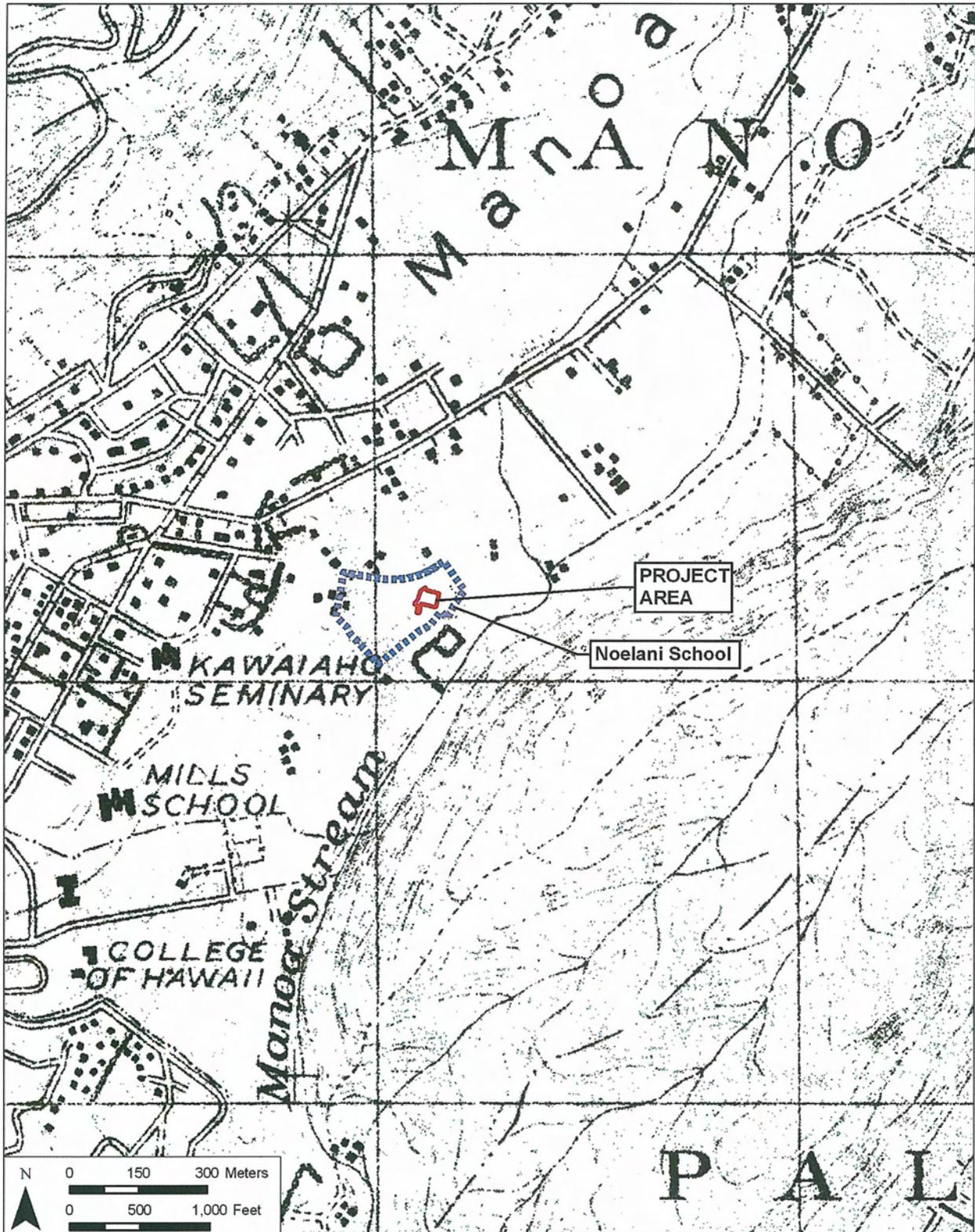


Figure 14. 1919 Army Corp Fire Control Honolulu Quad map showing vicinity of project area

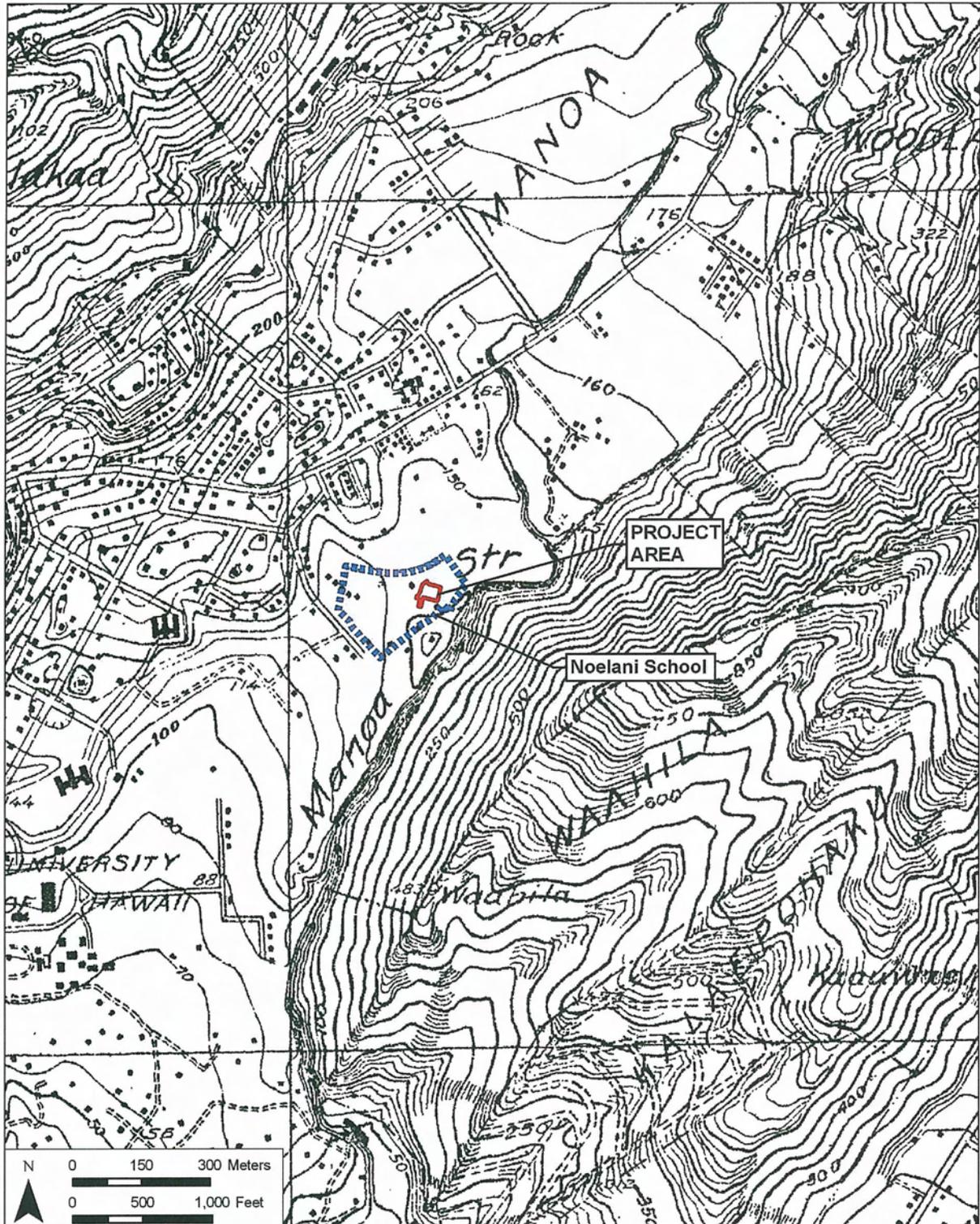


Figure 15. 1927 U.S. Geological Survey Honolulu Quad map showing vicinity of project area

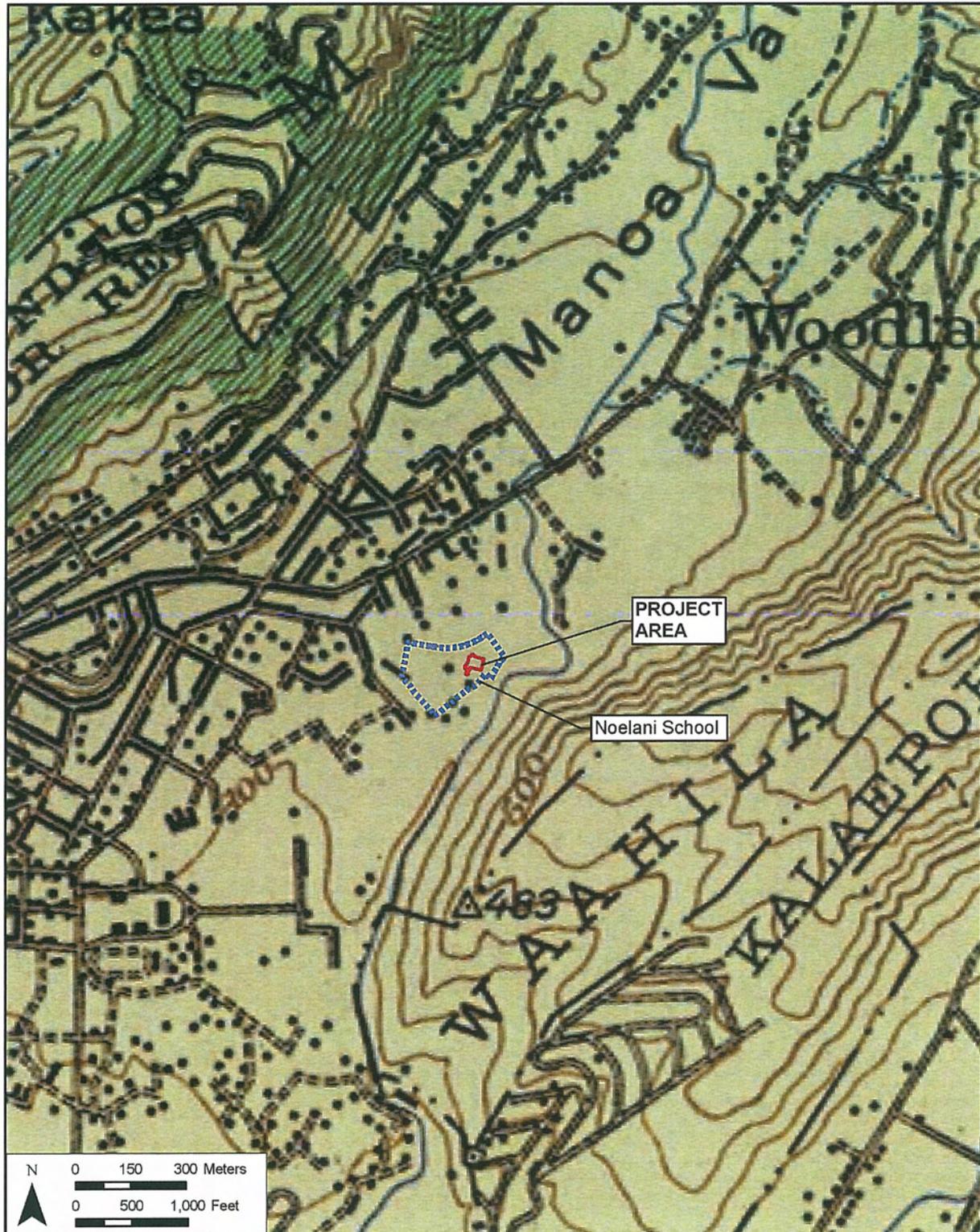


Figure 16. Portion of 1938 U.S. Geological Survey Oahu Island map showing vicinity of project area

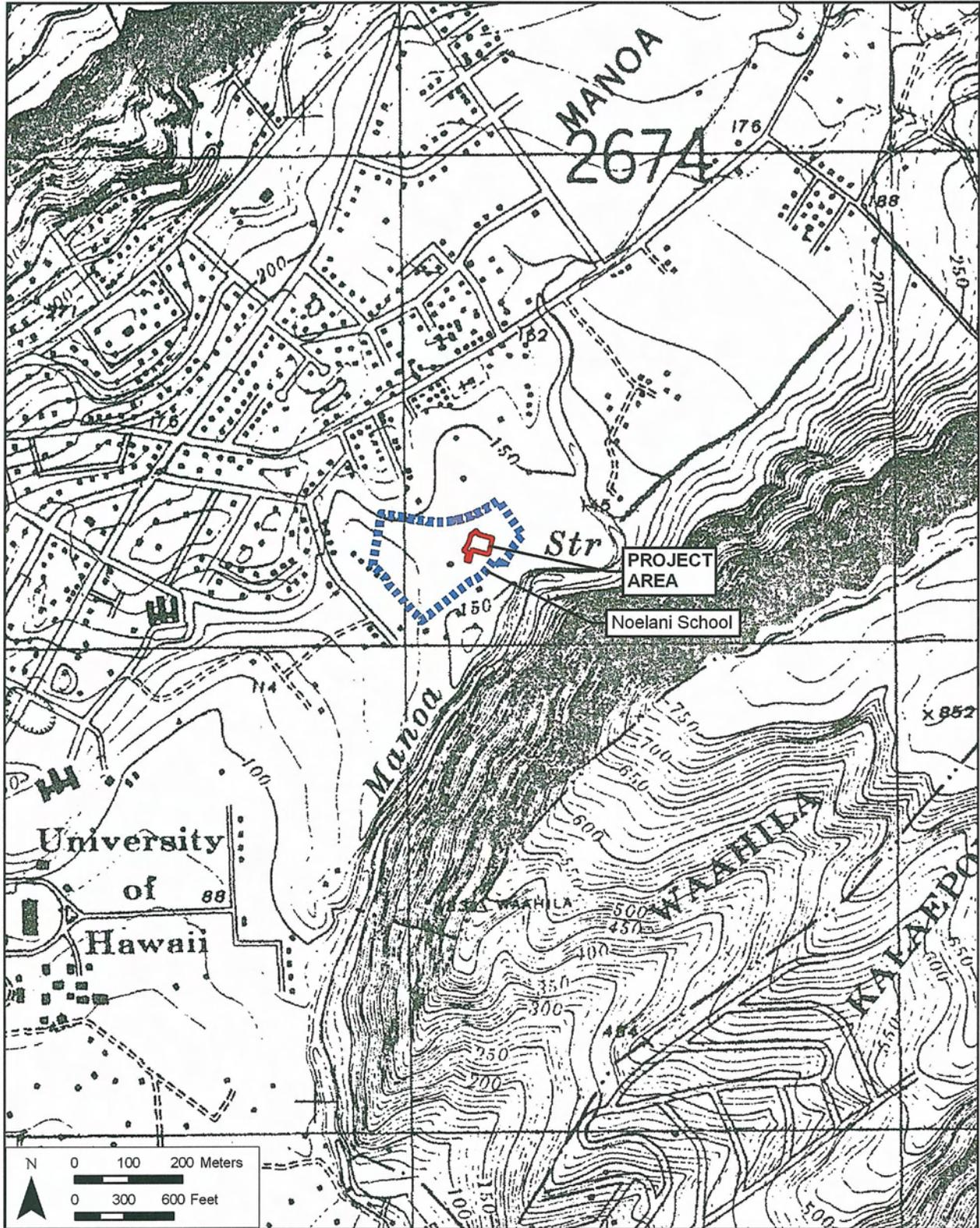


Figure 17. Portion of 1943 War Department map showing project area and its vicinity

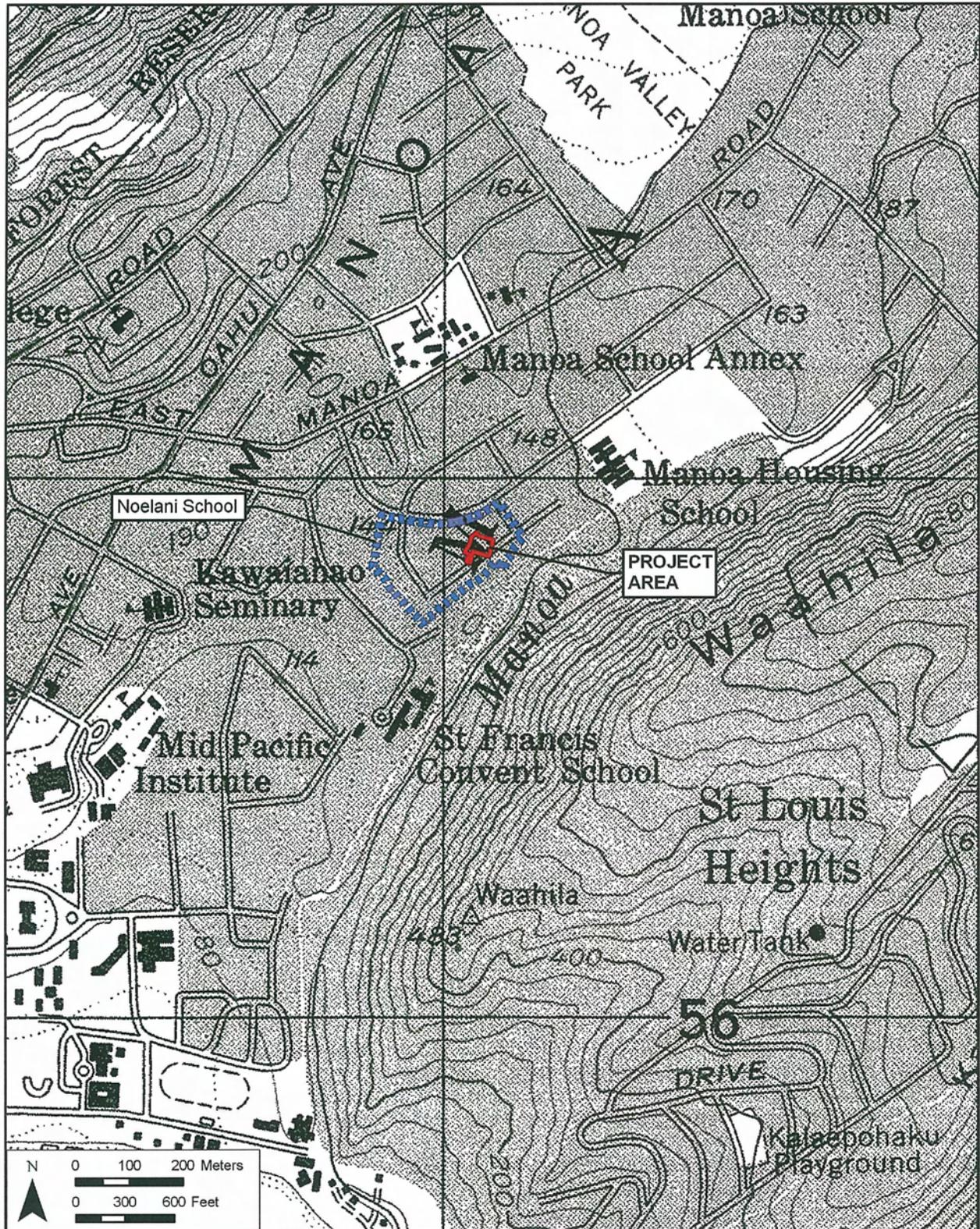


Figure 18. 1956 map showing vicinity of project area

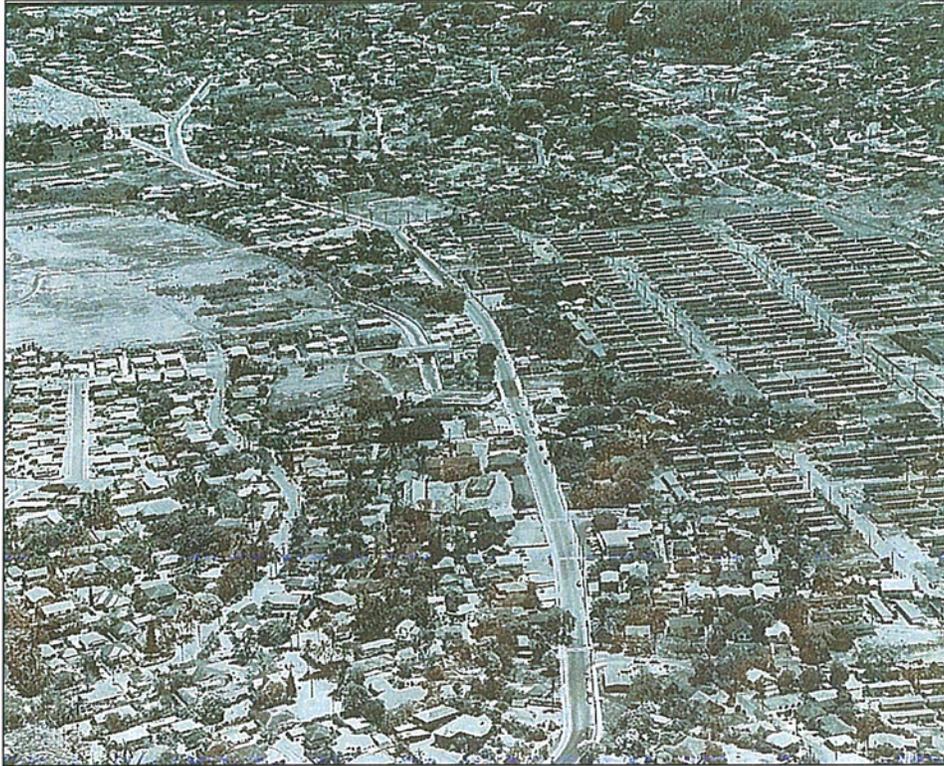


Figure 19. 1954 Aerial photograph (adapted from Bouslog et al.1994:142) showing extensive complex of Military “Housing Project” (East Mānoa Road at center, Woodlawn Drive at right, Kolowalu Road at bottom right, Noelani Elementary School just off photo at lower right)



Figure 20. Miss Sakai's 1967 Kindergarten Class of Noelani Elementary School showing the school's most illustrious alumnus to date - future POTUS and Nobel Peace Prize winner Barrack H. Obama

Section 4 Mānoa Previous Archaeological Research

The first recording of information regarding archaeological sites of Mānoa was by Thomas G. Thrum in his informal study of Hawaiian *heiau*. It was presented in a number of short articles in his *Hawaiian Annual* between 1892 and 1909. Thrum (1907a, b) briefly described five *heiau* in Mānoa. In the early 1930s, McAllister (1933) reprinted this information in his *Archaeology of O'ahu*. McAllister could relocate only one of these *heiau*, Kūka'ō'ō Heiau, which he mapped and described in more detail.

Emma Nakuina (1907:24) also describes a *heiau*, named Kaulaa, and a sub-*heiau*, named Kauwalomalie, on the site of the Mid-Pacific Institute near Wailele Spring (possibly in the 'ili of Kauwala'a). These *heiau* were not listed by Thrum in his report on O'ahu *heiau*, but may be mentioned in a different article by Thrum (1892:112) that lists forts built by the high *ali'i* Kūali'i, who built "a system of heiaus, extending from Mauoki, Puahia-luna and lalo, Kumuohia, Kaulaa, Wailele, and one or two other points between Kaulaa and Kukao'o."

The possible locations of these six *heiau*, and place names associated with them mentioned in their descriptions, are shown in Figure 21. This figure is a modern O'ahu street map, with an overlay of the outline of the 1882 E.D. Baldwin map of Manoa Valley (see Figure 21). The overlay was created by lining up several major peaks (Round Top, Makani, and Wa'ahila) plotted on both maps; however, since this is a comparison of one map created in the nineteenth century and a more exact map created in the twentieth century, the correlation between the two maps may not be exact.

4.1 Heiau of Mānoa

4.1.1 Kūka'ō'ō Heiau

According to legend, six *heiau* on the island of O'ahu were built by the *menehune*, but only one, Kūka'ō'ō Heiau, was built for their own use (Luomala 1951:20). According to legends, the *menehune* built a fort and a temple at Kūka'ō'ō, a place above (*mauka*) the hill called Pu'u Pueo (Westervelt 1963:131). They were driven away from their fort by the high chief Kūali'i during his reign (sometime in the 1700s). Kūali'i rebuilt it after his seizure of the fort.

In 1892, Thrum described this still-standing *heiau* of Kūka'ō'ō on the hill called 'Ulumalu.

A few hundred feet from the house, on a vast rock pile, still stands a walled enclosure known as the *heiau* of Kukao, now overgrown with lantana and night blooming cereus. This old heathen temple dates back many hundred years. Its erection is credited to the Menehune's—or class of pigmies—but was rebuilt during the reign of Kualii [c. A.D. 1700s], who wrested it from them after a hard fought battle. The Menehune's fort was on the rock hill, Ulumalu, on the opposite side of the road, just above Kukao. Previous to the battle, they had control of all upper Manoa (Thrum 1892:112).

McAllister located the *heiau* during his inventory of O'ahu in the early 1930's. He described it as a small *heiau* 50 by 40 feet high "built on a natural elevation about 30 feet high. There

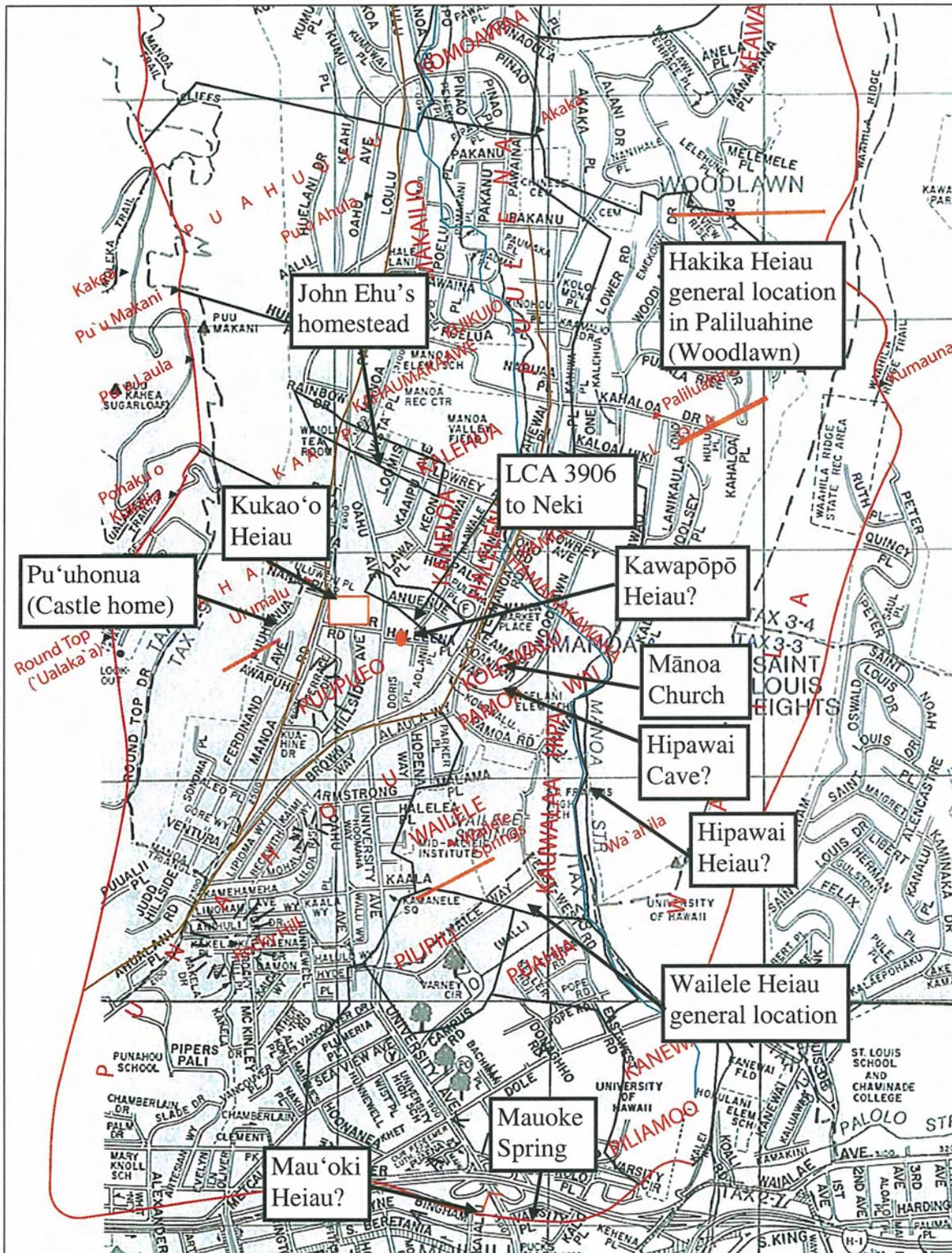


Figure 21. Overlay of 1882 E.D. Baldwin map of Mānoa Valley on modern street map, showing possible *heiau* locations

remain a small inclosure and two terraces to the west” (McAllister 1933:79). He located the *heiau* on the premises of the residence of C. M. Cooke, Jr.

This *heiau*, which is still standing and located at 2859 Mānoa Road, has been recorded during several subsequent archaeological surveys (Kennedy 1991, Cleghorn and Anderson 1992, Tomonari-Tuggle 1998). Various portions of the *heiau* have been recorded in TMK 1-2-019: 035, 036, and 043, in a large area between Mānoa and O‘ahu Roads and *mauka* of Cooper Road. In addition, a burial has also been recorded from 2859 Mānoa Road (Jourdane 1994). Although there is no confusion over the present-day location of the *heiau*, there is some confusion over the number of structures, the name of the surrounding area, and the name of the hill on which the *heiau* and/or fort was built. Given the *heiau* or *heiau* complex lies two kilometers away, the details need not concern us here.

4.1.2 Kawapōpō Heiau

Upper Manoa, on premises formerly of Haalilio; a small *heiau* said to have been torn down prior to 1850 (Thrum 1907:45).

McAllister (1933:80) could not relocate this *heiau*.

Margaret Luscomb (1975) conducted an inspection of the Marezki property on 2626 ‘Ānuenue Street. This property was a portion of Grant 638 to Hana Haalilio and K. Neki (LCA 3906) Royal Patent 6502, signed by Lunalilo. The native testimony for this award was presented above in the discussion of Kūka‘ō‘ō Heiau. Luscomb recorded a raised platform, 7 by 6.5 m on the property. Since this structure was on Ha‘alilio’s land, Luscomb concluded that this platform might be Kawapōpō Heiau. One problem with assigning this structure as Kawapōpō Heiau is that Ha‘alilio was granted other lands in Mānoa, before the *Māhele*, and the location given by Thrum may refer to these other lands. Because of Thrum’s imprecise location and the fact that McAllister could not relocate Kawapōpō Heiau, it is impossible at this time to determine whether Luscomb correctly identified the structure on the Metzinger property as Kawapōpō Heiau. The posited location is far from the Noelani Elementary School.

4.1.3 Hakika Heiau

Paliluahine, east side of valley.-A round *heiau* of not large size. Foundations now barely traceable [Thrum 1907a:45].

McAllister (1933:80) could not relocate this *heiau*, but according to Thrum’s description, it was on the east side of the valley, in the area called Paliluahine (near the modern-day suburb of Woodlawn). On the 1882 Baldwin map there is a peak labeled Paliluahine; therefore, the *heiau* was probably in this general location, but the specific location is not known.

4.1.4 Hipawai Heiau

Of the five *heiau* in Mānoa, Hipawai Heiau is within the closest proximity of the project area. Additionally, Hipawai Cave (see below) was located adjacent to the project area.

Thrum described Hipawai Heiau as:

Makai of Church, Manoa.-Of large size and pookanaka class, partly destroyed many years ago, then used as a place of burial. Remaining walls subsequently torn down [Thrum 1907a:45].

This *heiau* was possibly described in 1823 by Levi Chamberlain, when he and other missionaries came to inspect a lot of three acres given to them by the Hawaiian government. The official report of the Sandwich Island Mission described the structure as:

On one side of this secluded valley they visited an old *heiau* or place of worship of Kamehameha's time, consisting now simply of a stone wall enclosing a small area about 20 feet square [cited in Bouslog et al. 1994:12].

In his own journal for June 6th, 1823, Levi Chamberlain described in more detail "the ruins of a moreai [heiau]" as:

It was a regular wall built of loose stones about twenty four feet square from three to four feet high on the inside & from two and an [sic] half to three feet in thickness. On the north the outer side of the wall was much higher owing to a declivity at the foot of which were a few *kou* trees. The tall grass within and around was an evidence that it is a long time since it had been frequented for the purpose of superstitious ceremonies. It is probably fifty years since it was erected [cited in Bouslog et al. 1994:11-12].

The Mānoa Church was built in 1846 as an '*āpana* (branch) of the Kawaiha'ō Church. A newspaper article says that Hipawai Heiau was torn down in 1819 and some of the stones were used to build the rock foundation of the Mānoa Congregational Church, a building which replaced the Mānoa Church in 1935. Some stones may also have been used in the Mānoa Hawaiian Cemetery. A new church was built in 1968 on nearby Huapala Street, and the old building, on 2833 E. Mānoa Road, was used to house the Mānoa Valley Theater (Williams 1980:1).

Hipawai is also the name of a cave.

There is a large underground cavern with much of the water of Manoa passing through it under the area of Woodlawn Drive where the new (1975) astronomy building of the University is. People went down into the cavern in former times [Mary Pukui, cited in Sterling and Summers 1978:287].

The former location of the 1846 Mānoa Church (seemingly referenced above by Thrum in 1907) is plotted on the 1882 Baldwin map (see Figure 21). The present day location of the astronomy building of the University of Hawai'i, and thus the possible location of Hipawai Cave, are just across Woodlawn Drive from Noelani Elementary School.

Hipawai Heiau was reported by Thrum as *makai* of Mānoa Church. In 1968, Francis Ching recorded a rock mound, two to three feet high, 30-40 feet long, and 18 feet wide, with some remaining facing on the *makai* side. A platform was also present on the *makai* side. This *heiau* was located on the Magoon property on land donated to the University of Hawai'i. Ching identified this structure as a possible *heiau*, but did not suggest a name for the structure. Ching also stated "I was also told that there was another site similar to the one discovered a little further *makai*" (Ching 1968:1).

In 1988, a field check was conducted at the St. Francis High School campus (TMK 1-2-9-04:01), which is *makai* and adjacent to the northeastern corner of the campus (Kawachi 1988a). Carol Kawachi recorded several walls and terraces in this area, but the place was heavily vegetated. An inventory of the features was not made, and no map was drawn. Kawachi also reported on a 1908-1909 military map that showed a *heiau* in the general area. She then suggested that this *heiau* could be the same as the one recorded by Ching on the Magoon property, but, since Ching did not give the TMK of the parcel he investigated, it was difficult to determine the exact location of this structure. According to a Land Court Map of 1926, Magoon once owned property in several locations, including upstream of the St. Francis campus.

The exact 1908-1909 military map referred to by Kawachi could not be determined, but a 1908-1913 Corps of Engineers map (see Figure 14) does show an L-shaped structure *mauka* and upstream of the St. Francis campus. This map was made before the construction of the high school, which was founded in 1924 by the Franciscan Sisters of the Third Order. Although this structure is not labeled as a *heiau*, it may be the structure recorded by Ching, and may be Hipawai Heiau (the square enclosure on the northeast side roughly fits Levi Chamberlain's account of the *heiau*, or a portion of the *heiau*, being "twenty four feet square." A further confirmation of this attribution can be found on the 1882 Baldwin map the area where this L-shaped structure would be on this map (*mauka* of St. Francis High School) is in the 'ili named Hipawai (*lit.* water foolishness). In fact, the street just southeast of Noelani Elementary School is called Hipawai Place, which was "named for an O'ahu land section" (Budnick 1989:43). The study area is approximately 50 m northwest of the posited location of Hipawai Heiau.

4.1.5 Mau'oki Heiau (Kamō'ili'ili Heiau)

Mau'oki was a *heiau* of the *pō'okanaka* type (large *heiau* for the paramount chief of the district or island). The *heiau* was described by Thrum (1907:44) as:

It is said to have been of traditional Menehune construction with stones brought one by one from Kawiwi, Waianae. It was a *heiau* of good size, walled on three sides and open to the west that stood at the foot of the slope dividing the Manoa and Palolo valleys, Kamoiliili.

Thrum also referred to this *heiau* as the Kamō'ili'ili Heiau.

Kamoiliili. Heiau and luakini [sacrificial heiau]; erected according to tradition by Menehunes with stones from Kawiwi Waianae. Torn down about 1883 by the Minister of Interior for street work (Thrum 1907:44).

According to Thrum, the *heiau* was in Mō'ili'ili, at the border of the *ahupua'a* of Mānoa and Pālolo. According to C. S. Stewart (Sterling and Summers 1978:279), Mau'oki Heiau was located possibly at the junction of Wai'alae Avenue and Third Street, which would place the *heiau* just south of Chaminade University in the *ahupua'a* of Pālolo. McAllister also located the *heiau* (Site 62) in Pālolo Ahupua'a, just *mauka* of Site 61, the Mō'ili'ili petroglyphs.

On an 1883 survey map by S. E. Bishop (Reg. Map no. 1234 traced by E. Kealoha in 1958), a structure labeled "heiau" is shown near a feature labeled "Mauoke Spring," both of which are *mauka* of "Moiliili Road" and King Street (along the present day alignment of Wai'alae Avenue) in the 'ili of Pa'akea. In a comparison of this map with the 1882 E. D. Baldwin map of Mānoa

Valley, this location is south of the *'ili* of Pilipili and west of the *'ili* of Kānewai (the present day athletic field for the University of Hawai'i at Mānoa). If the pictured *heiau* is Mau'oki Heiau (as suggested by its proximity to "Mauoke Spring"), then Mau'oki Heiau was actually once located much farther west than Chaminade University, near the *makai* border of Mānoa Ahupua'a (south of the University of Hawai'i) rather than near the *makai* border of Pālolo Ahupua'a (south of Chaminade University).

This location seems to be near the Mō'ili'ili Quarry, but the correlation of the 1882 map and the modern map is probably not exact. This also means that the agricultural *heiau* noted by Dr. Bordner near the Mō'ili'ili petroglyphs may be a different *heiau* than the *luakini* (sacrificial) *heiau* of Mau'oki. It is also possible that Mauoke spring was another name for Kumulae Spring, an ancient legendary pool that is associated with the extensive karst caves of Mō'ili'ili.

4.2 Early Archaeological Surveys of Mānoa Valley

In J. Gilbert McAllister's island wide archaeological survey (1933), he recorded five sites in the vicinity of Mānoa including Site 61 petroglyphs, Mō'ili'ili, Site 62 Mau'oki Heiau, Site 63 Hipawai Heiau, Site 64 Kūka'ō'ō Heiau, and Site 65, which seems to refer to the whole valley.

Under McAllister's Site 65, "Mānoa Valley," he discusses "Pu'uhonua Heiau," the sweet potato fields of Pu'u Ualaka'a, Thrum's sacred stone, a cave on the east side of Mānoa Valley, which Westervelt (1904:2) associates with Kamehameha the Great, and the Kawapōpō and Hakika Heiau. Little new information is presented regarding the other sites.

Other early site designations in Mānoa included the Bishop Museum's designation of the former home of Queen Ka'ahumanu, "Pukaomaomao," in upper Mānoa as Site 405 and the designation of a complex of agricultural terraces in extreme northern Mānoa Valley (State Site #50-80-14-3953).

4.3 Post 1960 Surveys of Mānoa Valley

Between 1963 and 1990 there were at least thirteen other archaeological studies in the Mānoa area, which are summarized in Figure 22, Figure 23, and Table 2. Of particular interest is the identification of a total of 26 presumed pre-contact burials from seven other areas (Sites 3743, 4038, 4134, 4191, 4266, 7056 and the Koana Cave Site). The oldest report of burials in the Mānoa area of which we are aware concerns the discovery of human bones in a cave site located approximately 50 m *mauka* of the Dole Street burial site (4266). This cave is almost certainly the "cave called Koana" on a 1916 Podmore map. A neighboring resident informed us that she had taken human skeletal remains discovered in the cave to the B.P. Bishop Museum (she thought it was in 1953), and that subsequently archaeologists from the Museum had visited the cave and indicated that they felt the site had little potential. The Bishop Museum has no record of such a visit; however, they have an accession of an adult female crania (osteological catalogue #2863) dated 7/10/1964 from St. Louis Heights, O'ahu giving a person with the same last name (different first initial) as the source. Typically a Museum archaeologist would have investigated such a discovery. A habitation or burial function of the cave is suggested by one possible translation of *ko'ana* – "to stay or settle in one place, as people" (Pukui and Elbert 1986:157).

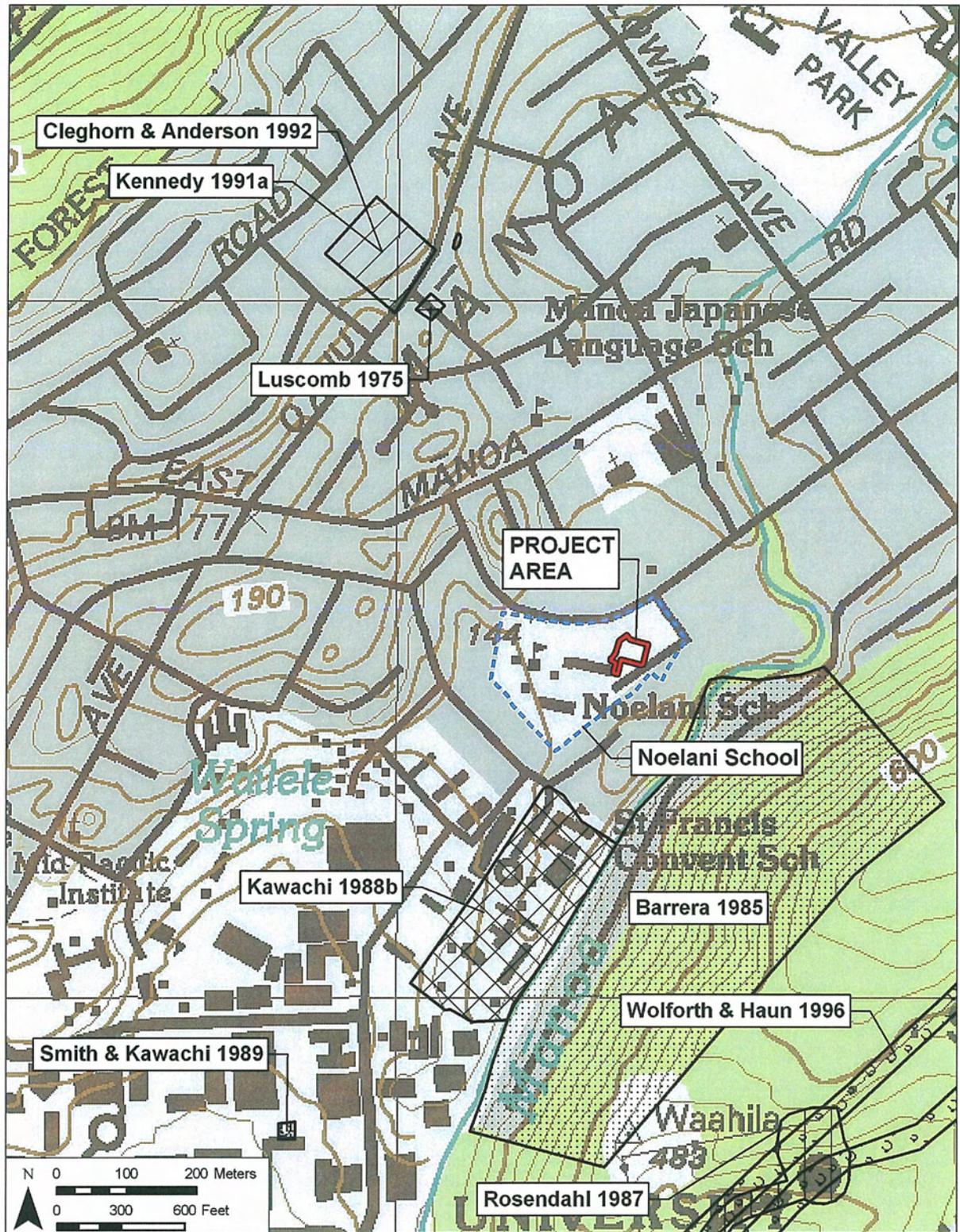


Figure 22. Portion of U.S. Geological Survey (1998), Honolulu quad, showing previous archaeological studies in the vicinity of the project area

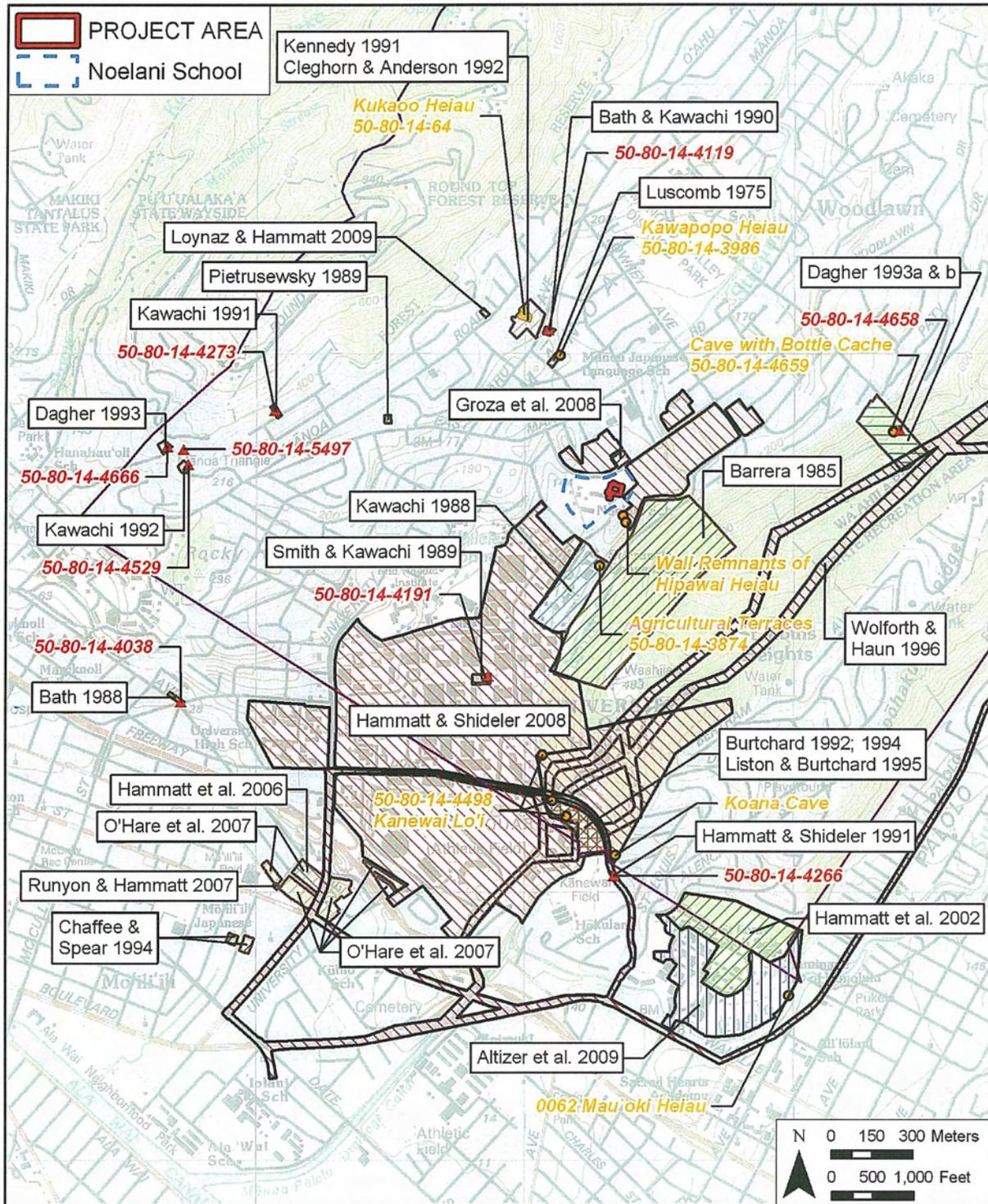


Figure 23. Previously identified archaeological sites in Mānoa Ahupua‘a (project areas with no identified sites are denoted by author and year of report)

Table 2. Previous Archaeological Investigations in Mānoa Ahupua'a

Reference	Type of Investigation	Site 50-80-14-	Findings
Thrum 1907a, b	Heiau Study	0063, 0064	Briefly describes Hipawai Heiau, Kūka'ō'ō Heiau (rebuilt around 1700), Kawapōpō Heiau reportedly destroyed at the time
McAllister 1933	Island-wide Survey	0063, 0064 0065	McAllister repeats Thrum's description and adds new information Designates Mānoa Valley as Site 65.
Soehren 1963	Field Notes	3953	Notes in B.P.B.M. files on agricultural terraces
Bishop Museum (Bowen?) 1964	Field notes		Visited Koana cave in response to discovery of human remains. No report.
Ching 1968	Reconnaissance Survey	3874	Survey of sites on the Magoon Property given to the Univ. of Hawai'i. Site (3874) probably located near St. Francis High School grounds; possibly a pre-contact agricultural <i>heiau</i> .
Luscomb 1975	Inspection Report	3986	Examination of site at 2626 'Ānuenue St., probably Kawapōpō Heiau
Barrera 1985	Survey and Testing		No sites reported in project area within the Mānoa Hillside Subdivision.
Rosendahl 1987	Reconnaissance Survey		No sites found at the Wa'ahila Reservoir Project Area.
Smith 1988a	Site Description	1170	Description of previously identified Mānoa mound complex site
Smith 1988b	Site Description, Reconnaissance	3726	Inspection of Pu'u Pia trail alignment. Description of a new site with a platform and mound.
Bath & Smith 1988	Burial Removal	3743	Burial removal from 2034 Round Top Drive
Kawachi 1988b	Field Check	3874	Field check of walls and terrace facings; St. Francis High School grounds may be location of a <i>heiau</i> shown on 1909/10 military map
Bath 1988	Burial Removal	4038	Burial removal from 2030 Wilder Ave. at Circle K convenience store.
Bath et al. 1988	Burial Removal	4134	Burial removal from 2030 A Makiki St. (site 50-80-14-4134)
Pietrusewsky 1989	Burial Report		Cremated dog and cat remains found at 2462 Mānoa Rd, no site number assigned to burial.
Bath & Kawachi 1990	Burial Report	4119	Inadvertent discovery of human skeletal remains on O'ahu Avenue
Smith & Kawachi 1989	Burial Report	4191	Burial Removal Near Keller Hall on the campus
Douglas 1990			
Hammatt and Shideler 1991	Burial Report	4266	18 human skeletal remains found on Dole Street, C14 dating, perhaps a village cemetery; includes osteological analysis.
Kawachi & Douglas 1991	Burial Report	4273	Burial found at Lower Mānoa, 2414 Sonoma St; includes osteological analysis.

Kennedy 1991	Arch. Investigation	0064	Investigation of Kūka'ō'ō Heiau
Burtchard 1992a	Data Recovery	4498	Letter to Tom Dye regarding test trenches at Kapapa <i>lo'i</i> Kānewai.
Burtchard 1992b	Testing		Letter report on trenching conducted to mitigate adverse effects of Hawaiian Studies Institute construction at Kapapa <i>lo'i</i> Kānewai
Cleghorn & Anderson 1992	Inventory Survey	0064	Inventory Survey of Kūka'ō'ō Heiau and Preservation Plan
Fager & Graves 1992	Inventory Survey		No sites found at prospective well site project area
Grune 1992	Archaeological Synthesis		Synthesis of sites in Mānoa Valley
Kawachi 1992	Burial Report	4529	Inadvertent discovery of human remains at 1908 Judd Hillside Road
Pietrusewsky 1992			
Chaffee & Spear 1993	Archaeological Assessment		No sites located at 2 Vancouver Drive lots; Vacant lots, some evidence of 1900s house foundations and walkways on surface.
Dagher 1993a	Burial Report	4658	Inadvertent discovery of cave containing multiple burials in Mānoa Valley.
Dagher 1993b	Site description	4659	Historic bottle cache found in Mānoa Valley Cave
Dagher 1993c	Burial Report	4666	Discovery of human skeletal remains at 2048B Ualaka'a Street
Dixon 1993	Reconnaissance Report		Absence of cultural remains at proposed Board of Water Supply well within Mānoa Valley Park, recommended an archaeological monitor be present during construction.
Burtchard 1994	Data Recovery	4498	Institute construction at Kapapa <i>lo'i</i> Kānewai
Jones et al. 1994	Archaeological Monitoring		Archaeological monitoring at the site of the UH School of Architecture. No sites.
Jourdane 1994	Burial Report	0064	Inadvertent discovery of human skeletal remains at 2859 Mānoa Rd
Liston & Burtchard 1996	Site Description, Historic Literature	4498	Paleoenvironmental samples, stratigraphic profiles at Mānoa stream. Pre-contact irrigation system that supported agriculture between A.D. 1443-1681 at Kapapa <i>lo'i</i> , Kānewai
Jourdane 1997	Burial Report	5497	Inadvertent discovery of skeletal remains at Wo/Sullivan House construction, 1908 Judd-Hillside Road. Skeletal remains are of undetermined age and ethnicity
Hammatt & Chigioji 1998	Archaeological Assessment		No sites found on a 2.4 Long portion of the H-1 Highway from the Punahou Street Overpass to Vineyard Blvd. Off-Ramp
Tomonari-Tuggle 1998a	Historical Research	0064	Historical background pertaining to Kūka'ō'ō Heiau
Tomonari-Tuggle 1998b	Historical Research, Arch. Assessment	4498	Recommends subsurface testing or archaeological monitoring at Kānewai for the National Marine Fisheries Service Laboratory
McIntosh & Cleghorn 2007	Archaeological Monitoring		Archaeological monitoring near the site of the UH School of Architecture. No sites.

Shideler and Hammatt 2008	Archaeological Literature Review and Field Inspection Report	1352, 4498, 4191, Koana Cave, and Hipawai Heiau	<p>The following historic properties located within the boundaries of the UH campus have previously been assessed as eligible for the Hawai'i Register of Historic Places: The historic core of the campus (State Inventory of Historic Properties [SIHP] No. 50-80-14-1352), consisting of Hawai'i Hall, George Hall, Dean Hall, Gartley Hall, Crawford Hall, Varney Circle, Founder's Gate, Andrew's Outdoor Amphitheater, Wist Hall and the Pineapple Research Center. These historic structures were added to the HRHP in 1984.</p> <p>Kānewai Cultural Garden (SIHP No. 50-80-14-4498), consisting of modern surface features (irrigation ditches feeding into taro pondfields) overlying centuries-old deposits consistent with a long history of cultivation. It is also important to state the nearby "Dole Street burials" documented by CSH (Hammatt and Shideler 1991) are reburied on the grounds of the Center for Hawaiian Studies.</p> <p>SIHP No. 50-80-14-4191, a traditional-style presumably pre-Contact-era burial discovered during construction activities at Keller Hall (Smith and Kawachi 1991). The following historic properties located within the boundaries of the UH campus have not been previously assessed for eligibility for the HRHP:</p> <p>Koana Cave, which has never received a site number designation, has previously yielded human skeletal remains (accessioned by the Bishop Museum in the 1960s), and probably contains as yet undiscovered historically-significant cultural materials consistent with habitation and / or gardening.</p> <p>Hipawai Heiau, designated by McAllister (1933) as "Site 63," reported as "torn down" earlier by Thrum; CSH archaeologists may have identified a remnant section of stone wall associated with this <i>heiau</i> located just outside the boundaries of the UH property. Additionally, two areas containing possible rockshelters were identified that would require additional testing (controlled archaeological excavations) to more accurately determine whether these possible rockshelters contain any historically-significant cultural materials.</p>
Loynaz and Hammatt 2009	Burial Treatment Plan	11-7056	Human skeletal remains (SIHP No. 50-80-11-7056) were inadvertently discovered during excavation of a footing trench behind existing private residence, 2826 Manoa Rd. Burial context, flexed positioning and absence of historic burial goods, indicates pre-contact or early post-contact origin, an ethnicity determination of native Hawaiian was made.

The six burial sites (3743, 4038, 4134, 4191, 4266, and 7056) were all interpreted as “prehistoric or early historic” (Bath and Smith 1988; Bath and Kawachi 1989; Bath and Kawachi 1990; Hammatt and Shideler 1991; Smith and Kawachi 1989, and Loynaz and Hammatt 2009). With one exception (the Dole Street burials), there were no associated cultural materials with any of these remains, nor was there any chronological dating. The Dole Street burials were associated with three formal artifacts of traditional design and with cultural layers dated to the fifteenth century A.D. (Hammatt and Shideler 1991).

Three of the archaeological studies bear upon *heiau* at Mānoa. Luscomb (1975) may have correctly identified the remains of Kawapōpō Heiau. Ching (1968) and Kawachi (1988a) both discuss possible identifications of a *heiau* on what appears to be two different properties located on the west side of Mānoa Stream just north of University of Hawai'i at Mānoa. It seems highly probable that Hipawai Heiau, where human sacrifices were offered, was in the immediate vicinity of these two study areas, but whether either report indeed describes remains of this temple is not altogether clear. CSH staff recently visited the posited location of the Hipawai Heiau, which was accessed by way of UH's agricultural research facility (the “Magoon Property”), adjacent to Woodlawn Drive near the southern tip of TMK [1] 2-9-023:001. What appears to be a very old remnant of stone wall (i.e., built in the traditional dry-stacked, core-and-fill style) was discovered located just outside of (and abutting) the chain-link fence defining the makai boundary of UH's “Mauka Campus”. There is a good possibility that the main core of this wall remnant dates to pre-contact or early historic times (Shideler and Hammatt 2008).

Kūka'ō'ō Heiau (2859 Mānoa Rd.) was the subject of further study by Tomonari-Tuggle 1998b and There appears to have been no further discussion of the other heiau of Mānoa: Hakika Heiau (near Paliluahine-Chinese Cemetery hill) since McAllister (1933). Other archaeological reports discuss minor agricultural sites or report no sites at all.

Archaeological data recovery was conducted at the Kāpapa Lo'i 'o Kānewai (a.k.a. Kānewai Cultural Garden) in association with construction of the University of Hawai'i Center for Hawaiian Studies building (Liston and Burtchard 1996). The project area was located adjacent to the east bank of Mānoa Stream, immediately *makai* of the Dole St. bridge. The Kāpapa Lo'i 'o Kānewai, designated Site 50-80-14-4498, consisted of a 1.7-acre parcel including active cultivation of taro *lo'i* and native Hawaiian plants. The area had been restored in the early 1980s by a group including community members, University students, and alumni. It was also noted by the Hawaiian Botanical Society that the garden was home to 69 varieties of taro, including 60 native Hawaiian cultivars (Fenstemacher 1989). Controversy arose when construction plans would have allowed encroachment into the garden area. Final plans limited disturbance to the recently restored southeastern portion of the garden area. The data recovery work was later conducted in a portion of the *lo'i* area that would be impacted by construction. Backhoe testing revealed evidence of a pre-contact irrigation system and pondfield agriculture. Radiocarbon dating of recovered samples indicated a period of pre-contact usage (A.D. 1443-1681), abandonment, and later reconstruction in the early historic period (Liston and Burtchard 1996).

4.4 Summary of Background Research

The study area consists of the approximately 8.57-acre Noelani Elementary School campus (focusing on a 0.5 acre project area in the east, central portion of the campus) located in Mānoa [Waikīkī] Ahupua'a, Kona District, Hawai'i. While no historic properties were located within the project area, documentary evidence indicates that the project area lies within a patchwork of traditional Hawaiian occupation within Pamoā and Hipawai 'Ili that included habitation sites, and taro *lo'i*. The nearest identified burials (Smith 1989, Bath and Kawachi 1990, Loynaz and Hammatt 2009) appear to lie at a distance of more than 500 m.

Especially relevant to the present project area are Hipawai Heiau and Hipawai Cave. Hipawai Heiau was designated by McAllister (1933) as "Site 63," that is, SIHP No. 50-80-14-63. Human sacrifices were offered at Hipawai Heiau and Thrum's comments, made approximately 100 years ago (see Sterling and Summers 1978:286), are instructive: "...partly destroyed many years ago, then used as a place of burial". CSH staff recently visited the posited location of the Hipawai Heiau, which was accessed by way of UH's agricultural research facility (the "Magoon Property"), adjacent to Woodlawn Drive near the southern tip of TMK [1] 2-9-023:001 and approximately 120 m south of the proposed playcourt project area. What appears to be a very old remnant of stone wall (i.e., built in the traditional dry-stacked, core-and-fill style) was discovered located just outside of (and abutting) the chain-link fence defining the *makai* boundary of UH's "Mauka Campus". There is a good possibility that the main core of this wall remnant dates to pre-contact or early historic times (Shideler and Hammatt 2008).

Hipawai Cave is a posited large underground cavern beneath the UH Astronomy Institute on Woodlawn Drive. "People went down into the cavern in former times" (Mary Pukui, cited in Sterling and Summers 1978:287).

The project area has been previously disturbed by the construction of the World War II era Mānoa War Housing and more recently by phases of construction of the school itself in the mid 1960s.

Archaeological studies have recorded the presence within Mānoa of subsurface historic properties – including cultural deposits and human burials – of both pre-contact Hawaiian and post-western contact provenance. These deposits had remained intact despite the years of construction activity that have altered the entire Mānoa area.

Due to the presence of several (*kuleana*) Land Commission Awards in the immediate vicinity, a major *heiau* in close proximity, and accounts of a fabulous cave system in very close proximity, it is possible that intact pre-contact and early contact cultural deposits associated with Hawaiian habitation, work and recreation are lying undisturbed beneath relatively shallow modern fill layers within the project area. Other cultural deposits, including historic trash pits, associated with late nineteenth century and mid-twentieth century residential sites may also be present.

Section 5 Results of Field Inspection

A field inspection was made on July 6, 2010 of the Noelani Elementary School proposed playcourt project area by David W. Shideler, M.A. under the overall supervision of Hallett H. Hammatt, Ph.D. The project area was approached from Woodlawn Drive and the main entrance to Noelani Elementary School (Figure 24 and Figure 25). The proposed playcourt area and proposed covered walkway area were observed to be in a short grass lawn, and quite flat, with indications of having been previously graded (Figure 26 to Figure 30). No indication of cultural resources and no stones as may have related to prior constructions were observed. No perturbations of the land (such as linear swales relating to former *'auwai*) were observed.

A brief inspection was made of the posited vicinity of the former Hipawai Heiau approximately 120 m south of the proposed playcourt project area (Figure 30 to Figure 33). The posited vicinity of the former Hipawai Heiau was accessed by way of an eastern arc through the University of Hawai'i agricultural research station (the former Magoon Estate). The posited location of the former Hipawai Heiau is on private property and was not accessed. Stacked boulder walls observed (Figure 31 and Figure 32) in the posited location of the former Hipawai Heiau are suggested to relate to the former *heiau* – although they may well have been re-worked in post-Contact times for agricultural and/or land ownership demarcation purposes. The estimated distance from Hipawai Heiau, a temple of human sacrifice to the Noelani Elementary School proposed playcourt project area is 120 m as the crow flies.

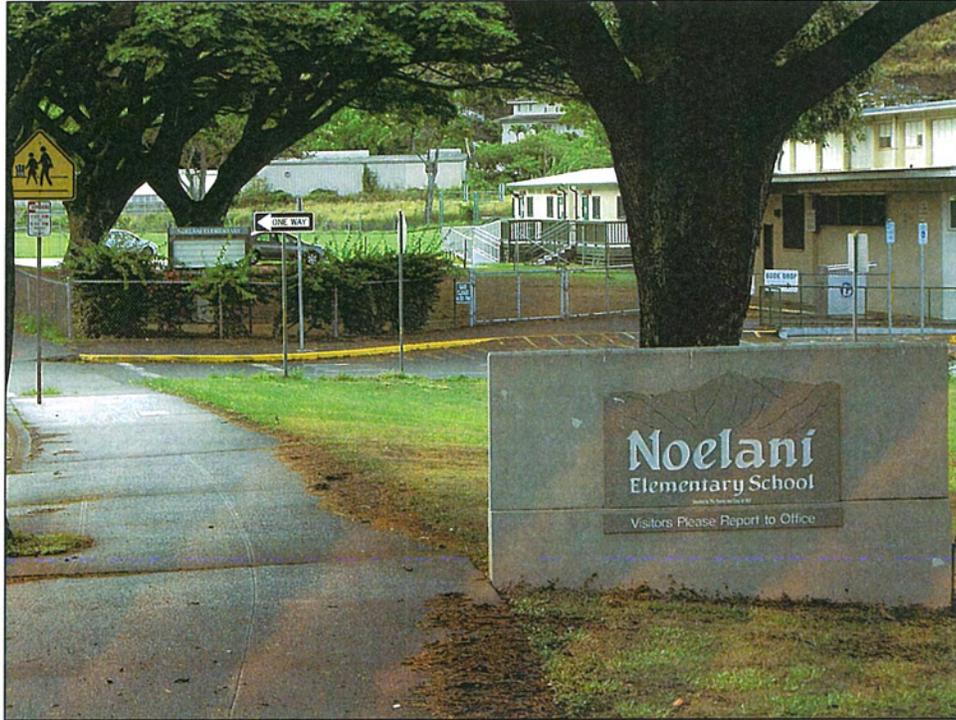


Figure 24. View from entrance to Noelani Elementary School towards proposed playcourt project area (left, background), view to southeast



Figure 25. View from near Woodlawn Drive of proposed playcourt project area, view to south



Figure 26. View of proposed playcourt project area (foreground), existing playcourt in background, covered walkway would be at right, view to south



Figure 27. Close-up of proposed playcourt project area covered walkway, view to south



Figure 28. Proposed playcourt project area (midground, far side of existing ball court), view to north (Institute of Astronomy at center, background)



Figure 29. View of proposed covered walkway area, view to northeast (Institute of Astronomy at center, background)



Figure 30. View of proposed playcourt project area looking toward posited location of Hipawai Heiau, view to southwest



Figure 31. View of stacked boulder wall possibly relating to northwest side of former Hipawai Heiau, view to west



Figure 32. View of stacked boulder wall possibly relating to southeast (Mānoa Stream) side of former Hipawai Heiau, view to southwest

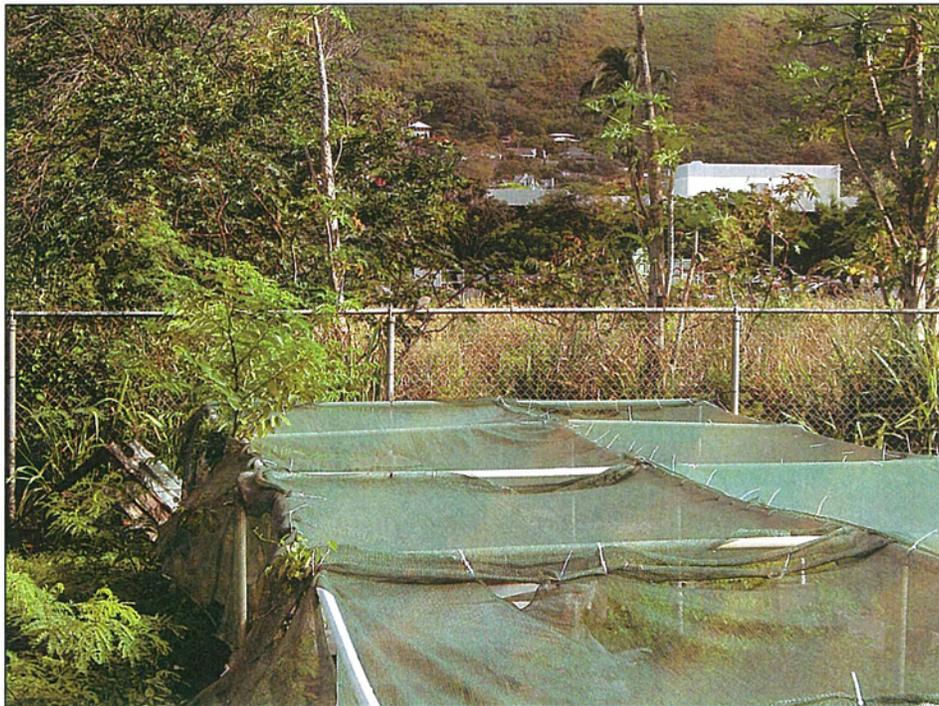


Figure 33. View from just northeast of posited location of Hipawai Heiau towards proposed playcourt project area (Institute of Astronomy at right, background), view to north

Section 6 Summary and Recommendations

Noelani Elementary School is in what was previously a core area of intensive Hawaiian habitation and cultivation. In the mid 1800s the lands of today's Noelani School were part of a quilt of Land Commission Awards and Grants for *lo'i kalo* and habitations (see Figure 11) that may well have been a pattern of centuries previous. A major cultural feature in the immediate vicinity is the former Hipawai Heiau, a Hawaiian temple of human sacrifice that is estimated to have been within approximately 120 m of the project area. Additionally the Hipawai Cave appears to have been within 100 m to 200 m. While there is a low probability of direct evidence of the Hipawai Heiau or the Hipawai Cave being uncovered in the modest playcourt project the close proximity of these sites indicates a higher likelihood of cultural resources in the vicinity.

The need for any further cultural resource management is something of a borderline call. Cultural Surveys Hawai'i recommends for State Historic Preservation Division consideration an archaeological monitoring program for project-related excavations more than 30 cm (1 foot) deep. If there are no early indications of the presence of cultural resources the SHPD should be consulted regarding the monitoring going "on-call."

Section 7 References Cited

Alexander, Mary Charlotte, and Charlotte Peabody Dodge

1941 *Punahou* 1841-1941. Berkeley and Los Angeles, CA.

Armstrong, Richard

1846 Letter in Houghton Library, Harvard University, A.B.C. 19.1, v.12. Letter 26, p.3.

Army Corps of Engineers Fire Control

1908-1913 Army Corps of Engineers Fire Control map, Honolulu.

Baldwin, E. D.

1882 Mānoa Valley, E. D. Baldwin, surveyor.

1883 Honolulu Water Works System map, E. D. Baldwin, surveyor. Hawai'i Land Survey Division, Registered Map No. 1087.

Barrera, William

1985 Archaeological Survey and Testing of Mānoa Hillside Subdivision, Mānoa Valley, O'ahu. Chiniago, Inc., Kamuela, Hawai'i.

Bath, Joyce

1988 Circle K Burial Call, Manoa, Honolulu District and O'ahu, TMK 2-08-17:7. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Bath, Joyce, and Carol Kawachi

1990 Oahu Avenue Burial Investigation, Manoa, Honolulu, O'ahu Island. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Bath, Joyce, and Marc Smith

1988 Burial Removal at 2034 Round Top Terrace TMK: 2-5-07:43. SHPD, State of Hawaii, Honolulu. [Contains Report "A Human Skeleton from Makiki, O'ahu, by Michael Pietrusewsky and Michele Toomay Douglas]. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Bath, Joyce, Rona Ikehara, and Michael Pietrusewsky

1988 Circle K Burial Coll., Manoa, Honolulu District, O'ahu (2030 Wilder Avenue), TMK 2-08-17:7. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Beasley, T.D

1899 O'ahu Island map compiled by T. D. Beasley.

Bishop Museum (Bowen, R.?)

1964 Koana Cave Visit. Bernice P. Bishop Museum, Honolulu, Hawai'i.

Bouslog, Charles, and other Mānoa Valley Residents

1994 Mānoa, The Story of a Valley. Mutual Publishing, Honolulu, Hawai'i.

Burtchard, Greg

- 1992a Letter: Completion of Archaeological Data Recovery at Kapapa Lo'i Kānewai, Waikīkī, Kona, O'ahu. International Archaeological Research Institute Inc., Honolulu, Hawai'i.

Burtchard, Greg

- 1992b Letter: Backhoe Trench Placement and Schedule for Data Recovery at Kapapa Lo'i o Kānewai. International Archaeological Research Institute Inc., Honolulu, Hawai'i.
- 1994 Completion of Phase II Archaeological Data Recovery Fieldwork, Center for Hawaiian Studies, UH at Mānoa. International Archaeological Research Institute Inc., Honolulu, Hawai'i.

Chaffee, David, and Robert L. Spear

- 1993 An Archaeological Assessment of Two Vancouver Drive Lots in Manoa Valley, Waikiki, O'ahu, Hawai'i [TMK: 2-8-16:27,29]. Scientific Consultant Services, Inc., Honolulu.

Ching, Francis

- 1968 Archaeological Sites Located on the Magoon Property Given to the University of Hawai'i. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

City and County of Honolulu

- 2000 City and Co. of Honolulu, Dept. of Planning and Permitting, website: <http://honolulu.org/planning/demographics/cp-toc.pdf>.

Cleghorn, Paul, and Lisa Anderson

- 1992 Archaeological Inventory Survey in Mānoa Valley, O'ahu TMK:2-9-19-36 and Preservation Plan for Kukao'o Heiau. Paul Cleghorn Consulting, Kailua, Hawai'i.

Coulter, John W., and Alfred G. Serrao

- 1932 Manoa Valley, Honolulu, A Study in Economic and Social Geography, Bulletin of the Geographical Society of Philadelphia.

Dagher, Cathleen

- 1993a Historic Bottle Cache in Mānoa Valley Cave (Site 50-80-14-4659), Waikiki, Kona, O'ahu. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.
- 1993b Inadvertent Discovery of Burial Cave Containing Multiple Burials in Mānoa Valley (Site 50-80-14-4658), Waikīkī, Kona, O'ahu. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.
- 1993c Inadvertent Discovery of Human Skeletal Remains at 2048B Ualaka'a Street. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

DeLeon David

- 1978 A Short History of Manoa Valley from 1800 to Present. Manuscript available at the University of Hawai'i at Mānoa, Honolulu, Hawai'i.

Dixon, Boyd

- 1993 An Archaeological Reconnaissance of Five Board of Water Supply Wells on O'ahu, Hawai'i. Anthropology Department, Bernice Pauahi Bishop Museum, Honolulu, Hawai'i.

Douglas, Michelle

- 1990 Osteological Analysis in conjunction with Burial Removal Near Keller Hall, UHM, Honolulu, O'ahu. Site No. 50-80-14-4191, TMK: 2-8-23:3. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Emery, Byron Elwyn

- 1956 Intensification of Settlement and Land Utilization since 1930 in Manoa Valley, Honolulu. Unpublished Master's Thesis, University of Hawai'i.

Fager, Mikele W., and Donna K. Graves

- 1992 Archaeological Inventory Survey Prospective Well Site Project Area. Paul H. Rosendahl, Ph.D. Inc., Hilo, Hawai'i.

Fenstemacher, Ron

- 1989 Status, Problems, and Prospects of the Hawaiian Taro Collection at Kapapa Lo'i 'o Kānewai. Newsletter of the Hawaiian Botanical Society Vol 28 (2) p. 22-26.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens

- 1972 Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, Government Printing Office, Washington, D.C.

Foster, Nelson (ed.)

- 1991 Punahou: This History and Promise of a School of the Islands. Punahou School, Honolulu.

Groza, Randy, David W. Shideler, and Hallett H. Hammatt

- 2008 Archaeological Literature Review and Field Inspection Report for the Mānoa Public Library Expansion and Site Improvements Project, DAGS Job No.12-36-6364, Mānoa [Waikīkī] Ahupua'a, Kona District, O'ahu Island TMK [1] 2-9-023:025. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Grune, Anna Maria Ramirez

- 1992 Archaeological Synthesis of Waikīkī Ahupua'a, Focusing on Mānoa Valley, 'Ili of Waikīkī, Waikīkī, Island of O'ahu, Hawai'i. University of Hawai'i, Honolulu, Hawai'i.

Gulick, Rev., and Mrs. Orramel Hinckley

- 1918 The Pilgrims of Hawaii, Their Own Story of their Pilgrimage from New England and Life Work in the Sandwich Islands, now Known as Hawaii. Fleming H Revell Co., New York.

Hammatt, Hallett H., and Rodney Chiogioji

- 1998 Archaeological Assessment of an Approximately 2.4-Kilometer Long Portion of the H-1 Highway from the Punahou Street Overpass to the Vineyard Blvd. Off-Ramp, Honolulu, Island of O'ahu. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Hammatt, Hallett H., and David W. Shideler (with Michelle Douglas)

- 1991 Archaeological Disinterment of Inadvertent Finds at Site 50-80-14-4266, On Dole Street, Kanewai, Mānoa, Kona District, O'ahu. Cultural Surveys Hawai'i, Honolulu, Hawai'i. [Contains Report "Report on Human Skeletal Remains Recovered from Dole Street, at Kanewai Park, Mānoa, Kona District, O'ahu Appendix A, by Michele Toomay Douglas].

Hammatt, Hallett H., David W. Shideler, and Todd Tulchin

- 2002 Archaeological Assessment in Support of the Kala'iōpua Road Improvements Project. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Handy, E.S. Craighill

- 1940 The Hawaiian Planter, Volume 1. Bishop Museum Bulletin 161, Bishop Museum Press, Honolulu.

Handy, E.S. Craighill, and Elizabeth G. Handy

- 1972 Native Planters in Old Hawaii: Their Life, Lore, and Environment. B.P. Bishop Museum Bulletin 233, B.P. Bishop Museum, Honolulu.

'I'i, John

- 1959 Fragments of Hawaiian History. Bishop Museum Press, Honolulu.

Irwin, Bernice P.

- 1936 In Menhune Land. The Printshop Co., Ltd., Honolulu.

Jones, Bruce, Conrad Erkelens, and J. Stephen Athens

- 1994 Archaeological Monitoring of the University of Hawai'i School of Architecture Construction Project. International Archaeological Research Institute Inc., Honolulu.

Jourdane, Elaine

- 1994 Inadvertent Discovery of Human Remains at 2859 Mānoa Rd., Sam and Mary Cooke Residence, Mānoa, Kona, O'ahu. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.
- 1997 Inadvertent Discovery of Skeletal Remains at Wo/Sullivan House Construction Judd-Hillside. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Kamakau, Samuel Mānaiakalani

- 1976 Ruling Chiefs of Hawai'i. Revised Edition. The Kamehameha Schools Press, Honolulu.
- 1991a Ka Po'e Kahiko. The People of Old. Bishop Museum Press, Honolulu, Hawai'i.
- 1991b Tales and Traditions of the People of Old. Nā Mo'olelo a ka Po'e Kahiko. Bishop Museum Press, Honolulu.

Kawachi, Carol

- 1988a Field Check at St. Francis High School Campus, Mānoa, Honolulu, O'ahu. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

- 1988b Field Check at 2182 Round Top Drive, Honolulu, O'ahu (TMK 2-5-06:14). DLNR, Honolulu. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.
- 1991 Unmarked Burial Under House at 2123 Round Top Drive, Makiki, Kona, O'ahu. TMK: 2-5-07:39. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Kawachi, Carol

- 1992 Judd Hillside Burial. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Kawachi, Carol, and Michele Douglas

- 1991 Burial at 2414 Sonoma Street, Lower Manoa, Honolulu, O'ahu. SHPD. [Report contains "Human Skeletal Remains Recovered from Sonoma Street, Lower Mānoa, State Site Number: 50-80-14-4273", by Michele T. Douglas]. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Kennedy, Joseph

- 1991 Archaeological Examination of Kukao'o Heiau. Archaeological Consultants of Hawai'i, Haleiwa, Hawai'i.

Kobayashi, Victor N

- 1983 Building a Rainbow: A History of the Building and Grounds of the University of Hawaii's Manoa Campus. Hui o Students, University of Hawai'i at Mānoa.

Kotzebue, Otto von

- 1817 South O'ahu. Reprinted in, *The Early Mapping of Hawai'i*, by Gary L. Fitzpatrick 1986, Editions Limited, Honolulu, pp. 48-49.

Kuykendall, Ralph S.

- 1938 *The Hawaiian Kingdom, Volume 1; 1778-1854 Foundation and Transformation*, University of Hawaii Press, Honolulu.

LaPasse, Lt. Joseph de

- 1855 Plan du Mouillage [Anchorage] d'Honolulu Map by Lt. Joseph de La Passe. Reprinted in, *The Early Mapping of Hawai'i*, by Gary L. Fitzpatrick 1986, Editions Limited, Honolulu, pp. 82-83.

Liston, Jolie, and Greg C. Burchard

- 1996 Kapapa Lo'i 'o Kānewai: Archaeology at the Center for Hawaiian Studies University of Hawai'i at Mānoa. International Archaeological Research Institute Inc., Honolulu.

Loynaz, Lleliena, and Hallett H. Hammatt

- 2009 Burial Site Component of an Archaeological Data Recovery Plan for a project 2826 Mānoa Road, Mānoa Ahupua'a, Honolulu District, O'ahu Island, TMK: [1] 2-9-016:052. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Luomala, Katharine

1951 The Menehune of Polynesia and Other Mythical Little People of Oceania. Bernice P. Bishop Museum Bulletin 203. Bishop Museum, Honolulu.

Luscomb, M.L.K.

1975 Report on Inspection of Heiau at 2626 Anuenue St., Mānoa, O'ahu. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

McAllister, Gilbert J.

1933 Archaeology of O'ahu. Bernice Pauahi Bishop Museum, Honolulu.

McIntosh, James, and Paul L. Cleghorn

2007 Archaeological Monitoring for the Old Quadrangle Install Chilled Water Loop, University of Hawaii at Manoa (UHM 03-521B), Manoa, Island of O'ahu, TMK (1) 2-8-23:3. Pacific Legacy, Inc., Kailua, Hawai'i.

Monsarrat, M.D.

1897 Honolulu, Hawaiian Islands. M.D. Monsarrat, surveyor. RM 1910

Nakuina, Emma M.

1907 The Springs of Waialele. Where Fact & Fancy Meet. The Mid-Pacific Student VI: Aug. 1987, pp. 22-26.

O'Hare, Constance R., David W. Shideler, and Hallett H. Hammatt

2007 Archaeological Literature Review and Field Inspection for Kamehameha Schools University Parcels and Varsity Theater Parcel in Mānoa, Waikīkī Ahupua'a, Honolulu District, O'ahu Island, TMK: (1) 2-8-006:001, 020, 023, 025, 032, 036, 038, 039, 040, 041, 042, 043, 048, 052, 057, 058; 2-8-024:013, 030, 031, 032, 033, 034; 2-8-025:047, 048, 049, 050, 051, 052, 053, 054. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Pietruszewsky, Michael

1989 Cremated Remains Found at 2464 Mānoa Rd., April 12, 1989. State Historic Preservation Division, Honolulu, Hawai'i. University of Hawai'i at Mānoa, Honolulu, Hawai'i.

1992 Human Remains found at 1908 Judd Hillside Road. University of Hawai'i at Mānoa, Honolulu.

Pukui, Mary Kawena, and Samuel H. Elbert

1986 Hawaiian Dictionary. 2nd Edition, University of Hawaii Press, Honolulu.

Pukui, Mary K., Samuel H. Elbert, and Esther Mookini

1974 Place Names of Hawaii. University of Hawaii Press, Honolulu.

Robb, Peggy, and Louise Vicars

1982 Manoa's 'Puuhonua': The Castle Home, 1900-1941. The Hawaiian Journal of History vol. 16:171-183.

Rosendahl, Margaret L. K.

1987 Archaeological Reconnaissance Survey Waahila Reservoir Project Area, Waahila Ridge, Manoa, Honolulu, Island of Oahu (TMK:3-5-56:Por.1, Por.2). Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai'i.

Sanborn Fire Insurance Map

1956 Honolulu 1927-1956, Vol. 6, Map No. 788. Sanborn Map Company, New York.

Shideler, David W. and Hallett H. Hammatt

2008 Archaeological Literature Review and Field Inspection Report for the University of Hawai'i at Mānoa Long Range Development Plan Project, Mānoa Ahupua'a, Kona District, O'ahu Island, TMKs [1] 2-8-015:001; 2-8-023:003; 2-9-004:005; 2-9-023:001 & 026; 2-8-029:001; 2-9-026:001 & 037; 2-9-027:054; 3-3-056:001 & 004 Cultural Surveys Hawai'i, Kailua, Hawai'i.

Smith, Marc

1988a Site 50-80-14-3726, Pu'u Pia Trail Site, Honolulu, Kona, Oahu. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

1988b Site 50-80-14-1170 Manoa Mound Complex Site (TMK 2-9-51:13), Kona, Honolulu Ahupua'a. Department of Land and Natural Resources. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Smith, Marc, and Carol Kawachi

1989 Burial Removal Near Keller Hall, UHM, Honolulu, O'ahu. Site No. 50-80-14-4191, TMK: 2-8-23:3. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Soehren, Lloyd

1963 Field notes on agricultural terraces (Site 3953) located in Mānoa Valley. Department of Anthropology, B.P. Bishop Museum, Honolulu.

Sterling, Elspeth, and Catherine Summers

1978 Sites of O'ahu. Bernice Pauahi Bishop Museum, Honolulu, Hawai'i.

Stokes, John F.G.

1941 Puuhonua: The Castles in Manoa Valley. Pan-Pacific April-June 1941. Published by the Pan-Pacific Union, Honolulu.

Tax Map Key

1984 Tax Map Key: [1] 2-9-23. Hawai'i TMK Service, Honolulu.

Thom, Wah C.

1985 The Story of Manoa Chinese Cemetery with a Discussion of Ancestor Worship, Lin Yee Chung Association, Honolulu.

Thrum, Thomas G.

1892 Manoa Valley. Hawaiian Almanac and Annual for 1892.

1907a Heiaus and Heiau Sites Throughout the Hawaiian Islands. Hawaiian Almanac and Annual for 1908, pp. 38-47, Honolulu, Hawai'i.

1907b Tales from the Temples. Hawaiian Almanac and Annual for 1907. Honolulu.

1909 Heiaus and Heiau Sites Throughout the Hawaiian Islands. Hawaiian Almanac and Annual for 1909, Honolulu.

Tomonari-Tuggle, Myra

1998a Proposed National Marine Fisheries Service Honolulu Laboratory Renewal Project: Historical Research and Assessment of Archaeological Potential. International Archaeological Research Institute Inc., Honolulu.

1998b Kukao'o Heiau: A Glimpse at Mānoa's Past Historical Research and an Interpretive Master Plan. International Archaeological Research Institute Inc., Honolulu.

United States Geological Survey

1927 U.S. Geological Survey, 7.5 minute topographic map, Honolulu Quad.

1938 U.S. Geological Survey, Island Of Oahu, 1/62500.

United States Geological Survey

1953 U.S. Geological Survey, 7.5 minute topographic map, Honolulu Quad.

1956 U.S. Geological Survey, 7.5 minute topographic map, Honolulu Quad.

1998 U.S. Geological Survey, 7.5 minute topographic map, Honolulu Quad.

United States War Department

1943 U.S. War Department, 7.5 minute topographic map, Honolulu Quad.

Wall, W.A.

1887 Honolulu and Vicinity, by W. A. Wall.

Westervelt, W. D.

1904 Hawaiian Burial Caves. Hawaiian Almanac and Annual for 1904.

1963a Hawaiian Legends of Old Honolulu. Charles Tuttle Co., Rutland, VT.

1963b Hawaiian Legends of Ghosts and Ghost-Gods. Charles E. Tuttle, Tokyo.

Williams, John

1935 The Romance of Honolulu's Prehistoric Caves. Honolulu Star Bulletin, Jan. 5, 1935.

Williams, Norma M.

1980 Forgotten 'Apana of Kawaiaha'o Church. Historic Hawai'i News, December 1930.

Yardley, Paul T.

1981 Millstones and Milestones. The Career of B. F. Dillingham 1844-1918. The University Press of Hawai'i, Honolulu.

Appendix A Land Commission Award Testimony:

7.1 LCA 1831 Mamala

N.R. 272v3

ʻIli of Pamoā, Manoa Ahupua`a, Island of Oahu. I have one mo`o, eleven lo`i, one kula, one house lot. One house lot is in Honolulu - on the north is the kula of Apiki, on the east is the lo`i of Unea and Kanaina, on the south is the lo`i of Kaawahua, on the west is the mo`o of Kaohe. It is finished.

MAMALA X

F.T. 478-479v3

No. 1831, Mamala, August 4, 1853

Kailiulaula, sworn, says he knows the land of claimant at Pamoā, Manoa Valley. It consists of 9 kalo patches, in 2 pieces, and a house lot.

The first piece, of 6 patches, is bounded:

Mauka & Palolo sides by the konohiki

Makai by Kaohi's land

Honolulu side by konohiki.

The second piece, of 3 patches, is bounded:

Mauka by Kuhaumea's land

Palolo side by C. Kanaina

Makai by Kalamakai's land

Honolulu side by Ioane Ii.

The house lot is enclosed but there is no house on it at present.

Claimant lives at present in Honolulu. Keawe cultivates the land at present under Kanaina.

Mamala got this land from Kaawapua in 1839, and he cultivated it till 1848, when Kanaina took away one patch. Mamala has not lived there since 1849.

Paniani, sworn, I know that Mamala possessed these 9 patches in 1843 and up to 1849 when Kanikalio, the Luna of C. Kanaina, took them away for debt. Mamala then left the place, but still contends for his right to the land. His debt to the Luna was only \$5.50.

Claimant gives up the 2nd piece of 3 patches.

N.T. 678-679v3

No. 1831, Mamala, October 10, 1850

Kaohe, sworn, I have seen his 2 sections of land at Pamoā in Manoa and his house lot at Kaoaopa in Honolulu here.

1. 8 taro patches and the house site at Pamoā:

Mauka, land of Kaili

Waialae, land of Kuhia

Makai, my land

Ewa, small street.

2. 3 taro patches:

Mauka, land of Kaaloa

Waialae, land of J. Ii, also makai and Ewa.

3. House lot in Honolulu:

Mauka, Naahu's lot

Waikiki, Kaeo's lot

Ewa, Kahanu's lot.

He had received section 3 as an idle lot at the time of Liholiho before 1823 and he has lived there comfortably to the present time. No one has objected.

Sections 1 & 2 are from Kaawahua given at the time of Kinau before 1839 and he had lived there comfortably to the year 1848. Three patches were taken away at this time from section 2 by C. Kanaina, the konohiki, and Mamala departed from the eight patches here and has lived away to this time I have not known the reason for the konohiki's action.

Kuikuikahi, sworn, The things which are related above are true; I have known in the same way.

[Award 1831; R.P. 2598; Pamoā Manoa Kona; 1 ap.; 1.40 Acs]

7.2 LCA 1918 to Kamahiai

N.R. 297v3

To the Land Commissioners: I hereby explain my claim for land. I have some lo`is /there may be a figure, but it is illegible/, and a planted tree. Kolowalu /illeg.?,

KAMAHIAI

Manoa

F.T. 230v3

Cl. 1918, Kamahiai

The claimant appeared and said he had no claim. He held no land, it was a mistake to put in his claim. [Margin note: copied by Kekaulahae to page 258] [not located]

N.T. 558v3

No. 1918 - Kamahiai, November 28, 1849

No. 1919 - Koolii

We are rejecting our interest, we have no claim in this deed and we will live under the konohiki. The deed is written inaccurately and without our knowledge; therefore, the land commissioners have not dared us.

N.T. 432v10

No. 1918, Kamahiai, 20 November 1854

Kalama, sworn, I have seen Kamahiai's claim in Kolowalu of Manoa, Waikiki, Oahu of 6 patches and house lot in two pieces.

Section 1 - House lot.

Mauka, Alawa's land

Waialae, the road

Makai, konohiki

Ewa, stone wall.

Section 2 - 6 patches.

Mauka, Alawa's land

Waialae, konohiki

Makai, Kaili's land

Ewa, Konohiki pasture.

Land from Kalapauwahiolo before the passing of Nahienaena in 1836. No objections to the present time. Kamahaiai has had the land to this day.

Alawa, sworn, verifies every statement made in the above.

[Award 1918; R.P. 2432; Kolowalu Manoa Kona; 2 ap.; 1.39 Acs]

7.3 LCA 1924 O Kealohapauole, Honolulu

N.R. 298-299v3

To the Land Commissioners: I hereby explain my claim: The Mo`i was above and my makuakane, who was Keoki, district caretaker, was below him; on his death it was bequeathed to me until this time. There are three lo`i on the west and north and four on the east There is a house lot on the south

KEALOHAPAUOLE

Kaulaa, Manoa

F.T. 271v3

No. 1924, Kealohapauole

Kailialio, sworn, I know this land.

No. 1 is 3 lois in Ili of Kaulaa, Waititi, Manoa, Oahu.

No. 2 is 3 lois in Ili of Kaulaa, Waititi, Manoa, Oahu.

No. 3 is 1 piece of kula in Kaulaa, Waititi, Manoa, Oahu.

No. 4 is ½ of ahupuaa of Paihaaloa, Hilo Hawaii.

No. 1 is bounded:

Mauka by Makaulio's lois

Waialae by Kanakaiki's lois

Makai by Kailiulaula's

Honolulu by Kolowalu, an ili.

No. 2 is bounded:

Mauka by Haipu's lois

Waialae by Halalena ili

Makai by No. 2

Honolulu by Kaaipu, ili.

No. 3 is bounded:

Mauka by No. 2

Waialae by Halelaua, ili

Makai by Kahaloa

Honolulu by Kaaipu.

Claimant received this land from Keoki, his father, who had them from Boki in 1824 and [incomplete word - o] title has never been disputed.

Claimant produced a certificate showing that at the recent division of land ½ of the Ahupuaa of Paihaalou at Hilo, Hawaii was given to claimant.

N.T. 600v3

No. 1924, Kealohapauole, March 25, 1850

Kailiahi, sworn, I have seen his land at Kaulaa ili in Manoa, Waikiki - 3 land sections.

1. Section 1: 3 taro patches:

Mauka, Kamakaulii

Waialae, Kanakaiki's land

Makai, Kailiulaula's land

Honolulu, Kalowalu ili.

2. 3 taro patches:

Mauka, Haupu's land

Waialae, Kailihiwa's land

Makai, Section 3

Honolulu, Kaaipu ili.

3. 1 pasture:

Mauka, Section 2

Waialae, Halelena Ili

Makai, Kaahaloa ili

Honolulu, Kaaipio ili.

Keoki, Kealohapauole's grandfather had given him his land. He /grandfather/ had received it from Poki in the year 1824 and he had always lived there. No one had objected.

These are land grants from the king during the Mahele in the year 1848.

2 Kaulaa, Manoa ili, Waikiki.

2 Pahaaloa, Hilo ili, Hawaii.

See the book of the Political Ministry, John Young in his office.

[Award 1924; R.P. 5369; Kaneloa Manoa Kona; 2 ap.; 0.91 Acs; Hawaii claim not awarded]

7.4 LCA 2216 Kaohe

No. 2216, Kaohe

N.R. 402v3

`Ili of Pamoā, Manoa, Island of Oahu. There is one mo`o, one kula, and one house lot. I have 17 lo`i, bounded on the north by the kula of Kuke, on the east by the lo`i of Mamala, on the south by the kula of Holualoa, on the west by the lo`i of Oponui. Finished.

KAOHE

F.T. 515v3

No. 2316!, Kaohe, 16 February 1854

[should be 2216]

Kalaweamoku, sworn says, he knows the kuleana of Kaohe in "Pamoā" Manoa Valley. It consists of 16 kalo patches, a house lot and 2 pieces of kula. The 16 patches for one piece bounded:

Mauka by Mamala's land

Palolo side by Naihe's land

Makai by Kalaweamoku's land

[no direction; by a watercourse.

The house site is near the kalo patches. It is not enclosed.

Kaohe received this land from Keawahua, the konohiki before 1839. Claimant held the land in peace till his death a few months ago. See page 517

F.T. 517v3

No. 2216, Kaohe, 20 February 1854, from page 515

Kukuikahi, sworn says, he knows the kuleana of Kaohe, in "Pamoā," Manoa Valley. It consists of 16 kalo patches and a house site. Witness state the boundaries to be as described by the former witness. Kaohe lived on this land from the time of Kinau till near the time of his death last year. The kalo patches are nahelehele at present. Claimant's daughter, who has lately got married, lives with her husband in the house which stands on this land.

See page 544.

F.T. 544v3

No. 2216, Kaohe, 6th April 1854. From page 544 [sic]

Kalawaia, the luna of the konohiki of "Pamoā," appeared & confirmed this kuleana.

N.T. 306-310v10

W.E. Maikai to E.G.M. Robertson, Assistant President

I am forwarding to you the claims given to me for this section of Waikiki, Oahu.

[Land claim number]

2216 Kaohe - Unable to find.

I have worked for four days just as you had ordered. I called the people together, some of which I was able to reach and there were some whom I could not locate, and some are dead, therefore, I am returning these documents to you with my comments on each of them.

With appreciation, J.W.E. Maikai

Honolulu, 10 August 1853

[No. 2216; R.P. 4255; Pamoia Manoa Kona; 1 ap.; 3.2 Acs]

7.5 LCA 2218 Kaawahua

No. 2218, Kaawahua

N.R. 402v3

ʻIli of Pamoā, Manoa, Island of Oahu. I have 4 loʻi, 3 house lots, 1 kula. 1 loʻi is /translator's note: direction omitted/, 2 of my loʻi are on the west of Mamala, of Nika /?/.

KAAWAHUA X

F.T. 545v3

No. 3218!, Kaawahua, 6th April 1854

Kuihelani, sworn says, he knows the kuleana of claimant in "Pamoā," Manoa Valley. It consists of 3 lois and 3 pieces of cultivated land. The kula land is in grass at the present time. The 3 patches of kalo form 3 pieces.

The first piece is bounded: The three patches are surrounded by the land of the konohiki.

Kelaweamoku, sworn says, he knows this kuleana. Claimant received this land from Kanaina, the koohiki, in the time of Kinau, and held it in peace up to the time of his death in 1848, sincw which time his widow. Kailikole, has held it.

Kalawaia, the luna of the kononhiki approves this claim.

N.T. 306-310v10

W.E. Maikai to E.G.M. Robertson, Assistant President

I am forwarding to you the claims given to me for this section of Waikiki, Oahu.

[Land claim number]

2218 Kaawahua (deceased) Kailikole, tbe heir.

I have worked for four days just as you had ordered. I called the people together, some of which I was able to reach and there were some whom I could not locate, and some are dead, therefore, I am returning these documents to you with my comments on each of them.

With appreciation, J.W.E. Maikai

Honolulu, 10 August 1853

[Award 2218; R.P. 3787; Pamoā Manoa Kona; 4 ap.; 2.5 Acs]

7.6 LCA 4294B Kalaweaumoku

No. 4294B, Kalaweaumoku, 10 May 1853

N.T. 226-227v10

L.C.W. Nailiili, sworn, I wrote Kalaweaumoku's claim on 16 February 1847, I wrote twenty or more other interests without a fee on that same day, for people from Pamoā and for others from other places. Eighteen patches, three potato ilis and two house lots were written in Kalaweaumoku's claim, these are all in Pamoā. I also filed these claims at the Land Claims Office at Halekauila in the presence of John Ii and Kaauwai. I placed them on their agenda and called their attention to it. I have not discarded anything I have done for the people pertaining to their claims, I have registered all of them. I have known the boundaries of this claim the gardens and the house sites which are in Manoa, Oahu. There are 18 patches, a farming pasture and two house lots, all in one piece of land.

Mauka, Kaohe's land

Waikiki, Naihe's land

Makai, Nawaakahahele's land

Ewa, Land fence.

Land from Kaawahua during the time of Kinau and he has lived there to the present time. He has built a store house which is standing in the two house lots, no one has objected to this day and Kaawahua had caused me to write the tenants claims. I had written these people's claims because the overseer had been very kind.

Mrs. Umi, sworn, I had seen Nailiili write this claim and had done other things, too. I have seen this place for which Kalaweaumoku had filed and the time he had obtained it just as Nailiili has related above, we have known in the same way. I have been a citizen of this place since the time of Kaluahinenui. I have also known the konohiki has a place there, although it has not been included in this listing above.

7 April 1854 - Kalawaia, Kanaina's konohiki relates: Kalaweaumoku and I appeared before C. Kanaina in regards to this claim and he consented to agree on Kalaweaumoku's claim except for the uncultivated pasture and the patches which are filled with weeds. This was an order by him and Kalaweaumoku has agreed to it.

[Award 4294B; R.P. 2596; Pamoā Manoa Kona; 3 ap.; 3.96 Acs]

7.7 LCA 5579 Kahapapa

N.R. 79v5

Here is my claim for a mo`o at Hipawai in Manoa. There are seven lo`i and one weed-grown kula. My claim for a mo`o was from my keiki- when he died it was transferred to me until this time. This keiki of mine had the sustenance of this mo`o during the time when Kinau was living. There are some witnesses to this right. That is my claim which I explain to you, the Land Commissioners.

Sincerely yours,

KAHAPAPA

Hipawai, Manoa, December 10, 1847

N.T. 306-310v10

W.E. Maikai to E.G.M. Robertson, Assistant President

I am forwarding to you the claims given to me for this section of Waikiki, Oahu.

[Land claim number]

... [many other claims also] 5579 Kahapapa - document given.

N.T. 393v10

No. 5579 Kahapapa (from pg. 306), 11 September 1854

Kaaukai, sworn, this claim is in Hipawai in Manoa of Waikiki, Oahu of 5 patches, a garden and a house lot.

Mauka, Makaulii's land

Waimanalo, Nahulu's land

Makai, Kaaukai's land

Ewa, Mr. E.W. Clark's land.

Halualoa gave this land to Kanakanui, the husband of Naioeha. Kahapapa was sent to Paku by Naioeha to register this claim in her name, instead he registered it in his own name. This claim is for Naioeha. It was from her husband, Kanakanui. She has always lived there in peace to the present time. I am the luna konohiki of this land under E. Kuhia. There is no konohiki koele here.

Naihe, sworn, I have seen this claim in the same way as Kaaukai has stated in the above.

[Award 5579; R.P. 2594; Hipawai Manoa Kona; 1 ap.; 1.08 Acs; Kahapapa for Naioeha]

7.8 LCA 11306 to Kalama

No. 11306, Kalama, 28 October 1854
N.T. 424-425v10

Nailiili, sworn, I wrote this claim for Kalama which is in Kolowalu, Manoa on 3 February, just as I had done for those claims shown in the above and I took it to Halekauwila to the land claims officers.

Mahia, sworn, I have seen this claim in Kolowalu, Mano of 15 lois and 2 house lots.

Mauka by Alawa's land
Waiialae by "Kanalea" land
Makai by Ala's land
Ewa by "Kaloiki" land.

Land from Kapule at the time salt was being processed in Walia of Moanalua. No objections - 14 patches have been cultivated and one has not been completed as yet.

Lupe, sworn, I have seen Kalama's claim in Kolowalu, Manoa in the same way as Mahiai has stated.

[Award 11306; R.P. 2507; Kolowalu Manoa Kona; 2 ap.; 3.7 Acs]

