

JOSH GREEN, M.D.  
GOVERNOR  
KE KIA'ĀINA



KEITH A. REGAN  
COMPTROLLER  
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN  
DEPUTY COMPTROLLER  
KA HOPE LUNA HO'OMALU HANA LAULĀ


**STATE OF HAWAII | KA MOKU'ĀINA O HAWAII'**  
**DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ**  
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)23.104

**JUL 12 2023**

**MEMORANDUM**

**TO:** Mary Alice Evans, Director  
Office of Planning and Sustainable Development

**FROM:** Christine L. Kinimaka  
Public works Administrator 

**SUBJECT:** Chapter 343 Final Environmental Assessment and  
Finding of No Significant Impact for  
Keaau-Mountain View Public Library,  
Keaau, Puna District, Island of Hawaii  
TMK (3) 1-6-002:001 (portion)

The State of Hawaii Department of Accounting and General Services hereby transmits the Final Environmental Assessment and Finding of No Significant Impact (FEA-FONSI) for the Keaau-Mountain View Public Library, proposed by the Hawaii State Public Library System.

Please publish notice of availability in the next available edition of the Office of Planning and Sustainable Development's *The Environmental Notice*. A PDF copy of the FEA-FONSI (searchable) and a Project Location Map have been submitted via the Environmental Review Program's online portal.

If you have any questions, please call Brian Isa of the Planning Branch at 808-586-0484, or our Environmental Assessment consultant, HHF Planners, attention: Leslie Kurisaki at [lkurisaki@hhf.com](mailto:lkurisaki@hhf.com), or at (808) 457-3182.

BI:mo

**From:** [webmaster@hawaii.gov](mailto:webmaster@hawaii.gov)  
**To:** [DBEDT OPSD Environmental Review Program](#)  
**Subject:** New online submission for The Environmental Notice  
**Date:** Monday, July 17, 2023 3:47:30 PM

---

**Action Name**

Kea'au-Mountain View Public Library

**Type of Document/Determination**

Final environmental assessment and finding of no significant impact (FEA-FONSI)

**HRS §343-5(a) Trigger(s)**

- (1) Propose the use of state or county lands or the use of state or county funds

**Judicial district**

Puna, Hawai'i

**Tax Map Key(s) (TMK(s))**

(3) 1-6-002:001 (por)

**Action type**

Agency

**Other required permits and approvals**

MOA and E.O. for property for library use (HSPLS and DOE); Plan Review (DOH DCAB); Director's Plan Approval (County Planning Dept); NPDES (if required during construction) (DOH); Building permit, electrical permit, plumbing permit, driveway permit, grading permit, grubbing and stockpiling permit (County of Hawaii); Permit to Perform Work Upon State Highways (work within state highway ROW); Permit to Operate or Transport Oversize and/or Overweight Vehicles & Loads Over State Highways (as required); Permit for the Occupancy and Use of State Highway ROW (as required) (Hawaii Dept of Transportation)

**Proposing/determining agency**

Hawaii Department of Accounting and General Services (DAGS)

**Agency contact name**

Brian Isa

**Agency contact email (for info about the action)**

[Brian.s.isa@hawaii.gov](mailto:Brian.s.isa@hawaii.gov)

**Email address or URL for receiving comments**

[Keaau-MtView-Library@hfh.com](mailto:Keaau-MtView-Library@hfh.com)

**Agency contact phone**

(808) 586-0484

**Agency address**

1151 Punchbowl Street  
Honolulu, HI 96813

United States

[Map It](#)

**Was this submittal prepared by a consultant?**

Yes

**Consultant**

HHF Planners

**Consultant contact name**

Leslie Kurisaki

**Consultant contact email**

[lkurisaki@hhf.com](mailto:lkurisaki@hhf.com)

**Consultant contact phone**

(808) 457-3182

**Consultant address**

733 Bishop Street, Suite 2590

Honolulu, HI 96813

United States

[Map It](#)

**Action summary**

The Hawai'i State Public Library System (HSPLS) proposes a new 13,900 SF public library on a 1.7-acre site in Kea'au, adjacent to the Kea'au Middle School. The site is owned by the State of Hawaii.

The Kea'au-Mountain View Public Library is one of two new libraries proposed in the Puna District to replace three outdated public and school libraries co-located within school campuses. The main library space will be a flexible open area with modular furnishings that can be reconfigured as needs change. A community meeting room is provided for special functions during or after library hours, and opens to a lanai for indoor-outdoor functions. Staff areas include offices, workspace, and storage, and space is included for Friends of the Library. Two one-way driveways will provide access to the 42-stall parking lot. Accessible walkways will connect the library to the public sidewalk and the middle school.

**Reasons supporting determination**

Refer to FEA-FONSI Chapter 6, Determination for reasons supporting the determination of no significant impact.

**Attached documents (signed agency letter & EA/EIS)**

- [revJuly17\\_Keaau-Mountain-View-Public-Library-Final-EA\\_2023-July1.pdf](#)
- [dags-transmit-FEA-to-ERP.2023-7-121.pdf](#)

**Shapefile**

- The location map for this Final EA is the same as the location map for the associated Draft EA.

**Action location map**

- [Library-Project-Site1.zip](#)

**Authorized individual**

Leslie Kurisaki

**Authorization**

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.



Hawai'i State Public Library System  
**Kea'au-Mountain View Public Library**

**Final Environmental Assessment  
Finding of No Significant Impact**

July 2023

DAGS Job No. 11-36-6589

Prepared For



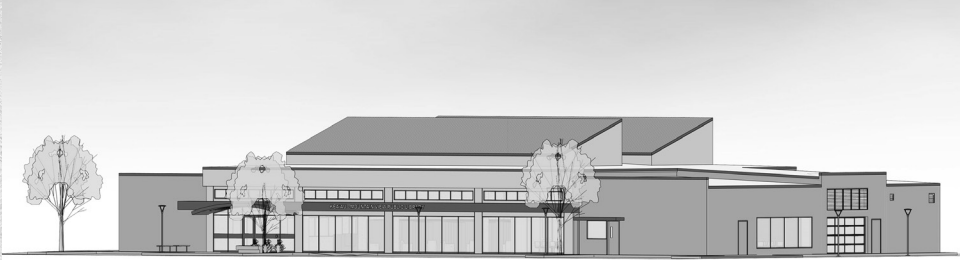
**Hawaii State  
Public Library System**

Prepared By



**HHF PLANNERS**  
*places for people*





Hawai'i State Public Library System  
**Kea'au-Mountain View Public Library**

**Final Environmental Assessment  
Finding of No Significant Impact**

July 2023

DAGS Job No. 11-36-6589

Prepared For



**Hawaii State  
Public Library System**

Prepared By



**HHF PLANNERS**  
*places for people*





# Contents

Project Summary.....	ix
1 Introduction .....	1-1
1.1 Location and Setting .....	1-1
1.2 Project Background.....	1-4
1.3 Purpose and Need for Project.....	1-6
2 Project Description and Alternatives .....	2-1
2.1 Proposed Action.....	2-1
2.1.1 Library Components.....	2-1
2.1.2 Access and Parking.....	2-3
2.1.3 Landscaping Plan.....	2-3
2.1.4 Estimated Cost .....	2-4
2.2 Alternatives Considered.....	2-4
2.2.1 Site Selection Process .....	2-4
2.2.2 No-Action Alternative .....	2-5
2.2.3 Alternative Library Sites in Kea’au .....	2-5
2.2.4 Locate Library in Mountain View .....	2-8
3 Natural and Physical Environment.....	3-1
3.1 Climate .....	3-1
3.1.1 Existing Conditions.....	3-1
3.1.2 Potential Impacts and Mitigation .....	3-1
3.2 Physical Setting .....	3-1
3.2.1 Topography.....	3-1
3.2.2 Soils .....	3-2
3.3 Natural Hazards .....	3-2
3.3.1 Existing Conditions.....	3-2

3.3.2	Potential Impacts and Mitigation .....	3-4
3.3.3	Climate Change and Sea Level Rise.....	3-5
3.4	Water Resources.....	3-8
3.4.1	Existing Conditions.....	3-8
3.4.2	Potential Impacts and Mitigation .....	3-9
3.5	Biological Resources .....	3-9
3.5.1	Botanical Resources.....	3-9
3.5.2	Avifauna .....	3-10
3.5.3	Mammals .....	3-11
3.5.4	Protected Species and Critical Habitat .....	3-12
3.6	Cumulative Impacts .....	3-13
4	Human Environment.....	4-1
4.1	Existing and Surrounding Land Uses.....	4-1
4.1.1	Existing Conditions.....	4-1
4.1.2	Potential Impacts and Mitigation .....	4-1
4.2	Air Quality .....	4-3
4.2.1	Existing Conditions.....	4-3
4.2.2	Potential Impacts and Mitigation .....	4-3
4.3	Noise .....	4-4
4.3.1	Existing Conditions.....	4-4
4.3.2	Potential Impacts and Mitigation .....	4-5
4.4	Historic and Archaeological Resources.....	4-6
4.4.1	Introduction and Summary of Findings .....	4-6
4.4.2	Background .....	4-7
4.4.3	Existing Conditions.....	4-9
4.4.4	Potential Impacts and Mitigation .....	4-10
4.5	Cultural Resources .....	4-12

4.5.1	Introduction .....	4-12
4.5.2	Traditional Practices .....	4-13
4.5.3	Potential Impacts and Mitigation .....	4-14
4.6	Socio-Economic.....	4-14
4.6.1	Existing Conditions.....	4-14
4.6.2	Potential Impacts and Mitigation .....	4-15
4.7	Infrastructure and Utilities.....	4-15
4.7.1	Sitework/Grading.....	4-15
4.7.2	Potable Water .....	4-16
4.7.3	Wastewater.....	4-17
4.7.4	Electrical and Telecommunication Facilities.....	4-18
4.7.5	Storm Water Drainage/Water Quality.....	4-18
4.8	Solid Waste and Hazardous Materials .....	4-20
4.8.1	Solid Waste .....	4-20
4.8.2	Hazardous Materials .....	4-21
4.9	Transportation and Roadways .....	4-22
4.9.1	Methodology and Study Intersections.....	4-23
4.9.2	Existing Conditions.....	4-25
4.9.3	Potential Impacts and Mitigation .....	4-26
4.10	Public Services.....	4-28
4.10.1	Police, Fire and Emergency Services.....	4-28
4.10.2	Schools and Parks .....	4-29
4.11	Cumulative Impacts .....	4-30
5	Relationship to Land Use Plans, Policies and Controls .....	5-1
5.1	State of Hawai'i .....	5-1
5.1.1	State Land Use .....	5-1
5.1.2	Hawai'i State Plan, HRS Chapter 226 .....	5-1

5.1.3	Hawai'i Coastal Zone Management Program .....	5-5
5.2	County of Hawai'i.....	5-10
5.2.1	County General Plan .....	5-10
5.2.2	Puna Community Development Plan.....	5-14
5.2.3	Zoning .....	5-15
5.2.4	Special Management Area.....	5-15
5.3	Permits and Approvals.....	5-17
6	Determination.....	6-1
7	References .....	7-1
8	Agencies and Organizations Consulted.....	8-1
8.1	Pre-Assessment Consultation .....	8-1
8.1.1	Agencies and Organizations Consulted.....	8-1
8.1.2	Community Open House.....	8-13
8.1.3	Draft EA Comment Period.....	8-18

**Appendices**

- A Biological Surveys; LeGrande Biological Surveys, Inc.
- B Archaeological Literature Review and Field Inspection; Honua Consulting
- C Preliminary Engineering Report; Coffman Engineers
- D Traffic Impact Analysis Report; Austin, Tsutsumi & Associates, Inc.

**Figures**

Figure 1: Regional Location Map .....	1-2
Figure 2: Project Location Map.....	1-3
Figure 3: TMK Map.....	1-5
Figure 4: Site Plan.....	2-2
Figure 5: Alternative Sites (Short-List) Location Map .....	2-6
Figure 6: NRCS Soils Classification .....	3-3
Figure 7: Major Land Ownership.....	4-2

Figure 8: Traffic Impact Analysis Report Study Intersections .....4-24  
Figure 9: State Land Use District Designations Map .....5-2  
Figure 10: County of Hawai'i Zoning Districts Map.....5-16

**Tables**

Table 4-1: HDOH Property Line Maximum Permissible Noise Limits .....4-5  
Table 4-2: HDOH Community Noise Permit-Construction Hours .....4-5  
Table 4-3: Project Trip Generation .....4-27  
Table 5-1: Potential Permits and Approvals .....5-17  
Table 8-1: Agencies and Organizations Consulted.....8-1  
Table 8-2: Summary of Pre-Assessment Comments Received .....8-4  
Table 8-3: Summary of Community Comments.....8-14  
Table 8-4: Draft EA Comments.....8-19

## **Acronyms and Abbreviations**

ADA	Americans With Disabilities Act
AFONSI	Anticipated Finding of No Significant Impact
ALRFI	Archaeological Literature Review and Field Inspection
ahupua'a	land division usually extending from uplands to the sea
AIS	Archaeological Inventory Survey
ALISH	Agricultural Lands of Importance to the State of Hawai'i
ASEA	Aquifer Sector Area
AQI	Air Quality Index
BMP	Best Management Practice
CAP	Climate Action Plan
CDP	Census Designated Place
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfs	cubic feet per second
C-EHMP	Construction Environmental Hazard Management Plan
CIA	Cultural Impact Assessment
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Area
CWRM	Commission on Water Resource Management
DAGS	Department of Accounting and General Services
dB	decibel
dBA	Sound pressure level ("A" weighting filter)
DCAB	Hawai'i Disability and Communication Access Board
DBEDT	State of Hawai'i Department of Business, Economic Development and Tourism
DHHL	Department of Hawaiian Home Lands
DLNR	State of Hawai'i Department of Land and Natural Resources
DOE	State of Hawai'i Department of Education
DOFAW	Division of Forestry and Wildlife
DOE	Hawai'i Department of Education
DOH	State of Hawai'i Department of Health
DOI	U.S. Department of the Interior
DWS	Hawai'i County Department of Water Supply
EA	Environmental Assessment
EDR	Environmental Database Report
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice
E.O.	Executive Order
EPA	Environmental Protection Agency
ERP	Environmental Review Program
ESA	Environmental Site Assessment
ESA	Endangered Species Act

FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
GBCI	Green Building Certification Institute
GHG	greenhouse gas
gpd	Gallons per Day
gpm	Gallons per Minute
HAR	Hawai'i Administrative Rules
HCEI	Hawai'i Clean Energy Initiative
HCM	Highway Capacity Manual
HDOH	Hawai'i Department of Health
HEER	(Hawai'i Dept. of Health) Hazard Evaluation and Emergency Response Office
HMC	Hilo Medical Center
HDOA	State of Hawai'i Department of Agriculture
HDOT	State of Hawai'i Department of Transportation
HELCO	Hawai'i Electric Light Company
HICRIS	Hawai'i Cultural Resource Information System
HIDOH	Hawai'i Department of Health
HMC	Hilo Medical Center
HRHP	Hawai'i Register of Historic Places
HRS	Hawai'i Revised Statutes
HSPLS	Hawai'i State Public Library System
HT	Hawaiian Telcom
HVAC	heating, ventilation and air conditioning
IBC	International Building Code
ISWMP	Integrated Solid Waste Management Plan
ITE	Institute of Transportation Engineers
IWS	Independent Wastewater System
KS	Kamehameha Schools
kV	kilovolt
Ldn	day-night average sound level
LEED	Leadership in Energy and Environmental Design
Leq(h)	Maximum hourly equivalent sound levels
LOS	Level-of-Service
LUPAG	Land Use Pattern Allocation Guide (Hawai'i County General Plan)
makai	on the seaside, toward the sea
mālama 'aina	caring for and honoring the land
mauka	inland, upland, towards the mountain
mgd	million gallons per day
mo'olelo	story, tale, myth, history, tradition, legend
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards

NPDES	National Pollutant Discharge Elimination System
OHWM	ordinary high water mark
OP	Hawai'i Office of Planning
PCS	public charter school
PER	Preliminary Engineering Report
psi	pounds per square inch
PV	photovoltaic
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
SF	Square Feet or Square Foot
SHPD	State Historic Preservation Division
SIHP	State Inventory of Historic Places
SLR	sea level rise
SLH	Session Laws of Hawai'i
SMA	Special Management Area
TIAR	Traffic Impact Analysis Report
TDFM	Traffic Demand Forecasting Model
TMK	Tax Map Key
UH	University of Hawai'i
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VOC	Volatile Organic Compounds
VMT	vehicles miles traveled
wahi pana	legendary places
WQS	water quality standards
WUDP	Hawai'i County Water Use & Development Plan



# Project Summary

PROJECT NAME	Kea'au-Mountain View Public Library
LOCATION	Kea'au, Puna District, Hawai'i Island
TAX MAP KEY (TMK) PARCELS	[3] 1-6-002: portion 001
PROPOSING AND DETERMINING AGENCY	Department of Accounting and General Services (DAGS) 1151 Punchbowl Street Honolulu, HI 96813 Brian Isa <a href="mailto:Brian.s.isa@hawaii.gov">Brian.s.isa@hawaii.gov</a> ; ph. (808) 586-0484
LANDOWNER	State of Hawai'i, Department of Education  <i><b>Note:</b> The property identified by TMK: (3) 1-6-002: portion of 001 is currently set aside by Executive Order No. 0614 (EO 614) to the Department of Education for the Ola'a School Lot (Kea'au Middle School). The area allotted for use by the Hawaii State Public Library System (HSPLS) will need to be withdrawn from EO 614 and re-set aside to HSPLS.</i>
PROPOSED ACTION	The Hawai'i State Public Library System (HSPLS) proposes to construct a new public library on a 1.7 acre site fronting Kea'au-Pāhoa Road. The project site is part of a larger TMK parcel occupied by Kea'au Middle School. The project site is currently an open grassed field and paved parking area.  The Kea'au-Mountain View Public Library is one of two new libraries proposed in the Puna District to replace three outdated public and school libraries co-located within school campuses. The new Kea'au-Mountain View Public Library will replace the existing Kea'au and Mountain View Public and School Libraries. It will be a stand-alone facility serving Kea'au, Mountain View, Kurtistown, and other Puna District communities. The proposed new Pāhoa Public Library is not part of the Proposed Action.
PROJECT AREA	Approximately 1.7 acres
STATE LAND USE DISTRICT	Urban District

GENERAL PLAN and COMMUNITY DEVELOPMENT PLAN (CDP) DESIGNATIONS	General Plan Land Use Pattern Allocation Guide (LUPAG): Medium Density Urban  Puna Community Development Plan: Medium Density Urban
ZONING	RS-10, Single Family Residential
SPECIAL MANAGEMENT AREA (SMA)	Not within SMA
FLOOD ZONE DESIGNATION	Zone X (areas determined to be outside of the 0.2% annual chance floodplain)
PERMITS AND APPROVALS REQUIRED	HRS Chapter 343, Hawai'i Environmental Policy Act compliance MOA and E.O. for property for library use (pending) Plan Approval (County Planning Director)  Building permit, electrical permit, plumbing permit, driveway permit, grading permit, grubbing and stockpiling permit  Permit to Perform Work Upon State Highways (work within state highway ROW); Permit to Operate or Transport Oversize and/or Overweight Vehicles & Loads Over State Highways (as required); Permit for the Occupancy and Use of State Highway ROW (as required)  <i>(see Chapter 5 for list of permits and approvals)</i>
CHAPTER 343 HRS DETERMINATION	Finding of No Significant Impact (FONSI)
CONSULTANT CONTACT	Scott Ezer, Principal HHF Planners 733 Bishop Street, Suite 2590 Honolulu, Hawai'i 96813  <a href="mailto:sezer@hhf.com">sezer@hhf.com</a> ; (808) 457-3158

# 1 Introduction

The Hawai'i State Public Library System (HSPLS) plans to construct a new public library in Kea'au, Puna District, Island of Hawai'i ("Proposed Action"). The Kea'au-Mountain View Public Library will serve residents of Kea'au, Mountain View, Kurtistown, and other nearby Puna District communities. It is one of two new public libraries proposed in the Puna District to replace outdated facilities and to respond to rapid population growth over the last 20 years.

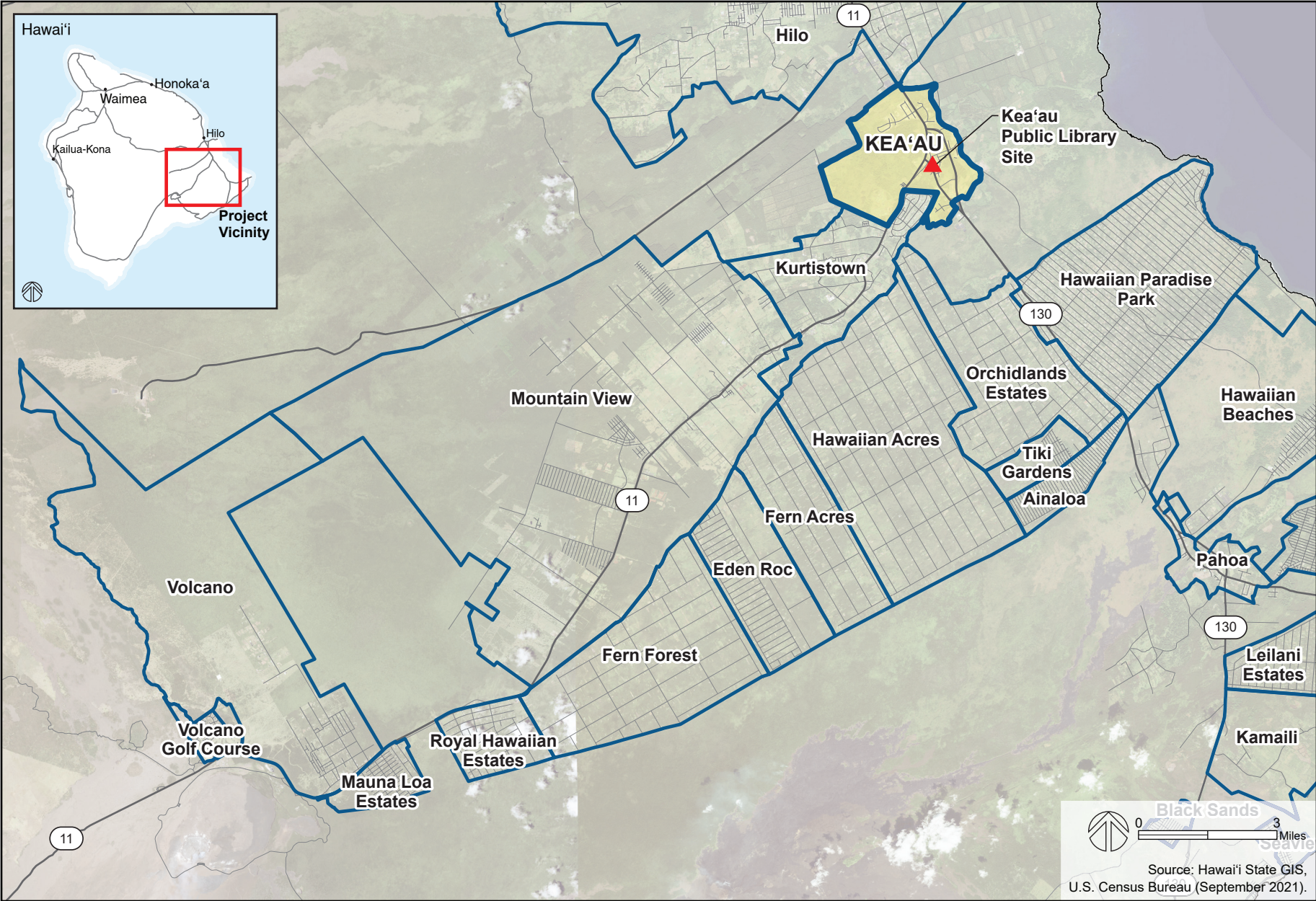
This Final Environmental Assessment and Finding of No Significant Impact (FEA-FONSI) has been prepared for the Proposed Action in accordance with Chapter 343 Hawai'i Revised Statutes (HRS), as amended, and Title 11, Chapter 200.1, Hawai'i Administrative Rules (HAR), Environmental Impact Statement Rules. An EA is required due to the use of public funds and land, as defined in Section 11-220.1-9(a)(2)(A).

The Final EA analyzes the potential environmental and socioeconomic consequences of the Proposed Action. Its intent is to provide sufficient analysis for determining whether the Proposed Action will have a significant effect on the environment, thereby requiring preparation of an environmental impact statement, or a Finding of No Significant Impact (FONSI) pursuant to Chapter 343 HRS. Based on the findings and analysis in this document, a FONSI determination has been made.

## 1.1 Location and Setting

The project site is located in the town of Kea'au, approximately eight miles southeast of downtown Hilo on the east side of Hawaii Island (see Figure 1 and Figure 2). Historically, the land surrounding Kea'au was used for sugar cane cultivation as part of the Ola'a sugar plantation. More recently the development of macadamia nut orchards and other crops, such as bananas, has occurred around Kea'au. The Mountain View to Kurtistown corridor above Kea'au along with other small communities further inland are rural in character. This corridor includes small, predominantly residential and agricultural settlements from the plantation era and earlier that have been connected to Kea'au by roadways.

The main highways providing vehicular access to Kea'au are Volcano Road (Route 11) and Kea'au-Pāhoa Road. Volcano Road extends from Hilo to Kea'au and then travels inland (mauka) providing access to other communities such as Kurtistown and Mountain View. Kea'au-Pāhoa Road (State Route 130) connects Kea'au to Pāhoa to the south, and eventually further south to Kalapana. The project site fronts Kea'au-Pāhoa Road within the Kea'au town area.



### Regional Location Map

#### Hawai'i State Public Library System

Kea'au-Mountain View Public Library

Final Environmental Assessment – Finding of No Significant Impact

Figure 1



**Project Location Map**

**Hawai'i State Public Library System**

Kea'au-Mountain View Public Library

Final Environmental Assessment – Finding of No Significant Impact

**Figure 2**

The proposed Kea'au-Mountain View Public Library will replace two existing public libraries located in Kea'au and Mountain View. HSPLS is also proposing a new public library in Pāhoa, to replace an existing facility in that community. The proposed Pāhoa Public Library was the subject of a separate environmental review process and is not part of this Proposed Action or this Environmental Assessment.

The Kea'au-Mountain View Public Library will be constructed on a 1.7-acre site on Kea'au-Pāhoa Road (State Route 139). The site is a portion of TMK 1-6-002:001, a 5.9-acre parcel occupied by Kea'au Middle School (Figure 3). The existing Kea'au Public and School Library is also located within this same parcel. The property is owned by the State of Hawai'i Department of Education (DOE) and is within a 5-minute walk from the Kea'au town center.

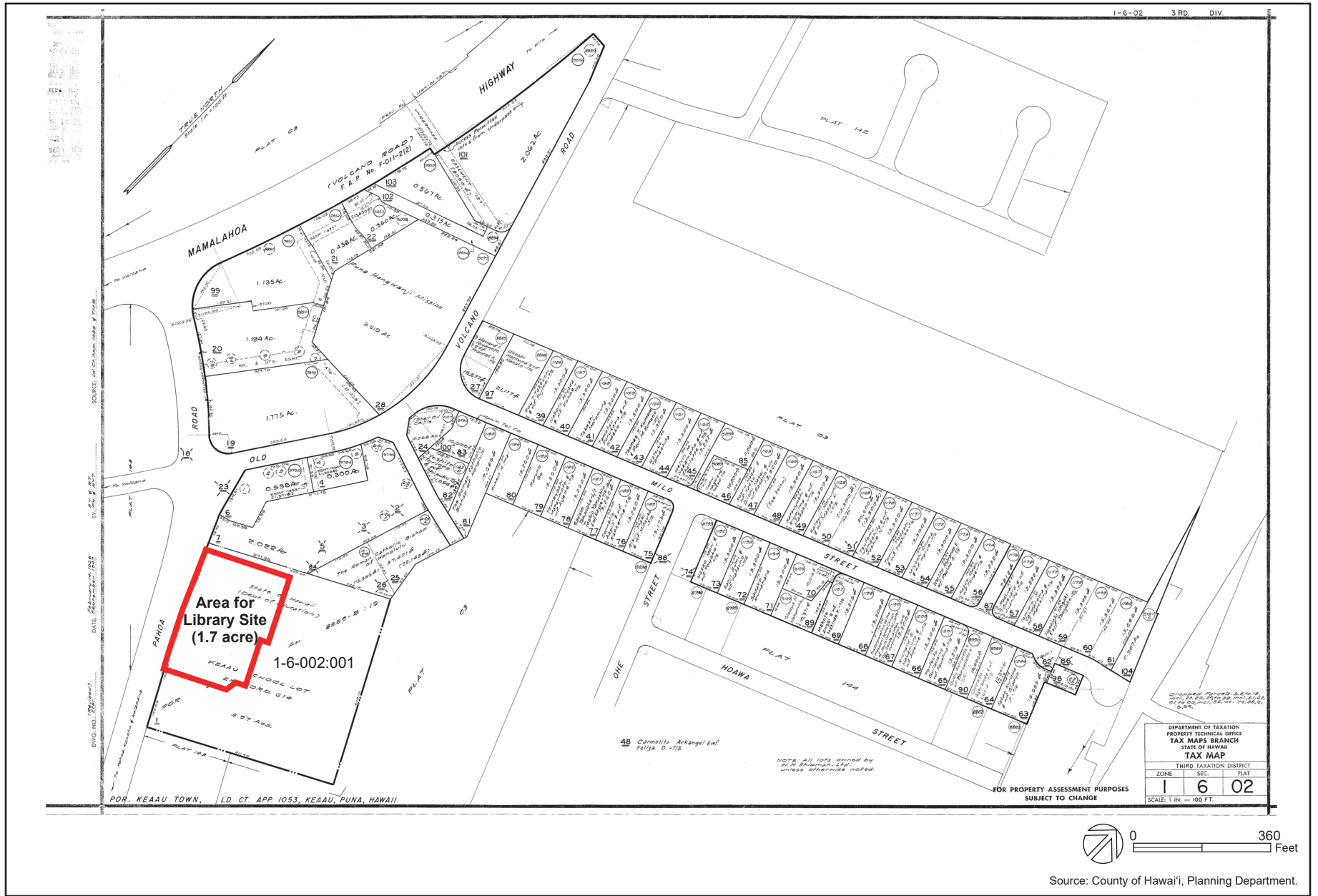
## 1.2 Project Background

The Hawai'i State Public Library System (HSPLS) is the only statewide public library system in the United States. It has 51 branches across six islands, including 12 branches on Hawai'i Island, three of them in the Puna District. The HSPLS is a Hawai'i State agency managed by the State Librarian, who reports to the State Board of Education.

The stated mission of HSPLS is to nurture a lifelong love of reading and learning using the resources of its staff, collections, programs, services, and physical and virtual spaces. HSPLS is a vital part of the learning ecosystem, ensuring that communities have access to technology, the world of information and ideas, and opportunities for learning 21st Century skills and literacies.

Today's public libraries are facing four major trends shaping the future of all libraries: 1) continued advances in digital media and technologies; 2) heightened competition from other media sources; 3) demographic transformation; and 4) financial constraints. To address these trends, the HSPLS is focusing its efforts and resources on the following:

- No- to low-cost access for Hawai'i's residents to technology, including virtual collections, media lending, and on-line services that integrate with library physical spaces.
- Improved service hours and service levels at libraries that are adaptable to technological advances and the changing needs of their communities.
- More educational programming at local libraries that involve and connect families, children, and teens.
- Expanded informational services and knowledge access to the community through events, mobile services and other activities in communities.
- Community stewardship of libraries through volunteerism, internships and community service.
- Up-to-date technology at physical branches (HSPLS, 2015).



**TMK Map**

**Hawai'i State Public Library System**

Kea'au-Mountain View Public Library

Final Environmental Assessment – Finding of No Significant Impact

**Figure 3**

### 1.3 Purpose and Need for Project

The Kea'au-Mountain View Public Library is needed to replace the existing Kea'au and Mountain View public libraries. The new public library will increase the space available for collections and staff operations, support current technology, and provide cost efficient operations to better meet the needs of the growing Puna District communities, the fastest growing district on Hawai'i Island.

Between 2000 and 2007, the Puna District population increased from 31,335 to 43,071 persons, an increase of over 37% in less than 7 years. 2010 U.S. Census data showed the district population grew to about 45,300 persons, a 45% increase over 2000. According to the Puna Community Development Plan, the population is projected to grow to approximately 75,000 people by 2030 (County, 2008 as amended). The growing population within the Puna District has increased demand for community services, including library facilities.

The existing Kea'au and Mountain View libraries are aging, outdated, and unable to meet current standards for space, facilities, and technology. Both libraries are co-located on existing school campuses: the Kea'au Public and School Library is located at Kea'au Middle School; and Mountain View Public and School Library is at Mountain View Elementary School. The model of co-locating public libraries within schools was a design strategy implemented by the State of Hawai'i in the 1960s and 1970s. However, their current location and modest size constrains the ability to expand resource collections, provide library patron seating and adequate staff support space. The aging facilities are also unable to support and adapt to current technological advances; provide mobile services; offer community services and events; and allow community stewardship (volunteerism, internships).

The location of a public library within a school campus also creates operational conflicts for both facilities and raises potential security issues. For example, during school hours, the Mountain View Elementary School requires library staff to escort patrons through the elementary school if they want to access the public library during school hours. Library patrons leaving the library generally return to the parking lot unescorted. Library patrons with limited mobility often have difficulty with the distance, especially if carrying books and equipment.

The existing public library at Kea'au Middle School is situated closer to the front of the middle school campus, but library patrons are required to check in at the school office. Because library patrons must walk through the campus, interactions with students are often unavoidable (e.g., during recess). The presence of a public library is inconsistent with modern school security best practices, which strive to keep each campus secure and self-contained and limit the presence of outside visitors.

The current model of public libraries emphasizes its role as an inclusive gathering space and community hub. Expanded services for modern libraries include social spaces, flexible meeting rooms, makerspaces (collaborative workspaces), and educational opportunities for everyone. Libraries can be a crucial space for people who need help with filling out an online job application, tutoring, or access to technology. This model cannot be effectively implemented at the existing Kea'au and Mountain View libraries with current limitations on access to the libraries.



In October 2015, the HSPLS held three initial community focus group meetings in the Puna District (one each in Kea'au, Mountain View, and Pāhoā) to gauge public interest in a new regional library. Based on feedback from the focus group meetings, HSLPS determined that due to the size of the Puna District and the traffic flow patterns of the area, one library could not replace the three existing public libraries. HSPLS determined that instead of one library to serve the Puna District, two new libraries should be constructed; one in Pāhoā and the other in Kea'au. The latter is the Proposed Action, construction of the Kea'au-Mountain View Public Library.

This page intentionally left blank

## 2 Project Description and Alternatives

### 2.1 Proposed Action

The Proposed Action is the construction of a new 13,900 SF Kea'au-Mountain View Public Library serving the Kea'au and Mountain View communities, including Kurtistown and other nearby communities in the Puna District. The Kea'au-Mountain View Public Library will support current public demand and provide sufficient operational space for staff, resources, and library patrons. It will provide current technologies such as broadband wi-fi services and support community activities.

The Proposed Action does not include the construction of the Pāhoā Public Library in Pāhoā. This library is being proposed under a separate HSPLS project in conjunction with the County of Hawai'i and was evaluated in a separate environmental document.

The project is proposed on a 1.7 acre portion of TMK (3) 1-6-002:001, owned by the State of Hawai'i. This 5.97-acre TMK parcel includes the Kea'au Middle School and is currently set aside by Executive Order No. 0614 (EO 614) to the Department of Education (DOE) for the Ola'a School Lot (Kea'au Middle School). The 1.7-acre area proposed for use by the Kea'au-Mountain View Public Library will be withdrawn from EO 614 and re-set aside to the Hawai'i State Public Library System (HSPLS). This agreement between the DOE and HSPLS is in process.

#### 2.1.1 Library Components

The proposed site plan for the Kea'au-Mountain View Public Library is shown in Figure 4. Access to and from the library from Kea'au-Pāhoā Road will be via two new access driveways and visitor parking will be located at the front of the building with staff parking and loading areas on the north side of the building. The library interior will be comprised of four types of space: Library, Community, Staff, and Other.

##### Library Areas

The Library areas are public spaces for library patrons and other users, and represents the majority of the indoor area, with over 60% of the square footage. The Library area includes the collections area, technology lab, reading area, seating areas, quiet and small group spaces, activity spaces, and staff circulation and information areas. The Library area will be a large, flexible open space with modular furnishings that can be moved and reconfigured, as needs change. During the preliminary design process, HSPLS indicated that its top priority in designing a library was to maintain flexibility for the interior space to accommodate future needs. Hard walls and built-in furnishings will be minimized to retain versatility and adaptability in future use.

##### Community Area

The Community area includes a separate meeting room that can be reserved for a variety of functions during or after regular library hours. The meeting room opens onto an outdoor lanai which can be used for indoor-outdoor functions or an outdoor reading area.



2-2

**Site Plan**

**Hawai'i State Public Library System**

Kea'au-Mountain View Public Library

Final Environmental Assessment – Finding of No Significant Impact

**Figure 4**

## Staff Areas

Staff areas are the non-public areas of the facility used by library employees. It includes offices, work areas, space for receiving and sorting, break room, and general and secured storage. A work space for the Friends of the Library of Hawai'i has also been included near the community meeting room.

## Other Areas

Other miscellaneous space includes restrooms, mechanical and electrical spaces, and maintenance areas. Restrooms are located outside the main library space to remain accessible for community functions when the library is closed. Mechanical and maintenance areas are located on the west side of the building and include mechanical and electrical rooms and a trash enclosure. A septic tank and leach field are located toward the back of the property on the west side.

### 2.1.2 Access and Parking

Ingress and egress to the site will be off Kea'au-Pāhoa Road via two redeveloped driveways. The entry driveway will be adjacent to (just west of) the middle school entry road. This driveway will be clearly designated with signs to differentiate it from the school entry. The one-way driveway will lead to a parking lot at the front of the library with 42 stalls, including two accessible stalls. The parking stalls at the front of the building will be reserved for library patrons, with staff parking and loading areas on the north side of the building. All vehicles will exit the parking lot through a second driveway on the west side of the property. There will be a book drop and pickup lockers accessible from the parking lot.

New walkway connections between the library, public sidewalks, and the Kea'au Middle School will be constructed. The design of the walkways (width and slope) will comply with the Americans with Disabilities Act (ADA) and the State Disability and Communication Access Board (DCAB).

The construction of the walkway between the public sidewalk and the library will require removal of an approximately 5-foot section of the existing rock wall on the south side of the entry driveway. This portion of the wall is currently collapsed and presents a safety and liability hazard. After removal of the wall section, the wall will be finished using materials of and in a style consistent with its historic character. Other onsite improvements include grading, Individual Wastewater System (IWS), waterline and connections, drainage structures, perimeter chain link fence and gate, and cattle and sliding vehicle gates.

### 2.1.3 Landscaping Plan

The goal of the landscape design is to provide a visually appealing landscape that meets the library's functional and program requirements of the library and creates a sense of identity for the facility.

A small courtyard area with planter and seating will be included near the building's main entry doors to enhance a sense of arrival. A covered lanai adjacent to a grassy area promotes an indoor-outdoor connection, and can be used for outdoor reading, for pop-up activities and community events, or in conjunction with the adjacent meeting room.

The landscaping will be low maintenance. The trees proposed in the landscape plan produce minimal leaf litter and are commonly used for street trees due to their clean appearance, moderate growth

habits, and low potential for root impacts on paving. A root barrier will be provided for the parking planting island to minimize the potential for tree roots to impact paving.

Security and safety were identified by HSPLS staff as a priority, and the intent of the landscaping is to provide a safe, secure site surrounding the building. All designed landscape areas and outdoor open spaces/activity areas will maintain a clear line of sight for surveillance purposes. Use of shrubs and groundcover is limited to avoid blind spots or hiding places that could attract loitering.

The site design will meet sustainable goals by following the Leadership in Energy & Environmental Design (LEED) V4.0 for New Construction and Major Renovations. To meet sustainable goals and to conserve water resources, the use of a permanent automatic irrigation system will not be utilized for any landscape areas. Temporary irrigation will be installed during the plant establishment period.

Proposed site amenities include a bike rack, which will hold a maximum of nine bicycles, one trash receptacle and two benches.

#### **2.1.4 Estimated Cost**

The total cost of the library project is approximately \$20 million. One-half is already appropriated; the remaining \$10m has been appropriated by the State Legislature during the 2023 Legislative session and the Governor has approved the budget.

## **2.2 Alternatives Considered**

### **2.2.1 Site Selection Process**

The proposed site for the Kea'au-Mountain View Library was identified through an extensive site evaluation process and site selection study (HSPLS, May 2022).

The site evaluation process consisted of two phases: 1) an initial screening process; and 2) evaluation and ranking of five short-listed alternatives. Twelve (12) sites were identified for initial screening based on discussions with HSPLS and Hawai'i Department of Accounting and General Services (DAGS) staff. The 12 sites included government-owned and privately-owned properties, all of which met minimum size and roadway access requirements.

The initial screening evaluated each of the 12 sites on location, ownership and other physical considerations, to narrow the sites to a short list of five sites. These five sites were evaluated in more detail and given a quantitative rating (i.e., points) based on whether they were Excellent, Good, Average, Fair or Poor in meeting each criterion. The criteria were also weighted, with the most heavily weighted criteria being: a) site location and accessibility; b) site ownership; c) vehicular access; and d) availability of infrastructure. Other criteria that were considered included: physical site characteristics; pedestrian access and walkability; compatibility with State and County plans and policies; and compatibility with adjacent land uses. Points for each site were totaled and the sites ranked by their point totals.

The proposed Kea'au Middle School site received the highest ranking of the five sites, receiving favorable ratings on all site criteria. The preferred site received high ratings for its location within walking distance to the Kea'au town center and its proximity to major roadways and infrastructure, reducing the need for costly infrastructure improvements. Existing ownership by the State of Hawai'i combined with the support of the Department of Education was another major advantage of the Kea'au Middle School site, as expeditious site control will result in significant time and cost savings. Section 2.5 below, Alternatives, describes each of the five sites and their pros and cons. The five sites are shown in Figure 5.

### 2.2.2 No-Action Alternative

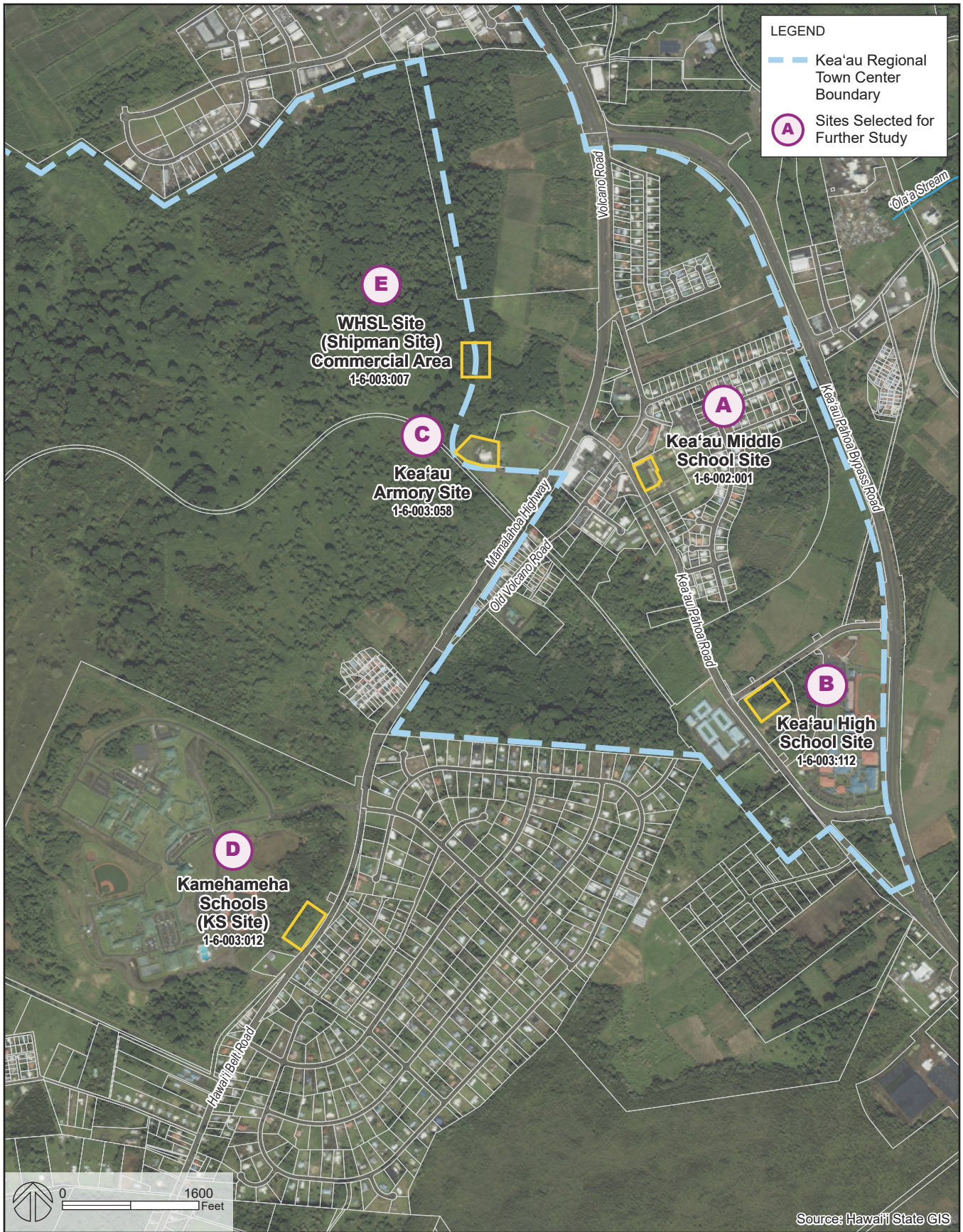
Under the No-Action alternative, the status quo would remain. A new library would not be constructed, and the Puna community would continue to rely on the existing libraries at Kea'au Middle School and Mountain View Elementary School. Although library service would continue, the undersized facilities are unable to be enlarged or upgraded to meet the needs of the growing regional population and to incorporate current technologies, resources and design concepts. The co-location of the libraries and schools would restrict public access by requiring library patrons to enter the main campuses with oversight by security during school hours. The situation would remain disruptive and a potential security concern for the school community.

### 2.2.3 Alternative Library Sites in Kea'au

Five sites in Kea'au, including the preferred site at Kea'au Middle School, were evaluated in detail in the Kea'au-Mountain View Public Library Site Selection Study (HSPLS, 2022). Selected from an original 12 potential sites, all five met the minimum size and site configuration criteria for a library. Although the Kea'au Middle School site was selected as the preferred alternative, each of the other four sites are considered viable, though less favorable, options. The advantages and disadvantages of each of the other four alternative sites, as determined by the Site Selection Study, are summarized below.

#### Kea'au High School Site

This 3.0-acre site (shown as Site "B" in Figure 5) is an unused State-owned property along Kea'au-Pāhoa Road adjacent to Kea'au High School. The site is part of a 59-acre area under the jurisdiction of the Department of Education for the high school but is not currently planned for use. It is also across the street from Kea'au Elementary School. The subject site is conveniently located in the southern end of the Kea'au town center and along a major roadway. It has the advantage of being under State control, which would facilitate site acquisition by HSPLS. Another advantage is proximity to both the high school and elementary school.



**Alternative Sites (Short-List) Location Map**

**Figure 5**

Hawai'i State Public Library System

Kea'au-Mountain View Public Library

Final Environmental Assessment – Finding of No Significant Impact



### Kea'au Armory Site

This State-owned site (Site “C” in Figure 5) is 3.04 acres and includes a building formerly used as the Hawai'i National Guard's Kea'au Armory. The site is centrally located within the Kea'au town center with vehicle access from a driveway off Volcano Road (Route 11) that serves Kea 'au Shipman Park.

The armory building was vacated by the National Guard but is now temporarily used for the National Guard Bureau Youth Services (Starbase Program) operations. In May 2020, the State Land Board approved setting this property aside to the County of Hawai'i for recreational programs and expanded community use. The County Department of Parks and Recreation is currently using the armory building for recreational programs and allowing the Starbase Program to continue.

Although centrally located and a State-owned property, the recent Executive Order set-aside for this property to the County for recreation use complicates site acquisition for HSPLS. The County would likely oppose relinquishing the site. Moreover, adaptive reuse of a former armory building for a library would also constrain the library use and design, compared to construction of a new custom-built library.

### W.H. Shipman Ltd. (Shipman) Site

A 3.0-acre site owned by W.H. Shipman Ltd. (Site “E” in Figure 5) had been offered by the landowner to the HSPLS for a new library. The site is located inland of Mamalahoa Highway and is part of a larger Shipman-owned parcel that is planned for future commercial development. A library on the Shipman Site would be situated above (mauka of) a regional commercial center proposed by Shipman as part of their master planned development of Kea'au.

The undeveloped Shipman Site is centrally located just outside the Kea'au town center. Although located on a major thoroughfare, vehicle access to the library would need to be provided by constructing a new roadway from Volcano Road (Route 11). Because the library would be sited inland of the future commercial center, the access roadway would need to serve both the library and the commercial area. If the library is constructed before the commercial center, which appears likely, the State would bear the cost of constructing the access road.

Although the site is being offered to HSPLS by the landowner at no charge, the property still needs to be subdivided and processed for conveyance to the State. Because the Shipman Site is within the State's Agricultural land use district, land use entitlement approval from the State Land Use Commission would also be required. This can be a time-consuming and costly process.

The lack of existing vehicle access and the lack of existing utilities on the site were major issues that would increase overall library development costs. Because both the future road and utilities would also serve the future Shipman commercial center, required coordination with and approval by Shipman was seen as another source of delay and added cost.

### Kamehameha School (KS) Site

A 3.0-acre site owned by Kamehameha Schools (KS) (Site “D” on Figure 5) was identified along Volcano Road, approximately one mile south of the Kea'au town center. The site is privately owned by KS and is part of a 302-acre parcel that includes the KS Hawai'i campus.

The KS site consists of undeveloped land fronting the KS Hawai'i campus and is located between a county reservoir site to the south and a Hawai'i Electric Light Company (HELCO) substation to the north. Vehicle access to the new library would be off Volcano Road (Route 11). Approval for a new driveway access would be needed from the State Department of Transportation, and other potential access improvements (e.g., right-turn deceleration lane) may be needed.

Since the site is undeveloped, off-site improvements would be needed to provide other infrastructure and utilities. The site is covered with vegetation which would require extensive clearing and grubbing. At the time the 2022 Site Selection report was done, no discussions with KS had been held regarding the potential use of the site, and it was unknown whether they would be supportive of using this site.

#### **2.2.4 Locate Library in Mountain View**

The proposed Kea'au-Mountain View Library will serve both the Kea'au and Mountain View communities, and another option was to site the library in Mountain View. Locating the library in another Puna District community such as Mountain View or Kurtistown, was explored during the HSPLS community meetings in 2015. However, the community consensus appeared to be that the library should be located in Kea'au rather than Mountain View, due to its more central location and direct roadway accessibility from all parts of the Puna District as well as Hilo.

## 3 Natural and Physical Environment

This chapter focuses on the natural and physical environment, including geography, topography, soils, climate, natural hazards (including climate change), water resources, and biological resources. It describes the existing environment, potential project impacts and proposed mitigation.

### 3.1 Climate

#### 3.1.1 Existing Conditions

Hawai'i Island's climate is generally mild with uniform temperatures and moderate humidity. The average temperatures at the Hilo Airport ranges between 72.2 degrees Fahrenheit in the coolest month to 78.2 degrees Fahrenheit in the warmest month (State of Hawai'i Data Book 2020). Northeast trade winds typically occur during the day, while winds from the southwest typically occur during the night due to cold air drainage from the mountains. The mean annual wind speed in Kea'au is about 4.8 miles per hour (mph), and typically varies between about 3 and 8 mph during the day. Regional temperatures are generally mild due to the trade winds. In Kea'au, the average temperature is approximately 69 degrees Fahrenheit in the winter, and 74 degrees Fahrenheit in the summer.

According to *The Rainfall Atlas of Hawai'i*, Kea'au (Kea'au/Olaa Station) receives an average annual rainfall of approximately 142.2 inches (Giambelluca, et al., 2013). The average monthly rainfall is fairly even throughout the year, with the rainiest months being March, April, and November.

#### 3.1.2 Potential Impacts and Mitigation

The Proposed Action will have no effect on immediate climate conditions and no mitigation is required. The larger relationship of the Proposed Action to global climate change and sea level rise is discussed in Section 3.3, Natural Hazards.

### 3.2 Physical Setting

#### 3.2.1 Topography

The elevation of the project site ranges from approximately 326-feet to 346-feet mean sea level (MSL), sloping from south to north from the access road towards the opposite side of the property. The site generally is flat through the middle of the property with an average slope of 1-2%. The highest slopes on the site may be observed at the entrance of the property closest to Kea'au-Pāhoa Road, at approximately 10%. Access to the site is provided by two existing one-way AC pavement driveways along Kea'au-Pāhoa Road, the ingress and egress being located furthest south and north, respectively.

## 3.2.2 Soils

### 3.2.2.1 Existing Conditions

The soils within the project area are Panaewa very cobbly hydrous loam (629) soils according to the U.S. Department of Agriculture (USDA) Soil Survey (1973) (Figure 6). The soil is described as:

The Panaewa series consists of shallow, moderately well drained soils that formed in material weathered from volcanic ash which overlies pahoehoe lava. Slopes range from 2 to 10 percent...Runoff is low. Permeability is moderate in the soil and very slow in the underlying bedrock. These soils are used principally for pasture and macadamia nut orchards.

A Phase I Environmental Site Assessment (ESA) (Renaissance Consulting LLC, 2023) has confirmed that soils in the project area are considered lead- and arsenic-impacted, due to the area's historic use for agriculture. This issue is discussed further in Section 4.8, Solid Waste and Hazardous Materials.

### 3.2.2.2 Potential Impacts and Mitigation

Construction of the library will involve site preparation, grading and excavation for the new building structure, access roads, parking, and utilities. The ground levels will be graded to maintain adequate slopes for drainage. The existing site grade will remain in areas of the site where no construction is proposed. Stormwater will be conveyed away from the proposed building to existing and proposed drainage structures as described in Section 4.7.5 of this EA. An Individual Wastewater System will be installed, in addition to fire and domestic waterlines which will be connected to the existing County system. All grading and stockpiling work will be in accordance with the State rules and County Code. An NPDES permit will be required for the Project. An erosion control plan will be developed for the Project.

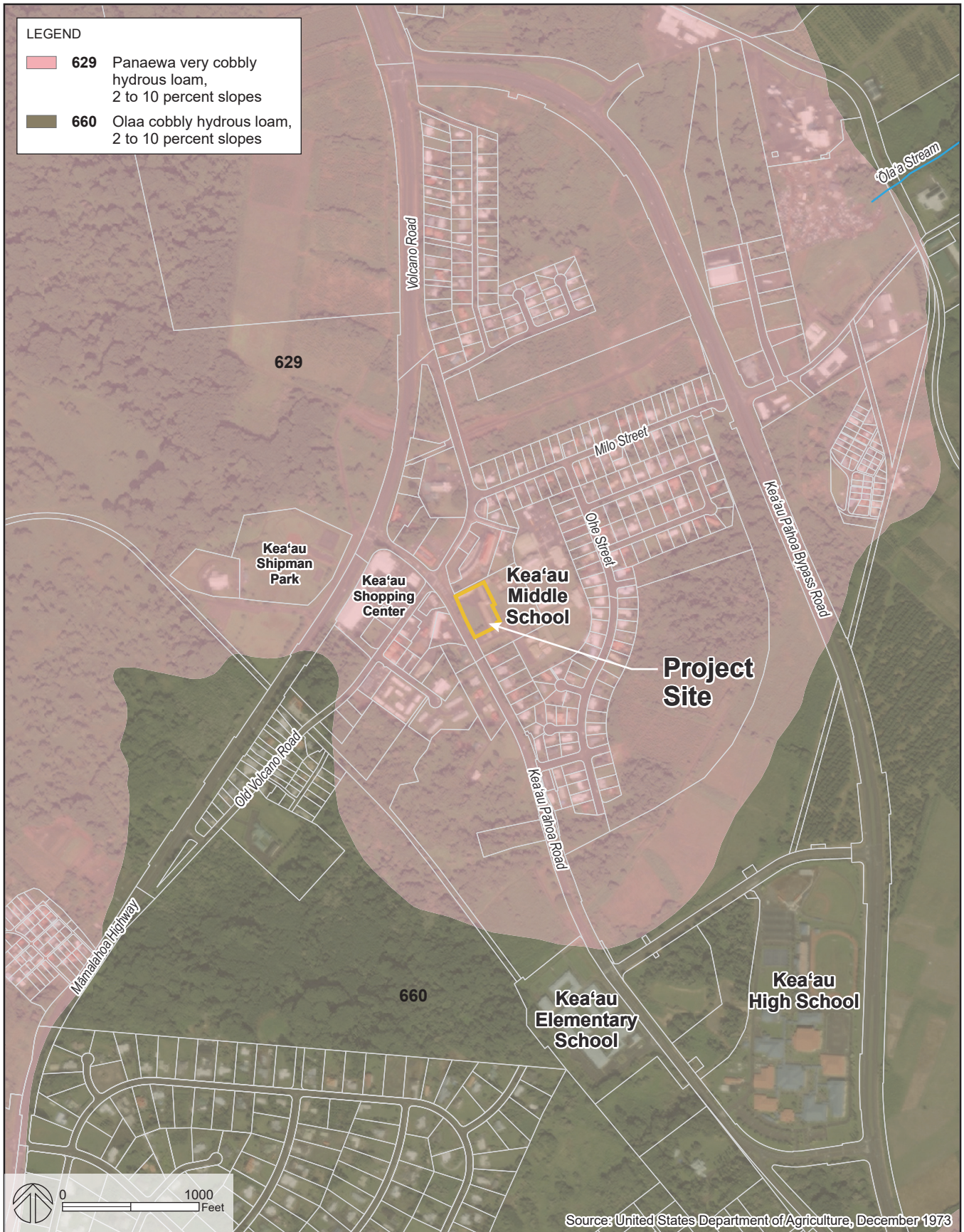
Temporary erosion control measures will be incorporated during construction to minimize soil loss and erosion hazards. Best Management Practices may include temporary sediment basins, temporary diversion berms and swales to intercept runoff, silt fences, dust fences, inlet protection, temporary ground cover, stabilized construction entrances and truck wash-down areas. Periodic water spraying of loose soils will be implemented to minimize air-borne dirt particles from reaching adjacent properties. Areas disturbed during construction will be permanently stabilized with buildings, pavements, and landscaping.

## 3.3 Natural Hazards

### 3.3.1 Existing Conditions

#### 3.3.1.1 Flood

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the majority of the project site is in Zone X (FIRM Panel 15516611765F), an area determined to be outside the 0.2% annual chance floodplain. The property is not located in the County's tsunami evacuation zone, or within a coastal area and is not adjacent to any streams or waterbodies.



**NRCS Soils Classification**

**Hawai'i State Public Library System**

Kea'au-Mountain View Public Library

Final Environmental Assessment – Finding of No Significant Impact

**Figure 6**

The Proposed Action will not increase the risk of human health or property damage due to natural hazards.

### 3.3.1.2 Volcanic Hazard

The U.S. Geological Survey (USGS) volcanic hazard zone map for the Island of Hawai'i divides the island into zones ranked from 1 through 9 (with 1 being the area of greatest hazards and 9 being the area of least hazard) based on probability of coverage by lava flows. The greater Hilo area, including the Kea'au area, is within Zone 3. This hazard rating indicates that the zone is gradationally less hazardous than Zone 2 because it is a greater distance from active vents and the topography makes it less likely to be covered by lava flows. Zone 3 has been covered by lava from one to five percent of its total land area since 1800, and 15 to 75 percent in the last 750 years.

### 3.3.1.3 Earthquake Hazard

Thousands of earthquakes occur every year beneath the Island of Hawai'i. Earthquakes in Hawai'i are closely linked to the volcanoes that shaped the island and continue to be active today. Numerous small earthquakes usually accompany eruptions and are directly related to magma moving within the volcanoes, accumulating in shallow reservoirs, or erupting at their summits or rift zones. Other earthquakes involve slippage along tectonic faults. They may occur on the upper crustal faults beneath and within the volcanoes, or deep beneath the island. (USGS Hawaiian Volcano Observatory, 2022).

A majority of the most destructive earthquakes in the state recorded since 1868 have occurred on the Island of Hawai'i. Several destructive earthquakes have affected East Hawai'i. A 7.7 magnitude earthquake in 1975 and a 6.1 magnitude earthquake in 1989, with its epicenter in Puna, caused extensive damage with both generating tsunamis. Most recently in 2018, a 6.9 magnitude earthquake, with its epicenter in Puna, was the largest earthquake to strike Hawai'i since 1975. Destructive earthquakes have also been felt in the Volcano District and on the west side of the island in Kona and Hualālai. (USGS Hawaiian Volcano Observatory, 2022).

### 3.3.1.4 Hurricanes

Hurricanes are part of a family of storms known as "tropical cyclones." These storms can be quite large and produce three life-threatening effects: high winds, storm surge, and heavy rains. Each of these effects in a singular manner could pose a serious threat to life and property. Taken together, they can cause widespread destruction, especially to older homes and structures that could be impacted by coastal storm surge (an abnormal rise of ocean water generated by a storm).

The Island of Hawai'i has historically received less threat and damage from hurricanes compared to the Island of Kaua'i. However, the proposed structures could potentially be damaged by high winds and heavy rainfall from a hurricane passing over the island.

## 3.3.2 Potential Impacts and Mitigation

The construction of the new Kea 'au-Mountain View Library will not increase the risk of human health or property damage due to natural hazards. The Project Area in Kea'au is not within the coastal area or an area vulnerable to flooding, tsunami or storm surge.

Like all of the east Hawai'i area, Kea'au has some volcanic hazard risk, as well as the potential for earthquakes and hurricanes. To mitigate damage due to earthquake and hurricanes, the proposed library will be designed and constructed in compliance with the seismic standards in the County of Hawai'i building code, International Building Code and other State and County standards.

### 3.3.3 Climate Change and Sea Level Rise

#### 3.3.3.1 Existing Conditions

Climate change is a long-term global shift in patterns of temperature, precipitation, humidity, wind and seasons. Scientific data show that earth's climate has been warming, mostly attributable to rising levels of carbon dioxide and other "greenhouse gases" generated by human activity. These changes are already impacting Hawai'i and the Pacific Islands through rising sea levels, increasing ocean acidity, changing rainfall patterns, decreasing stream flows, and changing wind and wave patterns. Sea level has risen over the last century on each island at rates varying from 0.5 to 1.3 inches per decade. (UH Sea Grant, 2014) For the foreseeable future, the planet's warming atmosphere will cause increased melting of ice sheets and snow, in addition to thermal expansion of ocean water, resulting in sea level rise.

The Hawai'i Sea Level Rise Vulnerability and Adaptation Report provides a statewide overview of vulnerability to sea level rise and the potential impacts from chronic flooding. This overview is based on modeling coastal flooding with sea level rise due to passive flooding, annual high wave flooding, and coastal erosion in the Sea Level Rise Exposure Area (SLR-XA) with up to 3.2 feet of sea level rise. It depicts flood hazards that may occur in the mid- to latter-half of this century. According to the report, this "timeframe is within the expected lifespan of most new construction and much of our existing development. It should be noted that sea level rise projections greater than 3.2 feet are "physically plausible" by the end of the century, based on the latest climate science..." (Hawai'i Climate Change Mitigation and Adaptation Commission, 2017).

In addition to sea level rise, human-driven climate change will result in: (1) warmer air temperatures; (2) a decrease in prevailing northeasterly trade winds; (3) a decline in rainfall and resulting decline in water resources and aquatic ecosystems; (4) warming and acidifying seawater; and (5) stress to human health. (UH Sea Grant, 2014)

#### 3.3.3.2 State and County of Hawai'i Policies and Initiatives

##### Hawai'i Clean Energy Initiative

The State of Hawai'i has committed to reduce its dependence on fossil fuels and achieve the goal of 100 percent clean energy by 2045. In 2008, the State of Hawai'i and the U.S. Department of Energy signed a groundbreaking Memorandum of Understanding to collaborate on reducing Hawai'i's dependence on fossil fuels. In 2014, a second MOU was signed building upon this earlier foundation and launching the Hawai'i Clean Energy Initiative (HCEI). The HCEI is led by the Hawai'i State Energy Office which spearheads statewide energy security and resilience initiatives. The intent is to reduce Hawai'i's dependence on fossil fuels, strengthen self-sufficiency, energy resilience and security, with a goal of 100% renewable energy by 2045.

### Hawai'i 2050 Sustainability Plan

In 2005, the Hawai'i Legislature established the Hawai'i Sustainability Task Force and directed it to develop a Hawai'i 2050 Sustainability Plan to address the vital needs of Hawai'i through year 2050 and beyond. The Plan was first published in 2008, updated in 2018 and superseded by the 2021 update, Charting a Course for the Decade of Action (2020-2030).

The 2021 update identifies 8 focus areas with 38 strategies and more than 250 recommended actions that point to what is urgent to undertake over this decade. The focus areas for the Decade of Action include:

- 1) Promote a Sustainable Economic Recovery
- 2) Reduce Greenhouse Gas Emissions
- 3) Improve Climate Resilience
- 4) Advance Sustainable Communities
- 5) Advance Equity
- 6) Institutionalize Sustainability Throughout Government
- 7) Preserve the Natural Environment
- 8) Perpetuate Traditional Ecological Knowledge and Values

The proposed Kea'au-Mountain View Public Library project supports strategies within the Advance Sustainable Communities and Advance Equity focus areas. Applicable strategies include advancing smart growth initiatives such as promoting human powered transportation and connectivity. The library's location within the center of Kea'au Town is within walking distance of schools, commercial areas and residential areas, supporting smart growth concepts. The library itself will incorporate sustainable design principles including PV, and its operation will incorporate sustainable practices such as reuse and recycling.

The new library will directly support the focus area of Advance Equity by strengthening widespread access to digital resources in a rural area which is currently underserved by the existing libraries. The new library will provide learning opportunities and access to state of the art digital technology to all Puna District residents. The resources available at the library will also support efforts in the focus area to Perpetuate Traditional Ecological Knowledge and Values. It can provide a venue for community events and meetings, and the library can provide a clearinghouse and archive for written, visual and other digital resources promoting ecological and cultural knowledge.

### County of Hawai'i Integrated Climate Action Plan

The County of Hawai'i is developing an Integrated Climate Action Plan to identify how to address climate change causes and impacts to Hawai'i Island. The goal is to develop strategies to reduce the island's greenhouse gas (GHG) emissions to create a more sustainable and healthier Hawai'i Island that is more self-sufficient and independent. A first draft Climate Action Plan (CAP) was released in 2020.



The County's plan identifies two main targets: 1) to generate power and electricity from 100% renewable energy sources by the year 2045; and 2) to become carbon neutral by 2045 through absorbing/sequestering more carbon than is emitted. To reach carbon neutrality by 2045, the County has set specific targets for reducing emissions from 2015 levels. The target goals include a 35% reduction by 2025, a 70% reduction by 2035, and 100% reduction by 2045.

The plan identifies mitigation strategies and measures for various sectors of the economy. Energy sector strategies include investing in more green buildings and infrastructure and promoting renewable energy growth. Transportation strategies include improving infrastructure design and development, improving mass transit, and use of multi-modal transportation and clean vehicles. Other strategies include waste reduction, recycling, promoting green and biodegradable products, and reducing the amount of wastewater generated.

### 3.3.3.3 Potential Impacts and Mitigation

Any new construction activity has the potential to generate greenhouse gas emissions due to the vehicles used by its personnel, and during construction through the operation of construction equipment. Because the project will replace two existing libraries, which will then be closed, once the new library is operational, there will be no significant change in the number of library patrons, or in vehicle trips and emissions. Construction vehicles and equipment will contribute to greenhouse gas emissions although this will be a temporary increase and not significant.

The project is pursuing sustainable design and development using the guidance of the U.S. Green Building Council's Leadership in Energy and Environmental Design for Building Design and Construction (LEED BDC v4) program administered by the Green Building Certification Institute (GBCI). LEED BDC provides a framework for building a holistic green building, incorporating sustainability features to maximize benefits and reduce greenhouse gas emissions. It is the standard for green building design, construction, operations, and performance.

According to the project's Preliminary Basis of Design, the Kea'au-Mountain View Library project will meet LEED Silver criteria, based on earned LEED credits for site location, energy efficiency and water efficiency. The project's sustainable site features include open space, rainwater management, and light pollution reduction. The project's energy efficiency features include energy efficient lighting, HVAC system, energy star appliances and photovoltaic (PV) panels. Water efficiency is assured through the use of low flow plumbing fixtures. The project will specify durable and environmentally preferable materials and it will include construction waste management methods in the specifications. Indoor environment quality will be integrated in design and low VOC materials will be specified.

To promote water saving, no permanent irrigation system will be installed, although temporary irrigation will be included during the plant establishment period. Trees will be planted to provide shade in open parking lots to minimize visibility of paved surface and reduce the heat island effect. A bike rack will be provided to promote bicycling and transportation efficiency. (RMA Architects Inc., 2023).

## Consistency with Hawai'i 2050 Sustainability Plan and Integrated Climate Action Plan

The proposed Kea 'au-Mountain View Public Library is consistent with the recommendations of the Hawai'i 2050 Sustainability Plan and the County's Integrated Climate Action Plan. The project will advance the State's attainment of sustainable goals and objectives. As indicated above, the library design will meet LEED Silver criteria based on location, energy, and water efficiency.

The library's location near the Kea'au town center is within convenient walking distance to area schools, parks, commercial areas and residential communities, reducing the need to drive and use of fossil fuels. Pedestrian connections between the library and school and the public sidewalk will be provided to encourage walking. Bicycle racks will be available on site. The project will incorporate recycling, reuse and waste reduction strategies during construction and library operation.

## 3.4 Water Resources

### 3.4.1 Existing Conditions

#### 3.4.1.1 Groundwater Resources

About 50 percent of the State's water supply comes from ground water sources. Ground water, which is also used for agricultural, industrial, and domestic purposes, is the principal source of municipal water supplies in Hawai'i. Groundwater hydrologic units, or aquifers, have been established by the State's Commission on Water Resource Management (CWRM) to provide a consistent basis for managing ground water resources. An aquifer coding system identifies and describes ground water hydrologic units.

The Hawai'i County Department of Water Supply has prepared the County Water Use and Development Plan (WUDP) as a long-range guide for water resource development in the County. There are nine Aquifer Sector Areas on Hawai'i Island which are further subdivided into Aquifer System Areas. The Northeast Mauna Loa Aquifer Sector Area (ASEA) (Sector 804) includes the bulk of urban Hilo and Kea'au and is divided into the Hilo and Kea'au hydrologic units or aquifers. The Northeast Mauna Loa ASEA has a sustainable yield of 740 million gallons per day (mgd), the highest sustainable yield of all aquifer sector areas on Hawai'i Island. This reflects the high annual rainfall and the permeability of the surface.

Sustainable yield is the amount of groundwater that can be pumped without depleting the source. Most of Kea'au is located within the Kea 'au aquifer system, which according to the Hawai'i County WUDP has a sustainable yield of 393 mgd. According to the Hawaii Groundwater & Geothermal Resources Center, there is one well approximately 1.5 miles to the east and upgradient of the subject property. Ola'a #3 Deepwell is located off Mamalahoa Highway, at 602 ft above mean sea level. The well was installed in 1988 and is owned and used by the Hawai'i Department of Water Supply. In 1988, the groundwater level was measured at 658.6 feet below ground surface (University of Hawaii, 2014).

#### 3.4.1.2 Surface Water Resources

Surface water in the Kea'au region generally flows from mauka areas in the southwest, down toward the shore in the northeasterly (makai) direction. The non-perennial 'Öla'a Stream, is located approximately

0.6 miles northeast of Kea'au town, and another nonperennial stream, Kea'au Stream, flows from the Mountain View area and crosses Kea'au-Pāhoa Road located approximately two miles southeast of the project area.

There are no streams or wetlands located on or near the library project site. The nearest coastline at Kea'au Beach is approximately four miles to the northeast. There is a historic, man-made 'auwai or open channel irrigation structure running parallel to the northern boundary of the library project site. The 'auwai was likely associated with the historic sugar cane industry and is no longer in use. It is discussed further in Section 4.4, Historic and Archaeological Resources.

### 3.4.2 Potential Impacts and Mitigation

The project is not expected to have an adverse impact on groundwater or surface water resources. Construction activities will not impact streams or drainage patterns associated with nearby streams, and the project will not impact surface water resources. The project will not impact water quality at Kea'au Beach or other nearshore areas.

The development of a new library on a portion of the Kea'au Middle School property will increase impervious surfaces, increasing the amount of surface runoff. Stormwater runoff within the site will be collected via the new onsite drainage system, and there will be no net increase in storm water runoff offsite, as required by County of Hawai'i Storm Drainage Standards.

## 3.5 Biological Resources

Botanical, avian and terrestrial mammalian surveys were conducted on the project site by Maya LeGrande and Reginald David (LeGrande Biological Surveys, Inc., December 2022, see Appendix A). The primary purpose of the surveys was to determine if there are any biological species currently listed or proposed for listing under either federal or State of Hawai'i endangered species statutes within or adjacent to the project area.

### 3.5.1 Botanical Resources

Fieldwork was conducted on August 19, 2022 within the approximately two acre project area. A pedestrian survey was carried out where the investigator walked all boundaries as well as transects through the project area.

#### 3.5.1.1 Existing Conditions

The majority of the project area is characterized by a mowed lawn area along with asphalt pavement. The grassy lawn area is dominated by grasses such as carpetgrass (*Axonopus compressus*) and dallis grass (*Paspalum dilatatum*) with various additional weedy species mixed in with the lawn as well as in cracks of the surrounding asphalt. A few large trees are planted as ornamentals in the Project Area including bottlebrush (*Callistemon* sp.) and fern tree (*Filicium decipiens*).

The northwestern boundary is dominated by overgrown Guinea grass (*Megathyrsus maximus*) thicket with other species such as gunpowder tree (*Trema orientalis*), bingabing (*Macaranga mappia*), butterfly bush (*Buddleja asiatica*), Moluccan albizia (*Falcataria moluccana*), castor bean (*Ricinus communis*),

avocado (*Persea americana*), california grass (*Brachiaria mutica*), rattlepod (*Crotalaria* sp.), partridge pea (*Chamaecrista nictitans*), milkwort (*Polygala paniculata*), little bell (*Ipomoea triloba*), *Heterotis rotundifolia*, *Oldenlandia corymbosa*, *Spermacoce exilis*, graceful spurge (*Euphorbia hypericifolia*), and *Vigna hosei*.

A moss rock wall runs parallel to the Kea'au-Pāhoa Road at the western boundary of the Project Area. A row of Royal palms (*Roystonea* sp.) are growing between the wall and the road. Plants growing on and around the wall included laua'e (*Microsorium grossum*), laua'e haole (*Phlebodium aureum*), climbing fig (*Ficus pumila*), oriental hawksbeard (*Youngia japonica*), maile pilau (*Paederia foetida*), ornamental *Nephrolepis* fern, and wild bean (*Macroptilium lathyroides*).

There were no native plant species observed during the survey.

### 3.5.1.2 Potential Impacts and Mitigation

Native plant habitat within the proposed project area has been highly modified by human activities, such as historical agricultural activities, campus use, and the intentional and accidental introduction of alien species. The abundance of non-native plant species throughout the Project Area is in direct correlation to disturbance over the last several hundred years.

The four (4) existing Royal palms on Kea'au-Pāhoa Road will remain. The three (3) existing bottlebrush trees along the South-East driveway approach are in the area of the proposed driveway and pedestrian walkway/ADA ramp and will be removed (RMA, 2023).

## 3.5.2 Avifauna

A bird survey was conducted on the morning of August 19, 2022. Birds were identified to species by audio and visual observation and by listening for vocalizations. A single eight-minute avian point-count was made in the center of the site.

### 3.5.2.1 Existing Conditions

A total of 32 individual birds of seven species, representing six separate families, were recorded during station counts. The detected species are listed in Appendix A. All avian species recorded are alien to the Hawaiian Islands. Avian diversity and densities were in keeping with the location and vegetation on the site.

### 3.5.2.2 Potential Impacts and Mitigation

The findings of the avian survey are consistent with the location of the property and habitat present there. All the avian species detected are alien to the Hawaiian Islands – the site lacks suitable habitat to support any native avian species currently present in the general project area.

## Seabirds

It is possible that the endangered Hawaiian Petrel (*Puffinus sandwichesis*), Band-rumped Storm-Petrel (*Hydrobates castro*), and the threatened Newell's Shearwater (*Puffinus newelli*) over-fly the Project area between April and the middle of December each year in small numbers. The primary cause of mortality in Hawaiian Petrels and Newell's Shearwaters in Hawai'i is thought to be predation by alien

mammalian species at the nesting colonies (USFWS, 1983; Simons and Hodges, 1998; Ainley et al., 2001). Collision with man-made structures is considered the second most significant cause of mortality of these seabird species in Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. Disoriented seabirds may collide with man-made structures and, if not killed outright, become easy targets of opportunity for feral mammals. No suitable nesting habitat exists within or close to the Project area for any of the three seabird species discussed here.

The principal potential impact that the construction of the proposed project poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the project during the nesting season. The two main areas that outdoor lighting could pose a threat to these nocturnally flying seabirds is if, 1) during construction it is deemed expedient, or necessary to conduct night-time construction activities, 2) following build-out, the potential operation of security lighting during the seabird nesting season.

**Recommendations:** If nighttime construction activity or equipment maintenance is proposed during the construction phases of the project, all associated lights should be shielded, and when large flood/work lights are used, they should be placed on poles that are high enough to allow the lights to be pointed directly at the ground (Reed et al., 1985; Teller et al., 1987).

Deleterious impacts to transiting seabirds can be avoided if construction occurs during daylight hours and all outdoor lighting installed is fully "dark sky compliant" (DLNR DOFAW, 2016). DLNR recommends avoiding construction-related night-time lighting between September 15 and December 15 (DLNR, 2022).

### Hawaiian Hawk

No Hawaiian Hawk (*Buteo solitarius*) were recorded during this survey. This state listed species is regularly seen in the greater Hilo/Kea'au area (David, 2022). There are no suitable nesting trees present on the site for this species – it is not expected that this proposed action will result in any impacts to this state listed species. Project Area lacks habitat suitable for waterbirds. No mitigation is necessary.

## 3.5.3 Mammals

A list was made of mammals encountered during the survey. Indicators of mammalian presence, such as tracks, scat, and other signs were noted. Mammalian phylogenetic order and nomenclature follow *Mammal Species of the World* (Wilson and Reeder, 2005).

### 3.5.3.1 Existing Conditions

Two terrestrial mammalian species were detected during this survey, including one small Asian mongoose (*Herpestes javanicus*) observed within the area. Domestic dogs (*Canis lupus familiaris*) were heard barking from locations outside of the survey area.

### 3.5.3.2 Potential Impacts and Mitigation

The findings of the mammalian survey are consistent with the location of the property and the habitat currently present on the parcels. Although no rodents were recorded on either survey it is likely that some, of the four established alien Muridae found on Hawai'i, roof rat (*Rattus rattus*), brown rat (*Rattus*

*norvegicus*), and possibly Polynesian rats (*Rattus exulans hawaiiensis*) and European house mice (*Mus musculus domesticus*) use various resources found within the general project area on a seasonal basis. All these introduced rodents are deleterious to native ecosystems and the native faunal species dependent on them.

No mammalian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during this survey (DLNR, 2015; USFWS, n. d.).

#### **Hawaiian hoary bat**

Hawaiian hoary bats overfly the Project area on a seasonal basis, as they have been regularly recorded in the greater Hilo/Kea'au area (David, 2022). There is an issue with clearing and grubbing in areas that bats may roost, and where females may tend to their pups. These issues are of higher concern regarding the removal of woody vegetation taller than 4.6 meters (15 ft) between June 1 and September 15, the period in which bats may have pups. During the pupping season, females carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they forage. Very small pups may be unable to flee a tree that is being felled.

There is no such vegetation on this site, so it is not expected that this proposed action will result in impacts to this listed mammalian species. No mitigation is required.

### **3.5.4 Protected Species and Critical Habitat**

#### **3.5.4.1 Botanical**

No protected botanical resources were detected on or adjacent to the study site, nor were any expected given the current use of the property. It is not expected that the proposed project will result in deleterious impacts to any protected botanical resources.

#### **3.5.4.2 Seabirds**

The principal potential impact that the construction of the project poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights during the nesting season. The two main periods that outdoor lighting could pose a threat to nocturnally flying seabirds are: a) if during construction, it is deemed expedient or necessary to conduct night-time construction activities (currently no nighttime construction is anticipated); b) the use of streetlights or other exterior lighting during the seabird fledging season which runs from September 15 through December 15. If no nighttime construction is being proposed, it is not expected that the proposed action will result in deleterious impacts to protected seabirds.

#### **3.5.4.3 Hawaiian hoary bat**

If additional fencing is included in the construction phase it is recommended that any type of barbed wire or razor wire not be used.

#### 3.5.4.4 Critical Habitat

There is no federally delineated Critical Habitat for any avian or mammalian species on, or close to the proposed project site (USFWS, nd-b). Thus, modifications of habitat on the site will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under state law.

#### 3.5.4.5 Wetlands

No wetland features were observed during the site survey.

### 3.6 Cumulative Impacts

Cumulative impacts are defined as the results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.

No cumulative impacts on the natural or physical environment are anticipated. New construction activity has the potential to generate dust and greenhouse gas emissions from construction equipment and vehicles. These are minor and temporary and will not have a measurable cumulative contribution. Because all library employees and users are already living on island, there will be no net increase in vehicles that could contribute to a cumulative impact. There will not be cumulative impacts on water resources or on biological resources.

This page intentionally left blank



## 4 Human Environment

This chapter focuses on the human-made environment, which includes land uses, air quality, noise, archaeological and cultural resources, infrastructure such as roads and utilities, and public services.

### 4.1 Existing and Surrounding Land Uses

#### 4.1.1 Existing Conditions

Figures 1 and 2 in Chapter 1 illustrated the project's regional location and surrounding uses. Historically, the land surrounding Kea'au was used for sugar cane cultivation as part of the Ola'a sugar plantation. More recently the development of macadamia nut orchards and other crops, such as bananas, has occurred around Kea'au. The Mountain View to Kurtistown corridor above Kea'au along with other small communities further inland are rural in character. This corridor includes small, predominantly residential and agricultural settlements from the plantation era and earlier that have been connected to Kea'au by roadways.

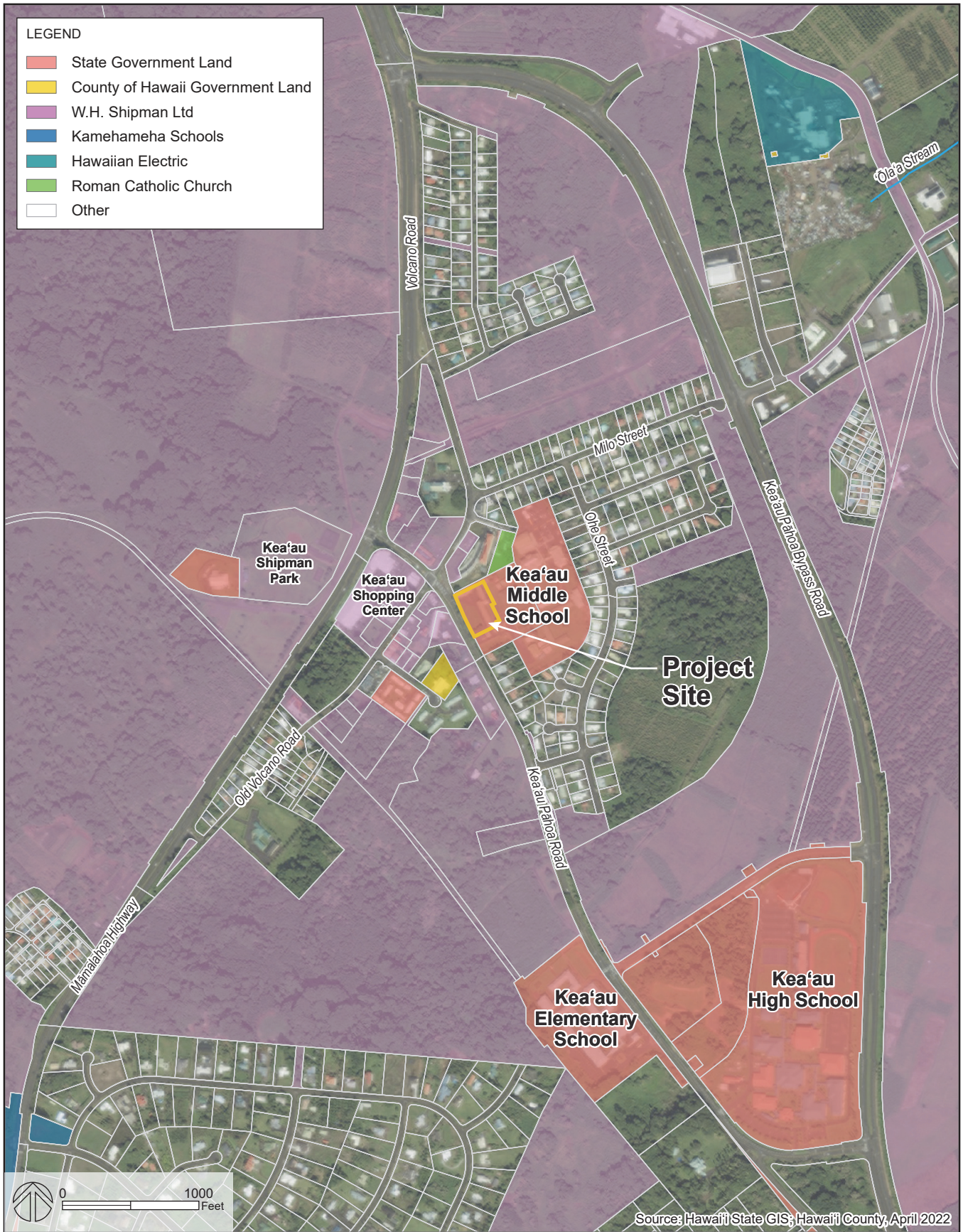
As shown in Figure 7, most of the land in Kea'au is held by a single landowner, W.H. Shipman, Ltd. Kea'au has its roots as a sugar plantation town, but has since undergone redevelopment with new commercial centers, schools, and residences. The Kea'au town center generally encompasses the urbanized areas along Kea'au-Pāhoa Road near its intersection with Volcano Road. The town center contains a variety of small businesses within two main shopping centers that serve the communities in this region. The town center include most of Kea'au's commercial/retail and small businesses, including a gas station, a McDonalds restaurant, Longs Drugs Store, Foodland grocery store, health clinic, credit union, plus police and fire stations. Residential areas are scattered throughout the project vicinity, including smaller subdivisions located within and adjacent to the town center.

The project site fronts Kea'au-Pāhoa Road adjacent to the Kea'au Middle School campus and within close proximity to the town center. The 1.7-acre project site is part of a larger 5.97-acre parcel that includes the middle school campus. The project site, as well as the land occupied by Kea'au High School and Kea'au Elementary School are owned by the State of Hawai'i (Department of Education).

#### 4.1.2 Potential Impacts and Mitigation

Adjacent and surrounding land uses, including the existing Kea'au Middle School, commercial and residential areas are compatible with the proposed library. The library's location is within walking distance of schools, commercial uses, residential and recreational areas.

A library is also compatible with W.H. Shipman's long-range Kea'au Village Master Plan, which calls for future commercial, community support, and residential land uses in the surrounding lands.



**Major Land Ownership**

**Hawai'i State Public Library System**

Kea'au-Mountain View Public Library

Final Environmental Assessment – Finding of No Significant Impact

**Figure 7**

## 4.2 Air Quality

### 4.2.1 Existing Conditions

Vehicular traffic and volcanic emissions are the major sources of air pollutants in the Hilo vicinity. Air quality in the Hilo vicinity is heavily influenced by volcanic activity. Kīlauea is one of three active volcanoes on Hawai'i Island, and one of the most active volcanoes on earth (Holcomb et al, 1987). Ongoing volcanic activity at the summit and east rift zones of Kīlauea volcano creates the potential for airborne health hazards to residents and visitors. At the levels of volcanic emissions occurring over recent years, individuals with pre-existing respiratory conditions are the primary group at risk of experiencing health effects from vog exposures, but healthy people may also experience symptoms.

The term “vog” refers to the hazy air pollution caused by the volcanic emissions from Kīlauea Volcano, which are primarily water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), and sulfur dioxide (SO<sub>2</sub>) gas. As SO<sub>2</sub> is released from the summit and east rift eruptive vents, it reacts in the atmosphere with oxygen, sunlight, moisture, and other gases and particles and, within hours to days, converts to fine particles, which scatter sunlight, causing the visible haze that is observed downwind of Kīlauea. Areas far downwind (e.g., the west side of Hawai'i Island and other islands in the state) are mostly affected by the fine particles; however, areas closer to the eruptive vents, including Hilo, can be exposed to both SO<sub>2</sub> gas and fine particles during periods of vog.

SO<sub>2</sub> is a colorless, irritating gas that has an acrid odor similar to fireworks or a struck match. It is also emitted from other sources, such as fossil fuel power plants and motor vehicles. Fine particles consist of particulate matter less than 2.5 micrometers in diameter and are referred to as “PM<sub>2.5</sub>”. These particles are smaller than the width of a human hair. PM<sub>2.5</sub> in vog is composed of acid and neutral sulfate particles. Other sources of PM<sub>2.5</sub> include vehicle exhaust and smoke from fires. Vog contains mostly SO<sub>2</sub> and acid particles, in contrast to urban, industrial, and other pollution sources, which also contain additional toxic contaminants, such as ozone and hydrocarbons.

In any location, vog concentrations are primarily dependent on the amount of volcanic emissions, the distance from the source vents, and the wind direction and speed on a given day. In the Hawaiian Islands, the predominant wind direction is from the northeast (trade winds). Consequently, the areas southwest of Kīlauea are most frequently affected by vog on Hawai'i Island. When trade winds are absent, which occurs most often during winter months, East Hawai'i, the entire island, or the entire state can be impacted by vog.

Sulfur dioxide emissions from Kīlauea Volcano have decreased since the beginning of the 2008 Halema'uma'u eruption, resulting in less vog for Hawai'i Island and state. In general, SO<sub>2</sub> and PM<sub>2.5</sub> are below levels considered to cause serious health effects for the general population. However, some individuals may experience symptoms from both PM<sub>2.5</sub> and SO<sub>2</sub> exposures, depending on location.

### 4.2.2 Potential Impacts and Mitigation

Project-related vehicular traffic will generate emissions but will not have a significant impact on air quality. The Traffic Impact Analysis report for the project, discussed in Section 4.9 below (and included

as Appendix D) concluded that traffic generated by the proposed library will account for roughly 1% of total future year traffic in 2027. Air quality impacts are not expected to be significant. As with most of east Hawai'i, the biggest influence on air quality will continue to be vog from Kīlauea Volcano.

During the construction period, there may be temporary, localized air quality impacts. Site clearing, grading, and the operation of construction machinery and vehicles have the potential to generate dust and other air quality impacts in the immediate area. These short-term impacts will be mitigated through Standard dust control measures during construction, in compliance with provisions of the State DOH Rules and Regulations (Chapter 43, Section 10) and Hawai'i Administrative Rules (HAR) Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33 on Fugitive Dust. Construction vehicles will be moved to and from the site during non-peak traffic hours to avoid unnecessary traffic delays.

## 4.3 Noise

### 4.3.1 Existing Conditions

Noise in the project vicinity is typical of a rural community, with the primary noise sources being environmental sources (e.g., birds, wind) and vehicle traffic on Kea'au-Pāhoa Road. Given the site's proximity to the Kea'au Middle School, traffic-related noise is most noticeable during weekday school drop off and pick up periods. According to the traffic impact assessment discussed in Section 4.9 below (ATA, 2023), peak weekday traffic within the study area generally occurs between 2:15 and 3:15 PM, coinciding with the end of the school day. During this time, traffic delays along Kea'au-Pāhoa Road occur for about a 30-minute period when vehicles queue for a left turn at the Old Volcano Road intersection.

#### 4.3.1.1 Sound Regulations and Guidelines

Various State and Federal sound regulations in guidelines are used in determining the project's noise impacts. They included the following:

##### Hawai'i Department of Health (HDOH)- Community Noise Control

*Hawai'i Administrative Rules, Title 11 – Department of Health, Chapter 46 – Community Noise Control* regulates environmental noise limits within the State of Hawai'i. Maximum permissible noise levels at the property line are identified for each specific class of land use (A, B, C). These sound level limits apply to "stationary noise sources, and equipment related to agriculture, construction, and industrial activities". Sounds generated by vehicles, hand tools, etc. are not considered a stationary source as defined by the regulation. The maximum permissible sound levels shall not be exceeded (at or beyond the property line) by more than 10% of the time for any 20-minute period.

The different land uses and their permissible noise limits are shown in Table 4-1 below. In mixed zoning areas, the primary land use designation is used for determining the zoning district. The applicable maximum noise levels are for daytime and nighttime hours at the property line and would pertain to equipment and vehicles used during construction. The proposed library would be considered Class A.

**Table 4-1: HDOH Property Line Maximum Permissible Noise Limits**

Land Use	Day Noise Limit 7am – 10pm	Night Noise Limit 10pm – 7am
Class A—Residential, conservation, preservation, public space, open space, or similar	55 dBA	45 dBA
Class B—Multifamily dwellings, apartment, business, commercial, hotel, resort or similar	60 dBA	50 dBA
Class C—Agriculture, country, industrial or similar	70 dBA	70 dBA

**Hawai'i Department of Health (HDOH)—Construction Noise Permit and Variance**

The HDOH grants permits to operate noise sources, such as construction equipment, in excess of the maximum permissible noise limits. Table 4-2 below shows the specific hours construction activities are allowed, with the appropriate community noise permit. Loud construction activities outside of normal construction hours require an approved Community Noise Variance.

**Table 4-2: HDOH Community Noise Permit-Construction Hours**

Equipment Type	Allowed Hours of Operation
Normal Construction Equipment	Monday – Friday: 7:00 am – 6:00 pm Saturday: 9:00 am – 6:00 pm Sunday & Holidays: No construction activities
Impulsive Construction Equipment: Pile driver, jack hammers, hydraulic hammers, high pressure sprayers, chain saws, etc.	Monday – Friday 9:00 am – 5:30 pm

**4.3.2 Potential Impacts and Mitigation**

**Construction Period Noise**

Site preparation work such as grading and excavation will generate noise which has the potential to impact surrounding land uses. The most noise-sensitive use nearby is Kea'au Middle School. Two portable classroom buildings are situated near the front of the middle school, about 50 feet from the proposed library driveway. The school administrative office building and several other classrooms are located within 100 feet of the library project site. These offices and classrooms will be impacted by construction noise. The closest residence on Kea'au-Pāhoa Road is located just a little over 200 feet from the project site on Kea'au-Pāhoa Road. The businesses located in the Kea'au Plaza shopping center across Kea'au-Pāhoa Road could also be affected by construction period noise.

The extent of construction noise impacts will vary depending on the type of equipment used, its location, and the construction phase. Earthmoving equipment is typically the loudest equipment. The project will not require impact equipment such as pile drivers.

The various construction phases may generate noise levels that are louder than the existing noise environment, especially during the initial site preparation phase. All construction activities are restricted to the conditions defined in the project's Construction Noise Permit issued by Hawai'i Department of Health. All work must be done during the construction hours described in the permit, i.e., 7:00 am to 6:00 pm, Monday to Friday and 9:00 am to 6:00 pm on Saturday. Construction work is not permitted on Sundays or holidays.

The construction contractor will comply with all conditions of the Construction Noise Permit. The Department of Education will be consulted during design regarding noise limitations on school operations. The Kea'au Middle School administration will be notified of the construction schedule and the timing and duration of the most noise intensive activities.

### **Operational Period Traffic Noise**

Once the library is constructed and is operational, the greatest potential for increased noise will be due to vehicles coming to and from the library. Because the existing Kea'au School and Public Library is already co-located at the middle school campus, there will not be a significant increase in the number of library patrons, employees, or service vehicles coming to the middle school site. There will be an overall net increase in library visitors, since the new facility will replace two existing libraries, and patrons may come from the entire Puna District. It is expected that library use will be highest after school hours and on weekends.

Overall, although there will be some increase in vehicle noise associated with the new library, it is not expected to be substantial nor perceptible to the adjacent school or surrounding community.

### **Equipment Noise**

The new library facility will incorporate stationary mechanical equipment on the building exterior associated with ventilation and air conditioning. Noise from the stationary mechanical equipment will comply with the HDOH maximum permissible noise limits at the project site property line. In addition, noise control measures will be taken into consideration during the design of the project, including locating exterior stationary mechanical equipment far from the project property lines and library patrons, and the use of equipment enclosures as required.

## **4.4 Historic and Archaeological Resources**

### **4.4.1 Introduction and Summary of Findings**

An Archaeological Literature Review and Field Inspection (ALRFI) was prepared (Honua Consulting, Inc. 2022) in support of the construction of the proposed Kea'au-Mountain View Public Library, and is included as Appendix B.

The objectives of the ALRFI are:

- 1) documentation and description of the parcel's land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes;
- 2) identification of any historic properties or component features in the project area; and
- 3) provide information relevant to the likelihood of encountering historically significant cultural deposits in subsurface context during future construction.

The current field investigation included a 100% pedestrian survey of the entire project area and was conducted in April 2022. The survey found that the entire project area has been substantially modified by the development of school infrastructure starting in the late nineteenth century and continuing to the present. More recently, the entire project area has been cleared of all formal structures except for an asphalt parking lot in the eastern portion of the project area, a large school sign near the southwestern entrance, and a flagpole near the western extent of the property. Two historic properties were identified during the survey: a historic 'auwai running outside of but parallel to the northern project area boundary, and a historic rock boundary wall, portions of which may be within the highway right-of-way.

## 4.4.2 Background

The discussion below is excerpted from the ALRFI (Appendix B), and provides the cultural, historic and archaeological context for the Study Area.

### 4.4.2.1 Cultural and Historic Context

#### Hawaiian Cultural Landscape

The project area is within the ahupua'a of Kea'au. The exact meaning of Kea'au is unknown and few traditional mythological accounts mention Kea'au specifically.

#### Historic Period

The first recorded western accounts of Kea'au come from a documented tour of Hawai'i Island in 1823 by the missionary William Ellis and the members of the American Board of Commissioners for Foreign Missions, represented by Artemas Bishop and Asa Thurston. Following a tour of the Ka'u District, and a trip to Kilauea Crater, the group traveled along the Puna coast, arriving in the village of Kea'au. In his writings, Ellis describes the coasts of Kea'au Ahupua'a, as a "wilderness of pandanus" (Ellis 1963:214) and the interior upland forests as uninhabited wilderness with sparse inland settlements. According to Ellis, settled populations were generally concentrated along the coast, where "the towns and villages of the natives are thickly scattered.

In the years between 1847 and 1855, land was divided under the Great Māhele. Lands were given to the Crown (the occupant of the throne), government, konohiki (headman of an ahupua'a), and hoā'āina (native tenants). The entire ahupua'a of Kea'au was considered chief lands, granted to William C. Lunalilo, with only one kuleana award located east of the project area. By the 1860s, the guardians of Lunalilo's estate mortgaged the entire ahupua'a of Kea'au to Honolulu banker Charles C. Bishop. Nearly

a decade later in September of 1872, 60,020 acres of Kea'au Ahupua'a were leased to O.B. Spencer and subsequently re-assigned to Rufus A. Lyman two years later (Hurst and Shilz 1994:13).

In 1882, the ahupua'a of Kea'au was sold to William H. Shipman, Samuel Damon, and J. Elderts. Two years later Shipman would buy out all of his partners' interest in the land, becoming sole owner. He primarily used the lands for cattle grazing and stockyards for his two endeavors, Hilo Meat Market and Waiakea Stock Ranch. A 40-ft right-of-way, needed for the construction of Volcano Road, was granted to Shipman in 1889 and completed four years later.

As the latter part of the nineteenth century approached, continuing into the twentieth century, traditional land use within the District of Puna started to change. Traditional agricultural practices were adapted to accommodate western industries of ranching, sugarcane, lumber, and coffee. By the 1850's the Kea'au Ranch was grazing cattle throughout the area and the sugar industry, including the 'Ōla'a and Puna Sugar Company, were in full operation.

The old Kea'au School was built in 1900 by the plantation, which initially called it "Ōla'a School". None of the original 'Ōla'a School buildings exist on the property today. Beginning as an elementary school in 1939 it became a K-9 school and was then known as Kea'au Elementary and Intermediate School. In the 1980's the 9th grade was transferred to the high school and in 1997 the elementary and middle schools became two separate entities. Since 1998, the school has been recognized as Kea'au Middle School (KMS). It includes sixth, seventh and eighth grades and occupies the site of the original campus.

#### 4.4.2.2 Archaeological Context

A minimum of three previous archaeological studies have been completed on the Kea'au Middle School property, which includes the current library project area. These completed studies are described in the ALRFI. They include a literature review and field inspection for wastewater/cesspool upgrades for the Department of Education (DOE); subsequent archaeological monitoring for that project; and a literature review and field inspection for demolition of several Kea'au Middle School buildings. (The new library is proposed where these demolished buildings were located). A fourth study is a draft archaeological monitoring report with a site request for an 'auwai documented near the northern portion of the current project area. This archaeological monitoring report is currently under review with the SHPD.

In addition, research indicates that a Kea'au Historic District (SIHP #50-10-44-7389) was proposed to encompass the "Kea'au Makai Village" near the intersections of Old Volcano Hwy/Milo St./and Pāhoa Highway (Kea'au-Pāhoa Rd.), including the current project area. The Kea'au Historic District was recommended significant under "Criterion A" for its association with events that have made a significant contribution to broad patterns of Hawaiian history, particularly its historical association with the sugar mill and plantation from 1920-1950.

The ALRFI also lists a number of previous archaeological studies adjacent to and within one mile of the project area.



### 4.4.3 Existing Conditions

#### 4.4.3.1 Summary of Findings

The ALRFI fieldwork for the project resulted in the following main findings:

1. Nearly the entire project area has been substantially modified at the ground surface and below by the development of school infrastructure, starting in the late-nineteenth century and continuing to the present;
2. More recently, the entire project area has been cleared of all formal structures except for an asphalt parking lot in the eastern portion of the project area, a large school sign near the southwestern entrance, and a flagpole near the western extent of the property.
3. Two historic properties were identified during the survey: a historic 'auwai (designated temporary site Honua 1) running parallel to the northern margin of the project area and a historic rock boundary wall with an associated raised planter (designated temporary site Honua 2) fronting the property to the west.
4. Other than the 'auwai (Honua 1) and rock wall/planter (Honua 2), no other historic properties, or potential historic properties, were observed.

#### 4.4.3.2 Description of Sites

##### Honua 1 (Historic 'Auwai)

Honua 1 is a historic 'auwai (irrigation ditch), measuring on average, 6.8 feet wide by 18 inches deep. This 'auwai was likely related to the historic sugar cane industry in Kea'au, and is an open channel, constructed from loose, angular to sub-angular basalt gravel/cobble sized rock. This section of the 'auwai (Honua 1) was previously documented by Cultural Surveys Hawai'i in 2015. It was documented in a subsequent archaeological monitoring study that was submitted to SHPD, but the study has not yet been accepted. It is located parallel to but outside the project area boundary.

##### Honua 2 (Historic Wall and Planter)

Honua 2 is a historic rock boundary wall with an associated raised rock planter fronting the property to the west. The wall is likely associated with the original development of the school grounds circa 1900. The main portion of the wall averages 20 inches wide and ranges from 4 to 7 feet in height. The overall length of the rock extends from the south side of the exit driveway (to the north) to the entrance driveway (to the south), a distance of approximately 250 feet and continues for another 68 feet out of the project area to the south, ending at the main entrance to Kea'au Middle School campus.

The wall is constructed of mortared, angular basalt boulders and cobbles, averaging 6–7 courses high. The portion of wall within the current project area includes 13 integrated square columns approximately 20 inches wide, nearly flush with the wall, spaced equidistant apart, with average heights of approximately 8 inches above the main wall. The wall is in relatively fair to poor physical condition with some sections that are leaning (i.e., out of plumb) and will eventually topple over, and one section near the south entry driveway in complete collapse.

The semi-circular rock planter associated with the rock wall has a low, perimeter rock wall measuring approximately 20 inches wide and approximately 20 inches tall. The planter is constructed of mortared, angular basalt boulders and cobbles. It is unknown if the planter was constructed contemporaneously with the wall, but the materials and construction technique are similar.



Representative section of Honua 2 (historic rock wall), view to the northeast.

Source: Honua Consulting 2023



Historic planter associated with Honua 2, view to the southeast.

Source: Honua Consulting 2023

#### 4.4.4 Potential Impacts and Mitigation

##### 4.4.4.1 Significance Assessment

Historic properties are assessed based on age, integrity, and significance. Qualifying historic properties must typically be at least fifty years old. Integrity of a historic property is based on the location, design, setting, materials, workmanship, feeling, and association.

According to HAR §13-284-6, the significance of a historic property is assessed for:

- **Criterion a:** Associated with events that have made a significant contribution to broad patterns of history;
- **Criterion b:** Associated with the lives of persons significant to our past;
- **Criterion c:** Embodies distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possess high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction;
- **Criterion d:** Yielded or may be likely to yield information important in prehistory or history; and
- **Criterion e:** Historic property has cultural significance to an ethnic group, including, but not limited to, religious structures, burials, traditional cultural properties, cultural practices, and/or beliefs important to the groups history and cultural identity.

The ALRFI assessed the significance of the two historic properties on the project site:

Honua 1 (historic 'auwai) likely dates to as early as the late nineteenth century. It retains integrity of location and is assessed as significant under criterion d for its association with the historic sugarcane industry that once thrived in Kea'au, prior to the parcel's use as a school.

Honua 2 (rock wall and planter) likely dates to circa 1900. It retains integrity of location, design, materials and workmanship. It is assessed as significant under Criterion d for its association with the history of the establishment and use of the property as a school, beginning circa 1900.

#### 4.4.4.2 Project Impacts and Mitigation

##### Honua 1 (Historic 'Auwai)

The 'auwai is located outside the boundary of the project site, and the proposed library project will not impact the 'auwai in any way.

##### Honua 2 (Rock Wall and Planter)

The construction of a pedestrian walkway connecting the public sidewalk on Kea'au-Pāhoa Road to the library building will require the removal of an approximately five-foot section of the existing rock wall on the south side of the entry driveway. This section of the wall is collapsed and currently presents a safety and liability hazard.

The construction of a walkway between the highway and the library was requested by the Hawai'i Department of Transportation (DOT) to provide a safe connection for library users walking from the highway. The design of the walkway (width and slope) will have to comply with Americans with Disabilities Act (ADA) and the State Disability and Communication Access Board (DCAB). The remaining end of the existing wall will be finished using materials of and in a style consistent with its historic character.

According to the ALRFI, sufficient documentation of Honua 2 (rock wall and planter) has been completed, and no further archaeological or historic preservation work is needed at this site.

Under state law, and in accordance with HAR § 13-275-7, an effect determination of "no historic properties affected" is proposed since all relevant information about the rock wall and planter has been recorded.

The overall project effect for the Kea'au-Mountain View Library project is "no historic properties affected," and no further archaeological or historic preservation work is needed.



Section of existing wall to be removed to accommodate ADA-accessible walkway to library.

Source: RMA Architects

#### 4.4.4.3 HRS Chapter 6E Consultation

The ALRFI and supporting documentation were submitted to SHPD via the Hawai'i Cultural Resource Information System (HICRIS) portal on July 12, 2023 (token 5CPTKEE4RMXM). SHPD review and written comment were requested in accordance with HRS §6E historic preservation requirements. DAGS is requesting SHPD concurrence with its determination of “no historic properties affected.”

### 4.5 Cultural Resources

#### 4.5.1 Introduction

The Honua ALRFI included a section on relevant cultural and historical information related to the types of land use in and around the project area from pre-Contact, traditional Hawaiian times into the historic period. The objective of this section was to provide a project-specific picture of land use and

modification over time. This was discussed in the previous Section 4.4.2, Historic and Archaeological Resources.

The project vicinity has also been the subject of a previous Cultural Impact Assessments (CIA). The CIA (PBR Hawai'i, 2017) was prepared as part of the environmental assessment for W.H. Shipman's Kea'au Village Master Plan. The master plan addresses Shipman-owned lands adjacent to the existing Kea'au Village and proposes future commercial and residential infill development. As State-owned land, the Kea'au Middle School, including the project site, was not included in the Shipman project area. However, the Shipman study area was within close proximity to the library, and the Kea'au Village Master Plan CIA encompasses the larger Puna District with a focus on the Kea'au ahupua'a.

The 2017 CIA included information from community consultation and talk story interviews with people thought to have knowledge of the cultural resources and cultural practices of the area. These consultations did not reveal or identify historic or cultural resources or practices that may be affected by the Shipman development plans.

#### 4.5.2 Traditional Practices

The CIA noted areas of ongoing cultural activity in the Puna District including the Maku'u Farmers Market grounds and the educational campuses of Kamehameha Schools and the Hawaiian language immersion institutions, 'Aha Pūnana Leo and Ke Kula 'O Nāwahīokalani'ōpu'u. While these sites are not immediately adjacent to Kea'au Town (or the library project area), they reflect ongoing cultural activities in the area.

The CIA notes that 'Ōlelo no'ēau (Hawaiian proverbs and poetical sayings), mele and 'oli (song and chant) pertaining to the Puna District and specifically the Kea'au ahupua'a, speak to the lush vegetation of these lands, including maile, lehua, and hala. This landscape served not only to provide an abundance of natural resources for generations of Native Hawaiians, though their use and continued preservation, perpetuate the transmission of knowledge, values, and identity.

The people of Puna were known as master weavers and one of the most famous mats of Puna was one called puahala, favored for its silky texture and pleasant fragrance (Maly K., 1999). Within Puna, cultural practices of lā'au lapa'au or Hawaiian medicine, as well as gathering the lauhala or pandanus leaf to be weaved were recorded and continue to be practiced (Luika Farias, Mitchell, & Hammatt, 2011). Within the upland forests of Puna, the gathering of plant material, such as liko lehua and hāpu'u fern for leis are also noted. Additional traditional practices that served subsistence and survival needs, include the pounding 'opihi collected from the coastlines (PBR Hawai'i 2017).

Puna's landscape changed rapidly following Western contact in 1778 with the introduction of large-scale resource exploitation and agriculture. As noted in Section 4.2.2 above, by the early twentieth century, traditional agricultural practices were adapted to accommodate western ranching, sugarcane, lumber and coffee.

The CIA concluded that no significant impacts to cultural resources are anticipated as a result of the Shipman Master Plan, and that the master plan will have no adverse impact on historic properties, cultural resources, practices, or artifacts.

### 4.5.3 Potential Impacts and Mitigation

As discussed in Section 4.4, Historic and Archaeological Resources, the 2022 Honua ALRFI found that the entire library project area has been substantially modified by the development of school infrastructure from the late nineteenth century to present. The proposed project will not impact the existing 'auwai (Honua 1) which runs parallel to (and outside of) the project site. An approximately five-foot portion of the historic wall (Honua 2) near the entry driveway will be removed to accommodate the pedestrian walkway. The wall in this area has collapsed and poses a safety and liability hazard. After removal of the section, the wall will be finished using the original stone and in a manner consistent with its historic character. The ALRFI recommended a finding of “no historic properties affected” since sufficient documentation of Honua 2 has been completed and no further archaeological or historic preservation work is needed at this site.

Based on the ALRFI findings and the findings of the 2017 Kea'au Village Master Plan CIA, it is reasonable to conclude that Hawaiian rights related to gathering, access or other customary activities will not be affected by the Kea'au-Mountain View Library project, and there will be no adverse effect upon cultural practices or beliefs.

## 4.6 Socio-Economic

### 4.6.1 Existing Conditions

The population of Hawai'i County has exhibited strong growth over the past several decades. The resident population for the County increased by 24.5 percent between 2000 and 2010 but slowed to a 8.4 percent growth rate between 2010 and 2020. Population in 2020 was 200,629 (U.S. Census Bureau, 2020).

As discussed in Section 1.3, the Puna District has been the most rapidly growing district on Hawai'i Island, with population increasing 83% between 1980 and 1990, 51% between 1990 and 2000, and another 45% between 2000 and 2010. Strong population growth is projected to continue in the Puna District and by 2020, it was estimated to account for approximately 27% of the Hawai'i County population (Hawai'i County General Plan Update, 2012).

The Puna Community Development Plan (CDP) (Hawai'i County, 2008 as amended) notes that the recent pattern of residential development and population growth in Puna is the result of widespread land subdivision within the past half century. The Puna CDP notes that managing growth is a major concern. The County's vision is to reshape Puna's development pattern by moving away from the sprawl of the existing subdivisions toward the formation of village and town centers.

In 2017, the Kea'au Census Designated Place (CDP) had a population of about 2,400 residents, about 1 percent of the County population, while the Puna District as a whole had 50,200 residents, or 25% of the

County population. Average household size in the Kea'au CDP was 3.23, higher than the County average of 2.74. Median household income in the Kea'au CDP was \$40,000 in 2017, compared to \$46,000 in the overall Puna District and \$56,090 in Hawai'i County (PBR Hawai'i, 2020).

## 4.6.2 Potential Impacts and Mitigation

The Kea'au-Mountain View Public Library project is not expected to impact population in the region. It will replace two existing libraries, and employees and library customers are already living on-island. By locating the library within the Kea'au town core, the project supports the Puna CDP vision to move away from sprawl toward the formation of village and town centers.

The Project will have a positive socio-economic impact on Puna District residents through enhanced library services, access to current information technology, improved connectivity, and providing a new community hub and meeting space.

The project will create short-term economic benefits as a result of design and construction employment. Local material suppliers and retail businesses can also expect to benefit through a multiplier effect from the construction activities. The State of Hawai'i and County of Hawai'i will receive general excise tax revenues from construction activities and income taxes from business revenues and wages. No specific socioeconomic mitigation actions are recommended.

## 4.7 Infrastructure and Utilities

The information in this section is based on the Preliminary Engineering Report (PER) for the project prepared by Coffman Engineers (May 2023), and included as Appendix C.

### 4.7.1 Sitework/Grading

#### 4.7.1.1 Existing Conditions

The existing site is primarily composed of AC pavement and grass, with no existing buildings. The AC pavement formerly served as access to two school buildings that have since been demolished. An existing unnamed drainage way is located on the north side of the site and flows from west to east.

#### 4.7.1.2 Potential Impacts and Mitigation

Onsite improvements in support of the proposed library include parking, modifications to the existing driveway and retaining wall, grading, Individual Wastewater System (IWS), water line improvements, drainage structures, and installation of chain link fence and gates. A covered walkway connection to the middle school will also be constructed.

Offsite improvements include a realigned access driveway and an ADA-compliant pedestrian concrete walkway into the project site.

The project proposes realigned access driveway connections along Kea'au-Pāhoa Road. Similar to the existing layout, the proposed driveways ingress and egress will be located south and north, respectively, along Kea'au-Pāhoa Road. The existing site grade will remain in areas of property where no construction

is occurring. The proposed access road will have a slope of 15%, the parking lot will have an average slope of 1 to 2%.

Following the Hawaii County Code Chapter 26, the proposed driveways will be constructed at a slope less than 15% with an inside and outside turning radius of 30-feet and 60-feet, respectively, for fire truck access. The proposed driveways will also be complemented with new sidewalks to allow safe access to the site for pedestrians. A five-foot section of the existing rock wall near the library entry drive will be removed to accommodate the ADA-accessible walkway connecting the public sidewalk to the library.

The proposed parking lot will have 42 parking stalls, 3 of which are ADA stalls, exceeding the minimum County of Hawaii requirements for the size of the parking lot. Additionally, four stalls are specially tailored towards electrical vehicles.

Areas disturbed during construction will be permanently stabilized with buildings, pavements, and vegetation.

## 4.7.2 Potable Water

### 4.7.2.1 Existing Conditions

Potable water is provided to the site through an existing 6" ductile iron main north of the property in Kea'au-Pāhoa Road, owned by the County of Hawai'i Department of Water Supply. The property has a 2.5" copper lateral providing water service through an existing 3-inch water meter. The water meter is located within the State (Department of Education) property near the right-of-way between the existing drainageway and asphalt access road. The identification number for the water meter is 15558541. A backflow preventer was observed in the vicinity of the water meter, the size is unknown.

Fire water is provided to the site through an existing 6" ductile iron main north of the property in Kea'au-Pāhoa Road, owned by the Department of Water Supply. The property has an existing 6" detector meter, the identification number is 15558261. The detector meter is located within DOE property near the rock wall at the Keaau Middle School access road, the backflow preventer is also 6". The detector meter and service lateral limits are unknown to DWS.

### 4.7.2.2 Potential Impacts and Mitigation

#### Domestic Water

Potable water will be provided to the site in accordance with the State of Hawaii: Water System Standards (2002) and the Department of Water Supply Amendments (2020). The existing 2.5" water line and 3" meter will need to be reactivated. Usage restoration must be approved by DWS prior to reactivation of water service. Water pressures shall be verified for the minimum requirements prior to reactivation of water service.

The daily consumption rate for the proposed library is determined by the number of employees and daily library users, and the average daily demand for a school. These values are determined by the Water System Standards Table 100-18 and 100-20. It is assumed that the potable water will service 20 employees and expect 219 library users daily, thus will require 20 gallons per day (gpd) per employee



and 3 gpd per library visitor. The total daily demand will be 817 gpd. The proposed library has a water fixture units count of 57.9, which is equal to 55 gpm of peak hour flow. For a water demand of 55 gpm, a 1.5" water meter will be required.

## Fire Water

Per Hawaii County Code Chapter 26, fire water rules and regulations must follow the NFPA Chapter 1 Standards unless otherwise specified by the Water System Standards and Department of Water Supply Amendments.

Fire water service to the proposed library will be provided from the existing fire water line and meter. Per the International Building Code (IBC), a fire sprinkler system will be required for the proposed building and will be provided for in the design of the improvements. If a Type II-B and V-B educational building exceed 14,500 SF and 9,500 SF, respectively, the installation of a fire sprinkler system will be required.

Additionally, a fire hydrant will be required onsite in a location that will provide fire hydrant coverage within 450-foot hose lay length to the nearest building opening. The Water System Standards Table 100-19 requires fire hydrants to meet a minimum flow rate of 2,000 gallons per minute (gpm) for 2 hours with a residual pressure of 20 pounds per square inch (psi). A permanent cleanout shall be installed at the terminal point of all dead-end lines, regardless of fire hydrant installation.

## 4.7.3 Wastewater

### 4.7.3.1 Existing Conditions

Hawaii County has a record of one septic system currently serving Kea'au Middle School property including pre-existing service to the since demolished Buildings B and G. The location and size of the septic system is unknown. There is no public sewer system located within the vicinity of the site.

### 4.7.3.2 Potential Impacts and Mitigation

Wastewater generated onsite will be processed by an Independent Wastewater System (IWS). The IWS is to be designed in accordance with Hawaii Administrative Rules 11-62-31.1 (Wastewater Systems).

The proposed IWS assumes the proposed library will have 20 employees and 160 visitors per day for a total wastewater load of 1,200 gallons per day (gpd). Therefore, the septic tank is approximately 1,500 gallons, with a 540 square foot absorption bed for the leach field. The leach field shall be on grades no greater than 8% with the bottom of the absorption bed being at least 18 inches below the finished grade. The septic tank and leach field will be located plan east of the proposed library.

The County of Hawai'i is currently preparing a programmatic Environmental Impact Statement for wastewater system improvements in the Puna District. These improvements would include proposed wastewater infrastructure or package plants envisioned for the Kea'au Town area. A sewer lift station and force main system may be required to discharge sewer into the street system due to the lower finished floor elevation of the library in relation highway elevation and the future invert connection elevations of the highway sewer system. The IWS system can be modified by installing a sump manhole

and pump system, given service is provided in the street fronting the library, and a portion of the proposed IWS sewer line is maintained.

#### 4.7.4 Electrical and Telecommunication Facilities

##### 4.7.4.1 Existing Conditions

Kea'au Middle School is served by the Hawai'i Electric Light Company, Inc. (HELCo) via a new underground 12.47KV primary lines. An existing HELCo pad mounted transformer steps down the voltage to utilization level and serves a new outdoor metering switchboard.

Telecommunication services are provided by Hawaiian Telcom Inc. and cable services are provided by Charter Spectrum.

##### 4.7.4.2 Potential Impacts and Mitigation

Since the Hawaii State Public Library System is a separate entity from the Department of Education which operates the middle school, the new public library can be fed from a new utility pole provided along Kea'au-Pāhoa Road and separately metered. A line extension will be required from the existing 12.47KV overhead line to a new pole fronting the project site. New underground 12.47KV lines will be provided to feed a new HELCo pad-mounted transformer. New electrical service equipment can either be wall mounted to the exterior of the new library building or provided in a new indoor electrical room with the meter located on an exterior wall for utility access.

A photovoltaic (PV) system will be designed for this project. Because the PV design is specific to the actual products that will be furnished by the awarded contractor, the bid documents will provide performance-based requirements that will set forth the minimum criteria the contractor must provide in their bid. The final system design will be provided by the contractor. The contractor will be required to prepare and submit the HELCO Interconnect Agreement as well as secure all necessary permits from the County of Hawai'i.

Telephone and CATV service can be provided from the existing overhead lines along Kea'au- Pāhoa Road by Hawaiian Telcom and Spectrum respectively. New overhead telephone and CATV lines can be extended overhead to a new pole fronting the project site and transitioned to underground ducts routed to serve the new library building. Telephone and CATV service equipment can either be wall mounted to the exterior of the new library building or provided in an indoor telecom room.

Emergency power will not be required for the facility; therefore, a standby emergency generator will not be required.

No significant impacts to electrical and telecommunications facilities are anticipated.

#### 4.7.5 Storm Water Drainage/Water Quality

##### 4.7.5.1 Existing Conditions

The proposed library site consists of an open grass field with runoff that discharges either into the existing open drainageway, north of the project site, or existing dry wells, east of the project site near

Kea'au Middle School. There are no collection systems currently on the site and runoff is generally allowed to sheet flow towards the drainageway or dry wells.

Drainage calculations were prepared by the civil engineer by following the Hawaii County Storm Drainage Standards, dated October 1970, applying the minimum time of concentration allowed by the County of Hawaii. Runoff calculations were completed using a 10-year, 1-hour storm interval frequency for the 1.7-acre project site. The PER in Appendix C includes the existing drainage plan and calculations.

Based on analysis of the site, there are three drainage areas. The location of the three drainage areas is shown in the Preliminary Engineering Report. Drainage Area 1 is located on the north side of the property and is approximately 0.19 acres (ac) in size with an estimated peak flow of 0.63 cubic feet per second (cfs). Runoff from Drainage Area 1 sheet flows offsite and discharges in the existing drainageway.

Drainage Area 2 is located generally in the middle of the site (south of Drainage Area 1) and is the largest of the three drainage areas. It is approximately 1.16 acres in size with an estimated peak flow of 6.42 cfs. Runoff from Drainage Area 2 sheet flows east into the existing Kea'au Middle School grass field and dry well.

Drainage Area 3, the southernmost drainage area on the site is approximately 0.58 acres in size with an estimated peak flow of 2.57 cfs. Runoff from the Drainage Area 3 sheet flows east offsite towards the Kea'au Middle School grass field.

The state receiving water for the entire site is classified as Marine AA by the Hawaii Department of Health Hawaii Administrative Rules (HAR) Chapter 11-54.

#### 4.7.5.2 Potential Impacts and Mitigation

Site drainage improvements have been designed in accordance with Hawaii County Storm Drainage Standards, dated October 1970. The PER calculated stormwater runoff using a 10-year, 1-hour storm.

The PER drainage plan shows eight identified drainage areas within the project site (see PER in Appendix C). The area identified as Drainage Area 1 is located in the furthest north area of the project site. Runoff from Drainage Area 1 flows offsite towards the existing drainageway. Runoff shall be mitigated with the use of a retention basin or other water quantity treatment methods such that runoff to the drainageway shall not increase or shall have negligible effect on adjacent or downstream properties.

Drainage Areas 2, 3 and 4, located near the center of the site, will drain toward three dry wells located within the AC paved portion of the site. Drainage areas 2, 3, and 4 account for 0.17 ac, 0.16 ac, and 0.29 ac of runoff with peak flows of 1.69 cfs, 1.60 cfs, and 2.89 cfs, respectively.

Drainage Areas 5, 6, and 7, located closer to the middle school and including the rear of the library site, flow towards the Kea'au Middle School and are ultimately captured by existing dry wells offsite.

Drainage Areas 5, 6, and 7 account for 0.15 ac, 0.15 ac, and 0.41 ac of runoff with peak flows of 0.48 cfs, 0.40 cfs, and 3.00 cfs. The current volume capacity of the existing dry wells are unknown. Further design and investigation are required to determine the total allowable runoff of the existing drywells.

Drainage from Area 8, which includes the front portion of the site closest to Kea'au-Pāhoa Road, may be considered self-mitigating if the system can contain the runoff before reaching other drainage areas along the AC pavement. Drainage Area 8 has an area of 0.32 acres with a peak flow of 1.06 cfs.

Hawai'i County does not have requirements for stormwater quality, however low impact development practices, such as grasscrete pavers, landscape areas, basins, and drywells are proposed to help mitigate stormwater runoff quantity and treat stormwater runoff quality. A basin can be installed in the northern portion of the site (north of the parking lot). When the project is ultimately designed, the designer shall comply with the current stormwater quality standards should there be one established.

A potential drainage system may be designed for Kea'au Town.

## 4.8 Solid Waste and Hazardous Materials

### 4.8.1 Solid Waste

#### Existing Conditions

The Hawai'i County Department of Environmental Management, Solid Waste Division is responsible for the operation and maintenance of the County's solid waste and recycling facilities. This includes the West Hawai'i Sanitary Landfill, the East Hawai'i Reload Facility (East Hawai'i Regional Sort Station), and 21 recycling and transfer stations. The former South Hilo Landfill was closed in 2019. Construction and demolition debris is disposed at the West Hawai'i Sanitary Landfill only.

The County does not provide collection services and residents and businesses either haul their solid waste to a transfer station or hire a private collection service. The nearest solid waste transfer station and recycling center is the Kea'au Transfer station at 16-921 Kea'au-Pāhoa Road, about 1.5 miles from the project site.

In December 2007, the County Council adopted Resolution 356-07 to "embrace and adopt the principles of zero waste as a long-term goal for Hawai'i County" and the County subsequently developed a Zero Waste Implementation Plan in 2008 that outlines suggested changes to solid waste management. The zero waste philosophy promotes the efficient use of materials to eliminate waste and pollution by emphasizing a closed-loop system of production and consumption, and moving in logical increments toward the goal of zero waste. The County recognizes that zero waste is a long-term goal, and County is committed to taking incremental steps toward achieving zero waste in the long-term with the understanding that the ability to truly achieve zero waste is challenging for an island.

In 2020, the County completed its update for the 2019 Integrated Solid Waste Management Plan (ISWMP), prepared in accordance with HRS Chapter 342G. The plan update evaluates solid waste management in the County, including waste reduction practices and programs, opportunities for recycling, implementation of zero waste policies and practices, the status of active and closed landfills, and options for increasing landfill diversion.

## Potential Impacts and Mitigation

Solid waste generated during construction will be minimal. There is no proposed demolition of buildings or structures, therefore remaining demolition waste is limited to sitework. During site grading, quantities of cut and fill will be balanced, and there are no plans to dispose of excess fill material offsite. The type and quantity of construction waste was estimated by the civil engineer as follows:

- 1,815 SY of asphalt
- 52 SY of concrete walkway
- 620 SF of chain link fence

The contractor will work with the County to find alternative ways to dispose of construction-period waste other than the landfill. Construction waste materials that cannot be recycled or reused will be properly disposed of at County disposal facilities.

During operation of the library, recycling of solid waste will be accommodated and implemented to the extent practicable. Composting of green waste will be encouraged and landscape maintenance will be recycled as much as possible. Solid waste that cannot be recycled will be collected by a private refuse hauler. The project will comply with all County solid waste disposal requirements.

### 4.8.2 Hazardous Materials

#### Existing Conditions

The project site was formerly occupied by two school buildings which have been demolished. A hazardous materials survey and sampling was conducted in 2013 prior to demolition of the buildings. All hazardous materials associated with the demolition, including asbestos containing material and lead-based paint products were handled and disposed of in accordance with State and federal regulations.

A Phase I Environmental Site Assessment (ESA) for the Kea'au-Mountain View Library project was completed in January 2023 by Reconnaissance Consulting, and a subsequent Phase II soil screening was conducted in March 2023. The purpose of the Phase I ESA was to identify recognized environmental conditions (REC) with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and petroleum products. The ESA consisted of a review of available environmental records; site reconnaissance; interviews; and reporting.

The Phase I ESA review of records and aerial images indicated that previous use of the subject property and surrounding area involved agricultural activities including sugar cane cultivation and processing. No RECs were observed during the site reconnaissance of the subject and surrounding properties. However, the subject property and several properties in the surrounding area are listed in online environmental databases and in the Environmental Database Report (EDR). The Sites of Interest list maintained by the Hawai'i Department of Health Hazard Evaluation and Emergency Response (HEER) Office lists the site as a Brownfield Low Priority Site. A brownfield is a property for which expansion, redevelopment or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant.

A Construction Environmental Hazard Management Plan (C-EHMP) dated October 2019 was on file at HEER for review. This document identifies the soil on the property as lead- and arsenic-impacted, requiring further delineation and testing prior to any soil disturbance and/or construction on the site.

Historical records indicate that the subject property was formerly used for sugarcane production from approximately 1913 until 1981. The historical land use, potentially with presence of arsenic based and organochlorine-pesticides which are known to be persistent and pose a direct exposure hazard is considered a REC.

### Potential Impacts and Mitigation

Following the Phase I ESA results, a Phase II soil screening was conducted to identify areas of impacted soil within the project area. The soil screening report includes the sampling methodology and laboratory results and has been submitted to the DOH HEER office for review and approval.

A Construction Environmental Hazard Management Plan (C-EHMP) is being prepared for the current project to provide guidance for the contractor during construction. The C-EHMP will include actions to address State of Hawai'i and federal requirements for onsite management and/or disposal of the impacted soil, human and environmental protection, soil stockpiling and transport, and Best Management Practices.

Impacted soil will either be disposed off-site in accordance with State and federal guidelines and regulations, or managed onsite. If all impacted soil is removed from the site, a "No Further Action" letter will be obtained from the Hawai'i Department of Health.

If any impacted soil is managed (i.e., retained) onsite, measures will be implemented to ensure that the soil has limited access to humans and the environment. This could occur through physical barriers such as a clean cover system (barrier fabric with clean soil or aggregate material to final grades) or managing the soil beneath an impermeable surface such as hardscapes including, but not limited to asphaltic concrete (AC) pavement (e.g., parking lots), or concrete (e.g., slab on grade structure, concrete walkways, etc.). If soil is managed onsite, a Long-Term EHMP will be prepared as an administrative control for future work on site which could disturb the impacted soil.

With these mitigation measures in place, risk to human health and the environment as a result of the project is not expected to be significant.

## 4.9 Transportation and Roadways

A Traffic Impact Analysis Report (TIAR) was prepared by Austin, Tsutsumi & Associates, Inc. (ATA) (2023) and is included as Appendix D. The TIAR addressed the following:

- Assess existing traffic operating conditions during the weekday school (SCH) and PM peak hours of traffic as well as the weekend midday (WE) peak hour of traffic within the study area.
- Traffic Projections for Base Year 2027 (without the Project).
- Trip generation and traffic assignment characteristics for the proposed Project.

- Estimate the vehicular trips that will be generated by the Project.
- Traffic projections for the Future Year 2027 (with Project).
- Provide recommendations for roadway improvements or other mitigative measures, as appropriate, to reduce or eliminate the adverse impacts resulting from traffic generated by the Project.

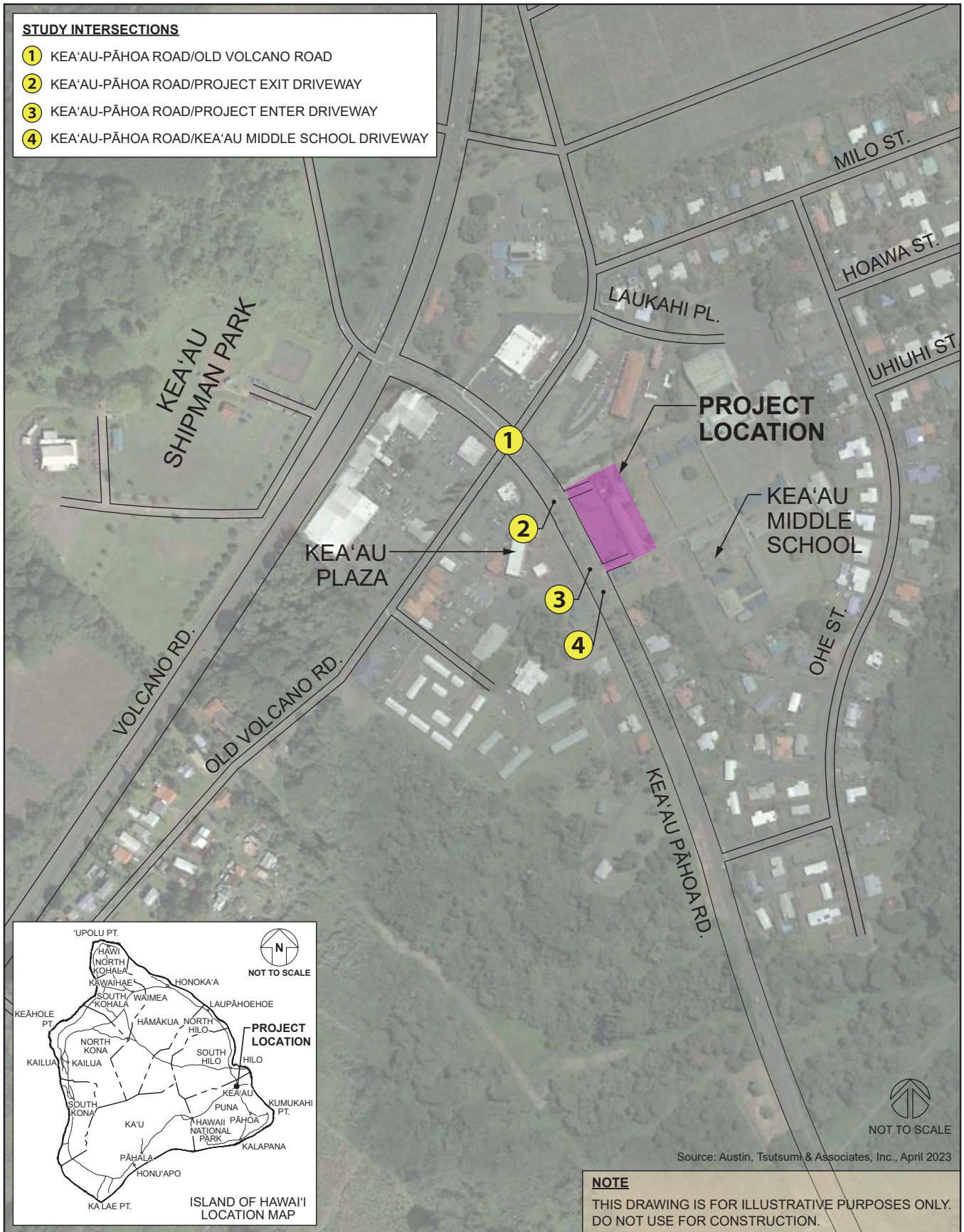
#### 4.9.1 Methodology and Study Intersections

Level of Service (LOS) is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions at LOS A to congested conditions at LOS F. The Highway Capacity Manual (HCM), 6th Edition, includes methods for calculating volume-to-capacity (v/c) ratios, delays, and corresponding LOS that were used in this study.

Analyses for the study intersections were performed using the traffic analysis software Synchro, which is able to prepare reports based on the methodologies described in the HCM. Based on the vehicular delay at each intersection, a LOS is assigned to each approach and intersection movement as a qualitative measure of performance. These results, as confirmed or refined by field observations, constitute the technical analysis that provided the basis of the recommendations outlined in the TIAR.

Intersection analysis was performed at the following study intersections (see Figure 8) due to their proximity to the proposed project:

1. Kea'au-Pāhoa Road/Old Volcano Road (Signalized)
2. Kea'au-Pāhoa Road/Project Exit Driveway (Unsignalized)
3. Kea'au-Pāhoa Road/Project Entrance Driveway (Unsignalized)
4. Kea'au-Pāhoa Road/Keaau Middle School Driveway (Unsignalized)



**Traffic Impact Analysis Report Study Intersections**  
**Hawai'i State Public Library System**  
 Kea'au-Mountain View Public Library  
 Final Environmental Assessment – Finding of No Significant Impact

**Figure 8**



## 4.9.2 Existing Conditions

### 4.9.2.1 Pedestrian, Bicycle and Bus Transit Facilities

A continuous sidewalk runs along the east side of Kea'au-Pāhoa Road adjacent to the Project site, while the west side of the street has a sidewalk between Old Volcano Road and the driveway of Keaau Plaza. Continuous sidewalks are present along both sides of Old Volcano Road within the study area. A marked crosswalk is provided at the Project exit driveway. Marked crosswalks are also provided at each approach of the signalized Kea'au-Pāhoa Road/Old Volcano Road intersection.

There are no dedicated bicycle facilities within the study area. However, according to the 2022 Bike Plan Hawaii Refresh, shoulder bikeways are proposed along Volcano Road and along Kea'au-Pāhoa Road between Volcano Road and Kea'au-Pāhoa Bypass Road.

The Hawaii County Mass Transit Agency operates Hele-On Bus, which provides 14 different routes with service in North, East, and West Hawaii. Service is provided Monday through Saturday with limited service on Sundays and holidays. There are five (5) bus routes with stops on Old Volcano Road and one (1) bus route that stops on Kea'au-Pāhoa Road. Most routes run at least once during the PM commuter peak. There are four (4) bus stops near the Project located on Old Volcano Road and Keaau-Pāhoa Road.

### 4.9.2.2 Roadway System

**Kea'au-Pāhoa Road** is a two-way, two-lane, north-south roadway within the study area. It begins at its intersection with Mamalahoa Highway to the north and terminates to the south at its intersection with Pāhoa Bypass Road and Nawahiokalaniopuu Public Charter School (PSC). The posted speed limit along this roadway is 25 miles per hour (mph) in the vicinity of the Project.

**Old Volcano Road** is a two-way, two-lane, east-west local roadway that begins at its intersection with Mamalahoa Highway to the west and terminates to the east at its intersection with Keaau Loop. It has a posted speed limit of 25 mph in the vicinity of the Project.

### 4.9.2.3 Existing Traffic Conditions

#### Field Observations

The TIAR includes turning movement counts and pedestrian counts. The data show the following peak hours of traffic within the study area:

- SCH: 2:15 PM – 3:15 PM
- Weekday PM 3:15 PM – 4:15 PM
- WE 11:00 AM – 12:00 PM

Field observations during the SCH peak hour of traffic noted vehicle queues along Kea'au-Pāhoa Road in the northbound (NB) direction. Vehicle queues formed around 2:30 PM due to a relatively high number of vehicles making a NB left at the Kea'au-Pāhoa Road/Old Volcano Road intersection and lasted around 30 minutes with the queue clearing by 3:00 PM. Relatively moderate pedestrian activity within the study area was observed during the SCH peak hour of traffic.

The PM and WE peak hours of traffic were observed to experience relatively light traffic conditions. During both the PM peak and the WE peak, light pedestrian activity was observed.

Although AM peak was not studied, signage was observed to restrict left turn movements into the Project driveway between 7:30 AM and 8:30 AM as well as left turn movements out of the Project driveway between 7:00 AM and 8:30 AM.

### Existing Intersection Analysis

All movements at the study intersections currently operate at LOS C or better during the SCH, PM, and WE peak hours of traffic except for the NB left-turn at the Kea'au-Pāhoa Road/Old Volcano Road intersection, which operates at an LOS F and overcapacity during the peak SCH hour. However, as mentioned, this only lasts for approximately 30 minutes. During other peak hours, the NB left-turn movement operates at LOS B. More information is provided in the TIAR in Appendix D.

## 4.9.3 Potential Impacts and Mitigation

### 4.9.3.1 Base Year 2027 (Without the Project)

The Year 2027 was selected to reflect the Project completion year. The Base Year 2027 scenario represents the traffic conditions within the study area without the Project. Background traffic growth in the study area was estimated based on the HDOT Island of Hawai'i 2035 Traffic Demand Forecasting Model (TDFM) which utilizes County population forecasts. A background growth rate of 0.5% was applied along Kea'au-Pāhoa Road to estimate Base Year 2027 conditions without the project.

In addition to the de facto growth rate, background projects that are anticipated to generate traffic were added to the existing roadway network. They included the Kea 'au Villages Master Plan; Kea 'au Zero Waste Facility; Kurtistown Subdivision; Pāhoa Park Phase 2 Expansion; Pāhoa Affordable Housing; and Kupuna Housing (Hope Services). These future developments are described in the TIAR. Trip generation for these background developments was based on prior traffic studies for these projects.

The TIAR intersection analysis concluded that under Base Year 2027 conditions, all movements at the study intersections are expected to continue operating similar to existing conditions during the SCH, PM, and WE peak hours of traffic with the exception of the Kea 'au-Pāhoa Road/Old Volcano Road intersection. At this intersection, the NB left-turn approach is anticipated to continue operating at LOS F with delay increasing by roughly 110% (approximately 127 seconds). These conditions are only expected to last for about 30 minutes and not expected to hinder operations for the remainder of the day.

### 4.9.3.2 Future Year 2027 Traffic Conditions

The Future Year 2027 scenario represents the traffic conditions within the Project study area with the full build-out of the Project.

### Trip Generation

The Institute of Transportation Engineers (ITE) publishes trip rates, Trip Generation Manual, 11<sup>th</sup> Edition, based upon historical data from similar land uses. ITE trip generation for libraries is based on data taken in the 1980's to 2000's and did not reflect existing observations. Instead, Hawai'i State Public Library

System (HSPLS) provided existing daily trip counts for the existing Kea'au Library. These existing daily trip counts and ITE's data were used to estimate the number of vehicular trips generated by the proposed Project. Adjustments for increases in both building area and population served were applied to these existing daily trip counts.

As shown in Table 4-3, the Project is projected to conservatively generate 42(30)[43] new external trips during the SCH(PM)[WE] peak hours of traffic.

**Table 4-3: Project Trip Generation**

Land Use (ITE Code)	Independent Variable	Weekday SCH Peak Hr			Weekday PM Peak Hr			Weekend Peak Hr		
		Enter (vph)	Exit (vph)	Total (vph)	Enter (vph)	Exit (vph)	Total (vph)	Enter (vph)	Exit (vph)	Total (vph)
Library (ITE 590)	12,000 SF GFA	23	24	47	15	17	32	25	22	47
	Existing Trips	-1	-4	-5	-1	-1	-2	-2	-2	-4
	Net New Trips	22	20	42	14	16	30	23	20	43

### Future Year 2027 Analysis

Under Future Year 2027 conditions, all movements at the study intersections are expected to continue operating similar to Base Year 2027 conditions during the SCH, PM, and WE peak hours of traffic. Additional data is included in the TIAR, including a summary of the Future Year 2027 delay, v/c ratio, and LOS. The TIAR also shows the Future Year 2027 traffic volumes and lane configuration at the study intersections.

### Conclusion and Recommendations

The worsening of traffic operations (LOS and capacity) between each scenario can mostly be attributed to the volume increases due to the projected background growth (without the Project).

The Project-generated traffic accounts for roughly 1% of the total Future Year 2027 traffic projections at the Kea'au-Pāhoā Road/Old Volcano Road intersection during the SCH, PM, and WE peak hours of traffic. Thus, no intersection capacity improvements are recommended at the study intersections.

The Hawai'i Department of Transportation, in a pre-assessment consultation letter (see Chapter 8, Agencies and Organizations Consulted), recommended that the project provide pedestrian connection between 1) the library and the middle school and 2) the library and the highway. These pedestrian connections are included in the project.

The TIAR recommended that the HSPLS restrict the LT movement from the Project driveways by extending the existing signage hours to include the SCH peak (2:00 PM to 3:30 PM).

## 4.10 Public Services

### 4.10.1 Police, Fire and Emergency Services

#### 4.10.1.1 Existing Conditions

##### Police

The County of Hawai'i Police Department is divided into two Areas. Area I, east Hawai'i, includes the police districts of Hāmākua, North Hilo, South Hilo and Puna. Area II, west Hawai'i, includes the districts of Kona, South Kohala, North Kohala, and Ka'u. The Study Area is within the Puna District of Area I. Kea'au is served by the Hawai'i Police Department-Puna station at 16-189 Pili Mua Street in Kea'au.

##### Fire and Emergency Medical Services

The Hawai'i County Fire Department provides fire protection and suppression, pre-hospital emergency medical services, land and sea search and rescue, hazardous materials response, ocean safety, and fire prevention and public education for the County of Hawai'i. The County Fire Department has 20 fire stations island-wide, comprising two Battalions (East and West Hawai'i). In addition, there are 18 volunteer fire companies that are also part of the County Fire Department, and a federal fire department at the Pohakuloa Training Area.

Twenty-four-hour fire and emergency medical services (EMS) are available in Kea'au at the Kea'au Fire Station (Station 5) located on Old Volcano Road near the intersection of Pili Mua Street next to the Kea'au police substation. The County has contracted emergency medical services with the State Department of Health.

Rapid population growth in the Puna District over the past twenty years and projections of continued growth have significantly impacted the County's ability to provide emergency medical services units in the expansive Puna District. The large geographic area and distance to primary medical care for many residents has resulted in the Kea'au and Pāhoā fire stations handling the majority of emergency medical service calls in the district, overburdening these emergency medical service units.

##### Medical facilities

The Kea'au area is served by privately operated clinics and an urgent care facility, and the Hilo Medical Center (HMC), located approximately 10 miles or a 20-minute drive from the project area. HMC is the largest hospital in Hawai'i County with 1,200 employees. The facility is currently licensed for 166 beds for acute care and 45 beds for long-term care with nine outpatient clinics offering primary and specialty care.

#### 4.10.1.2 Potential Impacts and Mitigation

The project is not expected to impact the need for police, fire, emergency medical, or medical services. It will not cause an increase in population or demand for services.

## Police

In a May 31, 2023 letter, the Hawai'i County Police Department indicated that upon reviewing the Draft EA, it did not anticipate any significant impact to traffic and/or public safety concerns (see Chapter 8). The proposed uses will not increase the need for police services. Traffic impact resulting from the new library will be minimal, especially because there is already a public library operating out of the Kea'au Middle School.

During construction, there may be minor impacts to pedestrians and vehicles along Kea'au-Pāhoa Road in the vicinity of the middle school. Traffic lane closures will not be needed, and pedestrian paths to school will be maintained. Construction vehicles and equipment will be staged on site and will be moved to and from the property during non-peak traffic hours.

The project will include safe pedestrian connections between the library and the public sidewalks, as well as between the library and middle school.

## Fire and Emergency Medical

The proposed library is not expected to impact the Fire Department's ability to provide protective services for the public. No adverse impact is anticipated on emergency medical service.

The new library and parking area is designed to meet fire code requirements and fire access roads will be provided within the property. Adequate water supply capable of supplying required fire flow will be available and fire flow will be based on County Water System Standards.

Detailed design for the fire-fighting system will be determined as design progresses. Design plans will be reviewed by the Hawai'i County Fire Department's Prevention Bureau during the building permit process.

## Medical

No adverse impact on existing medical facilities is anticipated. All library employees and patrons are already living in the East Hawai'i area. The project will not increase the residential population served by existing medical facilities.

## 4.10.2 Schools and Parks

### 4.10.2.1 Existing Conditions

#### Schools

The Project Area is located within the Department of Education's (DOE) Ka'u-Kea'au-Pāhoa Complex Area. The schools in the Kea'au Complex include: Kea'au Elementary (Pre-school to Gr 5); Kea'au High School (Gr 9 to 12), Kea 'au Middle School (Gr 6 to 8), Mountain View Elementary (K to Gr 5), and Na Wai Ola Public Charter School (Pre-school to Gr 6). Private schools in the vicinity of the project include Kamehameha Schools Hawai'i campus (K to Gr 12), located in Kea'au, about one mile south of the project site, and Christian Liberty Academy.

The Complex Area also includes the Pāhoa Complex which includes Keonepoko Elementary, Pāhoa Elementary, Pāhoa High and Intermediate, and three public charter schools: Hawai'i Academy of Arts

and Science PCS, Ke Kula o Nawahiokalanipu'u Iki Laboratory PCS, and Kua O Ka La PCS. Schools in the Kau Complex include Kau High & Pahala Elementary, Naalehu Elementary, and two public charter schools: Kau Learning Academy and Volcano School Art/Science.

### Parks and Recreational Areas

County of Hawai'i parks in the project vicinity include Kea'au Shipman Park, which includes play fields, and outdoor basketball and tennis courts. This park is located on lands provided to the County from W.H. Shipman, Ltd. Adjacent to the Kea'au Middle School campus is Shipman Gym, which provides space for additional community activities. The County's Kea'au Community Center, on Pili Mua Street supplements the parks and gyms in Kea'au.

#### 4.10.2.2 Potential Impacts and Mitigation

The project will not impact the demand for area schools, parks or recreational facilities. Demand for these public services is largely determined by the resident population, which will not change as a result of the new library. The library will include a community meeting room which will provide a new venue for community meetings and smaller indoor events.

Use of the library parking lot will need to be monitored to discourage parents from using the library parking lot to pick up their children from school.

### 4.11 Cumulative Impacts

The proposed Kea'au-Mountain View Public Library will not have a significant cumulative impact on the human environment. The project will replace two existing libraries in the Puna District, and all employees and library patrons are already living on-island. There will be no cumulative increase in population or the number of vehicles in the area.

The site is located near the Kea'au town center, which is identified by landowner W.H. Shipman Ltd. and the County of Hawai'i for future commercial and residential development. The library is compatible with these plans and the neighboring uses. Its location will support these long-range plans for Kea'au town as well as the goal of promoting a walkable community.

Temporary dust, construction vehicle emissions and noise will not contribute to cumulative impacts on air quality or noise. Although the Proposed Action will increase water and electrical demand at the site and require new on-site infrastructure, existing utility systems have adequate capacity. Because the library is replacing two existing facilities and is not generating an increase in population, there is no cumulative impact on demand for police, fire, emergency services, schools, and parks. Mitigation measures proposed for lead and arsenic-impacted soils on site, including any that are managed onsite, will protect human health and the environment without cumulative impacts.

The increase in traffic generated by the library will contribute to area traffic, but will account for roughly 1% of the future traffic at the Kea'au-Pāhoa Road/Old Volcano Road intersection in year 2027. Worsening of intersection Level of Service will be mostly attributed to background traffic, which would occur even without the project. Cumulative impacts on traffic are not significant.

## 5 Relationship to Land Use Plans, Policies and Controls

This chapter discusses the proposed project's conformance with relevant state and county land use plans, policies, and controls. State plans and policies include the State Land Use Law (HRS Chapter 205), Hawai'i State Plan (HRS Chapter 266) and the State Coastal Zone Management program. County-level plans and policies include the Hawai'i County General Plan, the Puna Community Development Plan, Special Management Area (HRS Chapter 205A) and zoning.

### 5.1 State of Hawai'i

#### 5.1.1 State Land Use

The State Land Use Commission, pursuant to Chapter 205 and 205A, Hawai'i Revised Statutes (HRS) and Chapter 15-15, Hawai'i Administrative Rules (HAR), is empowered to classify all lands in the State into one of four land use districts: urban, rural, agricultural and conservation. The entire Project Area is within the State Urban District (Figure 9).

The Urban District generally includes lands characterized by "city-like" concentrations of people, structures, and services. The District also includes vacant areas for development.

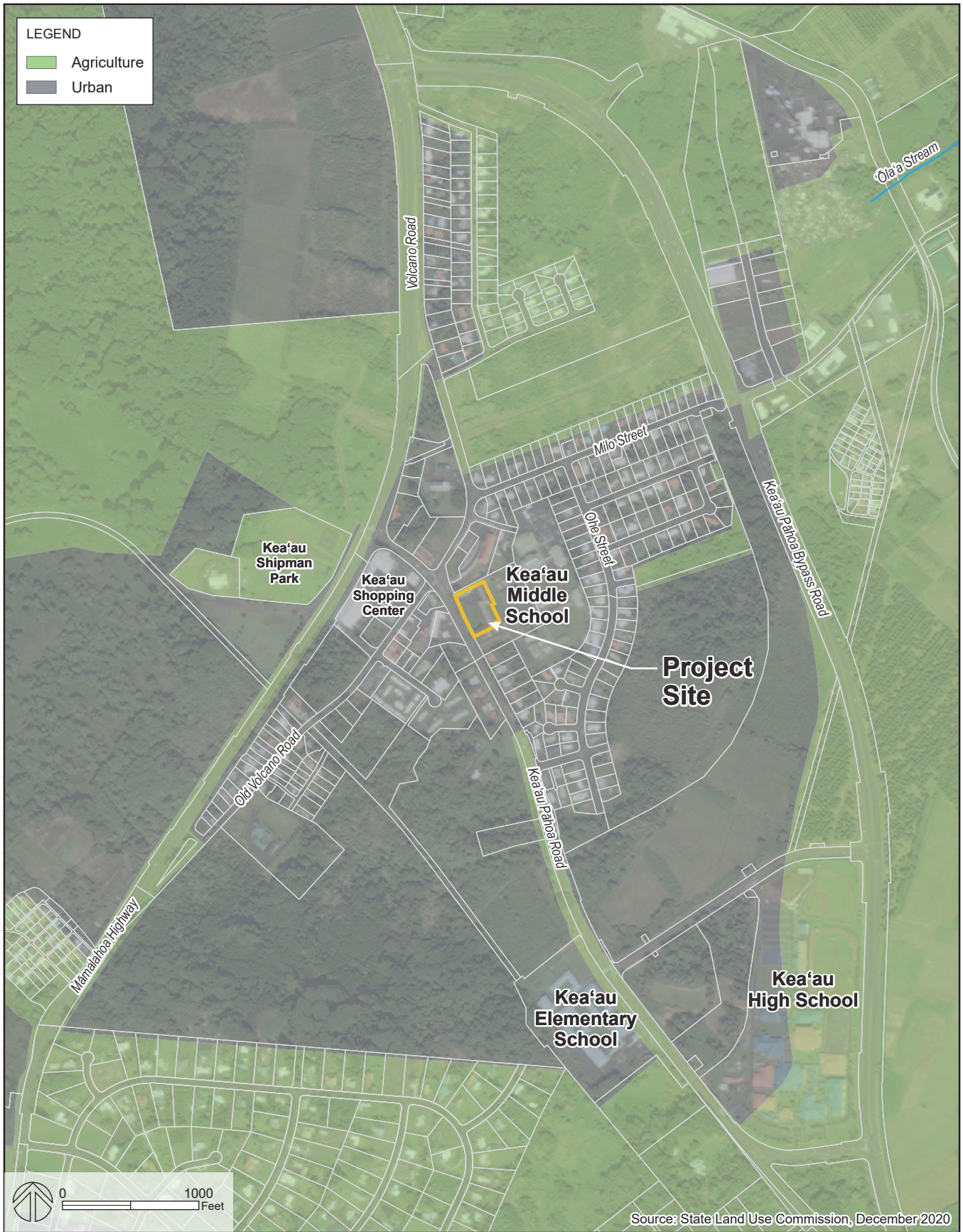
**Discussion:** The proposed site for the library is within the State Urban District. Its use as a library is consistent with this State land use designation.

#### 5.1.2 Hawai'i State Plan, HRS Chapter 226

The Hawai'i State Planning Act, Hawai'i Revised Statutes (HRS) Chapter 226 was enacted in 1978 to "improve the planning process in this state, to increase the effectiveness of government and private actions, to improve coordination among different agencies and levels of government, to provide for wise use of Hawaii's resources and to guide the future development of the state." The Act sets forth the Hawai'i state plan, which is a long-range comprehensive plan that includes an overall theme, goals, objectives, policies, priority guidelines, and implementation mechanisms.

The state plan is divided into three parts:

- *Part I, Overall Theme, Goals, Objectives, and Policies.* Part I lists the state plan's overall theme and goals. Objectives and policies focus on general topic areas including population, economy, physical environment, facility systems, and socio-cultural advancement.
- *Part II, Planning Coordination and Implementation.* Part II establishes a statewide planning system to coordinate and guide all major state and county activities and to implement the overall theme, goals, objectives, policies, and priority guidelines. These are implemented through State functional plans and county general plans.



**State Land Use District Designations Map**

**Figure 9**

**Hawai'i State Public Library System**

Kea'au-Mountain View Public Library

Final Environmental Assessment – Finding of No Significant Impact



Functional plans set forth the policies, statewide guidelines, and priorities within a specific field of activity. There are thirteen functional plans focusing on Agriculture, Conservation Lands, Education, Employment, Energy, Health, Higher Education, Historic Preservation, Housing, Human Services, Recreation, Tourism, and Transportation. The most applicable of the functional plans is the Education Functional Plan, discussed below.

- *Part III, Priority Guidelines.* The purpose of this part of the State Plan is to establish overall priority guidelines to address areas of statewide concern. This part lays out the overall direction for the state, as follows:

*“The state shall strive to improve the quality of life for Hawaii’s present and future population through the pursuit of desirable courses of action in five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, and quality education” (HRS §226-102).*

Other priority guidelines include sustainability and climate change adaptation.

### **Education Functional Plan (1989)**

The Education Functional Plan, together with other Functional Plans, seeks to achieve the State Goals (Section 226-4) of: 1) a strong viable economy characterized by stability, diversity and growth...; 2) a desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems...that enhances the mental and physical well being of the people; and 3) physical, social and economic well-being, for individuals and families in Hawai’i, that nourishes a sense of community responsibility, of caring, and of participation in community life.

While the State Education Functional Plan focuses primarily on the role and strategies of the State Department of Education (DOE), it also calls for integrating efforts with that of other agencies with the ultimate purpose of striving for *“students who attain high levels of knowledge, skills and attitudes and are thus fully equipped to live meaningful, productive lives now and in the 21<sup>st</sup> century.”*

The Education Functional Plan identifies twelve policy goals that are the basis for the functional plan—academic excellence, basic skills, education workforce, facilities and services, alternatives for funding and delivery, autonomy and flexibility, increased use of technology, personal development, students with special needs, early childhood education, Hawai’i’s cultural heritage, and research programs and [communication] activities. The Education Functional Plan grouped these goals into three clusters:

#### **Cluster A**

- Academic Excellence
- Basic Skills
- Education Workforce
- Facilities and Services

### Cluster B

- Alternatives for Funding and Delivery
- Autonomy and Flexibility
- Increased Use of Technology
- Personal Development
- Students with Special Needs

### Cluster C

- Early Childhood Education
- Hawai'i's Cultural Heritage
- Research Programs and [Communication] Activities

**Discussion:** All of the goals of the Education Functional Plan are directly supported by the State's public libraries. The Hawai'i State Public Library System (HSPLS) works closely with public and private schools and its libraries play a pivotal role in supporting education and literacy in the community. Library programs promote school readiness for young children, and establish positive associations with books, reading and learning. Public libraries provide a place outside of school for students to study, use computers, conduct research, and be exposed to a range of print and digital information sources. Today's libraries have access to a wide repository of online resources and knowledge which can be accessed electronically by everyone, regardless of age, financial resources or abilities. For all community members, libraries provide free and available resources and current information technologies that support life-long learning. Library staff have expertise in selecting and utilizing materials and are trained to assist community members to access all forms of information. The proposed Kea'au-Mountain View Public Library will support education by providing an appropriately sized and updated venue in the Puna District for both formal and non-formal learning, supporting residents of Kea'au, Mountain View, and surrounding communities.

#### 5.1.2.1 Hawai'i State Plan Update Phase 1

The last comprehensive review of HRS Chapter 226, the Hawai'i State Planning Act, was initiated in 1983, completed in 1985, and resulted in the enactment of legislation to fine tune the goals, policies, and objectives of Part I and priority guidelines of Part III of the State Planning Act.

In the decades since the Hawai'i State Plan and functional plans were adopted by the State Legislature, there have been significant changes in Hawaii's economic, physical, and social conditions, technology, and the global marketplace, as well as in the constraints and opportunities the State faces as it plans for the future.

The Hawai'i Office of Planning (now Office of Planning and Sustainable Development) has completed Phase 1 of the comprehensive review of HRS Chapter 226, the State Planning Act—with respect to how it aligns with current and emerging conditions and issues and its effectiveness in addressing the needs of Hawaii's people and providing for Hawaii's future.

The Phase 1 Final Report (March 2018) recommended revisiting the State Plan's priority guidelines, which may no longer be the priority areas of today. It notes new priority directives should be added to the Hawai'i State Planning Act, including Sustainability and Climate Change. The Phase 1 report recommends a thorough update of state plan issues, noting that new cross-cutting issues have emerged. These new issues include homelessness, affordable housing, green practices, climate change, conservation and environmental stewardship, self-reliance/resiliency/security, local food production, and alternate finance mechanism including public-private partnerships.

The Phase 1 Final Report noted that functional plans are outdated. In the area of Education, the DOE has two Strategic Plans, for 2011-2018 and 2017-2020. The DOE is working with federal education officials to finalize the State's plan for complying with new requirements of the *Every Student Succeeds Act*, the federal law replacing the *No Child Left Behind Act*.

The Priority guidelines portion of the state plan should also be revisited through a planning process that involves agencies, counties, and the public. New priority directives include sustainability and climate change, which should be addressed in a "cross-cutting fashion."

The Phase 1 Final Report also noted the importance of having a shared vision and pointed out the 2017 effort by a small group of long-time local leaders as part of the Hawai'i Asia Pacific Association's "I Am Hawai'i" visioning. The overall Vision is aloha. To achieve this the group identified nine sectors and visions, with associated key issues, core values, strategic goals and implementation. The sectors include: malama aina; food security and sustainability; economic growth; energy; education; workforce development and innovation; community health; and government and infrastructure.

**Discussion:** The proposed Kea'au-Mountain View Public Library is consistent with and supports the overall direction of the Hawai'i State Plan and the findings in the State Plan update. The library will play a crucial supporting role in education and is a valuable source of information on topical issues including food security, sustainability, energy, and community health. It will provide accessible technological resources for all residents, including underserved populations. The library will also serve as a community center and gathering place for meetings, local events and a venue for exchange of information and ideas.

### 5.1.3 Hawai'i Coastal Zone Management Program

Coastal Zone Management ("CZM") objectives and policies (Section 205A-2, HRS) have been developed to preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawai'i. All lands in the State of Hawai'i and the area extending seaward from the shoreline are classified as valuable coastal resources within the State's CZM area.

HRS §205A-4(a) states that by implementing the objectives of the CZM program, agencies shall give full consideration to ecological, cultural, historic, esthetic, recreational, scenic, and open space values, coastal hazards and economic development. Additionally, HRS §205A-4(b) requires all state and county agencies to enforce the CZM objectives and supporting policies. Below is a discussion of the project's consistency with all ten (10) CZM objectives and their supporting policies, as outlined in HRS §205A-2, found at: [https://www.capitol.hawaii.gov/hrscurrent/Vol04\\_Ch0201-0257/HRS0205A/HRS\\_0205A-0002.htm](https://www.capitol.hawaii.gov/hrscurrent/Vol04_Ch0201-0257/HRS0205A/HRS_0205A-0002.htm).

### 5.1.3.1 CZM Objectives

#### (1) Recreational resources

- (A) Provide coastal recreational opportunities accessible to the public

**Discussion:** The project site is not located on the coast and will not impact coastal resources or coastal recreational opportunities accessible to the public.

#### (2) Historic resources

- (A) Protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

**Discussion:** The archaeological literature review and field inspection of the project site found that nearly the entire site has been substantially modified at and below ground by historic agriculture use and school infrastructure. It identified a historic rock boundary wall and planter, and a historic 'auwai running parallel to, but outside of the project area. Both the 'auwai and wall are assessed as significant under NRHP Criterion d, yielded or may be likely to yield information important in prehistory.

The project will not impact the historic 'auwai in any way. The construction of a walkway connecting the public sidewalk to the library will require removal of an approximately 5-foot section of the historic wall near the entry driveway. The affected section of the wall is collapsed and poses a safety and liability hazard. According to the ALRFI, sufficient documentation of the rock wall has been completed, and no further archaeological or historic preservation work is needed. A determination of "no historic properties affected" is proposed.

Under state law, and in accordance with HAR § 13-275-7, an effect determination of "no historic properties affected" is proposed since all relevant information about the rock wall and planter has been recorded.

#### (3) Scenic and open space resources

- (A) Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

**Discussion:** The construction of the Kea'au-Mountain View Public Library will not impact coastal scenic and open space resources. The library will be of a low scale and height and compatible with the character of Kea'au town and the adjacent middle school.

#### (4) Coastal ecosystems

- (A) Protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems.

**Discussion:** The proposed library will not impact coastal ecosystems. Proposed best management practices will be utilized during construction and land uses on the site will avoid any runoff into streams which could impact coastal ecosystems.

(5) Economic uses

- (A) Provide public or private facilities and improvements important to the State's economy in suitable locations.

**Discussion:** The proposed library is a public improvement important to the State's economy. The proposed site is within walking distance to the Kea'au town center; Kea'au's elementary, middle and high school; residential areas; and public recreational facilities. It is accessible to major roadways connecting the greater Puna District and Hilo. The location is suitable for its use.

(6) Coastal hazards

- (A) Reduce hazard to life and property from coastal hazards.

**Discussion:** The proposed land uses and activities will have no impact on coastal hazards.

(7) Managing development

- (A) Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

**Discussion:** The proposed land uses and activities will have no impact on the management of coastal resources and hazards.

(8) Public participation

- (A) Stimulate public awareness, education, and participation in coastal management.

**Discussion:** The proposed construction of the library has no impact on coastal management education and public awareness of coastal management issues. However, there has been public participation in the development of the library project, through the environmental assessment early consultation process and a community informational meeting in March 2023.

(9) Beach and coastal dune protection

- (A) Protect beaches and coastal dunes for public use and recreation; benefit of coastal ecosystems; and use as natural buffers against coastal hazards
- (B) Coordinate and fund beach management and protection.

**Discussion:** The project will have no impact on beach and coastal dune resources.

(10) Marine and coastal resources

- (A) Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

**Discussion:** The proposed library has no effect on the protection, use and development of marine and coastal resources. The library will provide opportunities for the community to access information about marine and coastal resources.

5.1.3.2 Consistency with CZM Policies

Each of the ten CZM objectives includes supporting policies, which are listed in HRS §205A-2(c). The policies that are applicable to the Proposed Action are listed and discussed below:

(1) Recreational resources

- Policy (B)(vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters.

**Discussion:** By adopting sound land management and water quality control practices within the Project Area, nonpoint sources of pollution to coastal waters will be mitigated.

(2) Historic resources

- Policy (A) Identify and analyze significant archaeological resources

- Policy (B) Maximize information retention through preservation of remains and artifacts...

- Policy (C) Support state goals for protection, restoration, interpretation, and display of historic resources

**Discussion:** The archaeological literature review and field inspection that was completed as part of this Environmental Assessment identified and analyzed archaeological resources consistent with Policy (A). The study identified a historic rock boundary wall and associated raised rock planter and a historic open channel 'auwai outside the property boundary. The 'auwai was determined to be significant under Criterion d for its relationship to the historic sugar cane industry that once thrived in Kea'au. It has been documented in a previous monitoring study that was submitted to the State Historic Preservation Division. There are no plans to affect this feature.

The rock wall and planter were recommended as significant under Criterion d for its likelihood of containing information important to history regarding use of the property as a school. The project will remove an approximately 5-foot section of the wall near the driveway to accommodate a walkway. Sufficient documentation of the historic wall has been completed, and no further archaeological or historic preservation work is needed. SHPD has been asked to concur with the determination of "no historic properties affected."

(3) Scenic and open space resources

**Discussion:** None of the policies for this objective are applicable. The Project Area is not in the County's Special Management Area and will not impact coastal and scenic open space resources.

(4) Coastal ecosystems

Policy (A) Exercise and overall conservation ethic, and practice stewardship in the protection, use and development of marine and coastal resources;

Policy (B) Improve the technical basis for natural resource management;

Policy (D) Minimize disruption of degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses...

Policy (E) Promote water quantity and quality planning and management practices...and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures;

**Discussion:** Conservation, stewardship and sound land management practices within the property will avoid impacts to coastal water quality and ecosystems.

(5) Economic uses

**Discussion:** None of the policies for this objective are applicable to the Proposed Action. The policies for Economic uses pertain to coastal development and ensuring that such development is appropriately located and avoid adverse environmental risk and hazards. As the project is not coastal development, none of the listed policies apply.

(6) Coastal hazards

Policy (C) Ensure that developments comply with requirements of the National Flood Insurance Program

Policy (D) Prevent coastal flooding from inland projects

**Discussion:** The Project Area is not within an area susceptible to flood hazard, and the proposed uses will not impact the risk or occurrence of coastal flooding.

(7) Managing development

**Discussion:** None of the policies associated with this objective apply. These policies pertain specifically to coastal development and are not applicable to the Proposed Action.

(8) Public participation

**Discussion:** The CZM policies for this objective pertain to public involvement in coastal zone management issues, and do not directly apply to the Proposed Action. As stated previously, there has

been public participation in the development of the library and in the ongoing environmental review process.

(9) Beach protection

**Discussion:** The policies for the Beach protection objective pertain to structures along the coastline, shoreline hardening, and coastal dunes. The policies do not apply to the Proposed Action.

(10) Marine and coastal resources

**Discussion:** The policies for Marine and coastal resources pertain to the use and development of marine and coastal resources and are not applicable to the Proposed Action.

### 5.1.3.3 Special Management Area

Part II of Chapter 205A, HRS contains the general objectives and policies upon which all counties have established Special Management Areas (SMA). The Project Area is outside the County of Hawai'i's SMA. The proposed library will not impact coastal recreation or coastal access, coastal ecosystems, or coastal hazards. Consistency with the County's SMA objectives and policies was discussed in Section 5.1.3.2 above.

## 5.2 County of Hawai'i

Relevant County of Hawai'i land use regulatory policy documents and guidance pertaining to the proposed action include the General Plan, LUPAG map, and Hawai'i County Code (Comprehensive Zoning Ordinance). The Project Area is not located within the County's Special Management Area (SMA).

### 5.2.1 County General Plan

The County of Hawai'i's General Plan is the blueprint that guides the long-term development of Hawai'i Island. It considers the needs of the entire island and provides a sound growth strategy that directs future opportunities related to land use, zoning amendments and capital expenditures. The General Plan strives to position Hawai'i Island for economic progress while preserving the environment and strengthening community foundations. The current General Plan was adopted in 2005 and is undergoing a Comprehensive Review process. However, the 2005 General Plan continues to define Hawai'i County's structure and future growth. The purposes of the General Plan are to:

- Guide the pattern of future development in Hawai'i County based on long-term goals;
- Identify the visions, values, and priorities important to the people of the County;
- Provide the framework for regulatory decisions, capital improvement priorities, acquisition strategies, and other pertinent government programs within the County organization and coordinated with State and Federal programs.
- Improve the physical environment of the County as a setting for human activities; to make it more functional, beautiful, healthful, interesting, and efficient.
- Promote and safeguard the public interest and the interest of the County as a whole.



- Facilitate the democratic determination of community policies concerning the utilization of its natural, man-made, and human resources.
- Effect political and technical coordination in community improvement and development.
- Inject long-range considerations into the determination of short-range actions and implementation.

#### 5.2.1.1 Land Use Pattern Allocation Guide (LUPAG)

The 2005 General Plan includes a series of Land Use Pattern Allocation Guide (LUPAG) maps, which indicate the general location of various land uses in relation to each other. The LUPAG designation for the proposed site and surrounding school and Kea'au town areas is Medium Density Urban. As a public facility, the proposed library is compatible with this land use designation.

#### 5.2.1.2 General Plan Study Elements

The 2005 General Plan includes several study elements, each with its own goals and policies. Goals indicate the desired long-range directions and situations and provide a cohesive and comprehensive framework for the coordination of social and economic programs and government effort. Policies state the methods of strategies to be undertaken to achieve the stated goals.

The following are General Plan goals and policies that are relevant to the Proposed Action.

#### **ECONOMIC**

##### **Goals:**

- (b) Economic development and improvement shall be in balance with the physical, social, and cultural environments of the island of Hawai'i.
- (h) Promote and develop the island of Hawai'i into a unique scientific and cultural model, where economic gains are in balance with social and physical amenities. Development should be reviewed on the basis of total impact on the residents of the County, not only in terms of immediate short run economic benefits.

##### **Policies:**

- (b) Encourage the expansion of the research and development industry by working with and supporting the University of Hawai'i at Hilo and West Hawai'i, the Natural Energy Laboratory at Hawai'i Authority and other agencies' programs that support sustainable economic development in the County of Hawai'i.
- (f) Support all levels of educational, employment and training opportunities and institutions.
- (i) Continue to encourage the research, development and implementation of advanced technologies and processes.

**Discussion:** The Economic goals and policies of the General Plan generally relate to employment and economic growth and industries including agriculture, forestry, fishing, the visitor industry, and research and development. Although the proposed project does not directly impact the economy or economic

growth, ensuring adequate public services such as libraries and schools indirectly supports the growth of the economy by enhancing the quality of life for residents. The proposed action is consistent with policy (f) to support all levels of educational, employment and training opportunities and institutions.

## **HISTORIC SITES**

### **Goals:**

- (a) Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawai'i.
- (g) Collect and distribute historic sites information of public interest and keep an inventory of sites.
- (h) Aid in the development of a program of public education concerning historic sites.

### **Policies:**

(c) Require both public and private developers of land to provide historical and archaeological surveys and cultural assessments, where appropriate, prior to the clearing or development of land when there are indications that the land under consideration has historical significance.

(g) Collect and distribute historic sites information of public interest and keep an inventory of sites.

**Discussion:** As discussed above, an archaeological literature review and field inspection report has been conducted as part of the environmental review process. Approximately 5 feet of the existing 250+ foot long historic wall will be removed for a public walkway. The ALRFI found that sufficient documentation of the historic wall and planter has been completed and no further archaeological or historic preservation work is needed at this site. The SHPD has been requested to concur with a determination of “no historic properties affected.”

## **PUBLIC FACILITIES**

Public facilities are those service systems that are provided, staffed, and maintained by government to directly serve the residents of the County, and includes libraries. This area of the General Plan is directly applicable to the proposed project.

### **Goals:**

(a) Encourage the provision of public facilities that effectively service community and visitor needs and seek ways of improving public service through better and more functional facilities in keeping with the environmental and aesthetic concerns of the community.

### **Policies:**

(a) Continue to seek ways of improving public service through the coordination of service and maximizing the use of personnel and facilities.

(b) Coordinate with appropriate State agencies for the provision of public facilities to serve the needs of the community.

The Public Facilities-Education section of the General Plan (Section 10.2.4.1, Puna) specifically addresses the existing school overcrowding in Puna and the unsatisfactory situation of joint community-school libraries:

*The Keaau, Mt. View and Pahoa branch libraries are joint community-school facilities. The Keaau facility has 21,332 volumes. The Pahoa and Mt. View facilities house 34,365 volumes and 18,345 volumes, respectively. Both library facilities are inadequate in size to meet the needs of the students and community. Furthermore, the lack of adequate pedestrian access and parking at these facilities is an ongoing problem.*

The following Courses of Action (Section 10.2.4.1.2) are recommended:

- (a) Improve existing school complexes to meet the standards established by the State Department of Education.
- (b) School facilities should be made available to the community for recreation and other compatible uses during after-school hours.
- (c) Encourage the Department of Education to plan and develop school facilities as the need arises.
- (d) Encourage improvements to pedestrian access between the village of Pāhoā and the school and library facilities.

**Discussion:** The proposed Kea'au-Mountain View Public Library supports the goals and policies for the provision and improvement of public facilities, by replacing two existing inadequate school-based libraries with a new modern facility. The project directly responds to the General Plan's (Public Facilities) recommended Courses of Action (a), (b) and (c) above. The new library will be sized to meet the needs of the growing Puna District population, meet current DOE standards, and incorporate industry design and operational guidelines for contemporary community libraries. The existing spaces at Kea'au Middle School and Mountain View Elementary School that are currently the joint school-community libraries will be returned to DOE use. The new library will also enhance Kea'au Middle School and Mountain View Elementary School operations and security by reducing the presence of non-school personnel on campus during school hours.

### 5.2.1.3 General Plan Comprehensive Review

According to the 2005 General Plan, the comprehensive review process shall be initiated no more than 10 years after the previous review. In 2015, a Comprehensive Review of the General Plan was initiated. The initial phase involved collecting community feedback, examining the effectiveness of the previous plan, researching current conditions, and analyzing how to create a unified and easily implementable plan. An overarching goal of the review effort is to create an open forum for discussion, consider community input, encourage interagency collaboration, and direct growth in ways that benefit the population and environment.

## 5.2.2 Puna Community Development Plan

The 2005 General Plan established the Community Development Plan (CDP) program in order to translate island-wide General Plan goals and priorities into action-items for specific geographical areas. CDPs are also intended to serve as a forum for community input into land use, delivery of government services and other matters relating to the planning area.

The project site is located in the area covered by the Puna Community Development Plan (2008, as amended). The Puna CDP notes that the Puna District experienced the most or second-most rapid population growth of any district statewide for over 30 years, with increases of 83% between 1980 and 1990, 51% between 1990 and 2000, and another 45% between 2000 and 2010. As of 2017, the district's resident population was estimated at 50,200, or 25% of the County population (ESRI, 2017). By 2030, the population is projected to grow to approximately 75,000.

However, much of this growth has been accommodated on large, agriculturally zoned subdivisions with less than adequate infrastructure, making it difficult and expensive for the County to meet the social and physical infrastructure needs. A similar situation has been noted by public agencies for decades.

The Puna CDP focuses on three themes:

- **Malama I Ka Aina** establishes how the contextual natural, historic and cultural features of Puna should be preserved and respected. The goals, objectives and implementing actions address cultural and historic sites and districts.
- **Growth Management** addresses how the future pattern of human settlement should be shaped to respect that context and support the desired quality of life for Puna residents. The goals, objectives and implementing actions under this theme address the land use pattern; agricultural and economic development; public services, social services and housing; parks and recreation and renewable energy and energy efficiency.
- **Transportation** focuses on sustainable approaches to transportation to support the goals of the two above themes. The goals, objectives and implementing actions under this theme address mass transit and alternative travel modes, travel demand management and roadway connectivity and safety.

**Discussion:** The proposed library is consistent with all three themes of the Puna CDP but has greatest applicability to the theme of Managing Growth. The CDP's vision is to "reshape the development pattern by moving away from sprawl effects of existing subdivision and toward the formation of village and town centers."

The selected site for the Kea'au-Mountain View Library, on the Kea'au Middle School property and within the existing Kea'au town center supports this concept. The library will be located within an existing urbanized population center, within walking distance of existing elementary, middle and high schools; commercial areas; parks and residential areas. This location will minimize the need for vehicle trips and supports the development of a walkable town center. The site's walkability and proximity to residential and commercial areas was an important criterion in the selection of the site.

### 5.2.3 Zoning

As shown in Figure 10, the Project Area is zoned RS-10, Single family Residential District with a minimum building site area requirement of 10,000 square feet. According to the Hawai'i County Zoning Code (HCC Chapter 25), "*Public uses, structures and buildings and community buildings are permitted uses in any district, provided that the director has issued plan approval for such use*" (Section 25-4-11(c), Power lines, utility substations, public buildings).

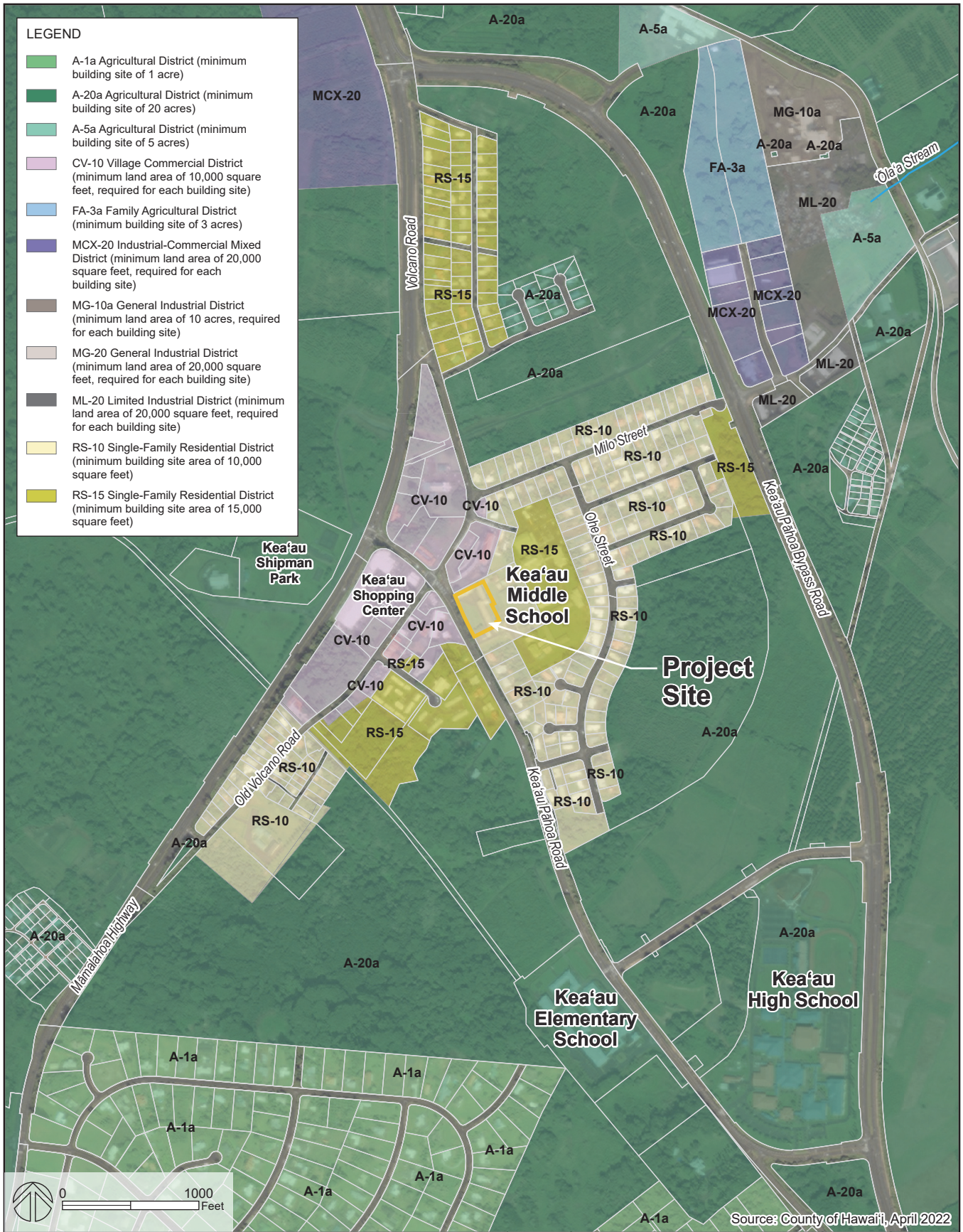
**Discussion:** As a public use and structure, the proposed Kea'au-Mountain View Public Library is a permissible use in the RS-10 zoning district. Plan Approval from the County Planning Director is required as part of the building permit approval process per HCC Section 25-4-11(c).

### 5.2.4 Special Management Area

Coastal Zone Management objectives and policies (Section 205A-2, HRS) and the Special Management Area Rule of the County of Hawai'i (Rule 9) have been developed to preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawai'i. Special controls on development within the area along the shoreline are necessary to avoid permanent loss of valuable resources and insure that public access is provided to public-owned or used beaches, recreation areas and natural reserves.

**Discussion:** As noted previously, the project site is outside the County's SMA. The Proposed Action is consistent with SMA objectives and policies and supports sound coastal management practices.

Neither the construction or operation of the library will result in runoff or other off-site impacts that could affect the coastal zone. The project will not cause an irrevocable commitment or loss of any natural or cultural resources. The removal of an approximately five-foot section of a historic wall to accommodate a pedestrian walkway is not expected to be an adverse effect. The project will not have secondary impacts such as population changes or effects on public facilities.



**County of Hawai'i Zoning Districts Map**

**Hawai'i State Public Library System**

Kea'au-Mountain View Public Library

Final Environmental Assessment – Finding of No Significant Impact

**Figure 10**

## 5.3 Permits and Approvals

A list of the anticipated and potential permits and approvals for the Proposed Action is presented below.

**Table 5-1: Potential Permits and Approvals**

<b>Responsible Agency</b>	<b>Permit/Approval</b>
Department of Accounting and General Services and Hawai'i State Public Library System	HRS Chapter 343 Hawai'i Environmental Policy Act compliance
Hawai'i State Public Library System; Department of Education	MOA and E.O. for Library Use <b>Note:</b> The property identified by TMK: (3) 1-6-002: portion of 001 is currently set aside by Executive Order No. 0614 (EO 614) to the Department of Education for the Ola'a School Lot (Kea'au Middle School). The area allotted for use by the Hawaii State Public Library System (HSPLS) will need to be withdrawn from EO 614 and re-set aside to HSPLS.
Hawai'i Department of Health-Disability and Communication Access Board	Plan review
Department of Health-Wastewater Branch	Plan review (Individual Wastewater System)
Department of Health-Clean Water Branch	National Pollutant Discharge Elimination System (NPDES) (if required during construction)
Department of Health Indoor and Radiological Health Branch	Form 1, Application for Permit (Air Conditioning and/or Ventilation)
Dept. of Land and Natural Resources-State Historic Preservation Division	Chapter 6E, HRS compliance
Hawai'i Department of Transportation	Permit to Perform Work upon State Highways Permit to Operate or Transport Oversize and/or Overweight Vehicles and Loads Over State Highways (as required) Permit for Occupancy and Use of State Highway ROW (as required)
County of Hawai'i Planning Department	Director's plan approval for public use within RS-10 zoning district, per HCC Section 25-4-11(c).
County of Hawai'i Department of Public Works	Building permit (includes electrical, plumbing, DEM-WW, engineering, DOH-Sanitation, Fire Dept., and structural reviews) Grading Permit, grubbing, stockpiling (reviews by SHPD, Planning, DPW)

This page intentionally left blank



## 6 Determination

To determine whether a proposed action may have a significant impact on the environment, the approving agency needs to consider all phases of the action, the expected impacts and the proposed mitigation measures. The agency's review and evaluation of the action would result in a determination that either: 1) the action may have a significant effect on the environment, and issuance of an Environmental Impact Statement Preparation Notice is required; or 2) the action is not likely to have a significant effect and notice of a FONSI should be issued.

Based on the findings presented in this Environmental Assessment, the Proposed Action will not result in a significant impact on the environment, and a Finding of No Significant Impact (FONSI) has been made.

The determination was based on review and analysis of the significance criteria specified in Section 11-200.1-13, HAR. An action shall be determined to have a significant effect on the environment if it meets any of the following criteria.

### **1. Irrevocably commit a natural, cultural, or historic resource**

The project will not irrevocably commit natural, cultural or historic resources. There are no sensitive natural resources, species, or habitats within the 1.77-acre Project Area. There are two historic properties identified within the Area of Potential Effect; a historic rock wall and a historic 'auwai running parallel to (but outside) the site boundary.

The project will not impact the 'auwai in any way. The project will remove an approximately 5-foot section of the rock wall near the entry driveway to accommodate a walkway connecting the sidewalk to the library. This section of the wall is collapsed and presents a safety and liability hazard. The walkway was requested by the Hawai'i Department of Transportation (DOT) to provide a safe pedestrian connection from the public sidewalk. The design of the walkway (width and slope) will comply with Americans with Disabilities Act (ADA) and the State Disability and Communication Access Board (DCAB) requirements. The remaining end of the existing wall will be finished using materials of and in a style consistent with its historic character.

According to the Archaeological Literature Review and Field Inspection (ALRFI) conducted for the project, sufficient documentation of the historic rock wall and planter have been completed, and no further archaeological or historic preservation work is needed. Under state law, and in accordance with HAR § 13-275-7, an effect determination of "no historic properties affected" is proposed since all relevant information about the rock wall and planter has been recorded.

See Section 4.4. of the EA for further discussion of historic and archaeological resources.

**2. Curtail the range of beneficial uses of the environment.**

The construction of the library on a portion of the Kea'au Middle School property is consistent with State and County land use plans, and compatible with the adjacent school use. The library will not curtail the range of beneficial uses of the environment.

**3. Conflict with the State's environmental policies or long-term environmental goals established by law.**

The Proposed Action does not conflict with the long-term environmental policies, goals and guidelines specified in HRS Chapter 344. The analysis of the individual resource areas presented in this EA demonstrates consistency with the State's policy to conserve natural resources and enhance residents' quality of life.

**4. Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and state.**

The Proposed Action will not have an adverse effect on the economic welfare, social welfare, or cultural practices. The project provides a much-needed new library facility to replace two inadequate facilities that are co-located on school campuses. Construction of a new stand-alone facility that meets current space requirements and modern design standards will benefit the economic and social welfare of the Puna District communities. In particular the overall effect will be positive for the community's social welfare, as the increased access to a public library will provide improved services to the regional population.

**5. Have a substantial adverse effect on public health.**

The construction and operation of the library will not have adverse environmental or health impacts. Previous agricultural use of the site has resulted in the presence of soils that are lead- and arsenic-impacted. A Phase I ESA and Phase II soil screening were completed, and a Construction Environmental Hazard Management Plan is being prepared for the project to guide the contractor during construction. Any impacted soil will either be disposed off-site in accordance with State and federal regulations or managed onsite. If impacted soil is managed onsite, measures will be implemented to ensure the soil has limited access to humans and the environment. With these mitigations in place, the risk to human health and the environment is not expected to be significant. See Section 4.8.2 of the EA.

**6. Involve adverse secondary impacts, such as population changes or effects on public facilities.**

The Proposed Action will not result in adverse secondary impacts such as population changes or effects on public facilities. The library will replace two existing public libraries which are aging, outdated, and too small to meet current needs. Once completed, the existing library spaces will return to school use. Future users of the Kea'au-Mountain View Public Library are already living in Kea'au, Mountain View, Kurtistown, and surrounding Puna communities. The new public library will not cause population change or adverse effects on other public facilities.

**7. *Involve a substantial degradation of environmental quality.***

The proposed construction and use of the new library will be conducted in accordance with all applicable environmental rules and regulations. No degradation of environmental quality is anticipated.

**8. *Be individually limited but cumulatively have substantial adverse effect upon the environment or involves a commitment for larger actions.***

There will be no cumulative adverse effect or commitment for larger action.

**9. *Have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat.***

There are no rare, threatened, or endangered species or habitats on or near the Project Area. There will be no impact on any of these species or habitats.

**10. *Have a substantial adverse effect on air or water quality or ambient noise levels.***

There will not be a substantial adverse effect on air or water quality or ambient noise levels. Uses are low intensity and similar to the existing library, which is co-located within the Kea'au Middle School campus. Operation of the new stand-alone library will follow all applicable environmental rules and regulations. During the construction period, there will be short-term noise impacts on nearby school classrooms and administrative offices. There will be no pile driving. Construction activities will be restricted to the construction hours specified by the Department of Health noise permit. See Section 4.3. The contractor will best management practices to minimize excessive dust and air quality impacts.

**11. *Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a floodplain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.***

The Project Area is not in a floodplain, tsunami zone, sea level rise exposure or erosion prone area. As with all of Hawai'i Island, the Project Area is subject to earthquake, and as most of the Puna District, at some risk of volcanic hazard.

**12. *Have a substantial adverse effect on scenic vistas and view planes, during day or night, identified in county of state plans or studies; or***

Proposed land uses will be of low scale and intensity and will have no effect on scenic vistas or view plane.

**13. *Require substantial energy consumption or emit substantial greenhouse gases.***

The proposed activities in the Project Area will not require substantial energy consumption or emit substantial greenhouse gases. The project will include a photovoltaic (PV) system.

This page intentionally left blank

## 7 References

- Austin, Tsutsumi & Associates, Inc. Traffic Impact Analysis Report, Kea'au-Mountain View Public Library. Final. Prepared for HHF Planners. July 2023.
- Coffman Engineers. Preliminary Engineering Report, Kea'au and Mountain View Public Library Planning, TMK (3) 1-6-002:001. May 10, 2023.
- County of Hawai'i General Plan. February 2005 (as Amended) URL = <https://www.planning.hawaiicounty.gov/general-plan-community-planning/gp>
- County of Hawai'i, Department of Research and Development. Climate Action Plan, First Draft 2020. URL= <https://www.rd.hawaiicounty.gov/home/showpublisheddocument/301933/637233445066030000>
- County of Hawai'i Department of Water Supply. Hawai'i County Water Use and Development Plan Update, Hawai'i Water Plan. Final Report August 2010. URL= <https://www.hawaiidws.org/water-use-development-plan/>
- County of Hawai'i. Northeast Maunaloa Aquifer Sector Area, Hawai'i County Water Use and Development Plan update, August 2010 update
- County of Hawai'i. Puna Community Development Plan. September 2008 (as amended November 2010, June 2011 & December 2011). URL = <https://www.planning.hawaiicounty.gov/home/showpublisheddocument/301707/637205017973800000>
- Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delporte, 2013: Online Rainfall Atlas of Hawai'i. *Bull. Amer. Meteor. Soc.* 94, 313-316, doi: 10.1175/BAMS-D-11-00228.1. URL = <http://rainfall.geography.hawaii.edu/rainfall.html>
- Hawai'i Climate Change Mitigation and Adaptation Commission. *Hawai'i Sea Level Rise Vulnerability and Adaptation Report*. Prepared by Tetra Tech, Inc. and the State of Hawai'i Department of Land and Natural Resources Office of Conservation and Coastal Lands under the State of Hawai'i Department of Land and Natural Resources Contract No. 64064. 2017. URL = [https://climateadaptation.hawaii.gov/wp-content/uploads/2017/12/SLR-Report\\_Dec2017.pdf](https://climateadaptation.hawaii.gov/wp-content/uploads/2017/12/SLR-Report_Dec2017.pdf)
- Hawai'i State Public Library System (HSPLS). (December 2015). State of Hawai'i, Department of Education. *The Hawai'i State Public Library System Strategic Plan, 2014 to 2018; Creating the Future; Progress Report FY '15*. Honolulu, Hawai'i
- Hawai'i State Public Library System (HSPLS) and the Department of Accounting and General Services (DAGS). Kea'au-Mountain View Public Library, Project Definition Report. May 2022.

- Hawai'i State Public Library System. Kea'au-Mountain View Public Library Site Selection Study, DAGS Job. No 11-36-6589. Prepared by HHF Planners. May 2022.
- Honua Consulting. Frederick LaChance, Rosanna Thurman and Trisha K. Watson. Archaeological Literature Review and Field Inspection for the Kea 'au-Mountain View Public Library Project, Kea'au Ahupua'a, Puna District, Island of Hawai'i. Prepared for HHF Planners. May 2023.
- LeGrande Maya and Reginald David, Le Grande Biological Surveys. Biological Surveys Conducted for Proposed Kea 'au-Mountain View Public Library, Kea 'au, Island of Hawai'i. Prepared for Helber, Hastert & Fee. December 2022.
- Mink, J. F., & Lau, L. S. (1993). *Technical Report No. 191: Aquifer Identification and Classification for Hawai'i: Groundwater Protection Strategy for Hawai'i*. University of Hawaii, Water Resources Research Center.
- Parametrix. 2019 Integrated Solid Waste Management Plan Update. Prepared for Hawai'i County Solid Waste Division. August 2020. URL=  
<https://records.hawaiicounty.gov/weblink/ElectronicFile.aspx?openfile=true&dbid=1&docid=110921>
- PBR Hawai'i & Associates, Inc. Cultural Impact Assessment, Kea'au Village Master Plan, Kea'au Ahupua'a, Puna District, Hawai'i Island. Prepared for W.H. Shipman Ltd. July 2017.
- RMA Architects Inc. Project Definition Report, Kea'au-Mountain View Public Library. Prepared for State of Hawai'i Department of Accounting and General Services and the Hawai'i State Public Library System, DAGS Job No. 11-36-6589, May 2022
- RMA Architects Inc. Preliminary Basis of Design, Kea 'au-Mountain View Public Library. Prepared for State of Hawai'i Department of Accounting and General Services and the Hawai'i State Public Library System, DAGS Job No. 11-36-6628, 13 April 2023.
- Renaissance Consulting LLC. Phase I Environmental Site Assessment for Keaau-Mountainview Public Library, TMK (3) 1-6-002:001. RENCON Project #1015. January 27, 2023.
- SMS Research and Marketing Services, Inc. County of Hawai'i General Plan Comprehensive Review, Trends and Forecasts, Final Report. September 2016. URL =  
<https://www.hawaiicounty.gov/home/showdocument?id=301661>
- State of Hawai'i, OEQC, Guide to the Implementation and Practice of the Hawaii Environmental Policy Act, 2012 Edition. URL = [http://oeqc2.doh.hawaii.gov/OEQC\\_Guidance/2012-GUIDE-to-the-Implementation-and-Practice-of-the-HEPA.pdf](http://oeqc2.doh.hawaii.gov/OEQC_Guidance/2012-GUIDE-to-the-Implementation-and-Practice-of-the-HEPA.pdf)
- State of Hawai'i, Office of Planning. SSFM International. Hawai'i State Plan Update: Phase 1 Final Report. March 2018. URL=  
[https://files.hawaii.gov/dbedt/op/spb/Hawaii\\_State\\_Plan\\_Update\\_Ph\\_1\\_Final\\_Report.pdf](https://files.hawaii.gov/dbedt/op/spb/Hawaii_State_Plan_Update_Ph_1_Final_Report.pdf)

- State of Hawai'i, Commission on Water Resource Management. Hawai'i Water Plan, Water Resource Protection Plan, 2019 Update. URL=  
[https://files.hawaii.gov/dlnr/cwrm/planning/wrpp2019update/WRPP\\_ALL\\_201907.pdf](https://files.hawaii.gov/dlnr/cwrm/planning/wrpp2019update/WRPP_ALL_201907.pdf)
- State of Hawai'i, Sustainability Task Force. Hawai'i 2050 Sustainability Plan, Charting a course for the Decade of Action (2020-2030). June 2021. URL = <https://hawaii2050.hawaii.gov/wp-content/uploads/2021/07/FINAL-Hawaii-2050-Sustainability-Plan-web-1.pdf>
- University of Hawaii. (2014). *Hawaii State Water Wells Data*. Retrieved November 2022, from Hawaii Groundwater & Geothermal Resources Center. URL =  
<https://www.higp.hawaii.edu/hggrc/projects/hawaii-state-waterwells/>
- U.S. Department of Agriculture, Foote, D. E., and Hawai'i Agricultural Experiment Station. *Soil Survey of Island of Hawai'i*. December 1973.
- Wright, T.L., Chun, J.Y.F., Esposito, Joan, Heliker, Christina, Hodge, Jon, Lockwood, J.P., and Vogt, S.M., 1992, Map showing lava-flow hazard zones, Island of Hawaii: U.S. Geological Survey Miscellaneous Field Studies Map MF-2193, scale 1:250,000.
- U.S. Geological Survey, Hawaiian Volcano Observatory. About Earthquakes in Hawai'i. URL=  
<https://www.usgs.gov/observatories/hawaiian-volcano-observatory/about-earthquakes-hawaii.2022>.
- W.H. Shipman Company, Ltd. Kea'au Village Master Plan, Final Environmental Assessment & Finding of No Significant Impact. Prepared by PBR Hawai'i. July 2020.

This page intentionally left blank



# 8 Agencies and Organizations Consulted

## 8.1 Pre-Assessment Consultation

Pre-Assessment consultation, as required under HRS Chapter 343, was conducted prior to the initiation of the Environmental Assessment. A pre-assessment consultation letter was sent via email on February 24, 2023 to government agencies and stakeholders listed below. The letter included a map of the project area, the site plan, and a project description. Comments were requested by March 24, 2023. Written comments could be submitted via email, U.S. mail, or dropped off at the Kea'au and Mountain View libraries. Comments could also be submitted at a community Open House which was held on Monday, March 6, 2023.

### 8.1.1 Agencies and Organizations Consulted

Agencies and organizations that were consulted during preparation of the Draft and Final EA are listed in Table 8-1. The parties that provided formal response during the 30-day pre-assessment consultation period and the Draft EA comment period are identified with a check mark (✓).

Written comments received during pre-assessment consultation are summarized in Table 8-2 and 8-3. Draft EA comments are in Table 8-4. All comments received are reproduced at the end of this chapter.

**Table 8-1: Agencies and Organizations Consulted**

Agency/Organization	Pre-Assessment Response	Draft EA Comments Provided
<b>Federal</b>		
U.S. Army Corps of Engineers, Honolulu District		
Oahu Natural Resource Conservation Service		
U.S. Fish and Wildlife Service, Pacific Islands Office		
<b>State of Hawai'i</b>		
Department of Agriculture		
Department of Accounting and General Services		
Department of Health (Clean Air Branch, Clean Water, Safe Drinking Water, Solid & Hazardous Waste, Wastewater Branches)	✓ (Solid and Haz Waste)	✓ (Clean Water Branch)
Disability and Communication Access Board	✓	
Office of Planning and Sustainable Development	✓	✓
Department of Business, Economic Development & Tourism		
Department of Defense		
Department of Education (Planning, Hawai'i District Hilo-Waiakea, Hawai'i District Ka'u-Puna)		

<b>Agency/Organization</b>	<b>Pre-Assessment Response</b>	<b>Draft EA Comments Provided</b>
Department of Hawaiian Home Lands	✓	
Department of Land & Natural Resources, State Historic Preservation Division		
Department of Land & Natural Resources, Land Division	✓ (Land & Engineering)	✓ (Land, Engineering; Forestry & Wildlife)
Department of Transportation	✓	
University of Hawai'i, Water Resources Research Center		
Office of Hawaiian Affairs		
<b>County of Hawai'i</b>		
Hawai'i County Civil Defense Agency		
Department of Environmental Management		
Hawai'i County Fire Department		
Office of Housing and Community Development		
Department of Human Resources		
Department of Information Technology		
Mayor Mitch Roth		
Department of Parks and Recreation		
Department of Planning		
Hawai'i County Police Department	✓	✓
Department of Public Works	✓	
Department of Research and Development		
Department of Water Supply	✓	✓
<b>Utilities</b>		
Hawai'i Electric Light Company		
Hawaiian Telcom		✓
Charter Communications		
<b>Other Local and Community</b>		
Kea'au Middle School		
Kea 'au Elementary School		
Kea 'au High School		
Mountain View Elementary School		
Ke Kula o Nawahiokalani'opu'u Iki Lab Public charter School		
Christian Liberty School and Academy		
W.H. Shipman Ltd.		

<b>Agency/Organization</b>	<b>Pre- Assessment Response</b>	<b>Draft EA Comments Provided</b>
Kamehameha Schools-Hawai'i Campus		
Kea'au Community Center		
<b>Elected Officials</b>		
Honorable Mazie K. Hirono, U.S. Senate		
Honorable Brian Schatz, U.S. Senate		
Honorable Ed Case, U.S. House of Representatives		
Honorable Jill Tokuda, U.S. House of Representatives		
Senator Dru Mamo Kanuha, District 3		
Senator Joy A. San Benaventura, District 2		
Representative Greggor Ilagan, District 4		
Representative Chris Todd, District 3		
Representative Jeanne Kapela, District 5		
Councilmember Susan Lee Loy, District 3		
Councilmember Ashley Lehualani Kierkiewicz, District 4		
Councilmember Matt Kanealii-Kleinfelder, District 5		

**Table 8-2: Summary of Pre-Assessment Comments Received**

<b>Agency/Organization</b>	<b>Contact</b>	<b>Date</b>	<b>Comments</b>	<b>Response</b>
<b>STATE OF HAWAII</b>				
Department of Hawaiian Home Lands	Andrew H. Choy, Planning Program Manager, (808) 620-9481, <a href="mailto:Andrew.h.choy@hawaii.gov">Andrew.h.choy@hawaii.gov</a>  Ref.: PO-23-036	Ltr dated 2/27/2023	Due to lack of proximity to Hawaiian Home Lands, we do not anticipate any impacts to our lands or beneficiaries from the project.  Recommend consultation with Hawaiian Homestead community associations within the Puna moku and other native Hawaiian organizations to better assess potential impacts to cultural and natural resources and other rights of Native Hawaiians.	Acknowledged.
Department of Health, Disability Communication Access Board (DCAB)	Duane Buote, Facility Access Coordinator, (808) 586-8121, <a href="mailto:duane.buote@doh.hawaii.gov">duane.buote@doh.hawaii.gov</a>	Ltr dated 3/20/2023	Because this project is being constructed by a State entity on State land, it is covered by §103-50, Hawaii Revised Statutes (HRS). The construction of library will be reviewed for compliance with the Department of Justice's (DOJ) 2010 ADA Standards for Accessible Design (2010 Standards).  Projects with construction documents that are covered by §103-50, HRS, are required to be submitted to DCAB for a formal document review.  Recommend the following be addressed in project design: <ul style="list-style-type: none"> <li>At least one accessible route shall be provided from public streets and sidewalks. Where a new on-site parking facility is being proposed, accessible parking stalls and access aisles shall be provided.</li> </ul>	Acknowledged and will comply.

Agency/Organization	Contact	Date	Comments	Response
			<ul style="list-style-type: none"> <li>• An accessible route shall be provided from the accessible parking stalls and access aisles to the proposed new building.</li> <li>• Future EV charging stations shall comply with DCAB Interpretive Opinion 2012-01.</li> <li>• New toilet facilities shall comply with ADAAG 213 and Chapter 6.</li> </ul> <p>The new walkway connecting to an existing covered walkway shall comply with ADAAG 206 and Chapter 4.</p>	
Department of Health, Solid and Hazardous Waste Branch	Solid and Hazardous Waste Branch, (808) 586-4226, <a href="mailto:shwb@doh.hawaii.gov">shwb@doh.hawaii.gov</a>	Email dated 3/8/2023	SHWB Standard Comments attached	Acknowledged and will comply.
Department of Land and Natural Resources, State Historic Preservation Division	SHPD Intake specialist	Email dated 3/1/2023	All submissions for SHPD review must be submitted online to Hawai'i Cultural Resource Information System (HICRIS) at <a href="https://dlnr.hawaii.gov/shpd/">https://dlnr.hawaii.gov/shpd/</a>	Acknowledged and will comply.
Department of Land and Natural Resources	Russell T. Tsuji, Land Administrator  Carty Chang, Engineering Division, <a href="mailto:DLNR.ENGR@hawaii.gov">DLNR.ENGR@hawaii.gov</a>  Gordon C. Heit, Land Division, <a href="mailto:Gordon.c.heit@hawaii.gov">Gordon.c.heit@hawaii.gov</a>	Ltr dated 3/23/2023	<u>Engineering Division</u> The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. The applicant should include water demands and infrastructure required to meet project needs.	<u>Engineering Division</u> Acknowledged and will comply.

Agency/Organization	Contact	Date	Comments	Response
			<p>All State projects requiring water service from their local Department/Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.</p> <p>The applicant is required to provide water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update projections.</p>	
			<p><u>Land Division-Hawai'i District</u></p> <p>The property identified by TMK: (3) 1-6-002: portion of 001 is currently set aside by Executive Order No. 0614 (EO 614) to the Department of Education for the Ola'a School Lot (Kea'au Middle School). The area allotted for use by the Hawaii State Public Library System (HSPLS) will need to be withdrawn from EO 614 and re-set aside to HSPLS.</p> <p>The Land Division will provide further comments when DEA is available for review.</p>	<p><u>Land Division</u></p> <p>MOA and new Executive Order being implemented by HSPLS and DOE.</p>
Office of Planning and Sustainable Development	Ruby Edwards <a href="mailto:Ruby.m.edwards@hawaii.gov">Ruby.m.edwards@hawaii.gov</a>	Ltr dated 4/4/2023	<p><u>Coastal Zone management Program Issues</u></p> <p>DEA should include discussion of the project's consistency with the policies of the Hawai'i CZM Program, HRS 205A-2 as amended.</p> <p>Disclosure of impacts on CZM objectives and supporting policies as it relates to HRS Chapter 343 requirements including:</p> <ol style="list-style-type: none"> <li>a. <u>Wastewater</u>. County is currently preparing a programmatic EIS for wastewater system</li> </ol>	<p><u>CZM</u></p> <p>See Draft EA Section 5.1.3 for discussion of consistency with CZM program objectives and policies.</p> <p><u>Wastewater</u></p>

Agency/Organization	Contact	Date	Comments	Response
			<p>improvements in the Puna District. OSPD recommends that the County DEM be consulted as to proposed wastewater infrastructure or package plants envisioned for Kea'au Town area. DEA should discuss County's plans and identify facility design and development measures that could be taken to enable the library to connect to any planned wastewater collection and treatment system in the future.</p> <p>b. <u>Stormwater and drainage</u>. DEA should discuss whether stormwater drainage system is planned for Kea'au Town and whether low impact development practices will be proposed to manage onsite retention and treatment of stormwater runoff quantity and quality.</p> <p><u>Advancement of Sustainability Objectives in the Hawaii 2050 Sustainability Plan</u></p> <p>Proposed project should be resilient and advance the attainment of sustainability goals and objectives over the long-term DEA should generally discuss the technologies and best practices and other mitigation measures for the project that would advance implementation of the Recommended Actions in the 2021-2030 Focus Areas of the Hawai'i 2050 Sustainability Plan.</p>	<p>Will comply. See Draft EA Section 4.7.3 and Preliminary Engineering Report in Appendix C.</p> <p><u>Stormwater and Drainage</u>                      See Draft EA Section 4.7.5 and Preliminary Engineering Report in Appendix C.</p> <p><u>Hawai'i 2050 Sustainability Plan</u>                      See Draft EA Section 3.3.3.</p>

Agency/Organization	Contact	Date	Comments	Response
			<p><u>TOD-related Issues</u></p> <p>Recommend DEA discuss MTA transit services and routes in the vicinity and how existing and planned transit service might impact or promote library usage.</p> <p>Recommend DEA consider the discuss potential for 1) moving parking lot from front to rear of library; 2) reducing driveways to minimize pedestrian and vehicular conflict; and 3) pull a portion or all of library building forward toward the road. This would allow the creation of a more attractive and people-focused space along the street frontage—providing more visibility of the library and the potential for activating this space by creating a front yard/lanai for library users and the community and a safer pedestrian environment.</p>	<p><u>TOD Related Issues</u></p> <p>Transit access will be discussed. See Draft EA Section 4.9.2.1.</p> <p>Alternative site design schemes were presented to HSPLS during concept charrette and were rejected in favor of the current plan. Current site layout and parking location provides maximum security and minimizes grading and earthwork required on the site.</p>
Department of Transportation	Jeyen Thirugnanam, Systems Planning Engineer, Highways Planning Branch (808) 587-6336	3/24/2023	<p>1. Please evaluate applicability of the following HDOT permits:</p> <ul style="list-style-type: none"> <li>a) Permit to Perform Work upon State Highways...includes Traffic Management Plan.</li> <li>b) Permit to Operate or Transport Oversize and/or Overweight Vehicles and Loads Over State Highways</li> <li>c) Permit for Occupancy and Use of State Highway ROW</li> </ul> <p>2. No additional discharge of surface water run-off onto Kea'au-Pāhoa Road ROW is permitted.</p>	<p>1. Potential permits list will be included in Draft EA. Traffic Management Plan will be completed prior to construction.</p> <p>2. Acknowledged.</p>



Agency/Organization	Contact	Date	Comments	Response
			<p><u>Comments regarding the TIAR</u></p> <ol style="list-style-type: none"> <li>1. Based on the project site plan, there appears to be no school bus parking to accommodate the Mountain View Elementary School students. In your TIAR, please clarify the primary mode of transportation for Mountain View Elementary School students and provide justification for the current parking design.</li> <li>2. There is no provision for pedestrian or Americans with Disabilities Act accessibility from the public road to the facility other than the proposed accessible and standard parking spaces.</li> <li>3. For the northbound left-turn approach at the Kea'au-Pāhoa Road and Old Volcano Road intersection, operating at an existing Level of Service F during the school peak hour of traffic, please suggest any mitigation measures.</li> <li>4. The project will be responsible for providing the transportation improvements as recommended on page 16 of the TIAR (subject to final approval of HDOT).</li> </ol>	<p><u>TIAR</u></p> <ol style="list-style-type: none"> <li>1. School bus parking                      According to HSPLS, they do not typically plan for school bus access in any public library parking lot statewide. Schools do not regularly bus their students to the public library during the school day. Schools that regularly bring their students to the library are those who are in walking distance to the library. The proposed library is in walking distance to Kea'au Elementary, Middle and High School.                      That said, it is possible for a 40-foot bus to drop-off/pick-up students at the Project site. However, the bus may need to traverse multiple lanes in order to turn into and out of the Project site. Additionally, multi-point turns/maneuvers may be required on-site for the bus to travel through the parking area.                      See EA Chapter 4 for Traffic discussion and Appendix G for TIAR.</li> <li>2. Pedestrian Access                      Pedestrian access will be provided between the library and sidewalk and library and middle school.</li> </ol>

Agency/Organization	Contact	Date	Comments	Response
				<p>3. Kea'au-Pāhoa Road/Old Volcano Rd. intersection</p> <p>Based on field observations, northbound vehicle queues at the Keaau-Pāhoa Road/Old Volcano Road intersection were observed to extend from nearby intersections and commercial areas. The estimated trip generation for the proposed Project is expected to be relatively low. Thus, it would be disproportionate for the proposed Project to be expected to resolve regional traffic issues. Additionally, there are no improvements identified at this intersection in the 2035 Transportation Plan for the District of Hawai'i or Statewide Transportation Improvement Plan 2022-2025. The Kea'au Villages Master Plan identifies additional turn lanes at the Mamalahoa Highway/Kea'au-Pāhoa Highway intersection and widening Kea'au-Pāhoa Road between Mamalahoa Highway and Old Volcano Road to include two (2) northbound lanes.</p> <p>4. Comment acknowledged.</p>

Agency/Organization	Contact	Date	Comments	Response
<b>COUNTY OF HAWAII</b>				
Department of Water Supply	Ryan Quitoriano, Water Resources Planning Branch (808) 961-8070, x256	Ltr dated 3/14/2023	<p>There are three (3) existing services installed for the subject parcel. There is an existing 2-inch domestic meter near the gate of the exit driveway, an existing 3-inch domestic meter, and an 6-inch tire meter at the entrance driveway.</p> <p>The Department requests submittal for a detailed estimated maximum daily water usage calculation for the proposed library, prepared by a professional engineer licensed in the State of Hawai'i, for review and approval.</p> <p>Water usage calculations should include the total estimated daily water usage in gallons per day (GPD) and the estimated peak flow in gallons per minute (GPM).</p> <p>Based on the water usage calculations provided. the Department will determine if the existing water system is adequate to support the additional water demand, facilities charge and necessary water system improvements.</p>	<p>Comments acknowledged.</p> <p>See EA Chapter 4 for discussion of water demands and Appendix A, PER for calculations.</p>
Department of Public Works-Building Division	Julann Sonomura, P.E., Building Chief (808) 961-8434	Email dtd 2/27/2023	<p>The County of Hawaii, Department of Public Works Building Division has no objections to the proposed development.</p> <p>Please ensure that appropriate steps are taken, including requirements for the demolition of existing structures, prior to applying for Building Permits.</p>	Acknowledged.

<b>Agency/Organization</b>	<b>Contact</b>	<b>Date</b>	<b>Comments</b>	<b>Response</b>
Police Department	Scott Amaral, Puna Patrol, (808) 965-2716	Ltr dtd 3/1/2023	Staff, upon reviewing the provided documents, does not anticipate any significant impact to traffic and/or public safety concerns.	Acknowledged.

### 8.1.2 Community Open House

A community Open House was held at the Mountain View Elementary School cafeteria on March 6, 2023 from 4:00 to 6:00 PM. The open house was held during the Pre-Assessment comment period.

Representatives from HSPLS, DAGS, and project architectural and planning consultants were present to answer questions and talk to attendees. Community members were able to submit written comments at the open house at the Mountain View or Kea'au Libraries until March 24, 2023.

A summary of written comments submitted at the Kea'au and Mountain View Libraries during the comment period are included at the end of this chapter.

**Table 8-3: Summary of Community Comments**

<b>Commentor</b>	<b>Comment</b>	<b>Response</b>
Tiffany Edwards Hunt; Kea'au	Include community gathering space; need is great for meeting space in our community. Hawaiiiana section is great, hopefully will expand.	Library includes community meeting room and outdoor area.
M.A.; Kea'au	Better handicap accessibility (entry door, wider aisles)	Library will be ADA compliant, including wider aisles. Accessible walkways will be provided between the library and public sidewalk, and the middle school.
Lawrence Chung	Better music section better video section	Comments acknowledged.
Maxine Aki	Are the Island manager and ESSS support personnel (East HI) based at this library? Will they have office/work space allocated?	Comment acknowledged. Decisions related to operations have not been made yet.
Wendy Irie; Kea'au	Easier handicap access!	Library will be ADA compliant, including accessible walkways between library and public sidewalk and middle school.
Sharon Stalinger/Mike Kamm; Kea'au	We like the layout of library; lots of parking. Kea'au Library has excellent service. Staff is extremely helpful. I know we'll enjoy the new library.	Comments acknowledged.
Lou Ann Gurney; Kea'au	Great to have beautiful new library with larger collection. More visibility and easier access. Caution that library not become so automated that valuable librarian-patron connection is diminished or lost. Professional librarians very knowledgeable. Concerned that Mt. View patrons will be inconvenienced. Concerned that Mt. View students and teachers will lose valuable resource.	Comments acknowledged. Existing library space at Mt. View Elementary will return to DOE control for their use.
Anita Padilla	Great to have Mobile Library for remote areas such as Volcano.	Comment acknowledged. Your request will be considered when planning future library services.
Jennifer Hamamoto; Kurtistown	Story room for children's programming; more parking; community space with outside parking; covered parking area for staff and public.	Library will have flexible interior space, meeting room, and outdoor area which can be used for various activities.

<b>Commentor</b>	<b>Comment</b>	<b>Response</b>
James Buck; Volcano	Would love the following: open on Saturdays, no lunch closures, expand book and CD library, expand DVD movie library, give Stacey a big raise.	Comment acknowledged.
June Chun; Kea'au	Excited to have new library; glad it will be in Kea'au. Concerned about Mt. View patrons; distance may keep them away. Possible Book Mobile.	Comments acknowledged. Existing library space at Mt. View Elementary will return to DOE control for their use.
Aurelia; Kea'au	Put a gallery in it and toy area for the kids	Library will have flexible interior space, meeting room, and outdoor area which can be used for various activities.
Laura Bock	It's a great idea!	Comment acknowledged.
Thomas Chun; Kea'au	Location is great. Access by driving is good. Uses site of former Ola'a School. Nice conceptual illustration.	Comment acknowledged.
Sima Mims; Kea'au	Have a kids section to play at. Have a cat area so kids could pet them.	Library will have flexible interior space, meeting room, and outdoor area which can be used for various activities.
Linda Broadgate; Kea'au	Please have workshops such as lauhala, ukulele, etc. Bring in local artists, musicians for talk story and mini concerts. Language—Hawaiian, Filipino, Japanese etc. workshops.	Library will have flexible interior space, meeting room and outdoor area which can be used for various activities.
Kimi B.	Good idea! More accessible!	Library will be ADA compliant, including accessible walkways between library and public sidewalk and middle school.
Kanya Bernal; Kea'au	Activities for teens—painting, origami, beading, learning how to work at library, learning how to use library systems. Thank you for being here. We love coming here!	Library will have flexible interior space, meeting room and outdoor area which can be used for various activities.
Kimberly Salerno	A tall fence to deter people from hopping over and sleeping behind building. I want library to feel like a safe place for everyone, especially women and children.	Library will have chain link perimeter fencing and a security surveillance system. Interior spaces have been designed to maintain line of sight to user areas to increase patron safety.
John Sanchez	Seed library. 3d printer/"maker space"	Comment acknowledged. Library will have flexible interior space, meeting room, and outdoor area which can be used for various activities.

<b>Commentor</b>	<b>Comment</b>	<b>Response</b>
	Tool lending library (maybe partner with Ace Hardware Kea'au)	
Catilyn Kryss; Mountain View	Please don't close libraries that exist within schools, especially Mt. View Library. Removing libraries in schools cuts students off from an incredible resource. Keiki don't have access to books in most of their homes. As an educator here in Mt. View who takes my own haumana and keiki to our local library frequently, we beg you to please keep our school-housed library sites.	Existing library space at Mt. View Elementary will return to DOE control for their use.
Edie Valentine; Kea'au	Need drive through book drop at new library. When Mt View closes, patrons from Volcano to Kea 'au will have to park and carry books (not convenient for kupuna and families)	Library will include a book drop off in the parking lot.
Jacqueline Ramirez; Volcano	Please include drive through book drop. Essential when raining if you have young children. Please still include a toy area for children.	Library will include a book drop off in the parking lot.
A. Thanavone	Have contest for kids to name future library.	Comment acknowledged.
Claudia Zirolì; Mountain View	Add space for Friends of the Library to store books and have book sales. Need book storage area to accommodate books for sales. Have more inclusive name such as Ola'a or Punawaena Library.	Library will include dedicated work and storage space for Friends of the Library.
Gary Neuraüter; Mountain View	Why call it Kea'au-Mt View Library if it's in Kea'au? Why not build it somewhere between two towns? Much less convenient for Mt. View residents. I thought idea was to have library not adjacent to school children.	The current name "Kea'au-Mountain View Public Library" is the project title. Board of Education policy determines names of public libraries statewide.
Sharlan Quon	Construct new library closer to Mountain View	A library located in Kea'au was determined based on comments shared at community meetings.
Melissa Smith; Mountain View	Great idea but my concerns are: what happens to library at Mt. View Elementary? It's essential for children to have easy access to books. Have heard library will not have drive-up book drop off. What about elders who cannot walk far? Or mothers with cars full of children? Community library must have an accessible book drop.	Existing library space at Mt. View Elementary will return to DOE control for their use.



<b>Commentor</b>	<b>Comment</b>	<b>Response</b>
Betsy Brook, Mountain View	Biggest concern is what's going to prevent teachers, students and parents picking up or dropping off children from using the parking lot. We don't want more congestion.	Comment acknowledged. Signage could be added to discourage school pickup from the library parking lot. The library will work with the school to prevent parents from using the library for afternoon pickups.

### 8.1.3 Draft EA Comment Period

A Draft Environmental Assessment and Anticipated Finding of No Significant Impacts (DEA-AFNSI) for the Kea'au-Mountain View Public Library was prepared, and notice was published in the May 23, 2023 edition of the Office of Planning and Sustainable Development, Environmental Review Program (ERP)'s publication, *The Environmental Notice*. This initiated a 30-day public comment period, which ran from May 23, 2023 to June 22, 2023. During this time, the DEA-AFNSI was available for public viewing and download from the ERP web site.

Notification of the DEA-AFNSI, including the ERP's URL link, was emailed on May 23, 2023 to all agencies and stakeholders listed in Table 8-1 and individuals who attended the March 6, 2023 Community Open House. Hard copies of the document were also sent to the Kea'au School and Community Library, the Mountain View School and Community Library, the Hilo Public Library, and the Hawai'i State Library (Hawai'i Documents Center) for public viewing.

Table 8-4 below summarizes all the comments received during the Draft EA comment period and responses. Copies of all comment and response letters are included at the end of this chapter.

**Table 8-4: Draft EA Comments**

<b>Agency/ Organization</b>	<b>Contact</b>	<b>Date</b>	<b>Comments</b>	<b>Response</b>
<b>STATE OF HAWAII</b>				
Department of Health, Clean Water Branch	DOH Clean Water Branch <a href="mailto:cleanwaterbranch@doh.hawaii.gov">cleanwaterbranch@doh.hawaii.gov</a>	Email dtd 5/23/2023	See Department of Health, Clean Water Branch’s (CWB) standard comments regarding water pollution control at: <a href="https://health.hawaii.gov/cwb/clean-water-branch-home-page/cwbstandard-comments/">https://health.hawaii.gov/cwb/clean-water-branch-home-page/cwbstandard-comments/</a> .  These standard comments specify your project’s responsibilities to maintain water quality and any necessary permitting issued by the Clean Water Branch.	Acknowledged.
Department of Land and Natural Resources	Engineering Division <a href="mailto:DLNR.ENG@hawaii.gov">DLNR.ENG@hawaii.gov</a>  Land Division-Hawai’i District  <a href="mailto:Gordon.c.heit@hawaii.gov">Gordon.c.heit@hawaii.gov</a>  Division of Forestry and Wildlife  Lainie Berry, Wildlife Program Manager  Response sent via email to Darlene K. Nakamura  <a href="mailto:Darlene.k.nakamura@hawaii.gov">Darlene.k.nakamura@hawaii.gov</a>	Ltrs dtd 6/23/2023 and 6/26/2023	<b>Engineering Division</b> We have no additional comments  <b>Land Division</b> We have no additional comments  <b>DOFAW</b> Concur with measures included in DEA intended to avoid construction and operational impacts to state-listed species. Appreciate measures outlined to incorporate BMPs during and after construction to contain soils and sediments with purpose of preventing damage to near-shore waters and marine ecosystems.  For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai’i, please	<b>Engineering Division</b> Acknowledged.  <b>Land Division</b> Acknowledged.  <b>DOFAW</b> Recommendations regarding Nene will be complied with. Native plants will be incorporated into landscaping to the extent possible. Recommendations on non-native predator mitigation will be followed. The proponent will comply with the referenced lighting guidelines to minimize adverse impacts on seabirds as well as to

Agency/ Organization	Contact	Date	Comments	Response
			visit <a href="https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf">https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf</a> .	protect the dark skies of Hawai'i Island for astronomical observatories.
			<u>DOFAW Additional Comments</u> <ul style="list-style-type: none"> <li>• <b>Nene (<i>Branta sandvicensis</i>)</b> could potentially occur in project vicinity. If present during construction, all activities within 100 feet (30 meters) should cease and the bird or birds should not be approached. Work may continue after the bird or birds leave of their own accord. If a nest is discovered contact DOFAW Office.</li> <li>• <b>Native Plants.</b> Recommend using appropriate native plants for landscaping. Please do not plant invasive species. Refer to <a href="http://www.plantpono.org">www.plantpono.org</a> for guidance.</li> <li>• <b>Non-native predators.</b> DOFAW is concerned about impacts on vulnerable birds from nonnative predators (cats, rodents, and mongoose). Recommend action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, provide covered trash receptacles.</li> </ul>	
Office of Planning & Sustainable Development	Ruby Edwards <a href="mailto:Ruby.m.edwards@hawaii.gov">Ruby.m.edwards@hawaii.gov</a>	Ltr dated 6/22/2023	OPSD finds DEA-AFONSI adequately discusses impacts and mitigation measures recommended for project design and implementation. Overall benefits of siting replacement library at this site support the AFONSI.  <b>Comment 1.</b> <i>Section 3.3.3.2, Hawai'i 2050 Sustainability Plan.</i> Discussion of Hawai'i 2050 Sustainability Plan should be revised to reflect updated plan issued June 2021 by OPSD. Since library is a long-term public investment, design and construction of facility should be resilient and advance sustainability goals and	<b>Comment 1.</b> EA sections on Hawai'i 2050 Sustainability Plan and Hawai'i State Plan Update Phase 1 will be updated.  <b>Comment 2.</b> Sentence referenced will be revised.  <b>Comment 3a. Wastewater.</b>

Agency/ Organization	Contact	Date	Comments	Response
			<p>objectives, including those in Recommended Actions in the 2021-2030 Focus Areas on pages 100-107 of 2050 Sustainability Plan. FEA should note those technologies and best practices and other mitigation measures proposed that advance Recommended Actions in the 2050 Sustainability Plan.</p> <p><b>Comment 2.</b> Section 5.1.2.1, Hawaiʻi State Plan Update Phase 1. Discussion in DEA includes info note particularly relevant to the purpose of this HRS Chapter 343 document. We recommend the first sentence in Discussion paragraph be revised to read as follows: “The proposed Keaʻau-Mountain View Public Library is consistent with and supports the overall direction of the Hawaiʻi State Plan and the findings in the State Plan update.”</p> <p><b>Comment 3a.</b> Section 4.7 Wastewater. OPSD encourages further consultation with the County DEM on any proposed wastewater infrastructure or package plans envisioned or planned for Keaʻau Town area and that any appropriate site and facility accommodations to enable sewer hookup in the future be incorporated in the final project.</p> <p><b>Comment 3b.</b> There appears to be discrepancies in the user counts used to estimate wastewater and water demand. Wastewater demand based on 180 users a day. Water demand based on a total of 227 users. FEA should ensure that the number of users is uniform for the infrastructure demand estimates. FEA should also clarify whether these counts include an estimate of those attending community events or meetings at library. If not, FEA should discuss how additional event</p>	<p>The project proponent is continuing to work with the County Department of Environmental Management through the ongoing project design process. Should a County sewer become available in the future, the library’s onsite wastewater disposal can be discontinued and wastewater flows can be easily hooked up to the county sewer. At that time, wastewater calculations can be revisited.</p> <p><b>Comment 3b. User Counts.</b>                      The population estimates provided in the Draft EA were preliminary estimates developed by project engineers for planning purposes. The proponent is currently in the design process and is working with HSPLS to develop more refined user projections. They are also working with County agencies and the State Department of Health to ensure that the project’s water and wastewater infrastructure is adequate and meets all regulatory standards and requirements. Water and wastewater systems will be designed to accommodate all operational conditions, including periodic community events. No significant impact on County</p>

Agency/ Organization	Contact	Date	Comments	Response
			<p>visitors would impact water and wastewater demand and IWS sizing and any mitigation required.</p> <p><b>Comment 4a.</b> Section 4.7.5, Storm Water Drainage/Water Quality. Would help if FEA could state whether or not County anticipates development of a stormwater drainage system for Kea'au Town in near future. FEA should clarify whether site receives runoff from Kea 'au-Pāhoa Road and whether this flow is incorporated in stormwater calculations.</p> <p><b>Comment 4b.</b> It is anticipated that climate change will bring more intense storms that will result in rainfall events that far exceed the [1970 County's Storm Drainage Standards]. FEA should discuss what if any this impact might have on stormwater management and the performance of the planned IWS under extreme rainfall events and what mitigation measures should be incorporated in project design, construction, and operations.</p> <p><b>Comment 5.</b> Page 6-3, Anticipated Determination, Item 13. If project will be installing a PV system, noting this in Item 13 would strengthen this statement.</p> <p><b>Comment 6.</b> Library Siting. DEA states the project will install a pedestrian pathway from Kea 'au-Pāhoa Road to library as recommended by State DOT. We note the driveways are anticipated to be approximately but no more than 15% grade. This might be a challenge for pedestrians accessing the library and will reduce overall connectivity and convenience for pedestrians and bus riders.</p>	<p>water or wastewater systems is anticipated.</p> <p><b>Comment 4a.</b>          The timing of future County development of a stormwater drainage system for Kea'au Town is unknown. The current stormwater calculations (provided in the Preliminary Engineering Report) do not consider runoff from Kea'au-Pahoa Road as additional survey information would be required to determine how much flow is ultimately discharging from the street onto the project site. That said, based on site visits it does not look like there is a large drainage area from the road discharging to the project site and Coffman does not anticipate a dramatic increase in runoff. These issues will be investigated further during the design process.</p> <p><b>Comment 4b Climate Change.</b>          The stormwater management is preliminarily designed for a 1-hour 10-year storm event which is the minimum standard storm event for Hawai'i County Storm Drainage Standards. If larger storms are anticipated the calculations can be revised for a more intense storm during</p>

Agency/ Organization	Contact	Date	Comments	Response
				<p>the design process. The IWS shall be designed to HAR 11-62 standards and should be able to perform under extreme rainfall events. Infiltration tests are required to be performed prior to IWS approval and installation to ensure proper performance.</p> <p><b>Comment 5.</b> Anticipated Determination Item 13 will be revised as suggested.</p> <p><b>Comment 6.</b> The walkway at Driveway 1 that connects from the State Highway (Kea'au-Pāhoa Road) to the site will be designed to meet ADA standards.</p>
<b>COUNTY OF HAWAI'I</b>				
Department of Water Supply	Ryan Quitoriano, Water Resources & Planning (808) 961-8070, x256	Ltr dtd 6/22/2023	Pls be informed that the 2-1/2-inch copper lateral is connected to the existing 2-inch domestic meter. The fire meter is a 6-inch detector check meter, which is connected to an existing 6-inch water main.	Acknowledged.
Police Department	Captain Scott Amaral, Puna Patrol, (808) 965-2716	Ltr dtd 5/31/2023	Staff, upon reviewing the documents, does not anticipate any significant impact to traffic and/or public safety concerns.	Acknowledged.
<b>OTHER</b>				
Hawaiian Telcom	Greg Kawachi, Specialist-Structure Engineer	Email 6/9/2023	This has been assigned for review.	Acknowledged.

Agency/ Organization	Contact	Date	Comments	Response
Taira Yoshimura	Taira Yoshimura, tairayoshimura@yahoo.com	Email 6/21/2023	We at Big Island Woodturners are in favor of the Middle School site. It will be a needed and welcome resource for our community. Would make an excellent site for our bimonthly Saturday meetings and woodturning demonstrations. We would like to have input on design of the covered open lanai, and operations of the facility.	Comments acknowledged. Your letter has been forwarded to HSPLS.

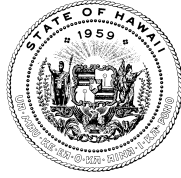


**Pre-Assessment Consultation  
Correspondence**



JOSH GREEN, M.D.  
GOVERNOR  
STATE OF HAWAII  
*Ke Kia'āina o ka Moku'āina 'o  
Hawai'i*

SYLVIA J. LUKE  
LT. GOVERNOR  
STATE OF HAWAII  
*Ka Hope Kia'āina o ka Moku'āina  
'o Hawai'i*



IKAIKA ANDERSON  
CHAIRMAN DESIGNATE, HHC  
*Ka Luna Ho'okele*

KATIE L. DUCATT  
DEPUTY DESIGNATE TO THE  
CHAIRMAN  
*Ka Hope Luna Ho'okele*

**STATE OF HAWAII**  
**DEPARTMENT OF HAWAIIAN HOME LANDS**  
*Ka 'Oihana 'Āina Ho'opulapula Hawai'i*

P. O. BOX 1879  
HONOLULU, HAWAII 96805

February 27, 2023

Refer: PO-23-036

sent electronically to: [Keaau-MtView-Library@hhf.com](mailto:Keaau-MtView-Library@hhf.com)

HHF Planners

ATTN: Kea'au-Mountain View Public Library

733 Bishop Street, Suite 2590

Honolulu, Hawai'i 96813

Aloha:

Subject: Kea'au-Mountain View Public Library Project; DEA Pre-Assessment Consultation;  
Kea'au, Puna District, Island of Hawai'i; TMK [3] 1-6-002: portion 001

The Department of Hawaiian Home Lands acknowledges receiving the request for comments on the above-cited project. After reviewing the materials submitted, due to its lack of proximity to Hawaiian Home Lands, we do not anticipate any impacts to our lands or beneficiaries from the project. However, DHHL recommends consultation with Hawaiian Homestead community associations located within the moku of Puna and with other (N)ative Hawaiian organizations, to better assess potential impacts to cultural and natural resources, and other rights of Native Hawaiians. A list of DHHL homestead associations can be found at <https://dhhl.hawaii.gov/homestead-associations/>

Mahalo for the opportunity to provide comments. If you have any questions, please call the Planning Office, at (808) 620-9480 or contact via email at [dhhl.planning@hawaii.gov](mailto:dhhl.planning@hawaii.gov).

Aloha,

Andrew H. Choy  
Planning Program Manager



## DISABILITY AND COMMUNICATION ACCESS BOARD

1010 Richards Street, Room 118 • Honolulu, Hawaii 96813  
Ph. (808) 586-8121 • Fax (808) 586-8129

March 20, 2023

Mr. Scott Ezer  
Principal  
HHF Planners  
733 Bishop Street  
Suite 2590  
Honolulu, HI 96813

Regarding: Draft Environmental Assessment Pre-Assessment  
Consultation for Keaau-Mountain View Public Library  
Project, Keaau, Puna District, Island of Hawaii  
Tax Map Key (TMK): (3) 1-6-002: portion 001

Dear Mr. Ezer:

The Disability and Communication Access Board (DCAB) would like to thank you for the opportunity to review and comment on the Draft Environmental Assessment Pre-Assessment Consultation for Keaau-Mountain View Public Library Project. The purpose of this review is to ensure that this project will take into account accessibility design requirements for persons with disabilities.

Because this project is being constructed by a State entity on State land, it is covered by §103-50, Hawaii Revised Statutes (HRS). The construction of the Keaau-Mountain View Public Library Project will be reviewed for compliance with the Department of Justice's (DOJ) 2010 ADA Standards for Accessible Design (2010 Standards) [http://www.ada.gov/2010ADASTandards\\_index.htm](http://www.ada.gov/2010ADASTandards_index.htm). To be consistent with the DOJ's standard, DCAB adopted the 2004 Americans with Disabilities Act Accessibility Guidelines (ADAAG) as of January 1, 2011 and passed interpretive opinions consistent with the 2010 ADA Standards. All new Interpretive Opinions can be viewed or downloaded at <http://health.hawaii.gov/dcab/facility-access/interpretive-opinions/>.

Projects with construction documents that are covered by §103-50, HRS, are required to be submitted to DCAB for a formal document review.

A preliminary review of the Draft Environmental Assessment Pre-Assessment prepared by HHF Planners prompts the following issues that we recommend that the design consultants address in their forthcoming project design. At least one accessible route shall be provided from public streets and sidewalks. Where a new on-site parking facility is being proposed, accessible parking stalls and access aisles shall be provided.

Mr. Scott Ezer

HHF Planners

Regarding: Draft Environmental Assessment Pre-Assessment Consultation for Keaau-Mountain View Public Library Project

March 20, 2023

Page 2

An accessible route shall be provided from the accessible parking stalls and access aisles to the proposed new building. Future EV charging stations shall comply with DCAB Interpretive Opinion 2012-01. New toilet facilities shall comply with ADAAG 213 and Chapter 6. The new walkway connecting to an existing covered walkway shall comply with ADAAG 206 and Chapter 4.

The above DCAB staff comments address the key issues found in the Draft Environmental Assessment Pre-Assessment Consultation for Keaau-Mountain View Public Library Project but does not reflect all the elements required to be accessible. The forthcoming design documents will have to be reviewed to more accurately address all of the accessibility requirements.

Should you have any questions, please feel free to contact Duane Buote, Facility Access Coordinator at (808) 586-8121 or [duane.buote@doh.hawaii.gov](mailto:duane.buote@doh.hawaii.gov).

Sincerely,



KIRBY L. SHAW  
Executive Director

**From:** [shwb](#)  
**To:** [Keaau-MtView-Library](#)  
**Subject:** Comments for Draft EA for Kea"au Library Project  
**Date:** Wednesday, March 8, 2023 12:32:55 PM  
**Attachments:** [Keaau-Mt View Library Pre-Assess Consult Ltr 2-24-2023.pdf](#)  
[STANDARD COMMENTS 2022 updated.pdf](#)

---

[This message was sent from an outside source.]  
Aloha,

Attached are our standard comments we have for the Library Project of Kea'au Mountain.



Solid and Hazardous Waste Branch  
State of Hawaii | Department of Health  
2827 Waimano Home Road, #100, Pearl City, HI 96782  
Phone Number: (808) 586-4226 | Fax Number: (808) 586-7509

# **Solid and Hazardous Waste Branch Standard Comments**

November 26, 2018

The Solid and Hazardous Waste Branch administers programs in the areas of:

- 1) Management of hazardous waste;
- 2) Management of solid waste; and
- 3) Regulation of underground storage tanks.

Our general comments on projects are below. For further information about these programs, please contact the Solid and Hazardous Waste Branch at (808) 586-4226. All chapters of the Hawaii Revised Statutes (HRS) are at <https://www.capitol.hawaii.gov/hrscurrent/>.

## **Hazardous Waste Program**

- The state regulations for hazardous waste and used oil are in chapters 11-260.1 to 11-279.1, Hawaii Administrative Rules (HAR) [<http://health.hawaii.gov/shwb/hwrules/>]. These rules apply to the identification, handling, transportation, storage, and disposal of regulated hazardous waste and used oil. Generators, transporters and treatment, storage, and disposal facilities of hazardous waste and used oil must adhere to these requirements. Violations are subject to penalties under chapter 342J, HRS.

## **Solid Waste Section**

- The Solid Waste Section (SWS) enforces laws and regulations contained in chapters 342H and 342I, HRS, and chapter 11-58.1, HAR, "Solid Waste Management Control" [<http://health.hawaii.gov/shwb/solid-waste/>].
- The purpose of the rules is to establish minimum standards governing the design, construction, installation, operation, and maintenance of solid waste disposal, recycling, reclamation, and transfer systems.
- All facilities that accept solid wastes are required to obtain a solid waste management permit from the SWS. Examples of the types of facilities governed by these regulations include landfills, transfer stations and convenience centers, recycling facilities, composting facilities, and salvage facilities. Medical waste, infectious waste, and foreign waste treatment facilities are also included.
- Generators of solid waste are required to ensure that their wastes are properly delivered to permitted solid waste management facilities. Managers of construction and demolition projects should require their waste contractors to submit disposal receipts and invoices to ensure proper disposal of wastes.

## **Solid and Hazardous Waste Branch Standard**

- Chapters 342H and 342I, HRS, and chapter 11-58.1, HAR, "Solid Waste Management Control" requires the proper management of solid wastes. Generators of solid waste are required to ensure that their wastes are properly delivered to permitted solid waste management facilities. Project managers should require their waste contractors to submit disposal (and recycling) receipts and invoices to ensure proper disposal (or recycling) of wastes.
- Chapter 342G, HRS, encourages the reduction of waste generation, reuse of discarded materials, and the recycling of solid waste. The project developer is highly encouraged to develop a solid waste management plan for each construction project to ensure proper handling of wastes and divert recyclables from being landfilled. Ideally, the plan would seek to maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.

## **Office of Solid Waste Management**

- The Office of Solid Waste Management (OSWM) administers statewide integrated solid waste management planning activities, which apply to the counties, as well as various recycling programs, e.g., the Glass Advance Disposal Fee (ADF) and Deposit Beverage Container (DBC) Programs. Management of the DBC Program is conducted pursuant to chapter 342G, HRS, which contains compliance and enforcement provisions, and chapter 11-282, HAR, "Deposit Beverage Recycling" [<http://health.hawaii.gov/hi5/rules-regulations-additional-links/>]. OSWM is also responsible for limited enforcement and compliance of solid waste management facilities that operate primarily as certified DBC redemption centers pursuant to chapter 342H, HRS, and chapter 11-58.1, HAR, "Solid Waste Management Control" [<http://health.hawaii.gov/shwb/solid-waste/>]. Authority for the integrated solid waste management planning and ADF programs is contained in chapter 342G, HRS.
- Glass Advance Disposal Fee Program: Businesses that import glass containers into Hawaii are required to register with the Department of Health (DOH) and pay a 1.5 cent per container fee. Fee revenue is distributed to the counties for the operation of glass recycling programs.
- Deposit Beverage Container Program: Business that manufacture or import deposit beverage containers into Hawaii are required to register with the DOH and pay the five-cent deposit and one cent container fee on each deposit container. Deposits and fees are deposited into a special fund and are used to reimburse DBC redemption center refunds paid to consumers; and to pay handling fees to redemption/recycling companies to process and recycle collected deposit beverage containers; and to pay program administrative costs.



## **Solid and Hazardous Waste Branch Standard**

- The DOH reimburses and pays an associated handling fee for the redemption of DBC. These transactions are conducted only with certified redemption centers. Certification requires obtaining a solid waste management permit from the SWS (which addresses environmental issues) and a certification from the DBC program (which standardizes the redemption process).
- Solid waste management plans seek to maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.

## **Underground Storage Tank Program**

- The state's underground storage tank (UST) regulations, found in chapter 11-280.1, HAR [<http://health.hawaii.gov/shwb/underground-storage-tanks/>], include specific requirements that UST owners and operators must meet when installing, operating, and permanently closing their UST systems and addressing releases from USTs. Violations are subject to penalties under chapter 11-280.1, HAR, and chapter 342L, HRS.
- A permit is required prior to the installation and operation of a UST. Any new UST system that will be installed must have secondary containment with interstitial monitoring. Refer to subchapters 2, 3, 4, and 12 of chapter 11-280.1, HAR. The installation permit expires 1 year from the date of issuance. The operation permit expires 5 years from the date of issuance.
- §11-280.1-50, HAR, requires owners and operators of USTs or tank systems to notify DOH within 24 hours and follow the procedures in §11-280.1-52, HAR, if any of the following occur, with specific exceptions found in the rules:
  - 1) The discovery by any person of evidence of regulated substances which may have been released at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, or nearby surface water);
  - 2) Unusual UST system operating conditions observed or experienced (such as the erratic behavior of product dispensing equipment, the sudden loss of product from the UST, or an unexplained presence of water in the tank); or
  - 3) Monitoring results from a release detection method required under §§11-280.1-41 or 11-280.1-42 indicate a release may have occurred.
- For release response actions, responsible parties and their consultants and contractors should follow the applicable guidance in the DOH, Hazard Evaluation Emergency (HEER) Office Technical Guidance Manual, HEER Environmental Action Level (EAL) guidance, and other guidance documents on the DOH HEER Office website [<http://eha-web.doh.hawaii.gov/eha-cma/Org/HEER/>], including those pertaining to Multi-Increment Sampling of soil, low flow groundwater sampling, soil vapor sampling, and Environmental Hazard Evaluations /Environmental Hazard Management Plans.

For further information about these programs,  
please contact the Solid and Hazardous Waste Branch

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
LAND DIVISION

P.O. BOX 621  
HONOLULU, HAWAII 96809

March 23, 2023

HHF Planners  
Attn: Mr. Scott Ezer, Principal  
733 Bishop Street, Suite 2590  
Honolulu, HI 96813

via email: [Keaau-MtView-Library@hhf.com](mailto:Keaau-MtView-Library@hhf.com)

Dear Mr. Ezer:

SUBJECT: Draft Environmental Assessment Pre-Assessment Consultation for the Proposed **Kea'au-Mountain View Public Library Project** located at Kea'au, Puna District, Island of Hawaii; TMK: (3) 1-6-002: portion 001 on behalf of Hawaii State Public Library System

Thank you for the opportunity to review and comment on the subject matter. The Land Division of the Department of Land and Natural Resources (DLNR) distributed or made available a copy of your request pertaining to the subject matter to DLNR's Divisions for their review and comments.

At this time, enclosed are comments from the (a) Engineering Division and (b) Land Division-Hawaii District on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: [darlene.k.nakamura@hawaii.gov](mailto:darlene.k.nakamura@hawaii.gov). Thank you.

Sincerely,

*Russell Tsuji*

Russell Y. Tsuji  
Land Administrator

Enclosures  
cc: Central Files

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
LAND DIVISION

P.O. BOX 621  
HONOLULU, HAWAII 96809

February 27, 2023

**MEMORANDUM**

TO: **DLNR Agencies:**  
 \_\_\_ Div. of Aquatic Resources  
 \_\_\_ Div. of Boating & Ocean Recreation  
X Engineering Division ([DLNR.ENGR@hawaii.gov](mailto:DLNR.ENGR@hawaii.gov))  
X Div. of Forestry & Wildlife ([rubyrosa.t.terrago@hawaii.gov](mailto:rubyrosa.t.terrago@hawaii.gov))  
 \_\_\_ Div. of State Parks  
X Commission on Water Resource Management ([DLNR.CWRM@hawaii.gov](mailto:DLNR.CWRM@hawaii.gov))  
 \_\_\_ Office of Conservation & Coastal Lands  
X Land Division – Hawaii District ([gordon.c.heit@hawaii.gov](mailto:gordon.c.heit@hawaii.gov))  
X Aha Moku Advisory Committee ([leimana.k.damate@hawaii.gov](mailto:leimana.k.damate@hawaii.gov))

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: Draft Environmental Assessment Pre-Assessment Consultation for the Proposed **Kea'au-Mountain View Public Library Project**

LOCATION: Kea'au, Puna District, Island of Hawaii; TMK: (3) 1-6-002: portion 001

APPLICANT: HHF Planners on behalf of Hawaii State Public Library System

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments by **March 23, 2023**.

If no response is received by the above date, we will assume your agency has no comments. Should you have any questions about this request, please contact Darlene Nakamura at [darlene.k.nakamura@hawaii.gov](mailto:darlene.k.nakamura@hawaii.gov). Thank you.

**BRIEF COMMENTS:**

( ) We have no objections.

( ) We have no comments.

( ) We have no additional comments.

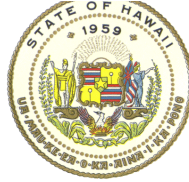
(X) Comments are included/attached.

Signed: *Gordon C. Heit*  
 Print Name: GORDON C. HEIT  
 Division: Land Division  
 Date: March 16, 2023

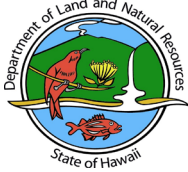
Attachments  
cc: Central Files

**JOSH GREEN, M.D.**  
GOVERNOR | KE KIA'ĀINA

**SYLVIA LUKE**  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



**DAWN N. S. CHANG**  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT



**STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**  
**KA 'OIHANA KUMUWAIWAI 'ĀINA**  
**LAND DIVISION**

75 Aupuni Street, Room 204  
Hilo, Hawaii 96720  
PHONE: (808) 961-9590  
FAX: (808) 961-9599

March 14, 2023

**MEMORANDUM**

**TO:** Russell Y. Tsuji, Administrator

**FROM:** Gordon C. Heit, Hawaii District Land Agent

**SUBJECT:** Pre-Assessment Consultation for an Environmental Assessment for the Proposed Kea'au-Mountain View Public Library Project

**LOCATION:** Kea'au, Puna District, Island of Hawaii,  
TMK: (3) 1-6-002: portion of 001

**APPLICANT:** The HHF Planners on behalf of the Hawaii State Public Library System

Pursuant to your request for comments on the above matter, we offer the following:

The property identified by TMK: (3) 1-6-002: portion of 001 is currently set aside by Executive Order No. 0614 (EO 614) to the Department of Education for the Ola'a School Lot (Kea'au Middle School). The area allotted for use by the Hawaii State Public Library System (HSPLS) will need to be withdrawn from EO 614 and re-set aside to HSPLS.

The Land Division will provide further comments when the Draft Environmental Assessment is available for review.

Please contact me should you have any questions.

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
LAND DIVISION

P.O. BOX 621  
HONOLULU, HAWAII 96809

February 27, 2023

**MEMORANDUM**

FROM: IQ:

**DLNR Agencies:**

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division** ([DLNR.ENGR@hawaii.gov](mailto:DLNR.ENGR@hawaii.gov))
- Div. of Forestry & Wildlife ([rbyrosa.t.terrago@hawaii.gov](mailto:rbyrosa.t.terrago@hawaii.gov))
- Div. of State Parks
- Commission on Water Resource Management ([DLNR.CWRM@hawaii.gov](mailto:DLNR.CWRM@hawaii.gov))
- Office of Conservation & Coastal Lands
- Land Division – Hawaii District ([gordon.c.heit@hawaii.gov](mailto:gordon.c.heit@hawaii.gov))
- Aha Moku Advisory Committee ([leimana.k.damate@hawaii.gov](mailto:leimana.k.damate@hawaii.gov))


TO: FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*  
SUBJECT: Draft Environmental Assessment Pre-Assessment Consultation for the Proposed **Kea'au-Mountain View Public Library Project**  
LOCATION: Kea'au, Puna District, Island of Hawaii; TMK: (3) 1-6-002: portion 001  
APPLICANT: HHF Planners on behalf of Hawaii State Public Library System

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments by **March 23, 2023**.

If no response is received by the above date, we will assume your agency has no comments. Should you have any questions about this request, please contact Darlene Nakamura at [darlene.k.nakamura@hawaii.gov](mailto:darlene.k.nakamura@hawaii.gov). Thank you.

**BRIEF COMMENTS:**

- We have no objections.
- We have no comments.
- We have no additional comments.
- Comments are included/attached.

Signed:   
Print Name: Carty S. Chang, Chief Engineer  
Division: Engineering Division  
Date: Mar 20, 2023

Attachments  
cc: Central Files

**DEPARTMENT OF LAND AND NATURAL RESOURCES  
ENGINEERING DIVISION**

**LD/Russell Y. Tsuji**

**Ref: Draft Environmental Assessment Pre-Assessment Consultation for the Proposed  
Kea'au-Mountain View Public Library Project**

**Location: Kea'au, Puna District, Island of Hawaii**

**TMK(s): (3) 1-6-002: portion 001**

**Applicant: HHF Planners on behalf of Hawaii State Public Library System**

**COMMENTS**

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). State projects are required to comply with 44CFR regulations as stipulated in Section 60.12. Be advised that 44CFR, Chapter 1, Subchapter B, part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center ([msc.fema.gov](http://msc.fema.gov)). Our Flood Hazard Assessment Tool (FHAT) (<http://gis.hawaiiinfip.org/FHAT>) could also be used to research flood hazard information.

If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:

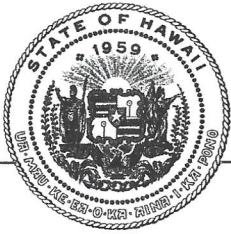
- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7139.
- Kauai: County of Kauai, Department of Public Works (808) 241-4896.

**The applicant should include water demands and infrastructure required to meet project needs.** Please note that all State projects requiring water service from their local Department/Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

**The applicant is required to provide water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update projections.**

Signed:   
CARTY S. CHANG, CHIEF ENGINEER

Date: Mar 20, 2023



**STATE OF HAWAII  
OFFICE OF PLANNING  
& SUSTAINABLE DEVELOPMENT**

**JOSH GREEN, M.D.**  
GOVERNOR

**SCOTT J. GLENN**  
INTERIM DIRECTOR

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846  
Fax: (808) 587-2824  
Web: <https://planning.hawaii.gov/>

DTS 202302271147NA

Coastal Zone  
Management  
Program

April 4, 2023

Environmental Review  
Program

Land Use Commission

Land Use Division

Special Plans Branch

State Transit-Oriented  
Development

Statewide Geographic  
Information System

Statewide  
Sustainability Branch

Scott Ezer, Principal  
HHF Planners  
733 Bishop Street, Suite 2590  
Honolulu, Hawaii 96813  
ATTN: Kea'au-Mountain View Public Library

Dear Mr. Ezer:

**Subject:** Draft Environmental Assessment Pre-Assessment Consultation for the Kea'au-Mountain View Public Library Project, Kea'au, Puna District, Island of Hawaii Tax Map Key No: (3) 1-6-002: 001 (portion)

The Office of Planning and Sustainable Development (OPSD) has reviewed the materials submitted with the request for comments for the preparation of a Draft Environmental Assessment (DEA) for the subject project.

The proposed project would provide a new 12,000-square-foot library to serve the growing population in the Kea'au, Mountain View, and Kurtistown communities and the greater Puna District area. The new library would replace two outdated and undersized libraries currently located on public school campuses. The proposed library site is located on the edge of the Kea'au Middle School campus fronting Kea'au-Pahoa Road. The library is planned to have two driveways with separate entrance and exit and 42 parking stalls.

OPSD notes that the *State Strategic Plan for Transit-Oriented Development* issued by the Hawaii Interagency Council for Transit-Oriented Development in 2017 includes proposals for a County transit hub and new wastewater system for Kea'au Town in support of transit-oriented development (TOD) at this regional center.

OPSD offers the following comments related to the preparation of the DEA and final project design and implementation.

1. Hawaii Coastal Zone Management (CZM) Program Issues  
The CZM area for the State of Hawaii is defined as "all lands of the

State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" under Hawai'i Revised Statutes (HRS) § 205A-1.

Pursuant to HRS § 205A-4, in implementing the objectives of the CZM program, agencies shall consider ecological, cultural, historic, esthetic, recreational, scenic, open space values, coastal hazards, and economic development. Therefore, the DEA should include a discussion of the project's consistency with the policies of the Hawai'i CZM Program, HRS § 205A-2, as amended.

Disclosure of impacts on CZM objectives and supporting policies, as it relates to HRS Chapter 343 requirements, will aid the State in determining impacts to the resources of the coastal zone and the evaluation of mitigation measures if needed, including:

- a. Wastewater. The County of Hawai'i is currently preparing a programmatic Environmental Impact Statement for wastewater system improvements in the Puna District. OPSD recommends that the County Department of Environmental Management be consulted as to proposed wastewater infrastructure or package plants envisioned or planned for the Kea'au Town area. The DEA should discuss the County's plans and identify the facility design and development measures that could be taken to enable the library to connect to any planned wastewater collection and treatment system in Kea'au in the future; and
  - b. Stormwater and drainage. The DEA should discuss whether a stormwater drainage system is planned for Kea'au Town and whether onsite low impact development practices will be proposed to manage onsite retention and treatment of stormwater runoff quantity and quality.
2. Advancement of Sustainability Objectives in the *Hawai'i 2050 Sustainability Plan*  
As a public capital investment, the proposed project should be resilient and advance the attainment of sustainability goals and objectives over the long term. To this end, the DEA should generally discuss the technologies and best practices and other mitigation measures for the project that would advance implementation of the Recommended Actions in the 2021-2030 Focus Areas on pages 100-107 of the *Hawai'i 2050 Sustainability Plan*.



3. TOD-related Issues

The new library site adjacent to the Kea'au Middle School is a great example of the reuse of underutilized centrally located State lands. The site is within walking distance of one of Kea'au's commercial centers and is situated on a major intraregional road. The County Mass Transit Agency (MTA) plans to locate a transit hub in Kea'au to expand its hub and spoke bus system to improve service in the Puna area. While the specific location is yet to be determined, enhanced transit services at or near the existing commercial center is likely. This will promote an increase in pedestrian traffic in and around the commercial core and enable ready access by foot or other non-vehicular modes to the new library. OPSD recommends the DEA discuss MTA transit services and routes in the vicinity and how existing and planned transit service might impact or promote library usage.

Library site design and building orientation will be critical to providing safe, convenient, and attractive pedestrian and bike connections to the library along its road frontage and to the library from Kea'au-Pahoa Road. For this reason, OPSD recommends the DEA consider and discuss the potential for (1) moving the parking lot from the front of the library to the rear of the library, (2) reducing the driveways to minimize pedestrian and vehicular conflicts, and (3) pull a portion or all of the library building forward toward the road. This would allow the creation of a more attractive and people-focused space along the street frontage—providing more visibility for the library and the potential for activating this space by creating a front yard/lanai for library users and the community, as well as creating a safer pedestrian environment for students and others accessing transit and commercial facilities in proximity to the library.

Thank you for the opportunity to comment on issues to consider in the preparation of the DEA. We look forward to reviewing and commenting on the DEA when it is published.

If you have any questions, please contact Ruby Edwards, [ruby.m.edwards@hawaii.gov](mailto:ruby.m.edwards@hawaii.gov), (808) 587-2817.

Mahalo,



for Katia Balassiano  
Planning Program Administrator  
Land Use Division

JOSH GREEN, M.D.  
GOVERNOR



**STATE OF HAWAII**  
**DEPARTMENT OF TRANSPORTATION**  
869 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813-5097

EDWIN H. SNIFFEN  
DIRECTOR

Deputy Directors  
DREANALEE K. KALILI  
TAMMY L. LEE  
ROBIN K. SHISHIDO  
JAMES KUNANE TOKIOKA

IN REPLY REFER TO:

STP 00127.23  
HWY-PL 2.0906

March 24, 2023

Mr. Scott Ezer  
HHF Planners  
733 Bishop Street, Suite 2590  
Honolulu, Hawaii 96813

Dear Mr. Ezer:

**Subject:** Pre-Assessment Consultation for Draft Environmental Assessment (DEA)  
Keeau-Mountain View Public Library Project  
Keeau, Puna District, Island of Hawaii  
Tax Map Key No: (3) 1-6-002: 001

Thank you for your letter dated February 24, 2023, requesting our comments for the preparation of an upcoming DEA. Your letter mentioned that this is to evaluate potential requirements by Chapter 343, Hawaii Revised Statutes (HRS) related to the construction and development of a public library. We have also reviewed a Draft Traffic Impact Assessment Review (TIAR) prepared by Austin Tsutsumi and Associates received on February 10, 2023.

The proposed work includes the construction of a 12,000-square-foot public library fronting Keaau-Pahoa Road (State Route 139) and will include up to 42 parking stalls for visitors and staff. The proposed public library will replace the existing Keaau Middle School and Mountain View Elementary School public libraries. The project site will be accessed via one ingress driveway and one egress driveway along Keaau-Pahoa Road.

Regarding the DEA, the Hawaii Department of Transportation (HDOT) has the following comments:

1. In your DEA, please evaluate the applicability of the following HDOT permits:
  - a. Permit to Perform Work Upon State Highways is required for any work within the state highway right-of-way (ROW) (HRS 264). The application includes the review and approval of construction drawings and a Traffic Management Plan.

- b. Permit to Operate or Transport Oversize and/or Overweight Vehicles and Loads Over State Highways (HRS Chapter 291, Section 36).
  - c. Permit for the Occupancy and Use of State Highway ROW (HRS 264). Note: this is applicable to underground and overhead power lines, utility pipelines within the state highway ROW. The permit applications and instructions are online: <https://hidot.hawaii.gov/highways/home/doing-business/guide-to-permits>
2. No additional discharge of surface water run-off onto the Keaau-Pahoa Road ROW is permitted. This includes the use of the existing state drainage culverts and channels. All additional stormwater run-off from the project site shall be managed and mitigated onsite.

Regarding the TIAR, HDOT has the following comments:

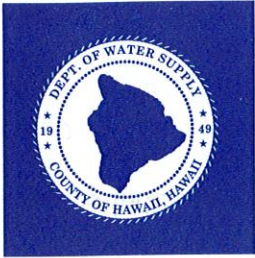
1. Based on the project site plan, there appears to be no school bus parking to accommodate the Mountain View Elementary School students. In your TIAR, please clarify the primary mode of transportation for Mountain View Elementary School students and provide justification for the current parking design.
2. There is no provision for pedestrian or Americans with Disabilities Act accessibility from the public road to the facility other than the proposed accessible and standard parking spaces.
3. For the northbound left-turn approach at the Keaau-Pahoa Road and Old Volcano Road intersection, operating at an existing Level of Service F during the school peak hour of traffic, please suggest any mitigation measures.
4. The project will be responsible for providing the transportation improvements as recommended on page 16 of the TIAR (subject to final approval of HDOT).

If you have any questions, please contact Jeyan Thirugnanam, Systems Planning Engineer, Highways Planning Branch at (808) 587-6336 or by email at [jeyan.thirugnanam@hawaii.gov](mailto:jeyan.thirugnanam@hawaii.gov). Please reference file review number PL 2023-006.

Sincerely,



EDWIN H. SNIFFEN  
Director of Transportation



**DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII**

345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAII 96720  
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

March 14, 2023

Mr. Scott Ezer, Principal  
HHF Planners  
733 Bishop Street, Suite 2590  
Honolulu, HI 96813

Dear Mr. Ezer:

**Subject: Pre-Environmental Assessment Consultation  
Kea'au-Mountain View Public Library Project  
Tax Map Key 1-6-002:001 Portion**

This is in response to your Pre-Environmental Assessment Consultation letter dated February 24, 2023.

Please be informed that there are three (3) existing services installed for the subject parcel. There is an existing 2-inch domestic meter near the gate of the exit driveway, an existing 3-inch domestic meter, and an 6-inch fire meter at the entrance driveway.

The Department requests submittal for a detailed estimated maximum daily water usage calculation for the proposed public library, prepared by a professional engineer licensed in the State of Hawai'i, for review and approval. The water usage calculations should include the total estimated daily water usage in gallons per day (GPD) and the estimated peak flow in gallons per minute (GPM).

Based on the water usage calculations provided, the Department will determine if the existing water system is adequate to support the additional water demand, facilities charge and necessary water system improvements.

Should there be any questions, please contact Mr. Ryan Quitarano of our Water Resources and Planning Branch at (808) 961-8070, extension 256.

Sincerely yours,

Keith K. Okamoto, P.E.  
Manager-Chief Engineer

RQ:dfg

*... Water, Our Most Precious Resource ... Ka Wai A Kāne ...*

The Department of Water Supply is an Equal Opportunity provider and employer.

**Mitchell D. Roth**  
Mayor



**Benjamin T. Moszkowicz**  
Police Chief

## County of Hawai`i

### POLICE DEPARTMENT

349 Kapi`olani Street • Hilo, Hawai`i 96720-3998  
(808) 935-3311 • Fax (808) 961-2389

March 1, 2023

Scott Ezer, Principal  
HHF Planners  
ATTN: Keaau-Mountain View Public Library  
Email: keaau-mtview-library@hhf.com

Dear Mr. Ezer:

**SUBJECT: KEAAU-MOUNTAIN VIEW PUBLIC LIBRARY PROJECT  
DRAFT ENVIRONMENTAL ASSESSMENT PRE-ASSESSMENT  
CONSULTATION  
KEAAU, PUNA DISTRICT, ISLAND OF HAWAII  
TMK (3) 1-6-002:PORTION 001**

This is in response to an email dated February 24, 2023, requesting input on a draft environmental assessment pre-assessment consultation for a new Hawaii State Public Library in Keaau, Puna District, Island on Hawaii.

Staff, upon reviewing the provided documents, does not anticipate any significant impact to traffic and/or public safety concerns.

Thank you for allowing us the opportunity to comment.

If you have any questions, please contact Captain Scott Amaral of Puna Patrol, at 965-2716 or via email at [scott.amaral@hawaiiicounty.gov](mailto:scott.amaral@hawaiiicounty.gov).

Sincerely,

  
KENNETH A.K. QUIROCHO  
ASSISTANT POLICE CHIEF

**From:** [Sonomura, Julann](#)  
**To:** [Keaau-MtView-Library](#)  
**Cc:** [Wilson, Kelly](#)  
**Subject:** Kea"au-Mountain View Public Library--consultation for Draft EA  
**Date:** Monday, February 27, 2023 7:02:09 AM  
**Attachments:** [Keaau-Mt View Library Pre-Assess Consult Ltr. 2-24-2023.pdf](#)

---

[This message was sent from an outside source.]

Good Morning,

The County of Hawaii, Department of Public Works Building Division has no objections to the proposed development.

Please ensure that appropriate steps are taken, including requirements for the demolition of existing structures, prior to applying for Building Permits.

Thank you,

*Julann Sonomura, P.E.*

Building Chief  
County of Hawaii  
Department of Public Works – Building Division  
101 Pauahi Street, Ste. 7  
Hilo, HI 96720  
(808) 961-8434

**Community Open House  
and Other Written Comments**







Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

Tiffany Edwards Hunt  
NAME  
HC2 Box 9643, Kea'au HI 96744  
ADDRESS  
newswoman@mac.com  
EMAIL

Please be sure to include a community gathering space, kind of like what we currently have with the Humanities Room, but also maybe another room or two— since the need is so great for meeting space in our community. Your Hawaiiana section is really nice and hopefully you will expand it & make it even better.  
Mahalo



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

M.A  
NAME  
PO Box 492814 Kea'au HI 96749  
ADDRESS  
EMAIL

Better handicap accessibility (entry door, wider aisles, etc.)



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

try to make sure have

Lawrence Chung  
NAME  
16-159 Pili Mews Apt 6 St  
ADDRESS  
Larry Chung 007 Mt Aot Comm  
EMAIL

better selection

Better MUSIC section &  
better Video section



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

Are the Island manager & ESSS support personnel in (East Hawaii) be based at this new library? If so, will they have office/work area space allocated to them?

Maxine Aki  
NAME

ADDRESS

EMAIL



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

Wendy Irie

NAME

HCI Box 5010, Keaau, HI 96749

ADDRESS

ohashiw@hawaii.rr.com

EMAIL

EASIER HANDICAP ACCESS!



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

SHAWN STALINGER/MIKE KAHM

NAME

HCR 2 Box 5751 Keaau, HI 96749

ADDRESS

kamstall@startmail.com

EMAIL

We really like the layout of the Keaau-Mountain View Public Library project. There seems to be plenty of parking. The Keaau library has always giving us excellent service. It is a full service library and the staff is extremely helpful. I know will enjoy the new library



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

NAME Lou Ann Gurney  
ADDRESS HC 1 Box 5244 Keaau  
EMAIL lag.sings@mac.com

1. Great to have a beautiful new library with a larger collection?
2. It will have more visibility + easier access. Maybe more people will use the library.
3. I caution that <sup>the library</sup> not become so automated that the valuable librarian - patron connection is diminished or lost. Professional librarians are very knowledgable.
4. I'm concerned that Mt. View patrons will be inconvenienced.
5. I'm concerned that Mt. View School students and teachers will lose a valuable resource.



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

NAME Anta Padilla  
ADDRESS 16 - 2086 Tiki La  
EMAIL waypadilla@yahoo.com

It would be great to have a Mobile Library for areas such as Volcano.  
remote



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

Jennifer Hamamoto

NAME

17-458 Hale Pule Loop Kurtistown, HI 96760

ADDRESS

N/A.

EMAIL

- ★ A story room for childrens programming
- ★ More Parking
- ★ Community space w/outside parking
- ★ Covered parking area for staff & public



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

James Buck

NAME

19-1785 Pahiu Loop, Volcano

ADDRESS

Kilauea.jimmy@gmail.com

EMAIL

I would love it if you could do the following:

Open on Saturdays

No lunch closures

Expand book on CD library

Expand DVD movie library

Give Stacey a big raise



Hawaii State  
Public Library System

**Kea'au-Mountain View Public Library Project**

*Please submit written comments by March 24, 2023*

June Chun  
NAME  
PO Box 365 Keaau, HI 96749  
ADDRESS  
puakalo1@gmail.com  
EMAIL

Excited to have a new library.

Glad it will be here in Keaau.

Concerned about Mt View patrons - Distance might  
keep them away. Possible Book Mobile



Hawaii State  
Public Library System

**Kea'au-Mountain View Public Library Project**

*Please submit written comments by March 24, 2023*

AM 1119  
NAME  
PO Box 1581 Keaau  
ADDRESS  
EMAIL

Put a gallery in it and a toys area for  
the kids



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

NAME Laura Buck  
ADDRESS 90-1775 Poino Loop  
EMAIL Puna Blossom @ gmail.com

It's a great idea!



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

NAME Thomas Chun  
ADDRESS P.O. Box 365, Keaau HI 96749  
EMAIL Kilohoku7@gmail.com

Location is great. Access by driving is good.  
Uses the site of Olaia School. Nice conceptual  
illustration - former  
Thank you!



Hawaii State  
Public Library System

Sina Mims

NAME

PO Box 1581 Keaau

ADDRESS

EMAIL

Kea'au-Mountain View Public Library Project

Please submit written comments by March 24, 2023

Have a kids section to play  
at. ~~AND FOR LIKE THERE IS TO~~  
~~OLDS IN UP~~ have a cat area  
so kids could pet them.



Hawaii State  
Public Library System

NAME

Linda Broadgate

ADDRESS

Keaau

EMAIL

Kea'au-Mountain View Public Library Project

Please submit written comments by March 24, 2023

Please have workshops such as hula, ukulele etc  
Maybe bring in local artists, musicians for talk  
story & mini concerts.  
language - Hawaiian, Filipino, Japanese etc  
workshops

Thank you

Enjoyed this library & great staff

Linda

3/1/2023





Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

NAME Kimi Bae

ADDRESS \_\_\_\_\_

EMAIL \_\_\_\_\_

Good idea! Move accessible!



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

NAME Kanya Bernal

ADDRESS HC 2 Box 6401, Keaau, 96749

EMAIL kanudast@gmail.com

Activities for teenagers - painting, origami, beading, learning how to work at library, learning how to use the library systems. The last 2 suggestions were from my 12 year old daughter.

Thank you for being here!  
We love coming here!



Hawaii State  
Public Library System

**Kea'au-Mountain View Public Library Project**

*Please submit written comments by March 24, 2023*

A tall fence to deter people from hopping over and sleeping behind building.  
I want the library to feel like a safe place for everyone, especially women and children.

Kimberly Salerno

NAME

ADDRESS

EMAIL



Hawaii State  
Public Library System

**Kea'au-Mountain View Public Library Project**

*Please submit written comments by March 24, 2023*

- Seed library
- 3d printer / "maker space"
- Tool lending library (maybe partner with Ace Hardware in Keaau)

John Sanchez

NAME

ADDRESS

EMAIL



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
PUBLIC OPEN HOUSE | MARCH 6, 2023

Caitlin Kryss  
NAME  
P.O. Box 711687, Mountain  
ADDRESS View, HI 967  
caitlin.kryss@gmail.com  
EMAIL

Aloha, PLEASE don't close our libraries that exist within the schools, especially our beloved Mtn. View Library. Removing libraries housed w/in schools cuts students off from this incredible resource. Our Keiki don't have access to books in most of their homes, and removing school-based libraries eliminates that access, as well as access to crafts + activities hosted by our amazing library staff. Access to books is a major predictor of 3rd grade literacy, and measures + metrics =>

beyond their formal education, like earnings, and even in incarceration rates. Our community is disadvantaged as it is, and this will only set us back further. As an educator here in Mountain View who takes my own haumāna and my own Keiki to our local library frequently, we beg you to please keep our ~~the~~ school-housed library sites at all costs. The future of our local Keiki depends on it.

Mahalo nui Loa,  
Caitlin Kryss



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

Edie Valentine  
NAME  
P.O. Box 493006 Kea'au HI 96746  
ADDRESS  
edie-the-reader@comcast.net  
EMAIL

We need a drive-thru book drop at new Kea'au library! When Mt View closes patrons from Volcano down to Kea'au will have to park & carry books (not very convenient for Kupuna & families)



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

Jacqueline Ramirez  
NAME  
Volcano  
ADDRESS  
EMAIL

Please include a drive thru book drop. When it is raining, if you have young children, this is essential.

Please also still include a toy area for children.



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
PUBLIC OPEN HOUSE | MARCH 6, 2023

A. THANAVONG

NAME

ADDRESS

EMAIL

HAVE A CONTEST FOR KIDS TO NAME  
FUTURE LIBRARY -



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

Claudia Zioli

NAME

P.O. Box 404 Mt. View

ADDRESS

czioli@yahoo.com

EMAIL

Please add space for the Friends of the Mountain  
View Library / Kea'au Friends (?) to store books  
and have revolving book sales.

We need book storage area also to accomodate  
books for sales - (currently floor to ceiling in  
a 6' x 10' room - overflow often stored in thilo

ALSO - Please have a more inclusive name -  
something descriptive of the middle + upper Puna  
area - such as, Ola'a or Punawaena Library!



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

NAME Gary Neurauter  
ADDRESS PO Box 711788 Mtn View  
EMAIL garytree@neurauter@yahoo

Why call it Kea'au-Mtn View library if it's in Kea'au?  
Why not build it somewhere between the two towns?  
Much less convenient for Mtn View area residents!  
I thought the idea was to have a library that is  
not adjacent to school children for safety  
of the kids - new library right next to  
a school!  
My wife says "Ditto"



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

NAME SHARLAN DUON  
ADDRESS \_\_\_\_\_  
EMAIL SK15@hawaii.or.com

Construct the new library closer to <sup>Mountain View</sup> ~~Kea'au~~ area, near



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
PUBLIC OPEN HOUSE | MARCH 6, 2023

Melissa Smith

NAME

18-4181 Komo St. Mt. View 96771

ADDRESS

mtsalo@gmail.com

EMAIL

The new Kea'au Library is a great idea + needed for the community but my concerns are two-

① what happens to the essential library at Mt. View Elementary?

It is essential that children have easy access to books, etc to foster a life long love of reading, thus knowledge!

② I've heard the new library will NOT have a drive-up book drop off. How ridiculous!?! what about us elders who cannot walk far? The mothers with cars full of children?? people who are short on time??? A community library MUST have a book drop-off that is accessible to all, even after hours.

matado. melissa Smith



Hawaii State  
Public Library System

Kea'au-Mountain View Public Library Project  
Please submit written comments by March 24, 2023

Betsy Brook

NAME

Mountain View

ADDRESS

bblpn96@gmail.com

EMAIL

My biggest concern is what is going to prevent teachers, students, and parents picking up or dropping off children, <sup>from</sup> using the parking lot? We don't want more congestion.





# **Draft EA Comments and Responses**



**From:** [CleanWaterBranch](#)  
**To:** [Isa, Brian S](#)  
**Cc:** [Keaau-MtView-Library](#)  
**Subject:** RE: Kea'au-Mountain View Public Library--Draft EA available for review  
**Date:** Tuesday, May 23, 2023 4:15:49 PM

---

[This message was sent from an outside source.]

Hello,

Please see the Department of Health, Clean Water Branch's (CWB) standard comments regarding water pollution control at: <https://health.hawaii.gov/cwb/clean-water-branch-home-page/cwb-standard-comments/>. These standard comments specify your project's responsibilities to maintain water quality and any necessary permitting issued by the Clean Water Branch.

Thank you,

The Clean Water Branch

---

**From:** Keaau-MtView-Library <keaau-mtview-library@hhf.com>  
**Sent:** Monday, May 22, 2023 4:09 PM  
**To:** Keaau-MtView-Library <keaau-mtview-library@hhf.com>  
**Subject:** [EXTERNAL] Kea'au-Mountain View Public Library--Draft EA available for review

Dear Participant,

The Hawai'i State Public Library System (HSPLS) proposes a new 13,900 SF public library on a 1.7-acre site in Kea'au, Puna District, Hawai'i Island. This is to notify you that the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFNSI) for the Kea'au-Mountain View Public Library is available for public review starting on May 23, 2023.

Notice of the DEA-AFONSI will be published in May 23, 2023 edition of *The Environmental Notice*. The DEA-AFONSI is available for review or download at:

[https://files.hawaii.gov/dbedt/erp/Doc\\_Library/2023-05-23-HA-DEA-Keaau-Mountain-View-Public-Library.pdf](https://files.hawaii.gov/dbedt/erp/Doc_Library/2023-05-23-HA-DEA-Keaau-Mountain-View-Public-Library.pdf)

(\*URL will be live starting on May 23, 2023. Error message may be received if link is used prior to that date)

The 30-day public comment period ends on June 22, 2023. Please see the attached letter for more information.

Aloha.

# HHF PLANNERS

*places for people*

July 20, 2023

Sent electronically to: [cleanwaterbranch@doh.hawaii.gov](mailto:cleanwaterbranch@doh.hawaii.gov)

Clean Water Branch  
State of Hawai'i Department of Health  
P.O. Box 3378  
Honolulu, Hawai'i 96801



Dear DOH Clean Water Branch:

**Comments to Draft Environmental Assessment-Anticipated Finding of No Significant Impact  
Kea'au-Mountain View Public Library Project  
Kea'au, Puna District, Island of Hawai'i  
[3] 1-6-002:001 (por)**

Thank you for your Draft EA comments sent via email on May 23, 2023. We have received and reviewed the CWB Standard Comments regarding water pollution control and forwarded them to the project architect and engineer. The project will comply with all applicable laws regulations pertaining to water quality and any necessary permitting issued by the Clean Water Branch.

Thank you for your participation in the environmental review process. Your letter and this response will be reproduced in the FEA. If you have any questions, please contact me at [keaaau-mtview-library@hhf.com](mailto:keaaau-mtview-library@hhf.com); or contact Brian Isa at DAGS at [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov).

Very truly yours,

A handwritten signature in black ink that reads "Scott Ezer".

Scott Ezer  
Vice President

Cc: Brian Isa, DAGS  
Mallory Fujitani, HSPLS

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
LAND DIVISION

P.O. BOX 621  
HONOLULU, HAWAII 96809

June 23, 2023

State of Hawaii  
Department of Accounting and General Services  
Attn: Mr. Brian Isa  
1151 Punchbowl Street  
Honolulu, Hawaii 96813

via email: [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov)

Dear Mr. Isa:

SUBJECT: Draft Environmental Assessment for the Proposed **Kea'au-Mountain View Public Library** located at Kea'au, Puna District, Island of Hawaii; TMK: (3) 1-6-002: portion 001 on behalf of State of Hawaii, Department of Accounting and General Services for the Hawaii State Public Library System

Thank you for the opportunity to review and comment on the subject matter. The Land Division of the Department of Land and Natural Resources (DLNR) distributed or made available a copy of your request pertaining to the subject matter to DLNR's Divisions for their review and comments.

At this time, enclosed are comments from the (a) Engineering Division and (b) Land Division-Hawaii District on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: [darlene.k.nakamura@hawaii.gov](mailto:darlene.k.nakamura@hawaii.gov). Thank you.

Sincerely,

*Russell Tsuji*

Russell Y. Tsuji  
Land Administrator

Enclosures

cc: HHF Planners (w/copies)  
Attn: Ms. Leslie Kurisaki, Planner (via email: [Keaau-MtView-Library@hhf.com](mailto:Keaau-MtView-Library@hhf.com))  
Central Files

6/15/23

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
LAND DIVISION

P.O. BOX 621  
HONOLULU, HAWAII 96809

May 24, 2023

MEMORANDUM

TO: **DLNR Agencies:**  
 Div. of Aquatic Resources  
 Div. of Boating & Ocean Recreation  
 Engineering Division ([DLNR.ENGR@hawaii.gov](mailto:DLNR.ENGR@hawaii.gov))  
 Div. of Forestry & Wildlife ([rubyrosa.t.terrago@hawaii.gov](mailto:rubyrosa.t.terrago@hawaii.gov))  
 Div. of State Parks  
 Commission on Water Resource Management ([DLNR.CWRM@hawaii.gov](mailto:DLNR.CWRM@hawaii.gov))  
 Office of Conservation & Coastal Lands  
 Land Division – Hawaii District ([gordon.c.heit@hawaii.gov](mailto:gordon.c.heit@hawaii.gov))  
 Aha Moku Advisory Committee ([leimana.k.damate@hawaii.gov](mailto:leimana.k.damate@hawaii.gov))

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: Draft Environmental Assessment for the Proposed **Kea'au-Mountain View Public Library**

LOCATION: Kea'au, Puna District, Island of Hawaii; TMK: (3) 1-6-002: portion 001

APPLICANT: HHF Planners on behalf of State of Hawaii, Department of Accounting and General Services for the Hawaii State Public Library System

Transmitted for your review and comment is information on the above-referenced subject matter. The DEA was published on May 23, 2023, by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

[https://files.hawaii.gov/dbedt/erp/The\\_Environmental\\_Notice/2023-05-23-TEN.pdf](https://files.hawaii.gov/dbedt/erp/The_Environmental_Notice/2023-05-23-TEN.pdf)

Please submit any comments by **June 21, 2023**. If no response is received by this date, we will assume your agency has no comments. Should you have any questions, please contact Darlene Nakamura directly via email at [darlene.k.nakamura@hawaii.gov](mailto:darlene.k.nakamura@hawaii.gov). Thank you.

**BRIEF COMMENTS:**

- We have no objections.
- We have no comments.
- We have no additional comments.
- Comments are included/attached.

Signed:

Print Name: GORDON C. HEIT

Division: Land Division

Date: 6/15/23

Attachments

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
LAND DIVISION

P.O. BOX 621  
HONOLULU, HAWAII 96809

May 24, 2023

**MEMORANDUM**

FROM: ʻŌ:

**DLNR Agencies:**

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division** ([DLNR.ENGR@hawaii.gov](mailto:DLNR.ENGR@hawaii.gov))
- Div. of Forestry & Wildlife ([rubyrosa.t.terrago@hawaii.gov](mailto:rubyrosa.t.terrago@hawaii.gov))
- Div. of State Parks
- Commission on Water Resource Management ([DLNR.CWRM@hawaii.gov](mailto:DLNR.CWRM@hawaii.gov))
- Office of Conservation & Coastal Lands
- Land Division – Hawaii District ([gordon.c.heit@hawaii.gov](mailto:gordon.c.heit@hawaii.gov))
- Aha Moku Advisory Committee ([leimana.k.damate@hawaii.gov](mailto:leimana.k.damate@hawaii.gov))

TO: FROM:

Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT:

Draft Environmental Assessment for the Proposed **Kea'au-Mountain View Public Library**

LOCATION:

Kea'au, Puna District, Island of Hawaii; TMK: (3) 1-6-002: portion 001

APPLICANT:

HHF Planners on behalf of State of Hawaii, Department of Accounting and General Services for the Hawaii State Public Library System

Transmitted for your review and comment is information on the above-referenced subject matter. The DEA was published on May 23, 2023, by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

[https://files.hawaii.gov/dbedt/erp/The\\_Environmental\\_Notice/2023-05-23-TEN.pdf](https://files.hawaii.gov/dbedt/erp/The_Environmental_Notice/2023-05-23-TEN.pdf)

Please submit any comments by **June 21, 2023**. If no response is received by this date, we will assume your agency has no comments. Should you have any questions, please contact Darlene Nakamura directly via email at [darlene.k.nakamura@hawaii.gov](mailto:darlene.k.nakamura@hawaii.gov). Thank you.

**BRIEF COMMENTS:**

- ( ) We have no objections.
- ( ) We have no comments.
- (✓) We have no additional comments.
- ( ) Comments are included/attached.

Signed: *Carty S. Chang*

Print Name: Carty S. Chang, Chief Engineer

Division: Engineering Division

Date: Jun 7, 2023

Attachments

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
LAND DIVISION

P.O. BOX 621  
HONOLULU, HAWAII 96809

June 26, 2023

State of Hawaii  
Department of Accounting and General Services  
Attn: Mr. Brian Isa  
1151 Punchbowl Street  
Honolulu, Hawaii 96813

via email: [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov)

Dear Mr. Isa:

SUBJECT: Draft Environmental Assessment for the Proposed **Kea'au-Mountain View Public Library** located at Kea'au, Puna District, Island of Hawaii; TMK: (3) 1-6-002: portion 001 on behalf of State of Hawaii, Department of Accounting and General Services for the Hawaii State Public Library System

Thank you for the opportunity to review and comment on the subject matter. In addition to our previous comments dated June 23, 2023, enclosed are comments from the Division of Forestry & Wildlife on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: [darlene.k.nakamura@hawaii.gov](mailto:darlene.k.nakamura@hawaii.gov). Thank you.

Sincerely,

*Russell Tsuji*

Russell Y. Tsuji  
Land Administrator

Enclosure

cc: HHF Planners (w/copy)  
Attn: Ms. Leslie Kurisaki, Planner (via email: [Keaau-MtView-Library@hhf.com](mailto:Keaau-MtView-Library@hhf.com))  
Central Files



JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
LAND DIVISION

P.O. BOX 621  
HONOLULU, HAWAII 96809

May 24, 2023

**MEMORANDUM**

FROM: **DLNR Agencies:**  
 \_\_\_ Div. of Aquatic Resources  
 \_\_\_ Div. of Boating & Ocean Recreation  
 X Engineering Division ([DLNR.ENGR@hawaii.gov](mailto:DLNR.ENGR@hawaii.gov))  
 X Div. of Forestry & Wildlife ([rubyrosa.t.terrago@hawaii.gov](mailto:rubyrosa.t.terrago@hawaii.gov))  
 \_\_\_ Div. of State Parks  
 X Commission on Water Resource Management ([DLNR.CWRM@hawaii.gov](mailto:DLNR.CWRM@hawaii.gov))  
 \_\_\_ Office of Conservation & Coastal Lands  
 X Land Division – Hawaii District ([gordon.c.heit@hawaii.gov](mailto:gordon.c.heit@hawaii.gov))  
 X Aha Moku Advisory Committee ([leimana.k.damate@hawaii.gov](mailto:leimana.k.damate@hawaii.gov))

TO: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: Draft Environmental Assessment for the Proposed **Kea'au-Mountain View Public Library**

LOCATION: Kea'au, Puna District, Island of Hawaii; TMK: (3) 1-6-002: portion 001

APPLICANT: HHF Planners on behalf of State of Hawaii, Department of Accounting and General Services for the Hawaii State Public Library System

Transmitted for your review and comment is information on the above-referenced subject matter. The DEA was published on May 23, 2023, by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

[https://files.hawaii.gov/dbedt/erp/The\\_Environmental\\_Notice/2023-05-23-TEN.pdf](https://files.hawaii.gov/dbedt/erp/The_Environmental_Notice/2023-05-23-TEN.pdf)

Please submit any comments by **June 21, 2023**. If no response is received by this date, we will assume your agency has no comments. Should you have any questions, please contact Darlene Nakamura directly via email at [darlene.k.nakamura@hawaii.gov](mailto:darlene.k.nakamura@hawaii.gov). Thank you.

**BRIEF COMMENTS:**

- ( ) We have no objections.
- ( ) We have no comments.
- ( ) We have no additional comments.
- ) Comments are included/attached.

Signed: *Lainie Berry*  
 Print Name: LAINIE BERRY, Wildlife Program Mgr.  
 Division: Division of Forestry and Wildlife  
 Date: Jun 21, 2023

Attachments

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII'  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA

DIVISION OF FORESTRY AND WILDLIFE  
1151 PUNCHBOWL STREET, ROOM 325  
HONOLULU, HAWAII 96813

June 21, 2023

DAWN N.S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT  
LAURA H.E. KAAKUA  
FIRST DEPUTY  
M. KALEO MANUEL  
DEPUTY DIRECTOR - WATER  
AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

Log no 4141

**MEMORANDUM**

**TO:** RUSSELL Y. TSUJI, Administrator  
Land Division

**FROM:** LAINIE BERRY, Wildlife Program Manager  
Division of Forestry and Wildlife

**SUBJECT: Draft Environmental Assessment (DEA) for the Kea'au-Mountain View Public Library Project, on Hawai'i Island**

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your request for comments on the DEA for the proposed Kea'au-Mountain View Public Library project located in Kea'au, Puna District, on the island of Hawai'i; TMK: (3) 1-6-002:001 (por). The Hawai'i State Public Library System (HSPLS) plans to construct a new 13,900 square-foot public library on a 1.7-acre portion of a parcel owned by the State of Hawai'i to serve the residents of Kea'au, Mountain View, Kurtistown, and other nearby Puna District communities. Construction of the library will involve site preparation, grading and excavation for the new building structure, access roads, parking, and utilities. Stormwater will be conveyed away from the proposed building to existing and proposed drainage structures, and an Individual Wastewater System will be installed, in addition to fire and domestic waterlines which will be connected to the existing County system.

DOFAW concurs with the measures included in the DEA intended to avoid construction and operational impacts to State-listed species including the 'Ōpe'ape'a or Hawaiian Hoary bat (*Lasiurus cinereus semotus*), 'Io or Hawaiian Hawk (*Buteo solitarius*), and seabirds. If adult 'Io individuals are detected in the area during construction, all activities within 30 meters (100 feet) of the bird should cease. Work may continue when the bird has left the area on its own. For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai'i, please visit <https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf>. We also appreciate the measures outlined to incorporate Best Management Practices during and after construction to contain any soils and sediment with the purpose of preventing damage to near-shore waters and marine ecosystems. DOFAW provides the following additional comments regarding the potential for the proposed work to affect listed species in the vicinity of the project area.

The State listed Nēnē or Hawaiian Goose (*Branta sandvicensis*) could potentially occur in the vicinity of the proposed project site. It is against State law to harm or harass these species. If any are present during construction, all activities within 100 feet (30 meters) should cease and the bird or birds should not be approached. Work may continue after the bird or birds leave the area of their own accord. If a nest is discovered at any point, please contact the Hawai'i Island Branch DOFAW Office at (808) 974-4221.

DOFAW recommends using native plant species for landscaping that are appropriate for the area, i.e., plants for which climate conditions are suitable for them to thrive, plants that historically occurred there, etc. Please do not plant invasive species. DOFAW also recommends referring to [www.plantpono.org](http://www.plantpono.org) for guidance on the selection and evaluation of landscaping plants and to determine the potential invasiveness of plants proposed for use in the project.

DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain detrimental fungal pathogens (e.g., Rapid 'Ōhi'a Death), vertebrate and invertebrate pests (e.g., Little Fire Ants, Coqui Frogs, etc.), or invasive plant parts (e.g., African Tulip, Octopus Tree, Trumpet Tree, etc.) that could harm our native species and ecosystems. We recommend consulting the Big Island Invasive Species Committee (BIISC) at (808) 933-3340 to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

DOFAW is concerned about impacts on vulnerable birds from nonnative predators such as cats, rodents, and mongooses. We recommend taking action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles.

We appreciate your efforts to work with our office for the conservation of our native species. These comments are general guidelines and should not be considered comprehensive for this site or project. It is the responsibility of the applicant to do their own due diligence to avoid any negative environmental impacts. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Myrna N. Giraldo Pérez, Protected Species Habitat Conservation Planning Coordinator at (808) 265-3276 or [myrna.giraldo-perez@hawaii.gov](mailto:myrna.giraldo-perez@hawaii.gov).

Sincerely,

*Lainie Berry*

LAINIE BERRY  
Wildlife Program Manager

# HHF PLANNERS

*places for people*

July 20, 2023

Sent electronically to: [Darlene.k.nakamura@hawaii.gov](mailto:Darlene.k.nakamura@hawaii.gov)

Department of Land and Natural Resources  
Land Division  
P.O. Box 621  
Honolulu, Hawai'i 96809



Dear Ms. Darlene Nakamura and DLNR Commentors:

**Comments to Draft Environmental Assessment-Anticipated Finding of No Significant Impact  
Kea'au-Mountain View Public Library Project  
Kea'au, Puna District, Island of Hawai'i  
[3] 1-6-002:001 (por)**

Thank you for your Draft EA comments sent via email on June 23, 2023 (Engineering Division; Land Division) and June 26, 2023 (Forestry and Wildlife). We offer the following responses to your comments:

**Engineering Division**

Comment: We have no additional comments

**Response:** Acknowledged

**Land Division**

Comment: We have no additional comments

**Response:** Acknowledged

**Division of Forestry and Wildlife (DOFAW)**

General Comments:

DOFAW concurs with measures included in DEA intended to avoid construction and operational impacts to state-listed species. DOFAW appreciates measures outlined to incorporate BMPs during and after construction to contain soils and sediments with purpose of preventing damage to near-shore waters and marine ecosystems.

For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai'i, please visit <https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf>.

**Response:** Acknowledged. The proponent will comply with the referenced lighting guidelines to minimize adverse impacts on seabirds as well as to protect the dark skies of Hawai'i Island for astronomical observatories.

Additional Comments:

Comment: Nene (*Branta sandvicensis*) could potentially occur in project vicinity. If present during construction, all activities within 100 feet (30 meters) should cease and the bird or birds should not be approached. Work may continue after the bird or birds leave of their own accord. If a nest is discovered contact DOFAW Office.

**Response:** The construction contractor will comply with these recommendations.

Comment: Native Plants. Recommend using appropriate native plants for landscaping. Please do not plant invasive species. Refer to [www.plantpono.org](http://www.plantpono.org) for guidance.

**Response:** Native plants will be incorporated in landscaping to the extent possible.

Comment: Non-native Predators. DOFAW is concerned about impacts on vulnerable birds from nonnative predators (cats, rodents, and mongoose). Recommend action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, provide covered trash receptacles.

**Response:** Actions to minimize predator presence will be incorporated into the project to the extent possible.

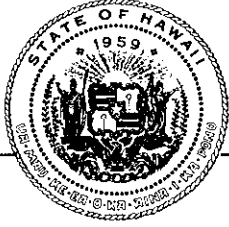
Thank you for your participation in the environmental review process. Your letter and this response will be reproduced in the FEA. If you have any questions, please contact me at [keaa-mtview-library@hhf.com](mailto:keaa-mtview-library@hhf.com); or contact Brian Isa at DAGS at [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov).

Very truly yours,



Scott Ezer  
Vice President

Cc: Brian Isa, DAGS  
Mallory Fujitani, HSPLS



**STATE OF HAWAII  
OFFICE OF PLANNING  
& SUSTAINABLE DEVELOPMENT**

**JOSH GREEN, M.D.**  
GOVERNOR

**SYLVIA LUKE**  
LT. GOVERNOR

**MARY ALICE EVANS**  
INTERIM DIRECTOR

235 South Beretania Street, 6th Floor, Honolulu, Hawaii'i 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii'i 96804

Telephone: (808) 587-2846  
Fax: (808) 587-2824  
Web: <https://planning.hawaii.gov/>

DTS202305230829NA

Coastal Zone  
Management  
Program

June 22, 2023

Environmental Review  
Program

Land Use Commission

Land Use Division

Special Plans Branch

State Transit-Oriented  
Development

Statewide Geographic  
Information System

Statewide  
Sustainability Branch

Mr. Brian Isa  
Department of Accounting and General Services  
State of Hawaii'i  
1151 Punchbowl Street  
Honolulu, Hawaii'i 96813

Dear Mr. Isa:

Subject: Draft Environmental Assessment / Anticipated Finding of No Significant Impact: Kea'au-Mountain View Public Library Project, Kea'au, Puna District, Island of Hawaii'i  
Tax Map Key No: (3) 1-6-002: 001 (portion)

The Office of Planning and Sustainable Development (OPSD) has reviewed the Draft Environmental Assessment / Anticipated Finding of No Significant Impact (DEA-AFONSI) for the subject project.

The proposed project would provide a new 13,900-square foot library to serve the growing population in the Kea'au, Mountain View, and Kurtistown communities and the greater Puna District area. The new library would replace two outdated and undersized libraries currently located on public school campuses in Puna District. The proposed library site is located on a portion of the Kea'au Middle School campus that fronts Kea'au-Pāhoa Road. The library is planned to have two driveways with separate entrance and exit and 42 parking stalls.

OPSD finds that the DEA-AFONSI adequately discusses the impacts and mitigation measures recommended for project design and implementation. The overall benefits of siting a replacement library at this site in proximity to Kea'au Town Center and the County's bus transit routes support the AFONSI.

OPSD offers the following comments related to the DEA-AFONSI, the Final EA, and final project design and implementation.

1. Section 3.3.3.2, Hawaii'i 2050 Sustainability Plan  
The discussion of the 2050 Sustainability Plan should be revised to reflect the updated plan issued in June 2021 by OPSD. The current

text discusses the prior plan and elements and the 2018 performance update that have been superseded by the 2021 plan. Since the library is a long-term public investment, design and construction of the facility should be resilient and advance sustainability goals and objectives, including those in the Recommended Actions in the 2021-2030 Focus Areas on pages 100-107 of the 2050 Sustainability Plan. To this end, the FEA should note those technologies and best practices and other mitigation measures proposed for the project that advance Recommended Actions in the 2050 Sustainability Plan. Our prior comment letter may have provided a link to the 2018 Update instead of the final plan issued in 2021. The updated Hawai'i 2050 Sustainability Plan can be accessed at <https://hawaii2050.hawaii.gov/wp-content/uploads/2021/07/FINAL-Hawaii-2050-Sustainability-Plan-web-1.pdf>.

2. Section 5.1.2.1, *Hawai'i State Plan Update Phase 1*  
The discussion in the DEA includes information that is not particularly relevant to the purpose of this Hawai'i Revised Statutes (HRS) Chapter 343 document. The update was prepared to assess the status of HRS Chapter 226, State Planning Act. As there are no current activities to expand on the update, we recommend the first sentence in the Discussion paragraph be revised to read as follows: "The proposed Kea'au-Mountain View Public Library is consistent with and supports the overall direction of the Hawai'i State Plan and the findings in the State Plan update."
  
3. Section 4.7, Wastewater.  
The DEA notes that the County of Hawai'i is preparing a programmatic Environmental Impact Statement for wastewater system improvements in the Puna District. We appreciate the DEA cites potential facility designs (pump retrofits, etc.) that could be incorporated in the overall project design that could facilitate future hookup of the library's wastewater flows to a County sewer line should that be planned for the Kea'au Town environs. OPSD encourages further consultation with the County Department of Environmental Management on any proposed wastewater infrastructure or package plants envisioned or planned for the Kea'au Town area, and that any appropriate site and facility accommodations to enable sewer hookup in the future be incorporated in the final project.

We note there appear to be discrepancies in the user counts used to estimate wastewater and water demand. The wastewater demand is based on a total of 180 users a day (20 employees and 160 library users). The water demand is based on a total of 227 users (8 employees and 219 users). The FEA should ensure that the number of users is uniform for the infrastructure demand estimates. The FEA should also clarify whether these counts include an estimate of those attending community events or meetings at the library meeting/event space. If not, the FEA

should discuss how additional event visitors would impact water and wastewater demand and Independent Wastewater System (IWS) sizing and any mitigation measures that may be required.

4. Section 4.7.5, Storm Water Drainage/Water Quality. It would help if the FEA could state whether or not the County anticipates development of a stormwater drainage system for Kea‘au Town area in the near future given the County’s interest in supporting additional density in and around the town center. The FEA should clarify whether the site receives runoff from Kea‘au-Pāhoa Road, and whether this flow is incorporated in the stormwater calculations. The Preliminary Engineering Report uses the County’s Storm Drainage Standards adopted in 1970, calculating runoff using a 10-year, 1-hour storm interval frequency. It is anticipated that climate change will bring more intense storms that will result in rainfall events that far exceed this design standard. The FEA should discuss what, if any, impact this might have on stormwater management and the performance of the planned IWS under extreme rainfall events, and what mitigation measures should be incorporated in project design, construction, and operations.
5. Page 6-3, Anticipated Determination, Item 13  
If the project will be installing a photovoltaic system, noting this in Item 13 would strengthen this statement.
6. Library Siting  
The DEA states the project will install a pedestrian pathway from Kea‘au-Pāhoa Road to the library as recommended by the State Department of Transportation. We note that the driveways are anticipated to be approximately but no more than 15% grade. This might be a challenge for pedestrians accessing the library and will reduce overall connectivity and convenience for pedestrians and bus riders.

Thank you for the opportunity to comment on the DEA. We look forward to reviewing FEA when it is published.

If you have any questions, please contact Ruby Edwards, [ruby.m.edwards@hawaii.gov](mailto:ruby.m.edwards@hawaii.gov), (808) 587-2817.

Mahalo,



Mary Alice Evans  
Interim Director

c: Leslie Kurisaki, HHF Planners



July 20, 2023

Sent electronically to: [Ruby.m.edwards@hawaii.gov](mailto:Ruby.m.edwards@hawaii.gov)

State of Hawai'i  
Office of Planning and Sustainable Development  
P.O. Box 2359  
Honolulu, Hawai'i 96804-2359



Dear Ms. Ruby Edwards and Office of Planning and Sustainable Development:

**Comments to Draft Environmental Assessment-Anticipated Finding of No Significant Impact  
Kea'au-Mountain View Public Library Project  
Kea'au, Puna District, Island of Hawai'i  
[3] 1-6-002:001 (por)**

Thank you for your Draft EA comments dated and sent via email on June 22, 2023. We note that OPSP finds the DEA-AFONSI adequately discusses the impacts and mitigation measures recommended for project design and implementation, and the overall benefits of siting a replacement library at this site in proximity to Kea'au Town Center and County's bus transit routes support the AFONSI.

We offer the following responses to the comments provided:

**Comment 1:** Section 3.3.3.2, Hawai'i 2050 Sustainability Plan. Discussion of Hawai'i 2050 Sustainability Plan should be revised to reflect updated plan issued June 2021 by OPSP. Since the library is a long-term public investment, design and construction of facility should be resilient and advance sustainability goals and objectives, including those in Recommended Actions in the 2021-2030 Focus Areas on pages 100-107 of 2050 Sustainability Plan. FEA should note those technologies and best practices and other mitigation measures proposed that advance Recommended Actions in the 2050 Sustainability Plan.

**Response:** The discussion of the Hawai'i 2050 Sustainability Plan will be updated as suggested.

**Comment 2:** Section 5.1.2.1, Hawai'i State Plan Update Phase 1. Discussion in DEA includes info not particularly relevant to the purpose of this HRS Chapter 343 document. We recommend the first sentence in Discussion paragraph be revised to read as follows: "The proposed Kea'au-Mountain View Public Library is consistent with and supports the overall direction of the Hawai'i State Plan and the findings in the State Plan update."

**Response:** The sentence referenced will be revised as recommended.

**Comment 3a:** Section 4.7 Wastewater. OPSP encourages further consultation with the County DEM on any proposed wastewater infrastructure or package plans envisioned or planned for Kea'au Town area and that any appropriate site and facility accommodations to enable sewer hookup in the future be incorporated in the final project.

**Response:** The project proponent is continuing to work with the County Department of Environmental Management through the ongoing project design process. Should a County sewer become available in the future, the library's onsite wastewater disposal can be discontinued and wastewater flows can be easily hooked up to the county sewer. At that time, wastewater calculations can be revisited.

**Comment 3b:** There appears to be discrepancies in the user counts used to estimate wastewater and water demand. Wastewater demand based on 180 users a day. Water demand based on a total of 227 users. FEA should ensure that the number of users is uniform for the infrastructure demand estimates. FEA should also clarify whether these counts include an estimate of those attending community events or meetings at library. If not, FEA should discuss how additional event visitors would impact water and wastewater demand and IWS sizing and any mitigation required.

**Response:** The population estimates provided in the Draft EA were preliminary estimates developed by project engineers for planning purposes. The proponent is currently in the design process and is working with HSPLS to develop more refined user projections. They are also working with County agencies and the State Department of Health to ensure that the project's water and wastewater infrastructure is adequate and meets all regulatory standards and requirements. Water and wastewater systems will be designed to accommodate all operational conditions, including periodic community events. No significant impact on County water or wastewater systems is anticipated.

**Comment 4:** Section 4.7.5, Storm Water Drainage/Water Quality. It would help if the FEA could state whether or not County anticipates development of a stormwater drainage system for Kea'au Town in near future. FEA should clarify whether site receives runoff from Kea'au-Pāhoa Road and whether this flow is incorporated in stormwater calculations.

**Response:** The timing of future County development of a stormwater drainage system for Kea'au Town is unknown. The current stormwater calculations (provided in the Preliminary Engineering Report) do not consider runoff from Kea'au-Pāhoa Road as additional survey information would be required to determine how much flow is ultimately discharging from the street onto the project site. That said, based on site visits, it does not look like there is a large drainage area from the road discharging to the project site, and Coffman does not anticipate a dramatic increase in runoff. These issues will be investigated further during the design process.

It is anticipated that climate change will bring more intense storms that will result in rainfall events that far exceed the [1970 County's Storm Drainage Standards]. FEA should discuss what if any this impact might have on stormwater management and the performance of the planned IWS under extreme rainfall events and what mitigation measures should be incorporated in project design, construction, and operations.

**Response:** The stormwater management is preliminarily designed for a 1-hour 10-year storm event which is the minimum standard storm event for Hawai'i County Storm Drainage Standards. If larger storms are anticipated, the calculations can be revised for a more intense storm during the design process. The IWS shall be designed to HAR 11-62 standards and should be able to perform under extreme rainfall events. Infiltration tests are required to be performed prior to IWS approval and installation to ensure proper performance.

**Comment 5:** Page 6-3, Anticipated Determination, Item 13. If project will be installing a PV system, noting this in Item 13 would strengthen this statement.

**Response:** Proposed PV system will be mentioned in Item 13.

**Comment 6:** Library Siting. DEA states the project will install a pedestrian pathway from Kea'au-Pāhoa Road to library as recommended by State DOT. We note the driveways are anticipated to be approximately but no more than 15% grade. This might be a challenge for pedestrians accessing the library and will reduce overall connectivity and convenience for pedestrians and bus riders.

**Response:** The walkway at Driveway 1 that connects from the State Highway to the site will be designed to meet ADA standards.

Thank you for participating in the environmental review process. Your letter and this response will be reproduced in the FEA. If you have any questions, please contact me at [keaaau-mtview-library@hhf.com](mailto:keaaau-mtview-library@hhf.com); or contact Brian Isa at DAGS at [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov).

Very truly yours,

A handwritten signature in black ink that reads "Scott Ezer". The signature is written in a cursive, flowing style.

Scott Ezer  
Vice President

Cc: Brian Isa, DAGS  
Mallory Fujitani, HSPLS



**DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII**

345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAII 96720  
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

June 22, 2023

Mr. Brian Isa  
State of Hawai'i, Department of Accounting and General Services  
1151 Punchbowl Street  
Honolulu, HI 96813

Dear Mr. Isa:

**Subject: Draft Environmental Assessment Consultation  
Kea'au-Mountain View Public Library Project  
Tax Map Key 1-6-002:001 Portion**

We have reviewed the subject Draft Environmental Assessment and have the following comments.

Please be informed that the 2½-inch copper lateral is connected to the existing 2-inch domestic meter. The fire meter is a 6-inch detector check meter, which is connected to an existing 6-inch water main.

Should there be any questions, please contact Mr. Ryan Quitoriano of our Water Resources and Planning Branch at (808) 961-8070, extension 256.

Sincerely yours,

<sup>A</sup>  
Keith K. Okamoto, P.E.  
Manager-Chief Engineer

RQ:dfg

copy - HHF Planners

# HHF PLANNERS

*places for people*

July 20, 2023

Sent electronically to: [dws@hawaiiidws.org](mailto:dws@hawaiiidws.org)

Department of Water Supply  
County of Hawai'i  
345 Kekuanao Street, Suite 20  
Hilo, Hawaii 96720  
Attn. Mr. Ryan Quitoriano



Dear Mr. Quitoriano:

**Comments to Draft Environmental Assessment-Anticipated Finding of No Significant Impact  
Kea'au-Mountain View Public Library Project  
Kea'au, Puna District, Island of Hawai'i  
[3] 1-6-002:001 (por)**

Thank you for your Draft EA comment letter dated June 22, 2023. Your letter indicated that the 2-1/2-inch copper lateral is connected to the existing 2-inch domestic meter. The fire meter is a 6-inch detector check meter, which is connected to an existing 6-inch water main.

Your letter and information provided have been forwarded to the project architect and civil engineer.

Thank you for your participation in the environmental review process. Your letter and this response will be reproduced in the FEA. If you have any questions, please contact me at [keaaau-mtview-library@hhf.com](mailto:keaaau-mtview-library@hhf.com); or contact Brian Isa at DAGS at [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov).

Very truly yours,

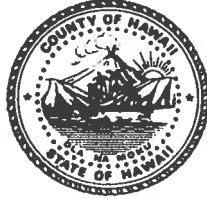
Scott Ezer  
Vice President

Cc: Brian Isa, DAGS  
Mallory Fujitani, HSPLS

BI *6/6/2023*

*JE 4/6*

Mitchell D. Roth  
Mayor



Benjamin T. Moszkowicz  
Police Chief

# County of Hawai`i

## POLICE DEPARTMENT

349 Kapi`olani Street • Hilo, Hawai`i 96720-3998  
(808) 935-3311 • Fax (808) 961-2389

May 31, 2023

Brian Isa  
State of Hawaii  
Department of Accountng and General Services  
1151 Punchbowl Street  
Honolulu, Hawaii 96813

Email: [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov)  
[Keaau-MtView-Library@hhf.com](mailto:Keaau-MtView-Library@hhf.com)

RECEIVED - DAGS  
DIV. OF PUBLIC WORKS  
2023 JUN -5 PM 1:05

Dear Mr. Isa:

SUBJECT: KEAAU-MOUNTAIN VIEW PUBLIC LIBRARY; DRAFT ENVIRONMENTAL ASSESSMENT AND ANTICIPATED FINDING OF NO SIGNIFICANT IMPACTS (DEA-AFNSI); KEAAU, PUNA DISTRICT, ISLAND OF HAWAII; TMK (3) 1-6-002:001

This is in response to an email dated May 23, 2023, requesting comment on a Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFNSI) for a new Hawaii State Public Library in Keaau, Puna District, Island on Hawaii.

Staff, upon reviewing the provided documents, does not anticipate any significant impact to traffic and/or public safety concerns.

Thank you for allowing us the opportunity to comment.

If you have any questions, please contact Captain Scott Amaral of Puna Patrol, at 965-2716 or via email at [scott.amaral@hawaiicounty.gov](mailto:scott.amaral@hawaiicounty.gov).

Sincerely,

  
KENNETH A.K. QUIROCHO  
ASSISTANT POLICE CHIEF



# HHF PLANNERS

*places for people*

July 20, 2023

Sent electronically to: [scott.amaral@hawaiicounty.gov](mailto:scott.amaral@hawaiicounty.gov)



County of Hawai'i Police Department  
349 Kapi'olani Street  
Hilo, Hawai'i 96720-3998  
Attn. Capt. Scott Amaral

Dear Captain Amaral:

**Comments to Draft Environmental Assessment-Anticipated Finding of No Significant Impact  
Kea'au-Mountain View Public Library Project  
Kea'au, Puna District, Island of Hawai'i  
[3] 1-6-002:001 (por)**

Thank you for your Draft EA comment letter dated May 31, 2023 providing comments on the above referenced DEA-AFNSI. We note that Police Department staff, upon reviewing the provided documents, does not anticipate any significant impact to traffic and/or public safety concerns.

Thank you for your participation in the environmental review process. Your letter and this response will be reproduced in the FEA. If you have any questions, please contact me at [keaau-mtview-library@hhf.com](mailto:keaau-mtview-library@hhf.com); or contact Brian Isa at DAGS at [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov).

Very truly yours,

Scott Ezer  
Vice President

Cc: Brian Isa, DAGS  
Mallory Fujitani, HSPLS

## Leslie Kurisaki

---

**From:** HT-Plan Reviews <HT-PlanReviews@hawaiiantel.com>  
**Sent:** Friday, June 9, 2023 10:33 AM  
**To:** Keaau-MtView-Library; Michael Ignacio  
**Cc:** brian.s.isa@hawaii.gov; Gerry Sagucio  
**Subject:** RE: Kea'au-Mountain View Public Library--Draft EA available for review

[This message was sent from an outside source.]

Aloha Mr. Isa & Mr. Kurisaki,

We just wanted to reach out to advise that this has been assigned for review. Please, feel free to reach out to us if you folks have any questions or concerns. Thank you!

### **Greg Kawachi**

**Specialist – Structure Engineer**

**O: 808.546.7666**

**C: 808.779.8324**



NOTICE: This message is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged information. If you are not the intended recipient, any review, retransmission, dissemination, copying or other use of this message is strictly prohibited. If you received this message in error, please contact the sender immediately by reply email, delete this message from all computers, and destroy any printed copies.

---

**From:** Keaau-MtView-Library <keaau-mtview-library@hhf.com>  
**Sent:** Tuesday, May 23, 2023 8:33 AM  
**To:** Keaau-MtView-Library <keaau-mtview-library@hhf.com>  
**Subject:** Kea'au-Mountain View Public Library--Draft EA available for review

Dear Participant,

The Hawai'i State Public Library System (HSPLS) proposes a new 13,900 SF public library on a 1.7-acre site in Kea'au, Puna District, Hawai'i Island. This is to notify you that the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFNSI) for the Kea'au-Mountain View Public Library is available for public review starting on May 23, 2023.

Notice of the DEA-AFONSI will be published in May 23, 2023 edition of *The Environmental Notice*. The DEA-AFONSI is available for review or download at:

[https://files.hawaii.gov/dbedt/erp/Doc\\_Library/2023-05-23-HA-DEA-Keaau-Mountain-View-Public-Library.pdf](https://files.hawaii.gov/dbedt/erp/Doc_Library/2023-05-23-HA-DEA-Keaau-Mountain-View-Public-Library.pdf)

(\*URL will be live starting on May 23, 2023. Error message may be received if link is used prior to that date)

The 30-day public comment period ends on June 22, 2023. Please see the attached letter for more information.

Aloha.



# HHF PLANNERS

*places for people*

July 20, 2023

Sent electronically to: [HT-PlanReviews@hawaiiantel.com](mailto:HT-PlanReviews@hawaiiantel.com)

Mr. Greg Kawachi  
Specialist-Structure Engineer  
Hawaiian Telcom



Dear Mr. Kawachi:

**Comments to Draft Environmental Assessment-Anticipated Finding of No Significant Impact  
Kea'au-Mountain View Public Library Project  
Kea'au, Puna District, Island of Hawai'i  
[3] 1-6-002:001 (por)**

Thank you for your email dated June 9, 2023 in response to the Draft EA, noting that the project has been assigned for review. Our project engineers will continue to coordinate with Hawaiian Telcom throughout the project design process.

Thank you for your participation in this process. Your letter and this response will be reproduced in the FEA. If you have any questions, please contact me at [keaa-mtview-library@hhf.com](mailto:keaa-mtview-library@hhf.com); or contact Brian Isa at DAGS at [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov).

Very truly yours,

Scott Ezer  
Vice President

Cc: Brian Isa, DAGS  
Mallory Fujitani, HSPLS

## Leslie Kurisaki

---

**From:** Keaau-MtView-Library  
**Subject:** FW: Keaau-Mountain View Public Library; D.A.G.S. Job No. 11-36-6589

---

**From:** taira yoshimura <[tairayoshimura@yahoo.com](mailto:tairayoshimura@yahoo.com)>  
**Sent:** Wednesday, June 21, 2023 8:28:11 AM  
**To:** Scott Ezer <[sezer@hhf.com](mailto:sezer@hhf.com)>  
**Subject:** Fwd: Keaau-Mountain View Public Library; D.A.G.S. Job No. 11-36-6589

[This message was sent from an outside source.]

Sent from my iPad

Begin forwarded message:

**From:** taira yoshimura <[tairayoshimura@yahoo.com](mailto:tairayoshimura@yahoo.com)>  
**Date:** June 21, 2023 at 7:15:51 AM HST  
**To:** [dagspwd@hawaii.gov](mailto:dagspwd@hawaii.gov)  
**Subject:** Keaau-Mountain View Public Library; D.A.G.S. Job No. 11-36-6589

We at Big Island Woodturners are very much in favor of the Middle School site for the proposed library. It will be a needed and welcome resource for our community. This location is at a perfect crossroads for our members from Puna Makai, Puna Mauka, and Hilo. The large parking accommodations, covered open lanai, and access to restrooms are essential for our needs. It's easy access to the urgent care clinic, police and fire services, Ace Hardware, and several restaurants also are attractive features. And so the Middle School site would make an excellent site for our bimonthly Saturday meetings and woodturning demonstrations.

That said, we would like to have input on design of the covered open lanai, and operations of the facility.

Thank you for this opportunity to comment. If you have questions, please contact Taira Yoshimura at [tairayoshimura@yahoo.com](mailto:tairayoshimura@yahoo.com) or 808-333-2390.

Sent from my iPad

# HHF PLANNERS

*places for people*

July 20, 2023

Sent electronically to: [tairayoshimura@yahoo.com](mailto:tairayoshimura@yahoo.com)

Dear Ms. Taira Yoshimura



**Comments to Draft Environmental Assessment-Anticipated Finding of No Significant Impact  
Kea'au-Mountain View Public Library Project  
Kea'au, Puna District, Island of Hawai'i  
[3] 1-6-002:001 (por)**

Thank you for your email dated June 21, 2023 in response to the Draft EA. We note that Big Island Woodturners is very much in favor of the Kea'au Middle School site for the proposed library and that it would make an excellent site for your bimonthly Saturday meetings. Your letter has been forwarded to HSPLS.

Thank you for your participation in the environmental review process. Your letter and this response will be reproduced in the FEA. If you have any questions, please contact me at [keaaau-mtview-library@hhf.com](mailto:keaaau-mtview-library@hhf.com); or contact Brian Isa at DAGS at [brian.s.isa@hawaii.gov](mailto:brian.s.isa@hawaii.gov).

Very truly yours,

Scott Ezer  
Vice President

Cc: Brian Isa, DAGS  
Mallory Fujitani, HSPLS



# **APPENDIX A**

Biological Surveys Conducted for the Proposed Kea'au-  
Mountain View Public Library

Reginald David & Maya LeGrande

LeGrande Biological Surveys, Inc.

December 2022



---

## Biological Surveys Conducted for Proposed Kea'au- Mountain View Public Library, Kea'au, Island of Hawai'i

---



**Prepared by:**

Reginald David & Maya LeGrande

LeGrande Biological Surveys Inc.

**Prepared for:**

Helber, Hastert, & Fee

December 2022

---

## Table of Contents

<b>Introduction</b> .....	<b>3</b>
General Site Description.....	3
<b>Methods and Results</b> .....	<b>4</b>
Botanical Survey Methods .....	4
Botanical Survey Results .....	5
Avian Survey Methods .....	6
Avian Survey Results .....	6
Mammalian Survey Methods.....	7
Mammalian Survey Results .....	7
<b>Discussion</b> .....	<b>7</b>
Botanical Resources .....	7
Avian Resources .....	8
Mammalian Resources.....	9
<b>Potential Impacts to Protected Species</b> .....	<b>9</b>
Botanical.....	9
Seabirds.....	10
Hawaiian hoary bat .....	10
<b>Critical Habitat &amp; Wetlands</b> .....	<b>10</b>
<b>Literature Cited</b> .....	<b>11</b>



## Introduction

This report describes the methods used, and the results of botanical, avian, and terrestrial mammalian surveys conducted over an approximately 2-acre Project Area located in Kea'au, Puna District, Hawai'i Island as part of the environmental disclosure process associated with the proposed construction of a single-story, 12,000 sf public library.

The primary purpose of the survey was to determine if there are any biological species currently listed, or proposed for listing under either federal or State of Hawai'i endangered species statutes within or adjacent to the project area. The federal and State of Hawai'i listed species status follows species identified in the following referenced documents, (Department of Land and Natural Resources (DLNR) 1998, 2014; U. S. Fish & Wildlife Service (USFWS) 2021). Fieldwork was conducted on August 19, 2022. Hawaiian and scientific names are italicized in the text.

### General Site Description

The Project Area is a roughly rectangular parcel, located along Kea'au-Pahoa Road at the current Kea'au Middle School (Figure 1). An open area with mowed lawn and asphalt dominate the Project Area. The soil is described as a non-hydric, panaewa very cobbly hydrous loam, 2 to 10 percent slopes for the entirety of the survey area by NRCS (2022).

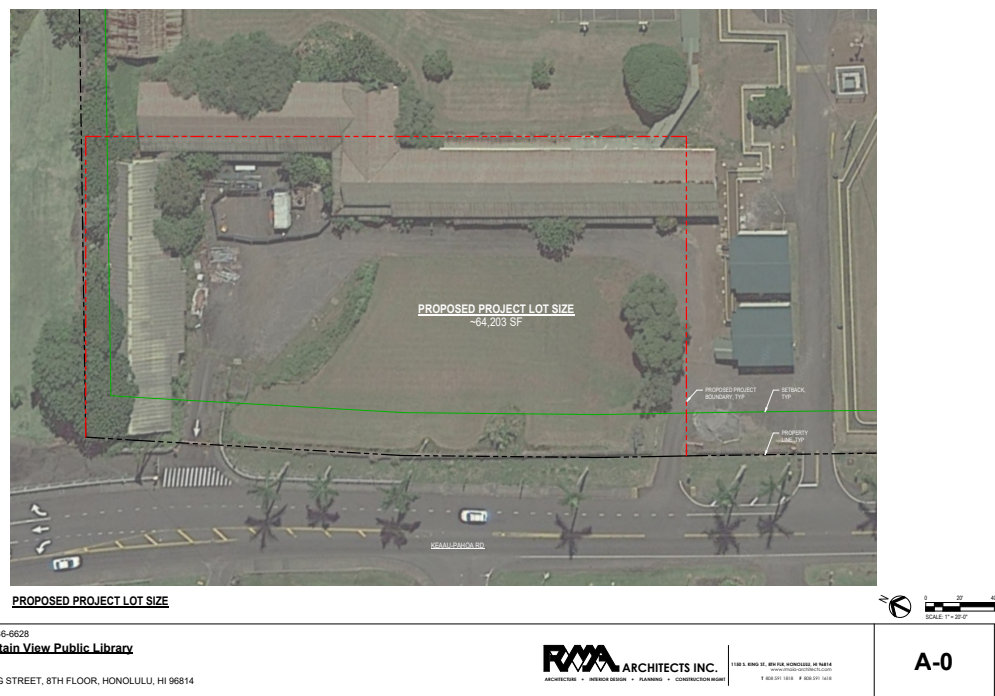


Figure 1. Project Area shown in red, aerial reflects historical conditions at the site, current conditions are shown in site photos in the report. The long building does not exist at the site anymore. Survey area included up to 50 feet in all directions from boundaries.

## Methods and Results

Plant names follow *Hawai'i's ferns and fern allies* (Palmer, 2003) and *Taxonomic and Nomenclatural Updates to the Fern and Lycophyte Flora of the Hawaiian Islands* (Ranker et al) for ferns, *Manual of the Flowering Plants of Hawai'i* (Wagner et al. 1990, 1999) & *Records of the Hawaii Biological Survey, Bishop Museum Occasional Papers* (editors; Evenhuis, N.L. and L.G. Eldredge, 1999-2020) for native and naturalized flowering plants, *Hawaiian Naturalized Vascular Plants Checklist* (Imada, 2019), and *A Tropical Garden Flora* (Staples and Herbst, 2005) for ornamental plants. The avian phylogenetic order and nomenclature used in this report follows the *AOU Check-List of North and Middle American Birds 2020* and the *Sixty-third Supplement to the Check-list of North American Birds* (Cheeser et al., 2021). Place names follow (Pukui et al., 1976).

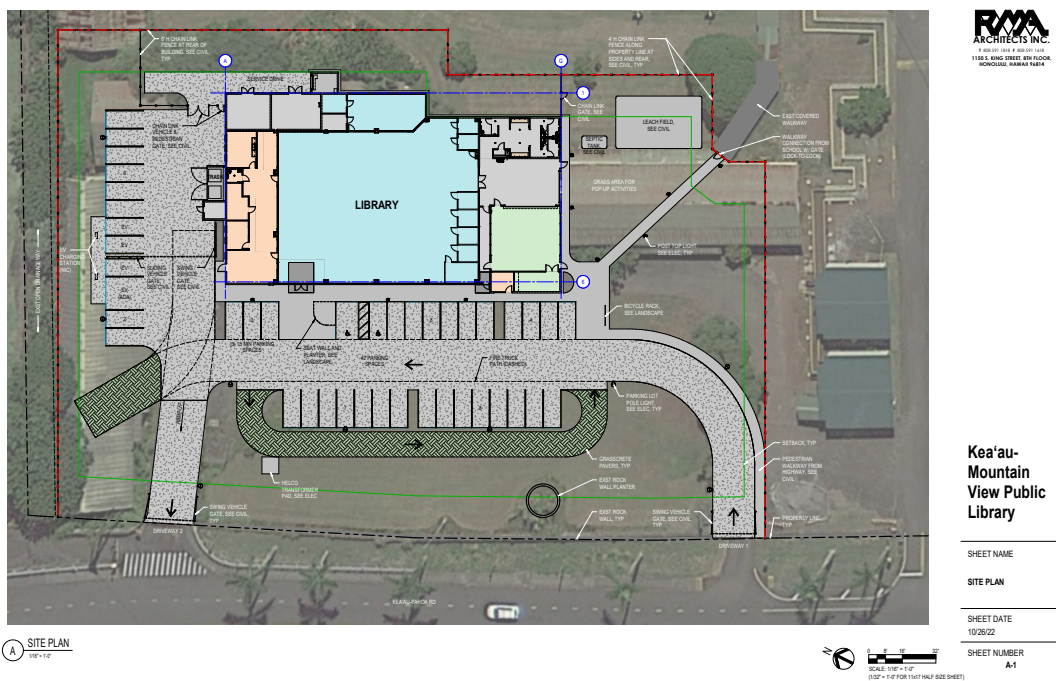


Figure 2. Proposed plans for a new Public Library at the Project are.

### Botanical Survey Methods

Prior to undertaking the field study, a search was made of the pertinent literature to familiarize the investigator with other plant and animal studies conducted in the general area. Topographic maps and aerial satellite images were examined to determine terrain characteristics, access, boundaries, and reference points.

A pedestrian survey was carried out where the investigator walked all boundaries as well as transects throughout the project area. Notes were made on plant associations and distribution, disturbances, topography, substrate types, exposure, and drainage. Plant identifications were made in the field; plants that could not be positively identified were photo documented for comparison with the recent taxonomic literature.

---

## Botanical Survey Results

The majority of the project area is characterized by a mowed lawn area along with asphalt pavement. The grassy lawn area is dominated by grasses such as carpetgrass (*Axonopus compressus*) and dallis grass (*Paspalum dilatatum*) with various additional weedy species mixed in with the lawn as well as in cracks of the surrounding asphalt such as creeping indigo (*Indigofera spicata*), sleeping grass (*Mimosa pudica* var. *unijuga*), prostrate spurge (*Euphorbia prostrata*), coat buttons (*Tridax procumbens*), lovegrass (*Eragrostis amabilis*), bristly foxtail (*Setaria verticillata*), and false pimpernel (*Torenia crustacea*). A few large trees are planted as ornamentals in the Project Area including bottlebrush (*Callistemon* sp.) and fern tree (*Filicium decipiens*).

The northwestern boundary is dominated by overgrown Guinea grass (*Megathyrsus maximus*) thicket with other species such as gunpowder tree (*Trema orientalis*), bingabing (*Macaranga mappia*), butterfly bush (*Buddleja asiatica*), Moluccan albizia (*Falcataria moluccana*), castor bean (*Ricinus communis*), avocado (*Persea americana*), california grass (*Brachiaria mutica*), rattlepod (*Crotalaria* sp.), partridge pea (*Chamaecrista nictitans*), milkwort (*Polygala paniculata*), little bell (*Ipomoea triloba*), *Heterotis rotundifolia*, *Oldenlandia corymbosa*, *Spermacoce exilis*, graceful spurge (*Euphorbia hypericifolia*), and *Vigna hosei*.

A moss rock wall runs parallel to the Kea'au-Pahoa Road at the western boundary of the Project Area. A row of Royal palms (*Roystonea* sp.) are growing between the wall and the road. Plants growing on and around the wall included lāua'e (*Microsorium grossum*), lāua'e haole (*Phlebodium aureum*), climbing fig (*Ficus pumila*), oriental hawksbeard (*Youngia japonica*), maile pilau (*Paederia foetida*), ornamental *Nephrolepis* fern, and wild bean (*Macroptilium lathyroides*).

There were no native plant species observed during the survey.



Figure 3. Current conditions at the Project area from Kea'au-Pahoa Road looking towards the existing Kea'au Middle School.

## Avian Survey Methods

A bird survey was conducted on the morning of August 19, 2022. Birds were identified to species by audio and visual observation aided by Leica 8 X 42 binoculars, and by listening for vocalizations. A single eight-minute avian point-count was made in the center of the site. Weather conditions were ideal, with unlimited visibility, no precipitation, and winds between 1 and 5 kilometers per hour.

## Avian Survey Results

A total of 32 individual birds of seven species, representing six separate families, were recorded during station counts (Table 2). All avian species recorded during this survey are alien to the Hawaiian Islands.

Avian diversity and densities were in keeping with the location and vegetation on the site.

Table 1. Avian species detected on the Kea’au Mountain View Public Library site  
Kea’au, Island of Hawai’i – August 2022

Common Name	Species	Order Family	Status	#
COLUMBIFORMES				
COLUMBIDAE - Pigeons & Doves				
Spotted Dove	<i>Streptopelia chinensis</i>		A	2
Zebra Dove	<i>Geopelia striata</i>		A	3
PASSERIFORMES				
ZOSTEROPIDAE - White-eyes				
Warbling White-eye	<i>Zosterops japonicus</i>		A	1
STURNIDAE - Starlings				
Common Myna	<i>Acridotheres tristis</i>		A	16
ESTRILDIDAE - Estrildid Finches				
Common Waxbill	<i>Estrilda astrild</i>		A	3
PASSERIDAE - Old World Sparrows				
House Sparrow	<i>Passer domesticus</i>		A	8
THRAUPIDAE - Tanagers				
Thraupinae - Core Tanagers				
Saffron Finch	<i>Sicalis flaveola</i>		A	3

### Key to Table1.

#### Status:

A = Naturalized, non-native species (introduced).

# : Number – number of birds recorded during an eight-minute point count

---

### *Mammalian Survey Methods*

A list was made of mammals encountered during the survey. Indicators of mammalian presence, such as tracks, scat, and other sign were noted. Mammalian phylogenetic order and nomenclature follow Mammal Species of the World (Wilson and Reeder, 2005).

### *Mammalian Survey Results*

Two terrestrial mammalian species were detected during this survey. We saw one small Asian mongoose (*Herpestes javanicus*) within the area. Domestic dogs (*Canis lupus familiaris*) were heard barking from locations outside of the survey area.



Figure 4. View of north and west boundaries of the project area (current conditions).

## *Discussion*

### *Botanical Resources*

The fieldwork results are representative of the plants inhabiting the survey area at the time of the survey. This information, along with the results of historical surveys and known land uses, represent a reasonably accurate description of the environment and vegetation of the Project Area. Native plant habitat within the proposed project area has been highly modified by human activities, such as historical agricultural activities, campus use, and the intentional and accidental introduction of alien species. The abundance of non-native plant species throughout the Project Area is in direct correlation to disturbance over the last several hundred years.

---

The nature of the land and its present and historical disturbances limit the natural botanical resources anticipated to occur here. The results of our survey substantiate this prediction. The absence of native plant species is an indication that because of constant disturbances (geological, vehicular, buildings & infrastructure, invasive plant and animal species), only species adapted to such conditions can survive, with few exceptions. None of the plant species observed are listed as threatened or endangered under either federal or state of Hawaii endangered species statutes.

### *Avian Resources*

The findings of the avian survey are consistent with the location of the property and habitat present there. All the avian species detected are alien to the Hawaiian Islands – the site lacks suitable habitat to support any native avian species currently present in the general project area.

### *Seabirds*

It is possible that the endangered Hawaiian Petrel (*Puffinus sandwichesis*), Band-rumped Storm-Petrel (*Hydrobates castro*), and the threatened Newell's Shearwater (*Puffinus newelli*) over-fly the Project area between April and the middle of December each year in small numbers. The primary cause of mortality in Hawaiian Petrels and Newell's Shearwaters in Hawai'i is thought to be predation by alien mammalian species at the nesting colonies (USFWS, 1983; Simons and Hodges, 1998; Ainley et al., 2001). Collision with man-made structures is considered the second most significant cause of mortality of these seabird species in Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. Disoriented seabirds may collide with man-made structures and, if not killed outright, become easy targets of opportunity for feral mammals (Hadley, 1961; Telfer, 1979; Sincok, 1981; Reed et al., 1985; Telfer et al., 1987; Cooper and Day, 1998; Podolsky et al., 1998; Ainley et al., 2001; Hue et al., 2001; Day et al., 2003). No suitable nesting habitat exists within or close to the Project area for any of the three seabird species discussed here.

The principal potential impact that the construction of the proposed project poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the project during the nesting season. The two main areas that outdoor lighting could pose a threat to these nocturnally flying seabirds is if, 1) during construction it is deemed expedient, or necessary to conduct night-time construction activities, 2) following build-out, the potential operation of security lighting during the seabird nesting season.

- If nighttime construction activity or equipment maintenance is proposed during the construction phases of the project, all associated lights should be shielded, and when large flood/work lights are used, they should be placed on poles that are high enough to allow the lights to be pointed directly at the ground (Reed et al., 1985; Teller et al., 1987). Deleterious impacts to transiting seabirds can be avoided if construction occurs during daylight hours and all outdoor lighting installed is fully "dark sky compliant" (HDLNR-DOFAW, 2016). DLNR recommends avoiding construction-related night-time lighting between September 15 and December 15 (DLNR, 2022).

---

### ***Hawaiian Hawk***

No Hawaiian Hawk (*Buteo solitarius*) were recorded during this survey. This state listed species is regularly seen in the greater Hilo / Kea'au area (David, 2022). There are no suitable nesting trees present on the site for this species – it is not expected that this proposed action will result in any impacts to this state listed species.

### ***Mammalian Resources***

The findings of the mammalian survey are consistent with the location of the property and the habitat currently present on the parcels. Although no rodents were recorded on either survey it is likely that some, of the four established alien Muridae found on Hawai'i, roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), and possibly Polynesian rats (*Rattus exulans hawaiiensis*) and European house mice (*Mus musculus domesticus*) use various resources found within the general project area on a seasonal basis. All these introduced rodents are deleterious to native ecosystems and the native faunal species dependent on them.

No mammalian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during this survey (DLNR, 2015; USFWS, n. d.).

### ***Hawaiian hoary bat***

Hawaiian hoary bats overfly the Project area on a seasonal basis, as they have regularly recorded in the greater Hilo / Kea'au area (David, 2022). The issue with clearing and grubbing in areas that bats may roost, and females may tend to their pups in centered around the removal of woody vegetation taller than 4.6 meters (15 ft) between June 1 and September 15, the period in which bats may have pups. During the pupping season, females carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they forage. Very small pups may be unable to flee a tree that is being felled.

There is no such vegetation on this site, so it is not expected that this proposed action will result in impacts to this listed mammalian species.

### ***Potential Impacts to Protected Species***

#### ***Botanical***

No protected botanical resources were detected on or adjacent to the study site, nor were any expected given the current use of the property. It is not expected that the proposed project will result in deleterious impacts to any protected botanical resources.

---

### *Seabirds*

The principal potential impact that the construction of the project poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the proposed action during the nesting season. The two main periods that outdoor lighting could pose a threat to these nocturnally flying seabirds is; a) during construction, if it is deemed expedient, or necessary to conduct night-time construction activities – currently no nighttime construction is anticipated; b) the potential use of streetlights or other exterior lighting during the seabird fledging season which runs from September 15 through December 15<sup>th</sup>. If no night-time construction is being proposed, it is not expected that the proposed action will result in deleterious impacts to protected seabirds.

### *Hawaiian hoary bat*

If additional fencing is included in the construction phase it is recommended that any type of barbed wire or razor wire not be used.

### *Critical Habitat*

There is no federally delineated Critical Habitat for any avian or mammalian species on, or close to the proposed project site(USFWS, nd-b). Thus, modifications of habitat on the site will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under state law.

### *Wetlands*

No wetland features were observed during the site survey.



---

## Literature Cited

- Ainley, D. G, R. Podolsky, L. Deforest, G. Spencer, and N. Nur. 2001. The Status and Population Trends of the Newell's Shearwater on Kaua'i: Insights from Modeling, *in*: Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna*. Studies in Avian Biology No. 22: Cooper's Ornithological Society, Allen Press, Lawrence, Kansas. (Pg. 108-123).
- Chesser, R. T., S. M. Billerman, K. J. Burns, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, N. Mason, C. Rasmussen, J. V., Remsen, Jr., D. F. Stotz, and K. Winker. 2020. Sixty-first Supplement to the American Ornithological Society's – Checklist of North American Birds. *The Auk Ornithological Advances*, Volume 137, 2020 PP 1-24.
- Chesser, R. T., S. M. Billerman, K. J. Burns, C. Cicero, J. L. Dunn, B.E. Hernández-Baños, R. A. Jiménez, A. W. Kratter, N. A. Mason, P. C. Rasmussen, J. V. Remsen Jr., D. F. Stotz, and K. Winker. 2022. Sixty-third supplement to the American Ornithological Society's Check-list of North American Birds. *Ornithology*, Volume 138, 2022, pp. 1-13.
- Cooper, B. A., and R. H. Day. 1998. Summer Behavior and Mortality of Dark-rumped Petrels and Newell's Shearwaters at Power Lines on Kauai. *Colonial Waterbirds*, 21 (1): 11-19.
- David, R. E. 2022. Unpublished field notes – Hawai'i 1980 - 2022.
- Day, R. H., B. Cooper, and T. C. Telfer. 2003. Decline of Townsend's (Newell's Shearwaters (*Puffinus auricularis newelli*) on Kauai, Hawaii. *The Auk* 120: 669-679.
- Department of Land and Natural Resources (DLNR). 1998. Indigenous Wildlife, Endangered And Threatened Wildlife And Plants, And Introduced Wild Birds. Department of Land and Natural Resources. State of Hawaii. Administrative Rule §13-134-1 through §13-134-10, dated March 02, 1998.
- \_\_\_\_\_. 2014. Hawai'i Administrative Rules, Title 13, Department of Land and Natural Resources, Subtitle 5 Forestry and Wildlife, Part 2 Wildlife, Chapter 124, Indigenous Wildlife, Endangered and Threatened Wildlife, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife. Exhibit 1. November 1, 2014. 21 pp.
- Hadley, T. H. 1961. Shearwater calamity on Kauai. *Elepaio* 21:60.
- Hue, D., C. Glidden, J. Lippert, L. Schnell, J. MacIvor and J. Meisler. 2001. Habitat Use and Limiting Factors in a Population of Hawaiian Dark-rumped Petrels on Mauna Loa, Hawai'i. , *in*: : Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna*. Studies in Avian Biology No. 22. Cooper's Ornithological Society, Allen Press, Lawrence, Kansas (Pg. 234-242).
- Imada, C. 2019. Hawaiian Naturalized Vascular Plant Checklist. February 2019 update. Bishop Museum Technical Report 69.

- 
- Natural Resource Conservation Service (NRCS). 2022. Accessed August 20, 2022.  
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- Palmer DD. 2003. Hawai'i's ferns and fern allies. Honolulu: University of Hawai'i Press.
- Podolsky, R., D.G. Ainley, G. Spencer, L. de Forest, and N. Nur. 1998. "Mortality of Newell's Shearwaters Caused by Collisions with Urban Structures on Kaua'i". Colonial Waterbirds 21:20-34.
- Pukui, M. K., S. H. Elbert, and E. T. Mookini 1976. *Place Names of Hawaii*. University of Hawaii Press. Honolulu, Hawai'i. 289 pp.
- Ranker, T.A., C.T. Imada, K. Lynch, D.D. Palmer, A.L. Vernon, and M.K. Thomas. 2019. Taxonomic and Nomenclatural Updates to the Fern and Lycophyte Flora of the Hawaiian Islands. *American Fern Journal* 109(1):54-72. Published 30 April 2019.
- Reed, J. R., J. L. Sincock, and J. P. Hailman 1985. Light Attraction in Endangered Procellariiform Birds: Reduction by Shielding Upward Radiation. *The Auk* 102: 377- 383.
- Simons, T. R., and C. N. Hodges. 1998. Dark-rumped Petrel (*Pterodroma phaeopygia*). In A. Poole and F. Gill (editors). *The Birds of North America*, No. 345. The Academy of Natural Sciences, Philadelphia, PA. and the American Ornithologists Union, Washington, D.C.
- Sincock, J. L. 1981. Saving the Newell's Shearwater. Pages 76-78 in *Proceedings of the Hawaii Forestry and Wildlife Conference, 2-4 October 1980*. Department of Land and Natural Resources, State of Hawaii, Honolulu.
- Staples, G. W. and D. R. Herbst. 2005. *A Tropical Garden Flora. Plants Cultivated in the Hawaiian Islands and other Tropical Places*. Bishop Museum, Honolulu. 908 pp.
- Telfer, T. C. 1979. Successful Newell's Shearwater Salvage on Kauai. *'Elepaio* 39:71
- Telfer, T. C. , J. L. Sincock, G. V. Byrd, and J. R. Reed. 1987. Attraction of Hawaiian seabirds to lights: Conservation efforts and effects of moon phase. *Wildlife Society Bulletin* 15:406-413.
- U.S. Fish & Wildlife Service-Pacific Islands Fish and Wildlife Office (USFWS-PIFWO). No date (nd). Avoidance and Minimization Measures. Available online at URL: <https://www.fws.gov/pacificislands/articles.cfm?id=149489720>; last retrieved July 31, 2020.
- U.S. Fish & Wildlife Service (USFWS) 1983. Hawaiian Dark-Rumped Petrel & Newell's Manx Shearwater Recovery Plan. USFWS, Portland, Oregon. February 1983.
- USFWS. 2015. Hawaiian Islands Threatened and Endangered Plants and Animals: Updated February 2, 2015.

---

USFWS. Undated website (nd-b). Critical Habitat Portal. Available online at URL: <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>; last retrieved August 15, 2022

Wagner, W. L., D. R. Herbst and S.H. Sohmer. 1990. Manual of the Flowering Plants of Hawai'i: Volume I and II. Bishop Museum Special Publication 83. University of Hawai'i Press. 1853 pp.

Wagner and Herbst. 1999. Supplement to the Manual of the flowering plants of Hawai'i, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer, Manual of the flowering plants of Hawai'i. Revised edition. 2 vols. University of Hawaii Press and B.P. Bishop Museum.

Wilson, D.E., and D. M. Reeder, (Editors), 2005. *Mammal species of the world: a taxonomic and geographic reference*. 3<sup>rd</sup> edition. 2 vols. John Hopkins University Press. Baltimore, Maryland. 2142 pp.



## **APPENDIX B**

Archaeological Literature Review and Field Inspection for the  
Kea'au-Mountain View Public Library Project

Honua Consulting  
LaChance, Thurman and Watson  
May 2023



---

**Archaeological Literature Review and Field Inspection  
for the Kea‘au-Mountain View Public Library Project,  
Kea‘au Ahupua‘a, Puna District, Island of Hawai‘i  
TMK: [3] 1-6-002:001 (por.)**



Prepared for  
HHF Planners  
Honolulu, HI

Prepared by  
Frederick LaChance, B.A.,  
Rosanna Thurman, M.A., and  
Trisha K. Watson, Ph.D.



Honolulu, Hawai‘i  
May 2023

## Management Summary

---

This report was completed on behalf of HHF Planners, in support of a historic preservation due diligence analysis for the proposed Kea‘au-Mountain View Public Library Project, Kea‘au Ahupua‘a, Puna District, Island of Hawai‘i. The project area comprises approximately 1.76 acres (76,665 square feet [sq. ft.] or 7,122 sq. meters [m]) and located within parcel TMK: [3] 1-6-002:001 (por.). The parcel is residentially zoned, owned by the State of Hawai‘i, with a total land area of 5.97 acres. The project area is near the center of Kea‘au town and is bound to the west by Kea‘au-Pahoa Rd. The northern extent of the project area is congruent with the parcel boundary and the eastern and southern extents of the project area are within the limits of Kea‘au Middle School. The proposed library project is currently in the early planning phases of construction.

The proposed project consists of construction of a single-story, 12,000 sq. ft. public library on a portion of Kea‘au Middle School property. The new library will serve both Kea‘au and Mountain View communities and will replace the two existing public libraries at Kea‘au Middle School and Mountain View Elementary School. The new library will provide the communities with better access to the library’s resources and provide community-oriented services/programs. Buildings B and G of Kea‘au Middle School were recently demolished, leaving a clear site for this project.

The objectives of this Archaeological Literature Review and Field Inspection (LRFI) were the following: (1) documentation and description of the parcel’s land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes; (2) identification of any historic properties or component features in the project area; and (3) provide information relevant to the likelihood of encountering historically-significant cultural deposits in a subsurface context during future construction.

Background research indicated the project area would most likely lack traditional Hawaiian archaeological sites, given the extent of both historic sugarcane cultivation and historic school development. It is possible that twentieth-century school building foundations and infrastructure associated with ‘Ōla‘a School and Kea‘au Public School could exist on the property, likely in remnant condition. Three previous archaeological studies have been completed within the Kea‘au Middle School property, encompassing the current project area (Hammatt and Shideler 2006, Wilkinson et al. 2008, and Wheeler et al. 2015). No subsurface deposits or materials were documented within the project area or within other portions of the Kea‘au Middle School grounds. An historic ‘auwai (irrigation ditch) was recorded by Wheeler et al. (2015) as being present along the northern border of the current project area.

The current field investigation, which consisted of a 100% pedestrian survey of the entire project area but no subsurface excavation, found the following: (1) Nearly the entire project area has been substantially modified by the development of school infrastructure, starting as early as circa 1900 and continuing to the present (before this time, the landscape in and around the project area was impacted by commercial sugarcane); (2) Most recently, nearly the entire project area has been cleared of all above-ground structures except for an asphalt parking lot in the eastern portion of the project area, a large school sign near the southwestern entrance, and a flag pole near the western extent of the property; and (3) Two historic properties were identified during the survey: a historic ‘auwai running parallel to the northern margin of the project area (Honua 1) and a historic rock boundary wall with an associated raised planter fronting the property to the west (Honua 2).



The ‘auwai was previously documented by Cultural Surveys Hawai‘i (Wheeler et al. 2015), who requested a State Inventory of Historic Places (SIHP) number for it from the State Historic Preservation Division (SHPD); to the best of our knowledge, however, a site number has not yet been assigned to it. Other than these two sites (i.e., Honua 1 and Honua 2), no other historic properties or potential historic properties were observed in the project area.

Honua 1 (‘auwai running along the northern border of the project area) likely dates to as early as the late nineteenth century. It retains integrity of location and is assessed as significant under criterion d for its association with the historic sugarcane industry that once thrived in Kea‘au, prior to the parcel’s use as a school.

Honua 2 (rock wall and planter along the west side of the project area) likely dates to circa 1900. It retains integrity of location, design, materials and workmanship. It is assessed as significant under Criterion d for its association with the history of the establishment and use of the property as a school, beginning circa 1900. The proposed project will not impact the ‘auwai (Honua 1) in any way. An SIHP number should be obtained for the rock wall and planter (Honua 2).

Sufficient documentation of Honua 2 (rock wall and planter) has been completed, and no further archaeological or historic preservation work is needed at this site. Under state law, and in accordance with HAR § 13-275-7, an effect determination of “no historic properties affected” is proposed since all relevant information about the rock wall and planter has been recorded.

Therefore, the overall project effect is “no historic properties affected,” and no further archaeological or historic preservation work is needed.

# Table of Contents

<b>Management Summary .....</b>	<b>i</b>
<b>Section 1 Introduction .....</b>	<b>1</b>
1.1 Project Background .....	1
1.2 Environmental Setting .....	1
1.2.1 Natural Environment.....	1
1.2.2 Built Environment.....	6
<b>Section 2 Cultural and Historical Context.....</b>	<b>8</b>
2.1 Hawaiian Cultural Landscape.....	8
2.2 Historic Period .....	11
2.2.1 The Māhele .....	11
2.2.2 Mid- to Late 1800's .....	11
2.2.3 Commercial Sugarcane in and near the Project Area .....	12
2.2.4 Kea'au Middle School and Contemporary Land Use .....	12
<b>Section 3 Archaeological Context .....</b>	<b>18</b>
3.1 Archaeological Studies Within the Current Project Area .....	18
3.1.1 Hammatt and Shideler 2006 .....	20
3.1.2 Wilkinson et al. 2008 .....	20
3.1.3 Wheeler et al. 2015 .....	20
3.2 Previous Archaeological Studies Near the Project Area.....	22
<b>Section 4 Results of Field Inspection .....</b>	<b>31</b>
4.1 Methodology.....	31
4.2 Survey Results .....	31
4.2.1 Overview.....	31
4.2.2 Site Descriptions.....	37
<b>Section 5 Significance Assessments, Project Effect &amp; Mitigation Recommendations.....</b>	<b>44</b>
5.1 Significance Assessments.....	44
5.2 Project Effect and Mitigation Recommendations .....	45
<b>Section 6 Conclusion .....</b>	<b>48</b>
<b>Section 7 References Cited .....</b>	<b>50</b>
<b>Appendix A State &amp; National Register Forms for Proposed Kea'au District (SIHP #50-10-44-7389).....</b>	<b>A-1</b>

List of Figures

Figure 1. Portion of U.S. Geological Survey (USGS) topographic map showing the project area (base map source: USGS online at <a href="http://ngmdb.usgs.gov/topoview/">http://ngmdb.usgs.gov/topoview/</a> ).....	2
Figure 2. Aerial photograph showing the location of the project area; note, buildings in this image within the project area were recently demolished (base image source: ESRI's ArcMap 10.2).....	3
Figure 3. Tax Map Key (TMK): [3] 1-6-002 showing project area (base map source: Hawai'i TMK Service n.d.) .....	4
Figure 4. Preliminary Site Plan (provided by client) .....	5
Figure 5. Soil survey data for the project area and environs (soils data from USDA Soil Survey Geographic database [SSURGO 2001] and Sato et al. 1973).....	7
Figure 6. Portion of a 1901 Alexander map (Registered Map 2060) showing the project area (base map source: DAGS Land Survey Map Search, <a href="http://ags.hawaii.gov/survey/map-search/">http://ags.hawaii.gov/survey/map-search/</a> ).....	13
Figure 7. 1914 Sanborn Fire Insurance map showing Kea'au Public School within the project area.....	14
Figure 8. 1921-1957 Sanborn Fire Insurance map showing reconfiguration of Kea'au Public School within the project area.....	15
Figure 9. Portion of a 1928 Wall map showing the project area (base map source: University of Hawai'i-Mānoa's digital maps, <a href="http://magis.manoa.hawaii.edu/maps/index.html">http://magis.manoa.hawaii.edu/maps/index.html</a> ) .....	16
Figure 10. Portion of a 1965 aerial image showing the project area (base map source: University of Hawai'i-Mānoa's digital maps, <a href="http://magis.manoa.hawaii.edu/maps/index.html">http://magis.manoa.hawaii.edu/maps/index.html</a> )....	17
Figure 11. Aerial showing previous archaeological studies within the current project area .....	19
Figure 12. Photo and profile of Project Location 35.01 (Wilkinson et al. 2008:16) .....	21
Figure 13. Previous archaeological investigations within 1.0 mile of the project area .....	23
Figure 14. Previously documented historic properties within 1 mile of the project area .....	24
Figure 15. TMK: [3] 1-6-002 showing the locations of sites documented by Escott (2013:35), adjacent to the current project area .....	29
Figure 16. Photo of SIHP #50-10-35-29899 (concrete sidewalk) (Escott 2013:43).....	29
Figure 17. Aerial image showing pedestrian survey tracks walked in the project area by Honua Consulting archaeologists; note, buildings in this image within the project area were recently demolished .....	32
Figure 18. Aerial image showing the results of the field inspection; note, buildings in this image within the project area were recently demolished.....	33
Figure 19. Southern gated entrance to the project area, view to the northeast .....	34
Figure 20. Northern gated entrance to the project area, view to the northeast .....	34
Figure 21. Overview of landscaped lawn and rock wall and planter (Honua 2, at right and center), view southeast.....	35
Figure 22. Overview of temporary fencing constructed near the eastern margin of the project area, view to the east.....	35
Figure 23. Photograph showing the flagpole within the project area, view to the southwest .....	36
Figure 24. Overview of the interior of the project area, view to the north .....	36
Figure 25. Photograph showing an overview of Honua 1 (historic 'auwai), view to the west.....	38
Figure 26. Detail of cleared section of Honua 1 (historic 'auwai), view to the northwest .....	38
Figure 27. Photos of the historic 'auwai from 2013 (Wheeler et al. 2015:28-29).....	39
Figure 28. Overview of Honua 2 (historic rock wall), view to the west.....	41
Figure 29. Detail of a section of Honua 2 (historic rock wall), view to the northeast.....	41

Figure 30. Detail of collapsed section of wall adjacent to the entrance driveway (to the south) ..42  
 Figure 31. Another view of collapsed section of wall adjacent to entrance driveway (to the south)  
 .....42  
 Figure 32. Another view of collapsed section of wall adjacent to entrance driveway (to the south)  
 .....43  
 Figure 33. Overview of historic rock planter associated with Honua 2, view to the southeast.....43  
 Figure 34. Detail portion of civil engineering plans showing plans to remove ~5-foot section of  
 the rock wall (Honua 2) (lower right) .....46  
 Figure 35. Annotated photograph from civil engineering showing plans to remove ~5-foot  
 section of collapsed rock wall.....47

## Table

Table 1. Previous Archaeological Studies and Results Documented Near the Project Area .....25  
 Table 2. Table Listing Historic Properties Assessments and Recommendations.....45

## Section 1 Introduction

---

### 1.1 Project Background

This report was completed on behalf of HHF Planners, in support of a historic preservation due diligence analysis for the proposed Kea‘au-Mountain View Public Library Project, Kea‘au Ahupua‘a, Puna District, Island of Hawai‘i (Figure 1, Figure 2, Figure 3). The project area comprises approximately 1.76 acres (76,665 square feet [sq. ft.] or 7,122 sq. meters [m] and located within parcel TMK: [3] 1-6-002:001 (por.). The parcel is residentially zoned, owned by the State of Hawai‘i, with a total land area of 5.97 acres. The project area is near the center of Kea‘au town and is bound to the west by Kea‘au-Pahoa Rd. The northern extent of the project area is congruent with the parcel boundary and the eastern and southern extents of the project area are within the limits of Kea‘au Middle School. The proposed library project is currently in the early planning phases of construction.

The proposed project consists of construction of a single-story, 12,000 sq. ft. public library on a portion of Kea‘au Middle School property. The new library will serve both Kea‘au and Mountain View communities and will replace the two existing public libraries at Kea‘au Middle School and Mountain View Elementary School. The new library will provide the communities with better access to the library’s resources and provide community-oriented services/programs. Buildings B and G of Kea‘au Middle School were recently demolished, leaving a clear site for this project. A preliminary site plan is shown as Figure 4.

The objectives of this Archaeological Literature Review and Field Inspection (LRFI) were the following: (1) documentation and description of the parcel’s land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes; (2) identification of any historic properties or component features in the project area; and (3) provide information relevant to the likelihood of encountering historically-significant cultural deposits in subsurface contexts during future construction.

While the subject LRFI is not an archaeological inventory survey (AIS), it was designed, conducted and written in accordance with requirements for Hawai‘i Revised Statutes (HRS) 6E-8 and Hawai‘i Administrative Rules (HAR) 13-276 for AIS work; and is intended to assist development of appropriate historic preservation efforts. Fieldwork for this project was performed under archaeological permit number 22-26, issued to Honua Consulting by the SHPD in accordance with HAR 13-282.

### 1.2 Environmental Setting

#### 1.2.1 Natural Environment

The elevation of the project area varies from 93-104 meters (m) (305-340 ft) amsl (above mean sea level), sloping to the east. The Kea‘au area receives approximately 400 centimeters (cm) (157 inches) of rainfall per year (Giambelluca et al. 1986:34). This amount of rainfall can easily support non-irrigated agriculture. The entire project area has been heavily impacted by historic development, showing no visible signs on the surface of the pre-contact landscape. Plant species in the project area are generally commercial and landscaping varieties.

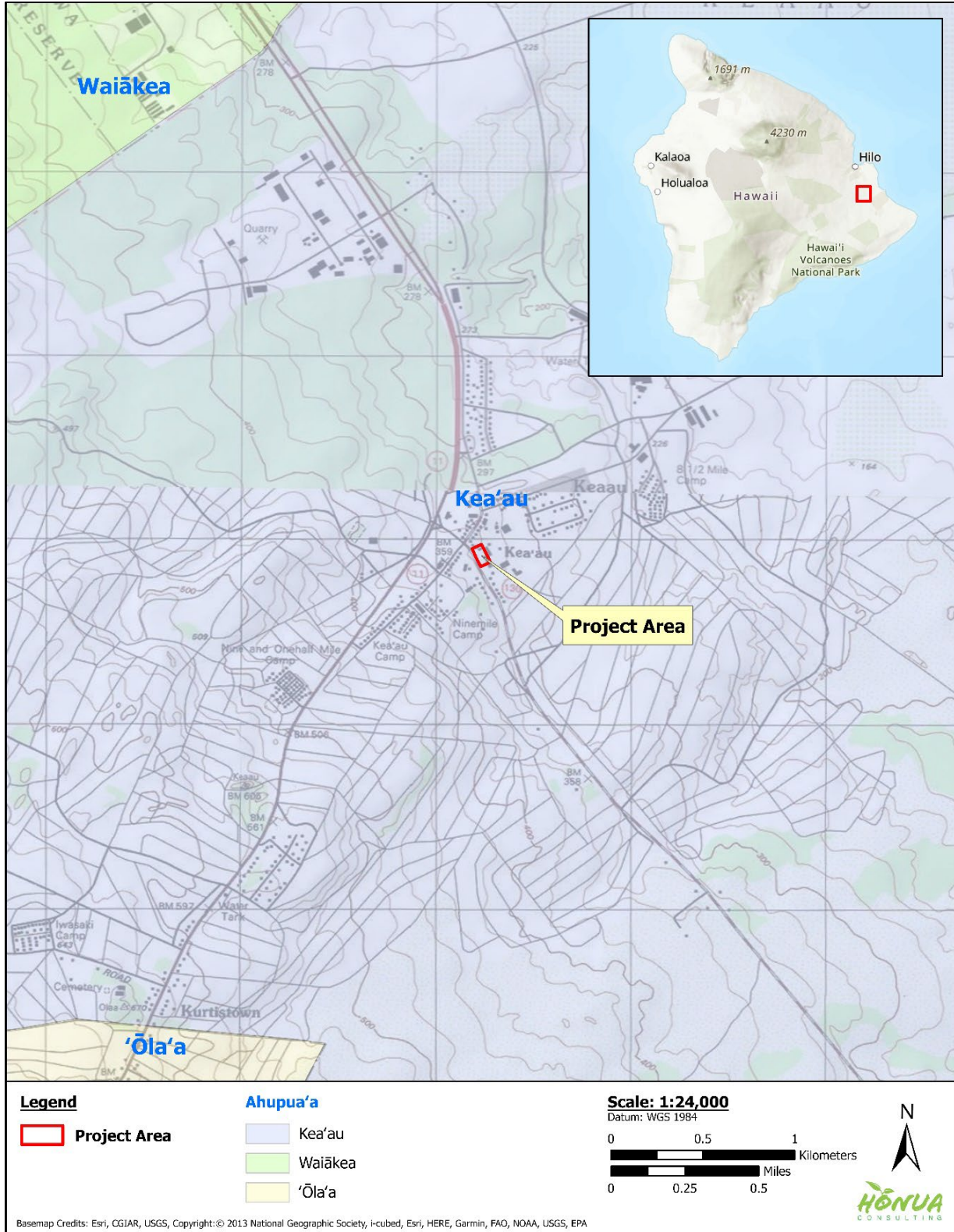


Figure 1. Portion of U.S. Geological Survey (USGS) topographic map showing the project area (base map source: USGS online at <http://ngmdb.usgs.gov/topoview>)



Figure 2. Aerial photograph showing the location of the project area; note, buildings in this image within the project area were recently demolished (base image source: ESRI's ArcMap 10.2)

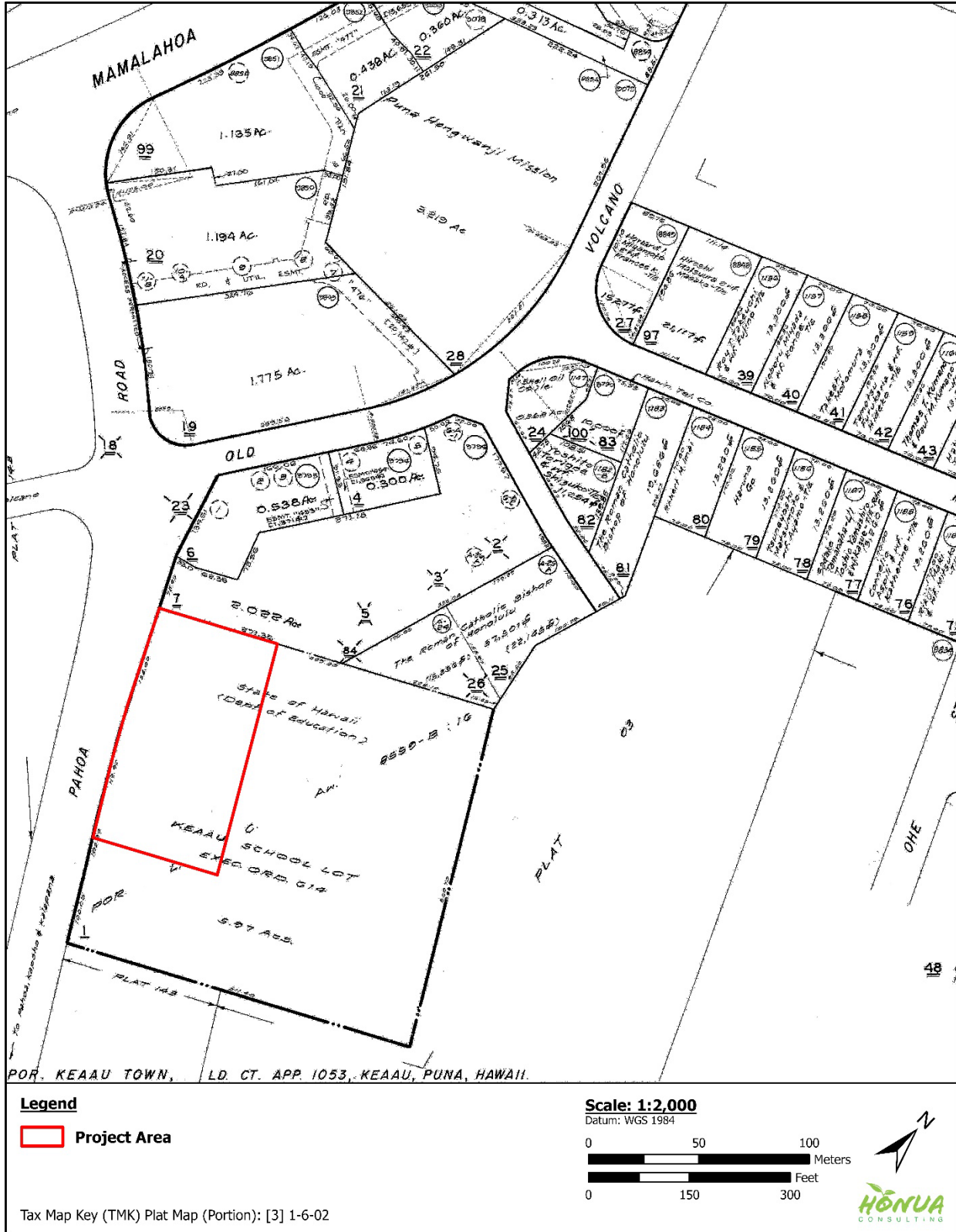


Figure 3. Tax Map Key (TMK): [3] 1-6-002 showing project area (base map source: Hawai'i TMK Service n.d.)



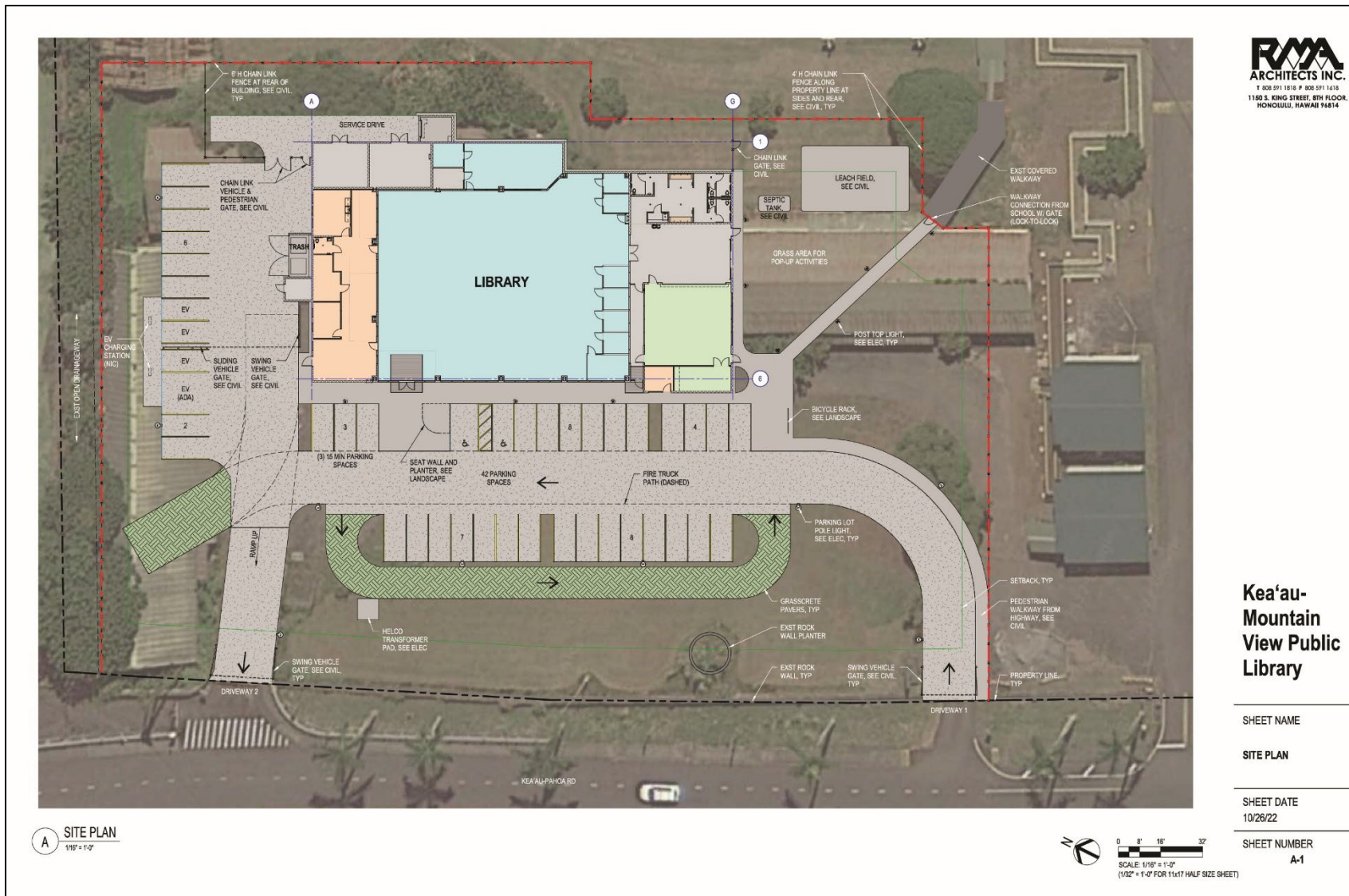


Figure 4. Preliminary Site Plan (provided by client)

The entire project area sits atop Panaewa very cobbly hydrous loam (629) soils according to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Sato et al. (1973) (Figure 5). The soil is described as:

The Panaewa series consists of shallow, moderately well drained soils that formed in material weathered from volcanic ash which overlies pahoehoe lava. Slopes range from 2 to 10 percent...Runoff is low. Permeability is moderate in the soil and very slow in the underlying bedrock. These soils are used principally for pasture and macadamia nut orchards. Vegetation is hilograss (*Paspalum conjugatum*), californiagrass (*Urochloa mutica*), lantana (*Lantana camara*), hapuu treefern (*Cibotium glaucum*), uluhe fern (*Dicranopteris linearis*) and guava (*Psidium guajava*). (NCSS 2012)

An article published in *The Hawai'i Island Journal* on May 20<sup>th</sup> of 2006, details the presence of arsenic in the soils at Kea'au Middle School and suggest that levels are potentially high enough to warrant a closure of the school gardens (McNarie 2006).

### **1.2.2 Built Environment**

The school grounds are located near the center of the town of Kea'au which is comprised of commercial enterprises and residential developments. The project area is bound by the Old Paho Road (Kea'au-Paho Rd.) to the west, which provides as a main vehicular access through the town. The northern extent of the project area is congruent with the parcel boundary, delineated by fencing. The eastern and southern extents of the project area are within the interior of the larger parcel owned by the Kea'au Middle School. Buildings B and G of Kea'au Middle School were recently demolished, leaving a clear site for this project. Currently, the project area is directly adjacent to portable school buildings to the south and a large open field to the east.

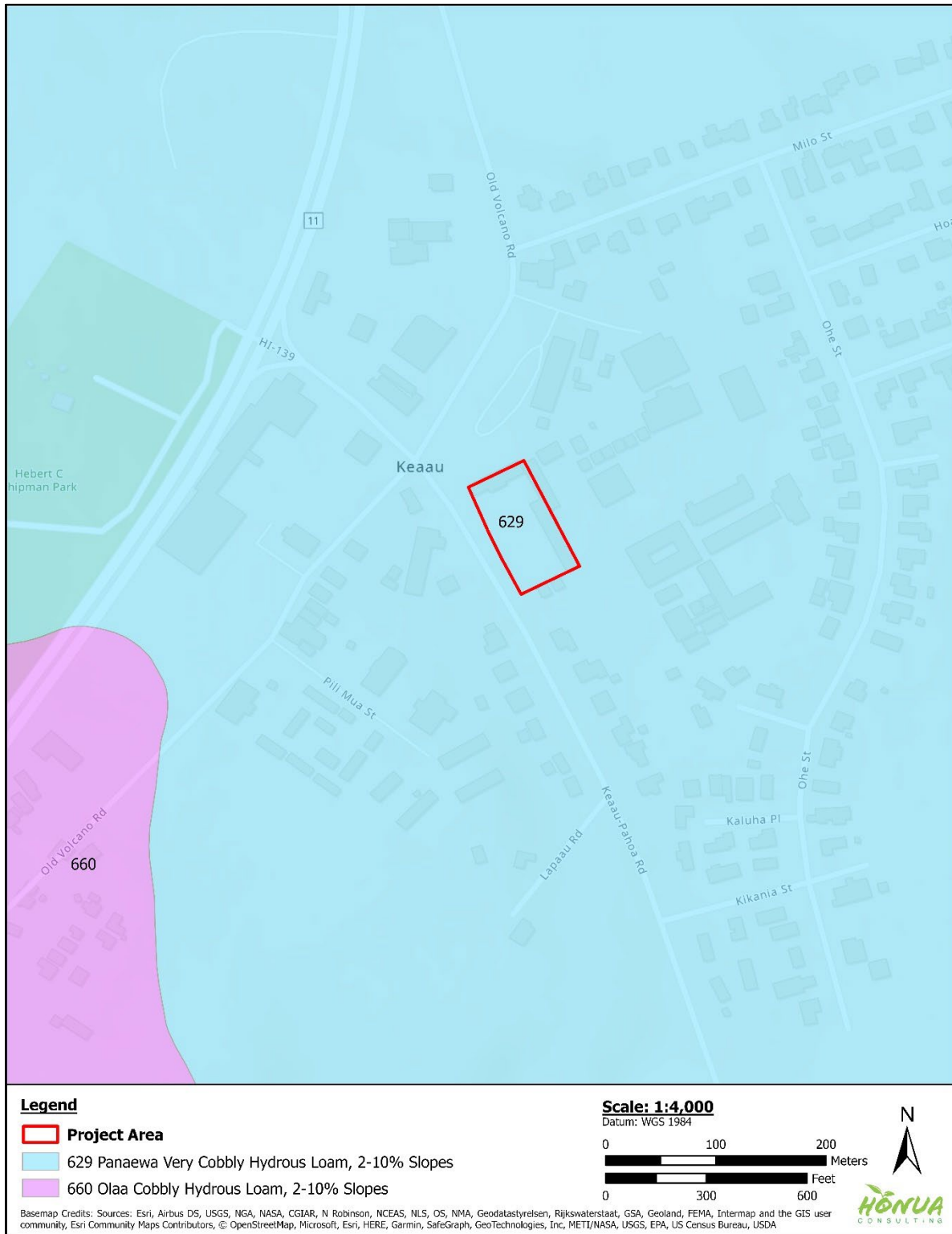


Figure 5. Soil survey data for the project area and environs (soils data from USDA Soil Survey Geographic database [SSURGO 2001] and Sato et al. 1973)

## Section 2 Cultural and Historical Context

This section includes a brief synthesis of relevant cultural and historical information related to the types of land uses in and around the project area from pre-Contact, traditional Hawaiian times into the historic period. Note that this section may be expanded if a formal archaeological inventory survey (AIS) is required.

The main objective of this section, primarily through the analysis of historical documents, maps and aerial images, as well as original texts and secondary sources, is to provide a project-specific picture of land use and modification over time.

Research was completed for this project using resources obtained from the SHPD's library in Kapolei, as well as the on-line database of the Environmental Review Program (ERP) within the Office of Planning and Sustainable Development which publishes EIS and EA documents; and referencing Honua's proprietary databases. We also utilized the following on-line sources to obtain cultural, historical, and archaeological data:

- OHA's Papakilo database (<http://papakilodatabase.com/main/main.php>)
- OHA's Kipuka database (<http://kipukadatabase.com/kipuka/>)
- Bernice P. Bishop Museum archaeological site database (<http://has.bishopmuseum.org/index.asp>)
- Bishop's Hawaii Ethnological Notes (<http://data.bishopmuseum.org/HEN/browse.php?stype=3>)
- University of Hawai'i-Mānoa's digital maps (<http://magis.manoa.hawaii.edu/maps/index.html>)
- DAGS' State Land Survey (<http://ags.hawaii.gov/survey/map-search/>)
- Waihona 'Aina website ([www.waihona.com](http://www.waihona.com))
- Digital newspaper archive "Chronicling America, Historic American Newspapers" (<http://chroniclingamerica.loc.gov/lccn/sn82014681/>)
- Hawai'i State Archives digital collections (<http://archives1.dags.hawaii.gov/>)
- U.S. Library of Congress digital map collections (<https://www.loc.gov/maps/>)
- USGS Information Service, including digital map collections (<https://nationalmap.gov/historical/index.html>)
- AVA Konohiki's website (<http://www.avakonohiki.org/>)

### 2.1 Hawaiian Cultural Landscape

Following initial settlement, traditional Hawaiian habitation was concentrated on the windward (ko'olau) shores of the main Hawaiian Islands where rainfall was consistent and streams flowed, providing ideal conditions for the establishment of agricultural production and fresh water availability. The windward district of Puna was traditionally known to be a place of fertile plains, long stretches of black sand, and cultivation of hala (*pandanus trees*) (Handy and Handy 1972:200, 205, 539-542). Following several centuries of occupation, the most fertile areas became quite populated and resulted in the need to expand to undeveloped areas, utilizing more remote lands of Puna and Kona Districts (leeward side) (Cordy 2000:130).

The project area is located within the ahupua'a (traditional land division) of Kea'au. The exact meaning of Kea'au is unknown and few traditional mythological accounts mention Kea'au specifically. According to Barrère and Crozier (1971:11), the lack of traditional accounts relating to ahupua'a within the Puna district, including Kea'au, is a result of missionary intervention and their "remarkably successful" conversion of the native population to Christianity. Reverend William Ellis and his party visited the district in 1823, paving the way for subsequent missionaries

like Rev. Titus Coan, who managed the Puna mission district, commencing in 1835. In 1841 Wilkes stated “[a]lmost all the hills or craters of any note [in Puna] have some tradition connected with them; but I found that the natives were now generally unwilling to narrate these tales, calling them ‘foolishness’” (Wilkes 1845:Vol. 4:186).

While few known mo‘olelo (oral-historical references) specifically address Kea‘au, they often speak of the Hawaiian deity, Pele, who is associated Kīlauea Volcano, situated within the district of Puna. Hurst and Shilz (1994:7) relay a legend concerning Pele that describes how the chief of Puna, Ke-Lii-Kuku, was traveling to O‘ahu, touting the richness of the agricultural lands of Puna to Kane-a-kalau (prophet of Pele). Following the encounter, the prophet forecasted the inundation of Puna lands by lava which did indeed occur (Hurst and Shilz 1994:7-8).

Two other mo‘olelo mention springs known to be present in the uplands of ‘Ōla‘a (also the former name of Kea‘au town). The first describes a brother named Ku-ka-ohia-a-ka-laka, and his sister that traveled from Kahiki to settle in the mountains and coast of Puna (Beckwith 1970:17). The mo‘olelo emphasizes the importance of trade and sharing, in particular with family affairs, within the ahupua‘a land structures that valued diversified resources and thoughtful management. The second mo‘olelo provides an account of the Ke‘amalu springs, located in upper ‘Ōla‘a. The story describes a romantic scenario that created an analogy of the beauty inherent to upper Kea‘au (Green et al. 1936: 1959-161). An excerpt from Maly and Maly (2004:19) provides details of the mo‘olelo of Ku-ka-ohia-a-ka-Laka:

The tradition of Ku-ka-ohia-a-ka-Laka dates from the period of settlement of these islands, when the gods themselves took human forms and resided upon the land. It is recorded that the gods Ku-ka-ohia-a-ka-Laka and his sister Ka-ua-kuahiwi came from Kahiki (the ancestral home land) to Hawai‘i, and settled at Kea‘au and ‘Ōla‘a, Puna. Ku-ka-ohia-a-ka-Laka and his wife resided near the shore at Kea‘au, and Ka-ua-kuahiwi, her husband and children lived upland in ‘Ōla‘a. Ku-ka-ohia-a-ka-Laka’s wife was stingy, and at one time denied Ka-ua-kuahiwi and her family fish that Ku-ka-ohia-a-ka-Laka had caught. Out of desperation, Ka-ua-kuahiwi turned her husband and children into rats, and turned herself into a spring of water. When Ku-ka-ohia-a-ka-Laka learned of this occurrence, he went to the spring and turned himself into an ‘ōhi‘a tree . . . This ‘ōhi‘a tree was known as a supernatural tree and the spring and tree were one of the wahi pana (special storied places) along the ancient trail leading to and from the volcano area in ‘Ōla‘a . The location of Ku-ka-ohia-a-ka-Laka was near the 13 mile marker of the old Volcano Road . . .

Although not technically occurring during a pre-Contact timeframe, a great resource for investigating the past environs of traditional Hawaiian settlements within a particular region of the island are the proceedings of the Boundary Commission: Documenting Traditional and Customary Practices and Land Boundaries (1873-1875). The Boundary Commission, formed in 1862, was established to legally set the traditional ahupua‘a boundaries that were previously awarded to ali‘i, konohiki, and foreigners during the Māhele (mentioned in detail in the following section). By 1874, authorization was given to the Commissioners of Boundaries to officially certify and legally establish ahupua‘a boundaries based on all gathered information. Part of this process relied on boundaries described in narratives provided by the longtime residences of the subject areas. The narratives were generally provided by Hawaiian language speaking, elderly residents (born between 1780’s to the 1820’s) that helped surveyors record ahupua‘a boundaries based on their

guidance. Boundaries were generally described as they rose in elevation continuing mauka from the shoreline. The following verbatim testimonies describe a wide breadth of traditional practices and land use for the areas that include Kea'au:

**District of Puna, Island of Hawaii, 3d J.C. Boundary Commission Testimony  
– Volume A. No. 1:191-198 June 4, 1873**

Uma K. Sworn: I was born at Keauhou at Keaau Puna, at the time of the return of Kamehameha 1st from Kaunakakai, Molokai [ca. 1791], I have always lived there and know the boundaries between Keaau and Waikahekahe. My parents pointed them out to me when we went after birds and sandal wood... [page 191] ...Alaalakeiki, which is the end of Waikahekahe Iki and Kahaualea joins Keaau. This place is at an old kauhale manu [bird catchers compound] (opposite a rise of ground, above the seventeen mile post, on the Volcano Road, about two miles above Kanekoa), thence mauka to Palauhulu, an ahua [rise] on the road to Kilauea, at the place where the road to Panau branches off. The boundary between Keaau and Kahaualea is on the South east side of Palauhulu about as far away from Hilo Court House to seashore. Thence the boundary runs mauka to Omaolaulau (he oiaina [a resting place] on pahoe) near the woods at Reeds bullock pen... thence mauka to Keekee, Kauhale kahi olona [house for stripping olonā bark for cordage] in Olaa. The boundary is a short distance from the Government road on the South East side. Thence to Kauwaanahunalii (he oiaina) this place is on Keaau and the boundary runs to the South East side of it. This is at the high ground where you can look down in the woods where the bullock pen is, thence to Kawaiaeae a large water pond (South East side of the road). The boundary of Keaau and Kahaualea is close to the pond, on the south east side, thence mauka to Kalaninauli, the land on the south east side being only about six chains wide thence to Puuenaena (large ohia trees on the road makai of the koa woods) a short distance South East of the Government road. Thence the boundary runs mauka to a place called Pohakuloa, a small cave south east of the Government road, and a very short distance above the koa woods, on the Government road to Kilauea. Thence Keaau is cut off by Keauhou. Olaa bounds Keaau on the north west side. Keauhou cuts Keaau off to Government road to Kilauea, then runs makai along the old [page 192] Government road, through the koa woods. Olaa being on the North side of the road and Keaau on the South east side. Thence down the road passing these points Palauhulu and to Kapueuhi, thence makai to Kahooku thence to Kanekoa, the houses on the South East side of the road are on Keaau, those on the other side are on Olaa, thence to Kamahiki (14 mile post). Thence to Kalehinapua (where there is a mauka road which goes to Hawelu's) thence to Kaahakanaka, on the outer road passed Hawelu's thence to Kaluakaiole (Kaakeakaiole) mauka of where Haanio road to Kukulu leaves the present traveled road, thence to Mahinaakaaka on the outer road, out side of Kahuku, thence down to where Kahopuaku's houses used to be (Makaulele) along the old road, this is as far as I know the boundaries between Olaa and Keaau. Kahopuaku's houses were on Olaa... (page 193)

## 2.2 Historic Period

The first recorded western accounts of Kea‘au come from a documented tour of Hawai‘i Island in 1823 by the missionary William Ellis and the members of the American Board of Commissioners for Foreign Missions (ABCFM), represented by Artemas Bishop and Asa Thurston. Following a tour of the Ka‘ū District, and a trip to Kīlauea Crater, the group traveled along the Puna coast, arriving in the village of Kea‘au, providing this account:

Soon after five p.m. we reached Kaau [Kea‘au], the last village in the division of Puna. It was extensive and populous, abounding with well-cultivated plantations of taro. Sweet potatoes, and sugar-cane; and probably owes its fertility to a fine rapid stream of water, which, descending from the mountains, runs through it into the sea. . . . [Ellis 1963:212]

In his writings, Ellis describes the coasts of Kea‘au Ahupua‘a as a “wilderness of pandanus” (Ellis 1963:214) and the interior upland forests as uninhabited wilderness with sparse inland settlements. According to Ellis, settled populations were generally concentrated along the coast, where “the towns and villages of the natives are thickly scattered” (Ellis 1963:4).

### 2.2.1 The Māhele

In the years between 1847 and 1855, land was divided under the Māhele. Lands were given to the Crown (the occupant of the throne), government, konohiki (headman of an ahupua‘a), and hoā‘āina (native tenants). Kuleana (right or privilege) Land Commission Awards (LCAs) were awarded to natives who actively lived and worked on their lands. LCAs can be researched to provide information on how the land was utilized and the resources it contained. The entire ahupua‘a of Kea‘au was considered chief lands, granted to William C. Lunalilo as a portion of LCA 8559-B, designated ‘āpana 16. Only one kuleana award (13.64 acres) was granted within the ahupua‘a of Kea‘au, in an area named Halauloa (LCA 8081, RP 4360) to Hewahewa, who served as kahuna nui (high priest) to Kamehameha I and II, is one of the most famous religious figures in Hawaiian history. According to the claim, the unfenced land only contained coffee (Hurst and Schilz 1994:12–13, 17). In 1865, the LCA was sold to the Roman Catholic Church. The kuleana award is located east of the project area, to the south of the ‘Ōla‘a Sugar Plantation mill.

### 2.2.2 Mid- to Late 1800’s

By the 1860’s, the guardians of Lunalilo’s estate mortgaged the entire ahupua‘a of Kea‘au to Honolulu banker Charles C. Bishop. Nearly a decade later in September of 1872, 60,020 acres of Kea‘au Ahupua‘a were leased to O.B. Spencer and subsequently re-assigned to Rufus A. Lyman two years later (Hurst and Shilz 1994:13). In 1875, Lyman conducted a survey of his lands, documenting vegetation zones, salient landmarks, and traditional features. Lyman’s survey recorded a heiau named Kawiakawaa, located near the shore at the Wai‘akea/Kea‘au Ahupua‘a boundary (Boundary Commission Testimony, Volume A. No. 1:191-198, June 4, 1873; pg. 197-198). A survey of the area was conducted in 1974 by the Bishop Museum which found no evidence of the heiau (Ewart and Luscomb 1974:52). According to reports dating to the 1880’s, W.H. Shipman may have collected rocks from the heiau to construct a cattle pen (Ewart and Luscomb 1974:12). The place name of “Kaluaike water” was also mentioned in the survey, said to be located on the east side of the Hilo/Puna Road (Ewart and Luscomb 1974:13).

In 1882, the ahupua‘a of Kea‘au was sold to William H. Shipman, Samuel Damon, and J. Elderts. Two years later Shipman would buy out all of his partners’ interest in the land, becoming sole owner. He primarily used the lands for cattle grazing and stockyards for his two endeavors, Hilo Meat Market and Waiakea Stock Ranch. A 40-ft right-of-way, needed for the construction of Volcano Road, was granted to Shipman in 1889 and completed four years later.

### 2.2.3 Commercial Sugarcane in and near the Project Area

As the latter part of the nineteenth century approached, continuing into the twentieth century, traditional land use within the District of Puna started to change. Traditional agricultural practices were adapted to accommodate western industries of ranching, sugarcane, lumber, and coffee. By the 1850’s the Kea‘au Ranch was grazing cattle throughout the area and the sugar industry, including the ‘Ōla‘a and Puna Sugar Company, were in full operation, continuing until the 1980’s (Maly 1998, Dorrance and Morgan 2000). Hawai‘i Railway Company began laying tracks in the beginning of 1900 to haul unprocessed sugarcane and passengers from the sugarcane fields in the lower Puna district to mills in Pahoā and Kea‘au, ultimately continuing to Hilo (Clark et al. 2001). At the height of operations, the railroad passed through Maku‘u, Holana, and Pōpōkī Ahupua‘a. By 1946, all railroad operation had ceased on Hawai‘i Island. Figure 6 and Figure 9 show the project area in relation to the ‘Ōla‘a Sugar Company mill and associated railroad infrastructure.

### 2.2.4 Kea‘au Middle School and Contemporary Land Use

A few years prior to the end of sugar cultivation, the grounds of the current project area were developed into the ‘Ōla‘a Elementary School. The following is a brief history of the campus according to the Accountability Resource Center Hawai‘i (ARCH 2013):

Kea‘au Middle School was originally founded as Ola‘a School over one hundred years ago, when Hawaii was a territory of the United States. Beginning as an elementary school in 1939 it became a K-9 school and was then known as Kea‘au Elementary and Intermediate School. In the 1980’s the 9th grade was transferred to high school and in 1997 the elementary and middle schools became two separate entities. Since 1998, the school has been recognized as Kea‘au Middle School (KMS). It includes sixth, seventh and eighth grades and occupies the site of the original campus. On March 4, 2000, KMS celebrated its 100th anniversary as a public school on the same physical site.

An article, published in the *Honolulu Star-Bulletin* (Kua 2000), entitled “Keaau: an education town”, provides a similar narrative for life in Kea‘au: “Keaau’s lifestyle revolved around the sugar plantation that eventually became Puna Sugar Co. The old Keaau School, in fact, was built in 1900 by the plantation, which initially called it Olaa School.” None of the original ‘Ōla‘a School buildings exist on the property today. Additionally, Kea‘au school buildings are not on the Hawai‘i Register of Historic Places despite the historic-aged context of the school grounds. Figure 7 and Figure 8 show the project area on twentieth century Sanborn Fire Insurance maps. Figure 10, an aerial photograph from 1965, clearly shows the school campus and Kea‘au town which both continue to develop today in response to an increase in population residing in several residential subdivisions located nearby.



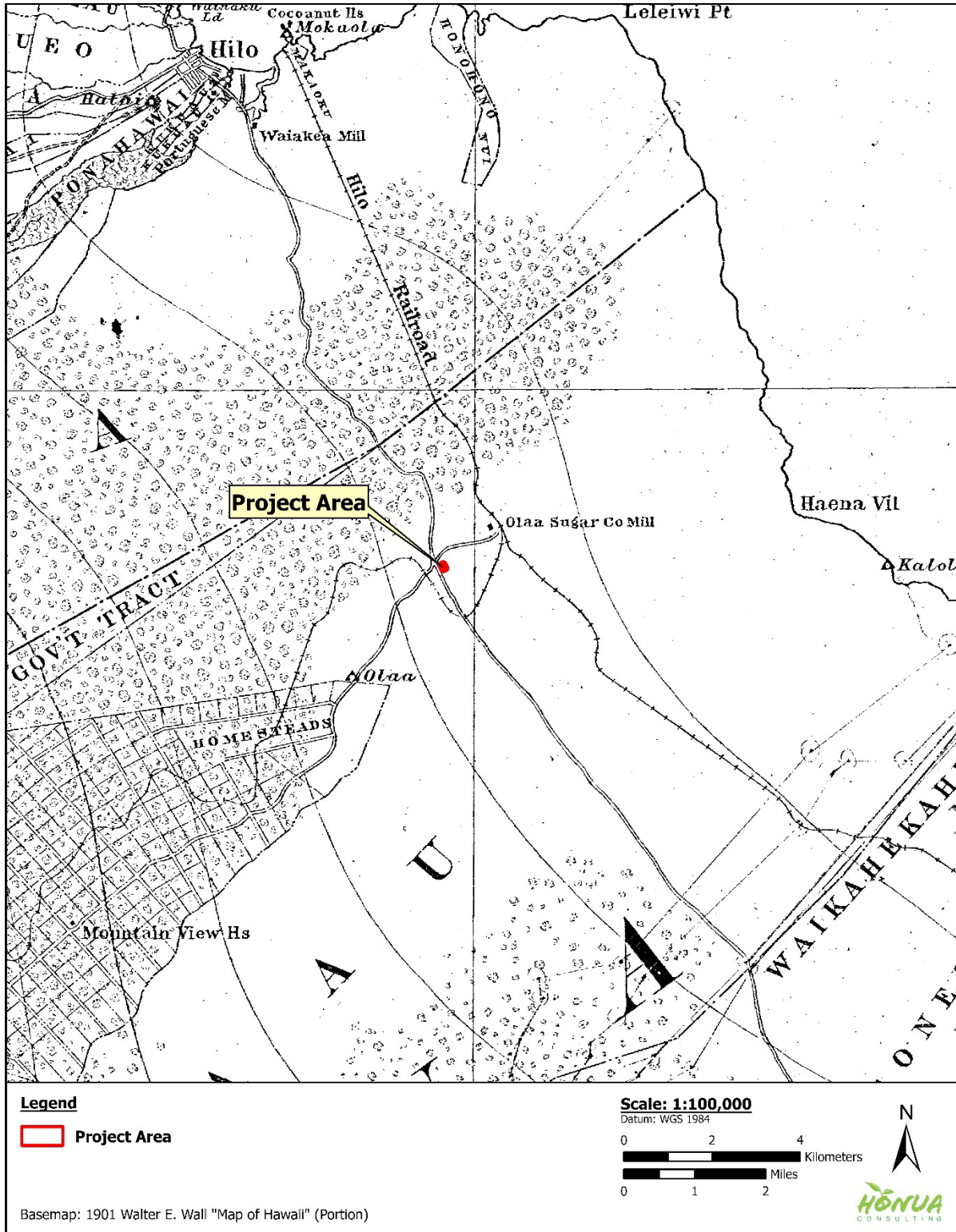


Figure 6. Portion of a 1901 Alexander map (Registered Map 2060) showing the project area (base map source: DAGS Land Survey Map Search, <http://ags.hawaii.gov/survey/map-search/>)

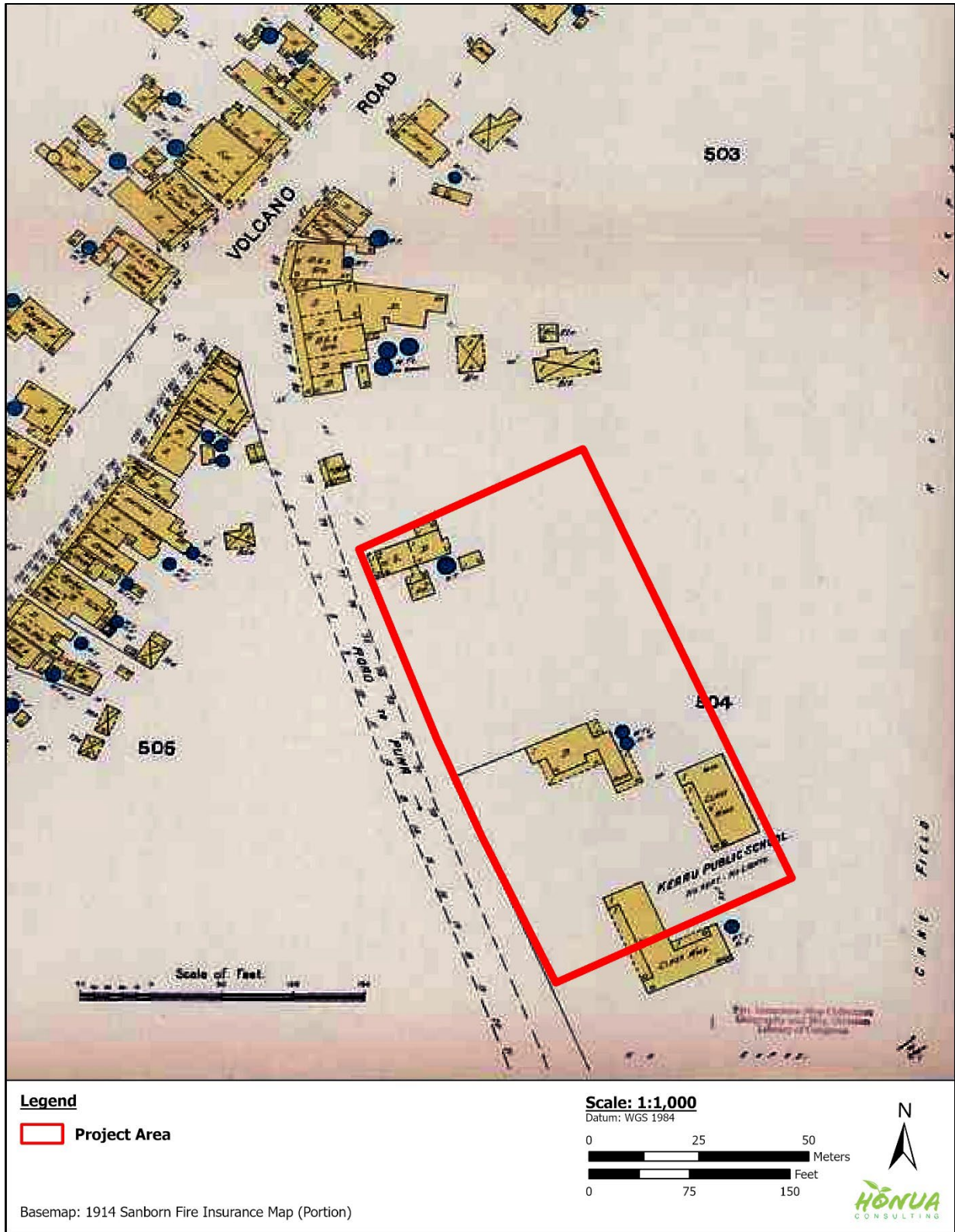


Figure 7. 1914 Sanborn Fire Insurance map showing Kea'au Public School within the project area

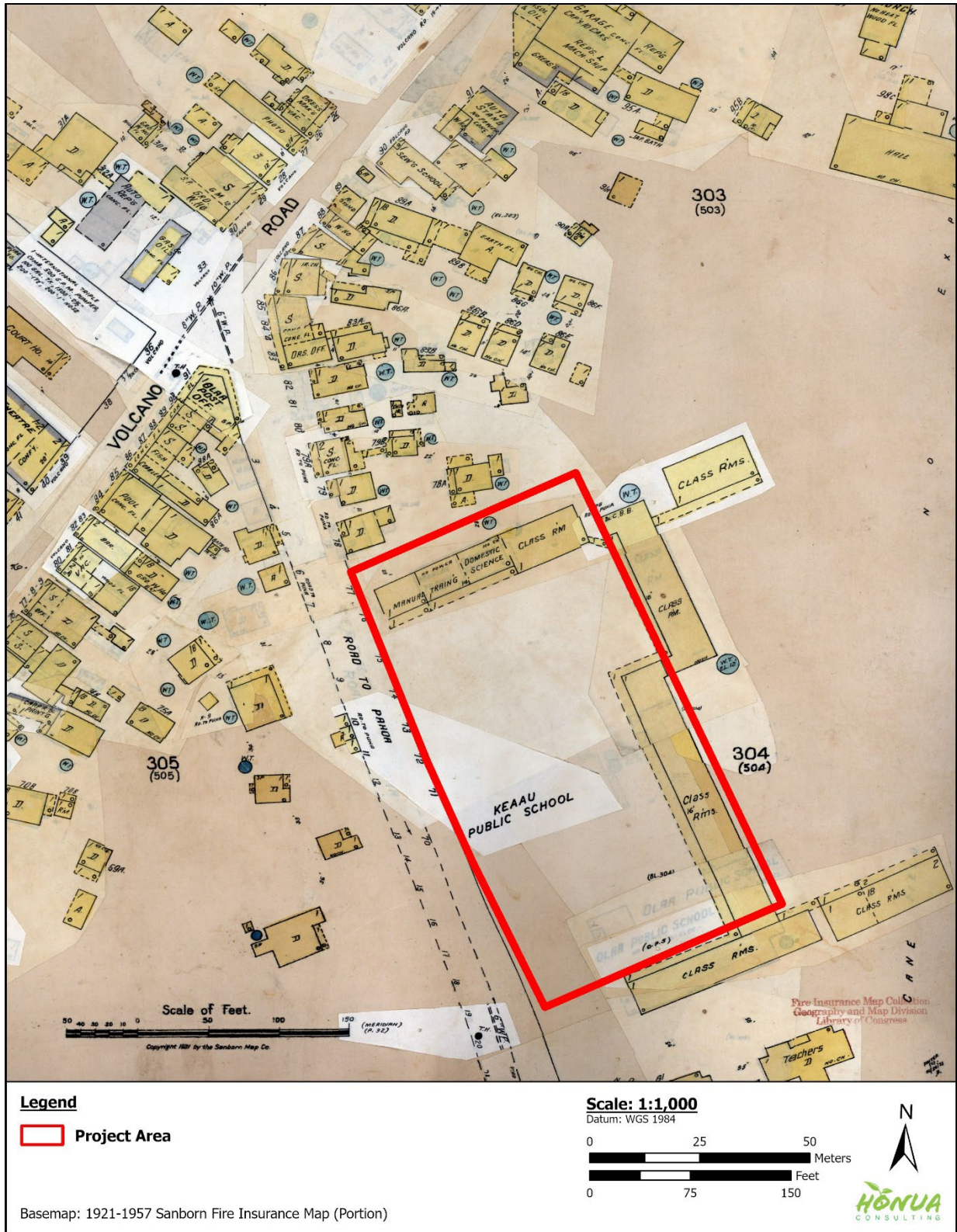


Figure 8. 1921-1957 Sanborn Fire Insurance map showing reconfiguration of Kea'au Public School within the project area

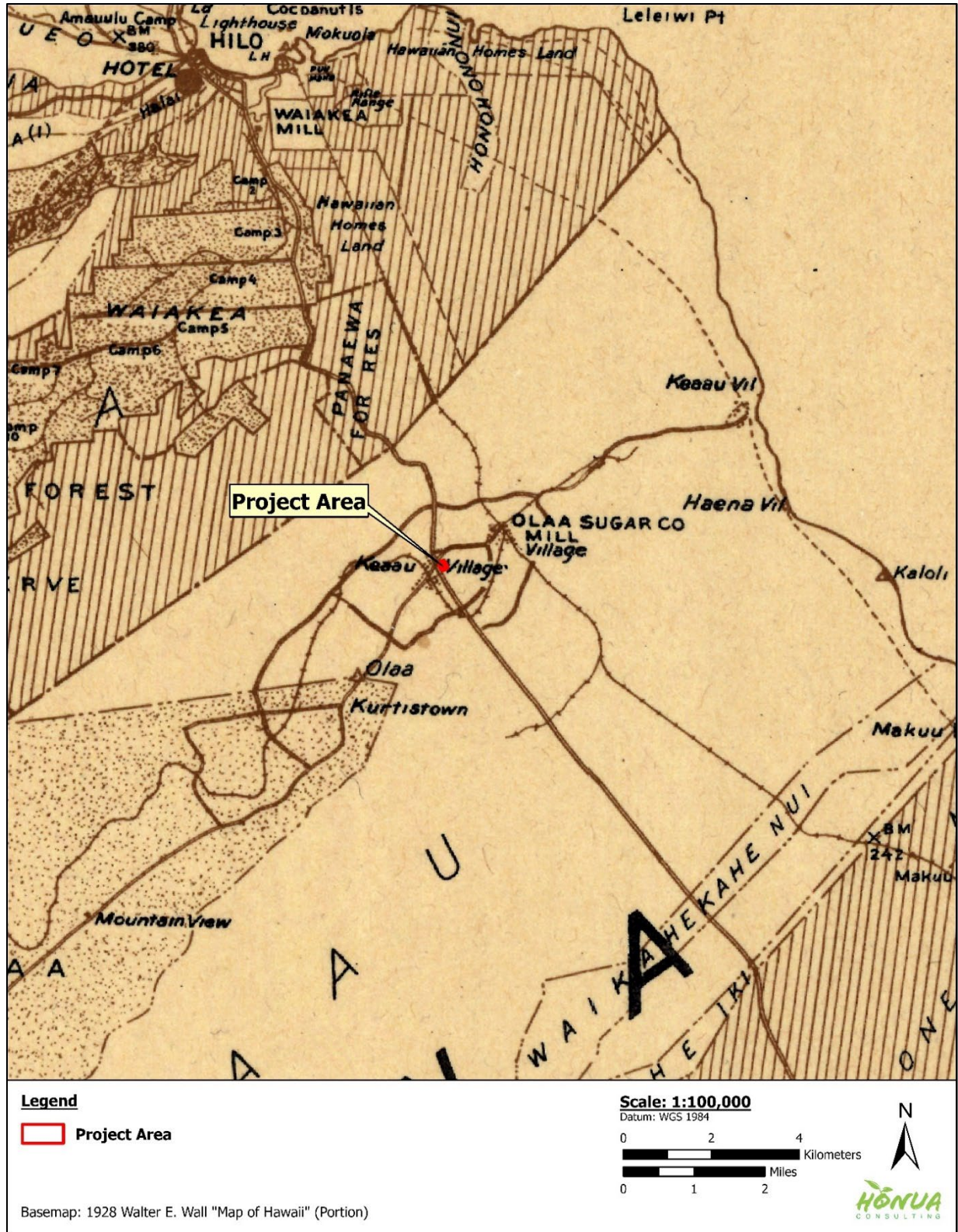


Figure 9. Portion of a 1928 Wall map showing the project area (base map source: University of Hawai'i-Mānoa's digital maps, <http://magis.manoa.hawaii.edu/maps/index.html>)



Figure 10. Portion of a 1965 aerial image showing the project area (base map source: University of Hawai‘i-Mānoa’s digital maps, <http://magis.manoa.hawaii.edu/maps/index.html>)

## Section 3 Archaeological Context

---

In this section, relevant previous archaeological research is summarized in order to reconstruct human use and modification of the land in and near the project area. The main purpose of presenting this information is to develop predictive data about the types and distribution of historic properties and their component features we would expect to encounter during the field inspection and proposed project activities. These results aid in assisting interpretation of any new findings.

Table 1 and Figure 11 through Figure 14 summarize and depict the location and results of previous archaeological studies in and near the project area. For the purposes of this study, this discussion of previous work and results is limited to a radius of approximately one mile around the project area.

### 3.1 Archaeological Studies Within the Current Project Area

To the best of our knowledge, three previous archaeological studies have been completed on the Kea‘au Middle School property, which included the current project area (Figure 11). Previous completed studies within the project area include a literature review and field inspection for wastewater/cesspool upgrades to Department of Education (DOE) properties (Hammatt and Shideler 2006), subsequent archaeological monitoring for that project (Wilkinson et al. 2008), and a literature review and field inspection for demolition of several Kea‘au Middle School buildings (Wheeler et al. 2015).

Consultation with Cultural Surveys Hawai‘i (CSH) indicates that a fourth study, a draft archaeological monitoring report with a request for a State Inventory of Historic Places (SIHP) number for the ‘auwai documented in the northern portion of the current project area, is currently under review with the SHPD. The findings of this draft report are largely unknown and results are not included in the current report.

In addition, research indicates that a Kea‘au Historic District (SIHP #50-10-44-7389) was proposed to encompass the “Kea‘au Makai Village” near the intersections of Old Volcano Highway, Milo Street and Pahoia Highway (Kea‘au-Pahoia Road), including the current project area (Bonk n.d. [ca. 1995], see Appendix A).

Included in the district are three churches, reflecting the racial and religious make-up of the district, the plantation store, plantation housing, a community hall, the commercial district, the school [current project area], a row of assistant manager’s houses, and the manager’s house. (Bonk n.d.: Section 7, Page 2)

The Kea‘au Historic District (SIHP # -7389) was recommended significant under “Criterion a” for its association with events that have made a significant contribution to broad patterns of Hawaiian history, particularly its historical association with the sugar mill and plantation from 1920-1950. Following a review of nominated and listed properties on the Hawai‘i and National Registers of Historic Places on-line database (updated Oct. 3, 2022, <https://dlnr.hawaii.gov/shpd/>), it does not appear that the site was officially designated as a district. It is therefore not shown on Figure 14.

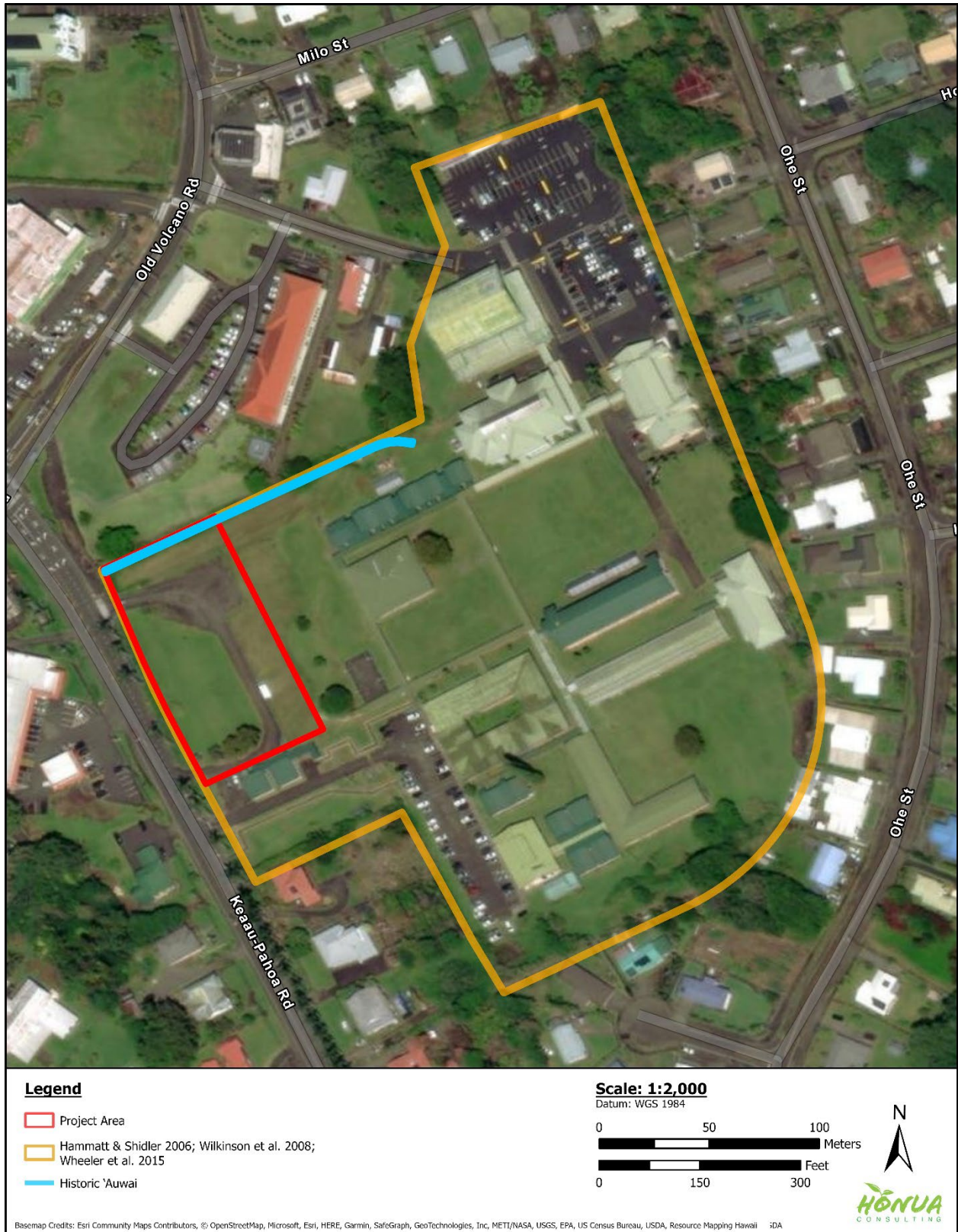


Figure 11. Aerial showing previous archaeological studies within the current project area

### **3.1.1 Hammatt and Shideler 2006**

In 2006, CSH conducted a literature review and field investigation at five schools in the Puna District for a DOE Cesspool project (Hammatt and Shideler 2006). Research was conducted and a field inspection was completed at Kea‘au Middle School. The study found the area was not recorded as heavily utilized traditionally; and, whatever sparse archaeological evidence that may have once been located in their project area would have been obliterated by a century of intensive sugarcane cultivation. Their study also noted the potential for archaeological finds or human remains with the project area appeared very low and no further work was recommended.

### **3.1.2 Wilkinson et al. 2008**

In 2007, CSH conducted archaeological monitoring for the DOE wastewater/cesspool project (Wilkinson et al. 2008). The project included excavations for five septic tanks and associated pipelines. Excavations extended a maximum of 17 feet deep and approximately 18 m (60 ft.) of trenching was conducted. Stratigraphy consisted of fill layers associated with previous construction projects on top of natural bedrock. No subsurface deposits or cultural materials were encountered. The closest recorded profile to the current project area, “Project Location 35.01,” was located adjacent to the northeast side of Building B (now demolished). The profile was obtained from an excavated trench measuring approximately 30 ft. long, 28 ft. wide, and 12 ft. deep. The profile identified a modern A Horizon (ground surface) composed of silt loam landscaping fill material (Stratum I), over a very cobbly silt loam fill (Stratum II), and natural basalt bedrock (Stratum III) (Figure 12).

### **3.1.3 Wheeler et al. 2015**

In 2013, CSH conducted a literature review and field investigation for the demolition of Buildings B, D, E and G at Kea‘au Middle School and associated utilities (Wheeler et al. 2015). The buildings were found to have been constructed between 1900 and 1939. The field inspection identified an ‘auwai (irrigation ditch) running east/west along the northern border of the project area, near Buildings D and G. The study recommended the project proceed through coordination with the SHPD under an archaeological monitoring program. An archaeological monitoring plan (AMP) was completed for the project (Wilkinson and Hammatt 2016). The buildings that were the subject of the Wheeler et al. (2015) study have all been razed and the draft archaeological monitoring report is currently under SHPD review.



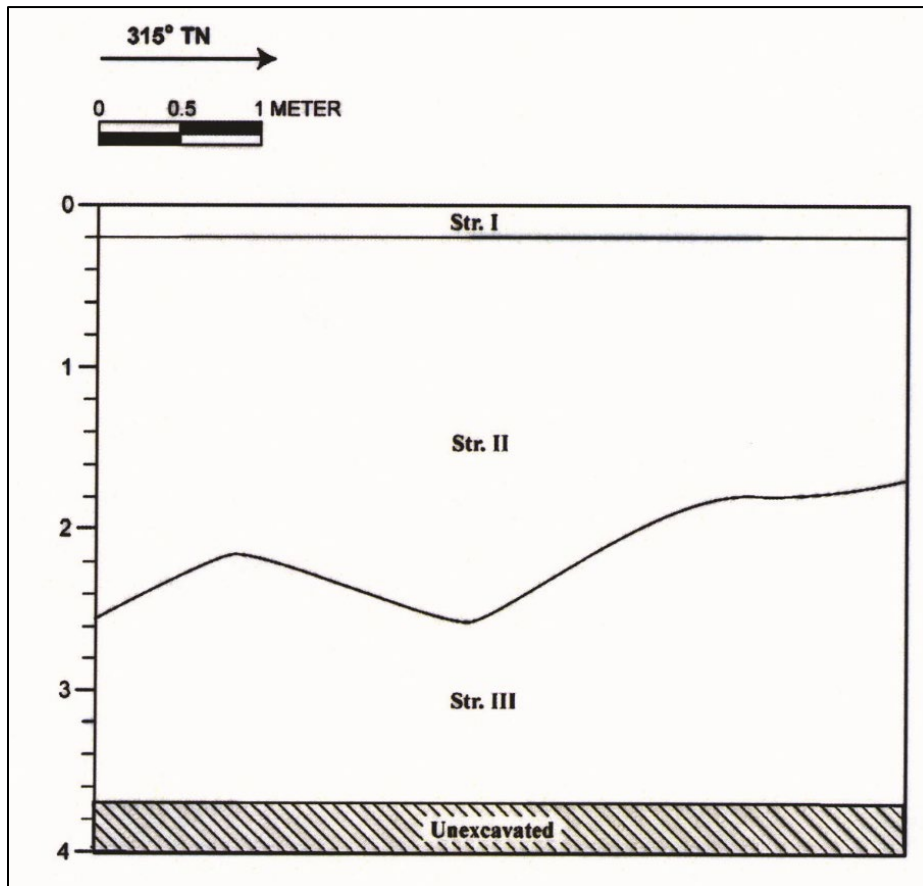


Figure 12. Photo and profile of Project Location 35.01 (Wilkinson et al. 2008:16)

### 3.2 Previous Archaeological Studies Near the Project Area

As shown in Figure 13 and Figure 14, and summarized in Table 1 below, several projects have been conducted adjacent to, and in the vicinity of, the current project area. Findings mostly consist of historic surface sites associated with sugarcane agriculture.

Kea‘au was once part of a vast commercial sugarcane operation. The current project area is located to the east of a wide area originally designated as containing two ‘Ōla‘a Sugar Plantation camps, Keaau Camp and Nine Mile Camp (SIHP #50-10-44-7389) (Wright 1973). This site area, which was not clearly defined, is not included on Figure 14. Neither camp is within the current project area. SIHP # -7389 was later expanded and proposed to include the Kea‘au Historic District (SIHP # -7389), or “Kea‘au Makai Village,” which included the old ‘Ōla‘a School lot (current project area) (see Appendix A). However, research indicates the historic district was not formally designated (see previous discussion).

Use of the project-area land for commercial agriculture would have destroyed or substantially degraded/damaged most evidence of pre-Contact Hawaiian sites both above and below the ground surface. Furthermore, the school grounds have been developed, including extensive mass excavation, since the early twentieth century, which would have also disturbed the native soils to depth.

The following studies were conducted within 1.0 mile of the current project area:

- Rosendahl and Walker (1992) conducted an archaeological field inspection of an approximately 46-acre parcel southwest of the project area in ‘Ōla‘a Ahupua‘a. Their results demonstrated that the entire parcel was heavily impacted by previous agricultural activities, primarily sugarcane. No historic properties or cultural materials were identified during the survey and the project report recommended “no further work” for the study area.
- Hunt (1993) performed an archaeological survey of approximately 600 acres of Kea‘au lands owned by the Shipman Company, which surround the current project area. The survey concluded that most of the 600-acre area was heavily impacted by sugarcane cultivation with the exception of five, less impacted areas, containing a total of 50 features, including mounds, platforms, walls, and multi-feature site complexes. The features were interpreted by Hunt (1993:11–12) as likely “associated with historic plantation activities, such as field clearing, and other cultivation work. It is possible that some features may date to earlier, prehistoric times, but further research, including test excavations would be needed to evaluate such a hypothesis.” The study recommended an archaeological inventory survey prior to any future development in those specific, feature-laden areas.
- In 1994, Ogden Environmental and Energy Services, Inc. (OGDEN) reported on an archaeological survey of a portion of the Kea‘au-Pāhoa road that traverses Kea‘au town, 500 meters east of the project area (Hurst and Schilz 1994). The report concluded that the area was heavily impacted by historic agricultural endeavors, specifically sugarcane cultivation, and modern residential development. Apart from

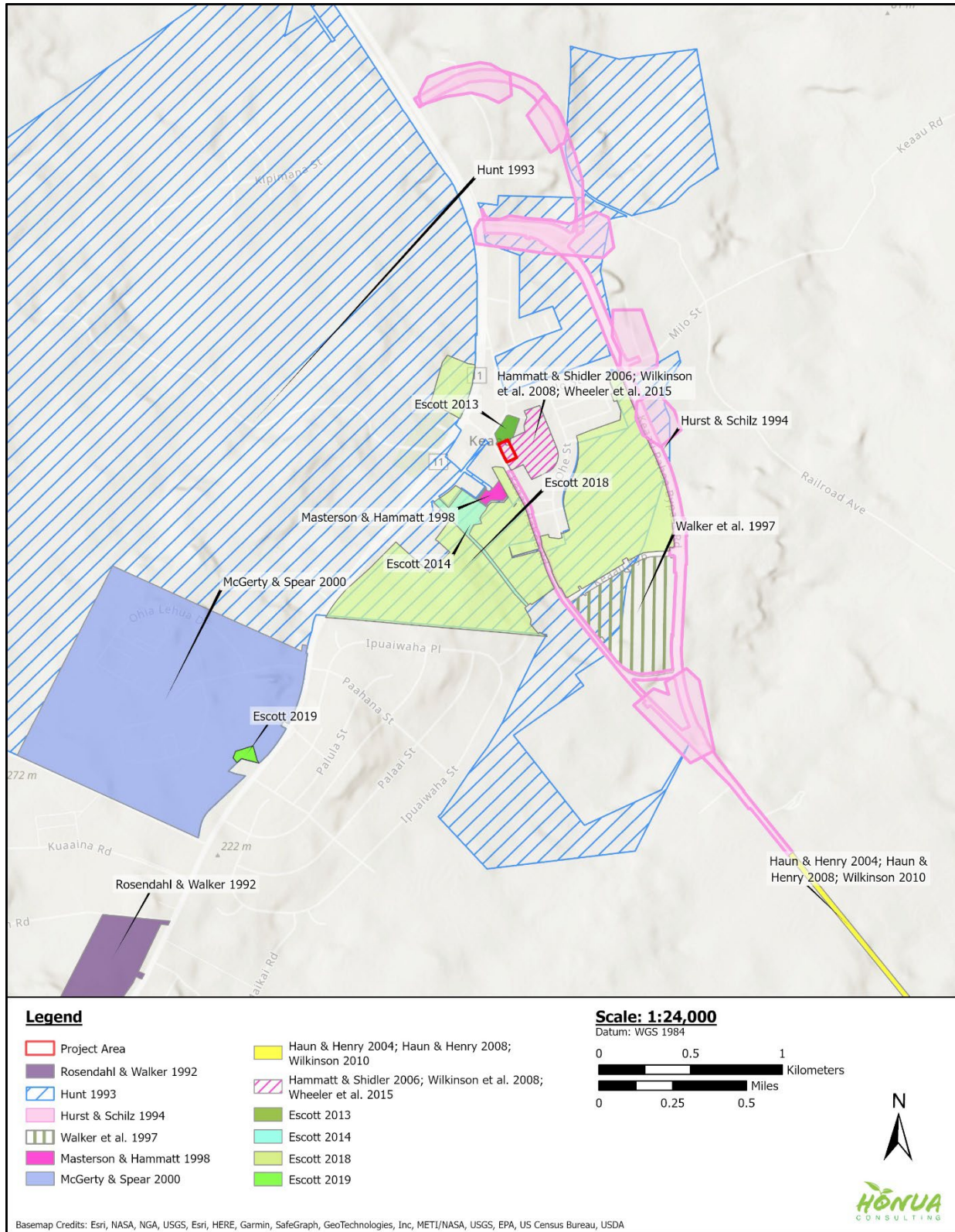


Figure 13. Previous archaeological investigations within 1.0 mile of the project area

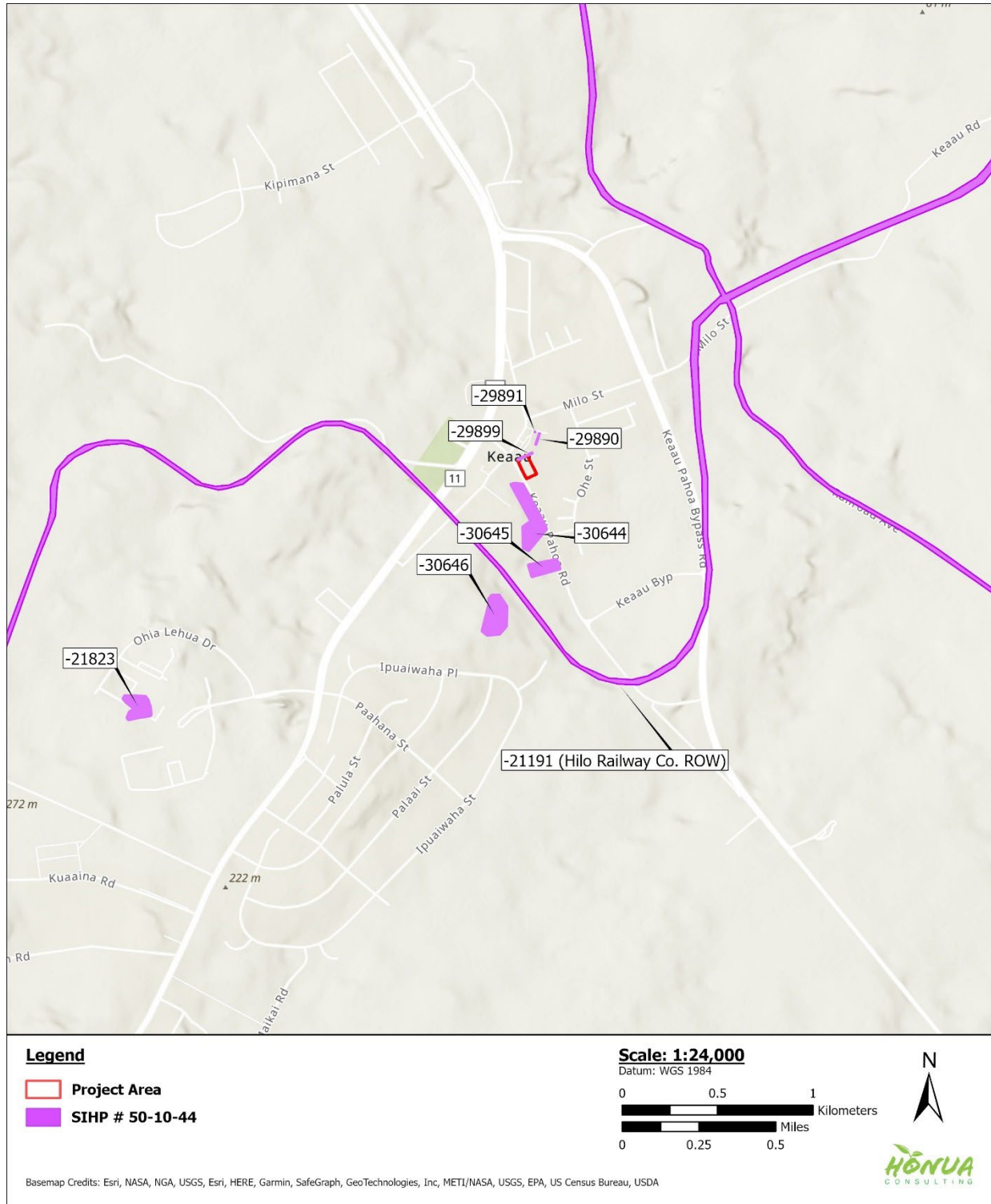


Figure 14. Previously documented historic properties within 1 mile of the project area

Table 1. Previous Archaeological Studies and Results Documented Near the Project Area

Author/Date <sup>1</sup>	Type of Study	Location	Results & Comments <sup>2</sup>
Wright 1973 (not included on Figure 13)	Hawai'i Register of Historic Places short form	Kea'au town	'Ōla'a Sugar Plantation camps, Keaau Camp and Nine Mile Camp (Site #50-10-44-7389) (not included on Figure 14)
Rosendahl and Walker 1992	Archaeological field inspection	TMK: [3] 1-7-017:003; 46 acres in 'Ōla'a	No historic properties or cultural materials identified
Hunt 1993	Archaeological survey	TMKs: [3] 1-6-003:003, 007, 008, 011, 012, 027, 029, 058, 073, 075, 084, 086, and 090; 600 acres; Shipman Lands in Kea'au	50 archaeological features were identified including walls, platforms, and mounds. Features were found in areas less impacted by cane cultivation, likely associated with historic plantation activities; features not assigned SIHP numbers
Hurst and Schilz 1994	Archaeological survey	TMK: [3] 1-6-003; Kea'au town Section Project no. 130B-01-92 (5 areas)	No historic properties or cultural materials identified
Bonk n.d. [ca. 1995] (not included on Figure 13)	Hawai'i Register of Historic Places	TMK: [3] 1-6-002, near Old Volcano Hwy/Milo St./and Pahoia Highway	Proposed Kea'au Historic District (SIHP #50-10-44-7389), <b>including the current project area</b> , was not designated a historic district (not included on Figure 14)
Walker et al. 1997	Historical and archaeological research	TMKs: [3] 1-6-03:003 (por.), 015 (por.), 084 (por.); 75 acres for Kea'au High School Site	Hilo Railway Company Right-of-Way (ROW) (SIHP #50-10-44-21191)
Masterson and Hammatt 1998	Archaeological Inventory Survey (AIS)	TMKs: [3] 1-6-143:018 (por.) and 039 (por.); 2.46 acres for Kea'au Elderly Housing project	Noted a modern "Filipino Camp"; no SIHP number assigned

Author/Date <sup>1</sup>	Type of Study	Location	Results & Comments <sup>2</sup>
McGerty and Spear 2000	AIS	TMK: [3] 1-6-003: por. 012; 300 acres for KSBE East Hawai'i Campus, Kea'au	Seven mound features (SIHP # 50-10-44-21823) associated with sugarcane clearing
Haun and Henry 2004	AIS turned into an Archaeological Assessment (AA)	Various TMK, 2.2-mile corridor along Keaau-Pahoa Rd, Kea'au	No historic properties or cultural materials identified
Hammatt and Shideler 2006	Archaeological Literature Review & Field Inspection (LRFI)	Five DOE Schools in Puna District; <b>including current project area</b>	No historic properties or cultural materials identified on Kea'au Middle School grounds
Haun and Henry 2008	AIS	TMKs: [3] 1-6-04:011, 047-053, 055, 056 and 1-6-64:266-269, 283-286; 2.4-mile corridor along Keaau-Pahoa Rd, Kea'au	Waipahoe Stream Bridge (SIHP #50-10-44-26874) (not shown on Figure 14)
Wilkinson et al. 2008	Archaeological Monitoring	TMKs: [3] 1-6-002:001 and 1-6-003:059; Kea'au Middle School, <b>within current project area</b>	No historic properties or cultural materials identified
Escott 2013	AIS	TMK: [3] 1-6-002:004, 006, and 007, Kea'au HMSA Site; adjacent to current project area	Three historic sites: rock wall (SIHP #50-10-25-29890), remnant brick walkway (SIHP #50-10-35-29891), and remnant concrete sidewalk (SIHP #50-10-35-29899, adjacent to current PA)
Escott 2014	Archaeological Field Inspection	TMK [3] 1-6-143:018 & 042, 9.251 Acres of W.H. Shipman, Ltd land	'Ōla'a Sugar Company Nine Mile Camp (SIHP #50-10-44-7389) had been removed (not included on Figure 14)

Author/Date <sup>1</sup>	Type of Study	Location	Results & Comments <sup>2</sup>
Wheeler et al. 2015	LRFI	TMKs: [3] 1-6-002:001 and 1-6-003:059; Kea‘au Middle School, <b>within current project area</b>	Four Buildings (Buildings B, C, D, and E) were found to be more than 50 years old; consultation with SHPD architecture branch was recommended; the study also documented an ‘auwai (irrigation ditch) documented directly north of Buildings D and G, no SIHP number assigned
Escott 2018	AIS	Various TMK, W.H. Shipman property	Six plantation dwellings and six garden features (SIHP #50-10-44-30644), a rock wall (SIHP #50-10-44-30645), and 13 historic-era sugarcane features (SIHP #50-10-44-30646) including 12 rock clearing mounds and a retaining wall
Escott 2019	Archaeological Field Inspection	TMK: [3] 1-6-003:012 (por.), 1.58 acres of Kamehameha School Hawai‘i Campus	No historic properties or cultural materials identified
Wilkinson et al. 2010	AIS	TMK: [3] 1-5 (various plats and parcels); 1-6 (various plats and parcels), Kea‘au-Pāhoa Road	No sites near current project area

<sup>1</sup> Arranged chronologically

<sup>2</sup> SIHP = State Inventory of Historic Places

historic fencing remnants associated with a nearby plantation, no other historic properties or cultural materials were identified during the survey.

- In 1997, PHRI conducted historical and archaeological research for the future Kea‘au High School site, located about one kilometer to the southeast of the current project area (Walker et al. 1997). The study identified a portion of the historic Hilo Railway Company Right-of-Way (ROW) within the study area, assigned SIHP #50-10-44-21191. No other historic properties or cultural materials were identified during the survey.
- In 1998, Cultural Surveys Hawaii (CSH) performed an archaeological inventory survey (AIS) of a 2.5-acre parcel located approximately 200 meters to the south of the current project area (Masterson and Hammatt 1998). Evidence of a modern camp, utilized in the 1980’s, was noted in the western portion of the study area, characterized as a modern Filipino Camp. No historic properties were identified during the survey.
- In 1999, Scientific Consultant Services, Inc (SCS) conducted an AIS for a proposed Kamehameha Schools Bishop Estate (KSBE) East Hawai‘i Campus project, located approximately 1.8 km to the southwest of the current project area (McGerty and Spear 2000). The study recorded several historic features (SIHP #50-10-44-21823) in remnant condition which were associated with heavy use of the area for sugarcane cultivation.
- In 2004, Haun and Associates performed an AIS along a 2.2-mile portion of the Kea‘au-Pahoa Road, starting approximately 1.7 km southeast of the current project area (Haun and Henry 2004). The survey area included a 5.4-m (18.0-ft) wide strip directly adjacent to the makai edge of the road. No historic properties or cultural materials were identified during the survey. In 2008, Haun and Associates surveyed the same portion of road, this time with a strip width of 30 ft. makai of the road, documenting the historic Waipahoehoe Stream Bridge (SIHP #50-10-44-26874). No other historic properties or cultural materials were identified during the 2008 survey.
- In 2013, SCS conducted an AIS of 3.0 acres in Kea‘au town, located adjacent to the north boundary of the current project area (Escott 2013). The investigation consisted of a surface survey, no excavation was performed. Three sites were documented, including a rock wall (SIHP #50-10-35-29890), a remnant portion of a brick walkway (SIHP #50-10-35-29891), and two remnant portions of a cement sidewalk (SIHP #50-10-35-29899). The features were associated with early 1900-1950 residential and commercial buildings which were demolished in 1996. Figure 15 shows locations of the documented sites. Figure 16 provides a photo of the site, a concrete sidewalk, documented adjacent to the current project area.



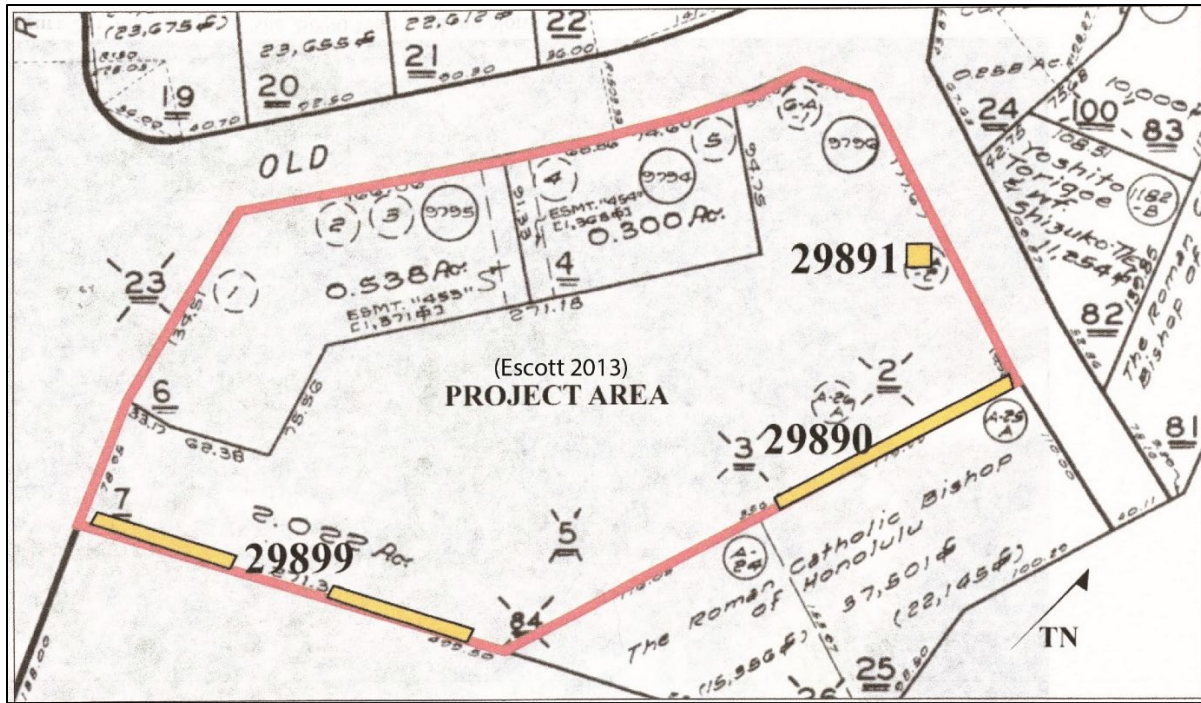


Figure 15. TMK: [3] 1-6-002 showing the locations of sites documented by Escott (2013:35), adjacent to the current project area



Figure 16. Photo of SIHP #50-10-35-29899 (concrete sidewalk) (Escott 2013:43)

- In 2014, SCS conducted an archaeological field inspection of 9.251 acres of W. H. Shipman, Ltd. land in Kea‘au town (Escott 2014). No historic properties were identified; however, the property was found to be the former location of the ‘Ōla‘a Sugar Company (later Puna Sugar Company) Nine Mile Camp (SIHP #50-10-44-7389) (exact site dimensions are not known, not shown on Figure 14). The camp was one of nine plantation villages in the area. Nine Mile Camp was documented as being demolished between 1980 and the early 1990s. A large amount of rubbish was noted throughout the property and the remains of one collapsed structure and a small, modern house garden were identified. No further work was recommended.
  
- In 2016, SCS conducted an AIS on approximately 254 acres of land owned by W.H. Shipman, Ltd. located in Kea‘au town (Escott 2018). Ten backhoe trenches measuring between 12-19 meters in length were excavated, finding only modern trash. Three historic properties were documented during surface survey. Sites included six plantation dwellings of Luna Row and six garden features (SIHP #50-10-44-30644), a rock wall (Site #50-10-44-30645) marking the residential lot of the plantation doctor, and 13 historic-era sugarcane features (SIHP #50-10-44-30646) including 12 rock clearing mounds and a retaining wall. No further work was recommended for the sites.
  
- In 2019, SCS conducted an archaeological field inspection of 1.58 acres of the 302-acre Kamehameha School Hawai‘i Campus in Kea‘au town for a well site (Escott 2019). During the twentieth century, the land was utilized as part of the ‘Ōla‘a Sugar Company (later the Puna sugar Company) field system. Bishop Estate purchased the land in 2000 for the new school. The field survey found the property to contain no archaeological sites.
  
- In 2010, an AIS was conducted by CSH for a road widening project along Kea‘au-Pāhoa Road (Wilkinson et al. 2010). The report was not accessed for the current report; however, Escott (2018:25) states that no sites were documented near Kea‘au town in the study.

## Section 4 Results of Field Inspection

---

Fieldwork for this project was conducted on April 11 and 12, 2022, by two Honua Consulting archaeologists, Frederick LaChance, B.A., and Radha Martin, B.A., under the supervision of Rosanna Thurman, M.A. (principal investigator). Fieldwork required approximately two (2) person-days to complete. Fieldwork for this project was performed under the archaeological permit number 22-26 issued to Honua Consulting by the SHPD/DLNR in accordance with HAR Chapter 13-282.

### 4.1 Methodology

The archaeological field inspection consisted of a 100% pedestrian survey of the project area. It included a visual inspection for any above-ground historic properties and observation of the ground surface and soil exposures for artifacts or exposed cultural deposits. Portions of the major stream drainages were also subject to pedestrian survey. Figure 17 depicts the GPS track log created by the Honua Consulting archaeologists. These data were recorded using Trimble equipment which maintained an accuracy ranging between 1 to 3 meters (3–10 feet). In addition, field notes were recorded, photographs were taken, and a detailed photo log was created. Locations of identified historic properties and points of interest were plotted with Trimble GPS equipment and are shown on Figure 18. Representative photos taken during the survey are provided in Figure 19 through Figure 24.

### 4.2 Survey Results

#### 4.2.1 Overview

Fieldwork resulted in the following main findings:

1. Nearly the entire project area has been substantially modified at and beneath the ground surface by the development of school infrastructure, starting as early as circa 1900 and continuing to the present (before this time, the landscape in and around the project area was impacted by commercial sugarcane);
2. Most recently, nearly the entire project area has been cleared of all above-ground structures except for an asphalt parking lot in the eastern portion of the project area, a large school sign near the southwestern entrance, and a flagpole near the western extent of the property;
3. Two historic properties were identified during the survey: a historic ‘auwai (designated temporary site Honua 1) running parallel to the northern margin of the project area and a historic rock boundary wall with an associated raised planter (designated temporary site Honua 2) fronting the property to the west.
4. Other than the ‘auwai (Honua 1) and rock wall/planter (Honua 2), no other historic properties, or potential historic properties, were observed.



Figure 17. Aerial image showing pedestrian survey tracks walked in the project area by Honua Consulting archaeologists; note, buildings in this image within the project area were recently demolished

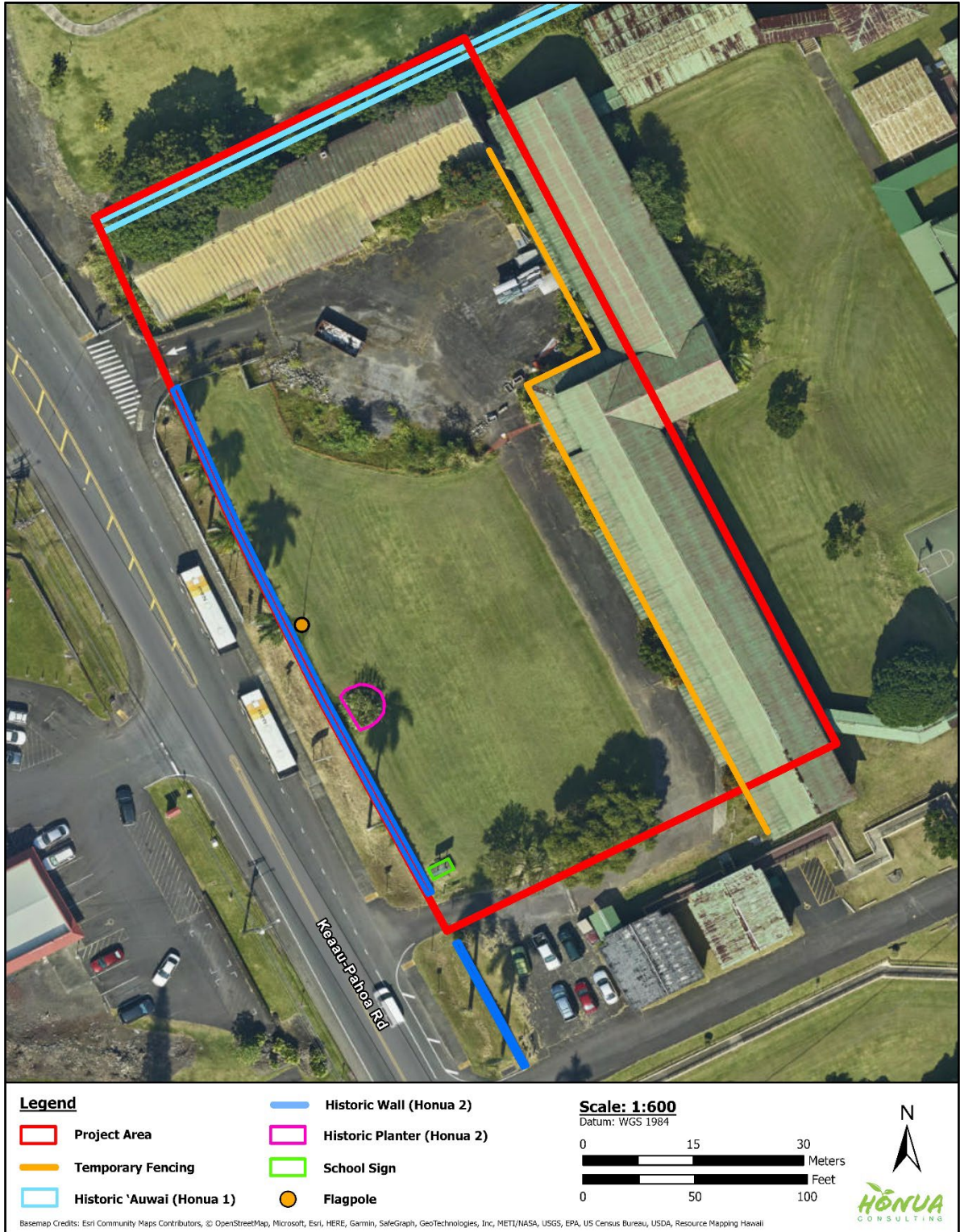


Figure 18. Aerial image showing the results of the field inspection; note, buildings in this image within the project area were recently demolished



Figure 19. Southern gated entrance to the project area, view to the northeast



Figure 20. Northern gated entrance to the project area, view to the northeast



Figure 21. Overview of landscaped lawn and rock wall and planter (Honua 2, at right and center), view southeast



Figure 22. Overview of temporary fencing constructed near the eastern margin of the project area, view to the east



Figure 23. Photograph showing the flagpole within the project area, view to the southwest



Figure 24. Overview of the interior of the project area, view to the north



## 4.2.2 Site Descriptions

### 4.2.2.1 Honua 1 (Historic 'Auwai)

Honua 1 is a historic 'auwai (irrigation ditch), measuring approximately 2.1 m wide by 45 cm deep (Figure 25 and Figure 26). The 'auwai runs along the entire length of the northern boundary of the project area parcel, approximately 180 ft. (55 m), continuing out of the project area to the northeast. Honua 1 is an open channel, constructed from loose, angular to sub-angular basalt gravel/cobble sized basalt. Oral-historical information (see below) suggest this ditch dates from as early as the sugarcane era in the area (i.e., as early as the late nineteenth century).

As depicted in Figure 27, this site was previously documented and described by Wheeler et al. (2015: 23-28) as follows:

A section of an 'auwai (irrigation ditch) was observed along the northwestern boundary of the project area. The 'auwai likely once extended beyond the campus to the northeast and southwest, but appears to have been cut off by school developments and the Pāhoa-Kea'au Road. The 'auwai is presently choked with vegetation, and no water was observed within it. The feature has an average width of 1.0 m.

While the ditch runs past all four of the buildings proposed for demolition, it is situated closest to Buildings D and G, at less than 2.0 m from the northern walls of these buildings. (The ditch lies 5.0 to 6.0 m from the northern walls of Buildings B and E.) Behind Building G, the 'auwai is situated at the base of a steep embankment. Breaks in the vegetation within this portion of the ditch exposed a section of stone-lining, indicating three or four courses of basalt cobbles and small boulders stacked up to 0.7 m high. The width at this section is approximately 0.9 m.

The school janitor mentioned that this feature was present at the school as far back as he could recall. This 'auwai was likely related to the historic sugar cane industry in Kea'au.

Following consultation with Cultural Surveys Hawai'i (CSH), it was determined that the subject historic 'auwai (Honua 1) was documented in a subsequent archaeological monitoring report (AMR) that has not yet been accepted by the SHPD. An SIHP number request was also submitted by CSH to SHPD that includes the exact same section of 'auwai within the current project area.



Figure 25. Photograph showing an overview of Honua 1 (historic 'auwai), view to the west



Figure 26. Detail of cleared section of Honua 1 (historic 'auwai), view to the northwest



Figure 27. Photos of the historic ‘auwai from 2013 (Wheeler et al. 2015:28-29)

#### 4.2.2.2 Honua 2 (Historic Wall and Planter)

Honua 2 is a historic rock boundary wall with an associated raised rock planter fronting the property to the west (Figure 28 and Figure 29). The wall is likely associated with the original development of the school grounds circa 1900. The main portion of the wall averages 50 cm wide and ranges from 1.2 m to 2.2 m in height. The overall length of the rock extends from the south side of the exit driveway (to the north) to the entrance driveway (to the south), a distance of approximately 250 ft. (76 m) and continues for another 68 ft. (21 m) out of the project area to the south, ending at the main entrance to Kea‘au Middle School campus.

The wall is constructed of mortared, angular basalt boulders and cobbles, averaging 6–7 courses high. The portion of wall within the current project area includes 13 integrated square columns approximately 50 cm wide, nearly flush with the wall, spaced equidistant apart, with average heights of approximately 20 cm above the main wall. The wall is in relatively fair to poor physical condition with some sections that are leaning (i.e., out of plumb) and will eventually topple over, and one section of complete collapse.

Figure 30 to Figure 32 illustrates details of a collapsed section of the rock wall next to the entrance driveway (to the south).

The semi-circular rock planter associated with the rock wall has a low, perimeter rock wall measuring approximately 50 cm wide and approximately 50 cm tall (Figure 33). The planter is constructed of mortared, angular basalt boulders and cobbles. It is unknown if the planter was constructed contemporaneously with the wall but the materials and construction technique are similar.



Figure 28. Overview of Honua 2 (historic rock wall), view to the west



Figure 29. Detail of a section of Honua 2 (historic rock wall), view to the northeast



Figure 30. Detail of collapsed section of wall adjacent to the entrance driveway (to the south)



Figure 31. Another view of collapsed section of wall adjacent to entrance driveway (to the south)



Figure 32. Another view of collapsed section of wall adjacent to entrance driveway (to the south)



Figure 33. Overview of historic rock planter associated with Honua 2, view to the southeast

## Section 5 Significance Assessments, Project Effect & Mitigation Recommendations

### 5.1 Significance Assessments

In accordance with HAR § 13-13-275-6, significance of a historic property is evaluated by first establishing that it possesses “integrity of location, design, setting, materials, workmanship, feeling, and association,” and, second, that it meets one or more of the following criteria:

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

The current field investigation identified two historic properties: a historic ‘auwai running parallel to the northern margin of the project area (designated temporary site Honua 1) and a historic rock boundary wall with an associated raised planter fronting the property to the west (designated temporary site Honua 2).

The ‘auwai (Honua 1) was previously documented by Cultural Surveys Hawai‘i (Wheeler et al. 2015), who requested a State Inventory of Historic Places (SIHP) number for it from the State Historic Preservation Division (SHPD); to the best of our knowledge, however, a site number has not yet been assigned to it, but this information could be added to the subject report if it now available.

An SIHP number should be obtained for the rock wall and planter (Honua 2).

Table 2 summarizes the significance assessments, project effect and mitigation recommendations for the two identified historic properties.

Honua 1 (‘auwai running along the northern border of the project area) likely dates to as early as the late nineteenth century. It retains integrity of location and is assessed as significant under criterion d for its association with the historic sugarcane industry that once thrived in Kea‘au, prior to the parcel’s use as a school.

Honua 2 (rock wall and planter along the west side of the project area) likely dates to circa 1900. It retains integrity of location, design, materials and workmanship. It is assessed as significant under Criterion d for its association with the history of the establishment and use of the property as a school, beginning circa 1900.



Table 2. Summary of Significance Assessments, Project Effect and Mitigation Recommendations

Site	Formal Type	Significance	Project Effect	Mitigation Recommendation
Honua 1	Late 19 <sup>th</sup> century 'auwai	Criterion d	No effect	No further work
Honua 2	Ca. 1900 rock wall and planter	Criterion d	No effect	No further work

## 5.2 Project Effect and Mitigation Recommendations

As depicted in Figure 34 and Figure 35, project plans include removing an approximately 5-foot section of the collapsed rock wall (Honua 2) adjacent to the entrance driveway (to the south), in order to rebuilt the driveway and in the interests of safety at the property going forward.

The proposed project will not impact the 'auwai (Honua 1) in any way.

Sufficient documentation of Honua 2 (rock wall and planter) has been completed, and no further archaeological or historic preservation work is needed at this site. Under state law, and in accordance with HAR § 13-275-7, an effect determination of “no historic properties affected” is proposed since all relevant information about the rock wall and planter has been recorded.

Therefore, the overall project effect is “no historic properties affected,” and no further archaeological or historic preservation work is needed.

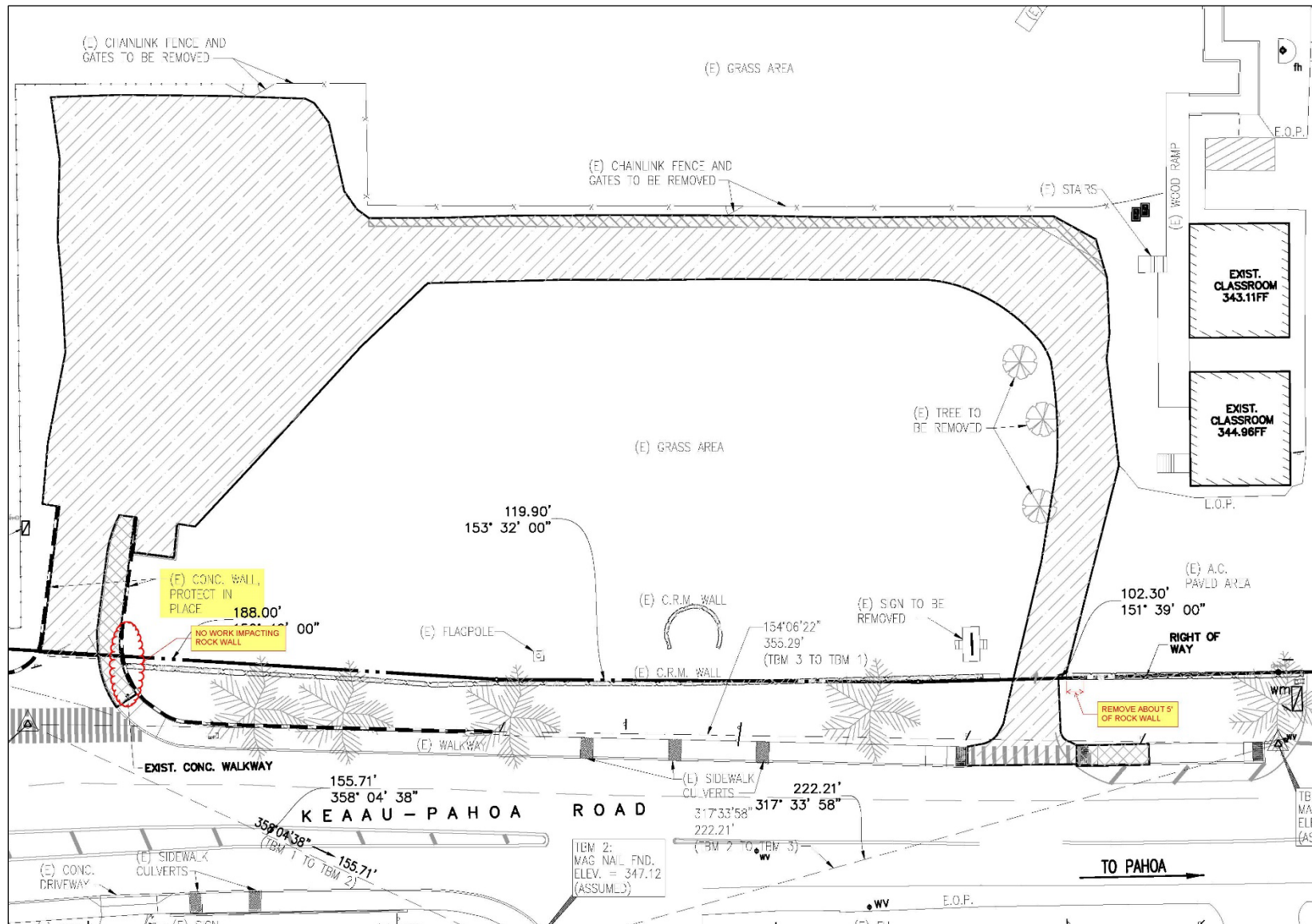


Figure 34. Detail portion of civil engineering plans showing plans to remove ~5-foot section of the rock wall (Honua 2) (lower right)

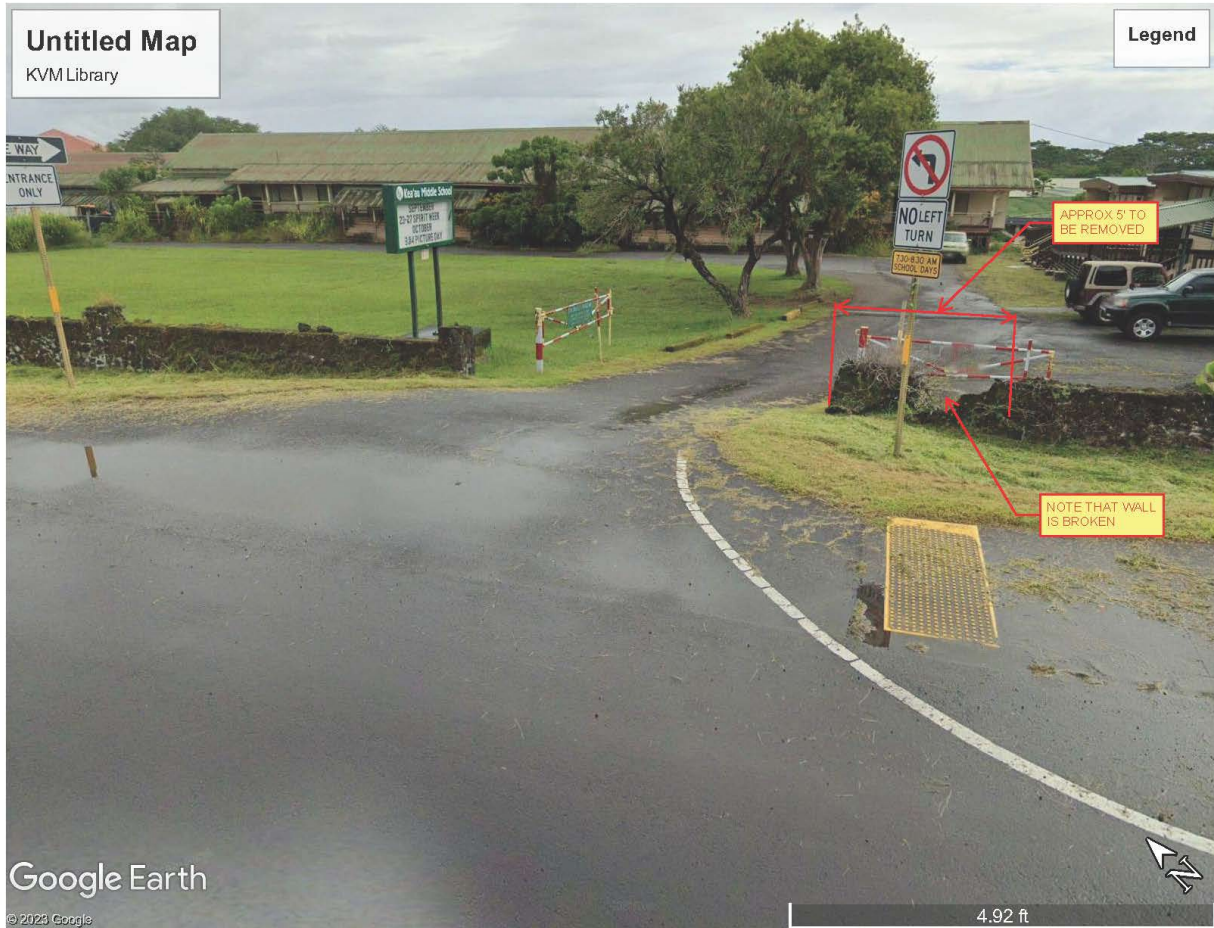


Figure 35. Annotated photograph from civil engineering showing plans to remove ~5-foot section of collapsed rock wall

## Section 6 Conclusion

This report was completed on behalf of HHF Planners, in support of a historic preservation due diligence analysis for the proposed Kea‘au-Mountain View Public Library Project, Kea‘au Ahupua‘a, Puna District, Island of Hawai‘i. The project area comprises approximately 1.76 acres (76,665 square feet [sq. ft.] or 7,122 sq. meters [m]) and located within parcel TMK: [3] 1-6-002:001 (por.). The parcel is residentially zoned, owned by the State of Hawai‘i, with a total land area of 5.97 acres.

The proposed project consists of construction of a single-story, 12,000 sq. ft. public library on a portion of Kea‘au Middle School property. The new library will replace the two existing public libraries at Kea‘au Middle School and Mountain View Elementary School. Buildings B and G of Kea‘au Middle School were recently demolished, leaving a clear site for this project.

The objectives of this Archaeological Literature Review and Field Inspection (LRFI) were the following: (1) documentation and description of the parcel’s land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes; (2) identification of any historic properties or component features in the project area; and (3) provide information relevant to the likelihood of encountering historically-significant cultural deposits in a subsurface context during future construction.

Background research indicated the project area would most likely lack traditional Hawaiian archaeological sites, given the extent of both historic sugarcane cultivation and historic school development. It is possible that twentieth-century school building foundations and infrastructure associated with ‘Ōla‘a School and Kea‘au Public School could exist on the property, likely in remnant condition. Three previous archaeological studies have been completed within the Kea‘au Middle School property, encompassing the current project area (Hammatt and Shideler 2006, Wilkinson et al. 2008, and Wheeler et al. 2015). No subsurface deposits or materials were documented within the project area or within other portions of the Kea‘au Middle School grounds. An historic ‘auwai (irrigation ditch) was recorded by Wheeler et al. (2015) as being present along the northern border of the current project area.

The current field investigation, which consisted of a 100% pedestrian survey of the entire project area but no subsurface excavation, found the following: (1) Nearly the entire project area has been substantially modified by the development of school infrastructure, starting as early as circa 1900 and continuing to the present (before this time, the landscape in and around the project area was impacted by commercial sugarcane); (2) Most recently, nearly the entire project area has been cleared of all above-ground structures except for an asphalt parking lot in the eastern portion of the project area, a large school sign near the southwestern entrance, and a flag pole near the western extent of the property; and (3) Two historic properties were identified during the survey: a historic ‘auwai running parallel to the northern margin of the project area (Honua 1) and a historic rock boundary wall with an associated raised planter fronting the property to the west (Honua 2). The ‘auwai was previously documented by Cultural Surveys Hawai‘i (Wheeler et al. 2015), who requested a State Inventory of Historic Places (SIHP) number for it from the State Historic Preservation Division (SHPD); to the best of our knowledge, however, a site number has not yet been assigned to it. Other than these two sites (i.e., Honua 1 and Honua 2), no other historic properties or potential historic properties were observed in the project area.

Honua 1 (‘auwai running along the northern border of the project area) likely dates to as early as the late nineteenth century. It retains integrity of location and is assessed as significant under criterion d for its association with the historic sugarcane industry that once thrived in Kea‘au, prior to the parcel’s use as a school.

Honua 2 (rock wall and planter along the west side of the project area) likely dates to circa 1900. It retains integrity of location, design, materials and workmanship. It is assessed as significant under Criterion d for its association with the history of the establishment and use of the property as a school, beginning circa 1900. The proposed project will not impact the ‘auwai (Honua 1) in any way. An SIHP number should be obtained for the rock wall and planter (Honua 2).

Sufficient documentation of Honua 2 (rock wall and planter) has been completed, and no further archaeological or historic preservation work is needed at this site. Under state law, and in accordance with HAR § 13-275-7, an effect determination of “no historic properties affected” is proposed since all relevant information about the rock wall and planter has been recorded.

Therefore, the overall project effect is “no historic properties affected,” and no further archaeological or historic preservation work is needed.

## Section 7 References Cited

---

### **Accountability Resource Center Hawai'i (ARCH)**

2013 *Kea'au Middle School*. State of Hawai'i Department of Education Systems Accountability Office. Electronic document, <http://arch.k12.hi.us/PDFs/ssir/2003/Hawaii/SSIR370.pdf>.

### **Barrère, Dorothy B. and S. Neal Crozier**

1971 *Historical Survey: Pualaa, Puna, Hawaii*. In *Archaeological and Historical Survey of the Ahupua'a of Pu'ala'a, Puna District, Island of Hawai'i*. Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu, Hawai'i.

### **Beckwith, M.**

1970 *Hawaiian Mythology*. University of Hawaii Press, Honolulu, Hawai'i.

### **Bonk, Sandra F.**

n.d. National Register of Historic Places Registration Form for Kea'au Makai Village. United States Department of the Interior, National Park Service. (ca. 1995)

1995 Kea'au Village Historical Restoration Plan with bike and Walking Trails. Written for the Hawai'i County Planning Commission, Submitted by The Kea'au Historical Society and Village Restoration Project, In Support of the Puna Community Development Plan.

### **Clark, M., R. Rudolph, and R. Rechtman**

2001 *An Archaeological Inventory Survey of TMK: 3-1-5-02:24, Waiakahiula Ahupua'a, Puna District, Island of Hawai'i*. Rechtman Consulting Report RC-0066. ASM Affiliates.

### **Condé, Jesse C. and Gerald M. Best**

1973 *Sugar Trains*. Glenwood Publishers, Felton, California.

### **Cordy, Ross**

2000 *Exalted Sits the Chief: The Ancient History of Hawai'i Island*. Mutual Publishing, Honolulu, Hawai'i.

### **Dorrance, William H. and Francis S. Morgan**

2000 *The 165-Year Story of Sugar in Hawai'i*. Mutual Publishing, Honolulu, Hawai'i.

### **Ellis, William**

1963 *Journal of William Ellis: Narrative of a Tour through Hawaii, or Owhyhee; With Observations on the Natural History of the Sandwich Islands and Remarks on the Manners, Customs, Traditions, History, and Language of their Inhabitants*. Advertiser Publishing Company, Honolulu, Hawai'i.

### **Escott, Glenn G.**

2013 *An Archaeological Inventory Survey Report for the Kea'au HMSA Site in Kea'au Ahupua'a, Puna District, Hawai'i Island, Hawai'i [TMK: (3) 1-6-002:004, 006, and 007]*. Scientific Consultant Services, Honolulu, Hawai'i.

2014 Request for Determination for Proposed Grubbing of Approximately 9.251 Acres of W.H. Shipman, LTD Land in Kea'au Town, Kea'au Ahupua'a, Puna District, Hawai'i Island [TMK (3) 1-6-143:018 & 042]. Scientific Consultant Services, Honolulu, Hawai'i.

- 2018 *An Archaeological Inventory Survey Report For W.H. Shipman Kea'au Town Property, In Kea'au Ahupua'a, Puna District, Hawai'i Island, Hawai'i, [TMK: (3) 1-6-003:003, 007 por., 008, 011, 076, 084, 123, and 125; 1-6-143:001, 002, 015, 016, 017, and 018 por.; and 1-6-144:001; and 1-6-145:001]*. Scientific Consultant Services, Honolulu, Hawai'i.
- 2019 *Archaeological Field Inspection Letter Report for a 1.58-Acre Portion of the 302-Acre Kamehameha School Hawai'i Campus in Kea'au Town, Kea'au Ahupua'a, Puna District, Hawai'i Island [TMK (3) 1-6-003:012 (por.)]*. Scientific Consultant Services, Honolulu, Hawai'i.
- Ewart, Ned D. and Margaret L. K. Luscomb**
- 1974 *Archaeological Reconnaissance of Proposed Kapoho-Keaukaha Highway, District of Puna, Island of Hawaii*. Bishop Museum, Anthropology Department, Honolulu, Hawai'i.
- Giambelluca, T., Q. Chen, A. Frazier, J. Price, Y. Chen, P. Chu, J. Eischeid, & D. Delparte**
- 2013 *Rainfall Atlas of Hawai'i, Interactive Map*. Geography Department, University of Hawai'i-Mānoa. Accessed at <<http://rainfall.geography.hawaii.edu/interactivemap.html>>.
- Green, Laura S., Mary Kawena Pukui, and Martha Warren Beckwith**
- 1936 *The Legend of Kawelo and Other Hawaiian Folktales*. Private printing, Honolulu, Hawai'i.
- Hammatt, Hallett H. and David W. Shideler**
- 2006 *Archaeological Literature Review and Field Check Study of Five DOE Schools, Hilo District, Island of Hawai'i, Hawai'i Inter-Island DOE Cesspool Project*. Cultural Surveys Hawai'i, Kailua, Hawai'i.
- Handy, E.S.C and E.G. Handy**
- 1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bernice P. Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu, Hawai'i.
- Haun, Alan E. and Dave Henry**
- 2004 *Archaeological Assessment Survey, Keaau-Pahoa Road Shoulder Lane Conversion, Land of Keaau, Puna District, Island of Hawaii*. Haun and Associates, Kea'au, Hawai'i.
- 2008 *Archaeological Inventory Survey, Portions of TMK: (3) 1-6-04: 11, 47-53, 55, 56, and 1-6-64:266-269, 283-286, Land of Kea'au, Puna District, Island of Hawaii*. Haun and Associates, Kea'au, Hawai'i.
- Hawai'i TMK Service**
- n.d. TMK [3] 1-6-002. On file at Hawai'i TMK Service, 222 Vineyard Street, Suite 401, Honolulu, Hawai'i.
- Hunt, Terry L.**
- 1993 *Archaeological Assessment of Shipman Lands in Kea'au, Puna, Island of Hawai'i*. University of Hawai'i, Honolulu, Hawai'i.
- Hurst, Gwen and Allan Schilz**
- 1994 *Revised Archaeological Survey of the Kea'au Town Section Project no. 130B-01- 92 Puna, Hawai'i (TMK 1-6-03)*. Ogden Environmental and Energy Services, Honolulu, Hawai'i.
- Kua, Crystal**
- 2000 Keaau: An education town. *Honolulu Star-Bulletin* 10 February 2000. Accessed at <<http://archives.starbulletin.com/2000/02/10/news/story4.html>>.

**Maly, K.**

1998 “PUNA, KA ‘ĀINA I KA HIKINA A KA LĀ.” A Cultural Assessment Study—Archival and Historical Documentary Research and Oral History Interviews for the Ahupua‘a of ‘Ahalanui, Laepāo‘o, and Oneloa (with Pohoiki), District of Puna, Island of Hawai‘i (TMK:1-4-02, por.07,13,73,74,75). Oneloa Development, Hilo, Hawai‘i.

**Maly, K. and O. Maly**

2004 *He Mo‘olelo ‘Aina: A Cultural Study of the Pu‘u Maka‘ala NAR*. Kumu Pono Associates LLC, Hilo, Hawai‘i.

**Masterson, Ian and Hallett H. Hammatt**

1998 *Archaeological Inventory Survey for the Proposed Kea‘au Elderly Housing Project, Kea‘au, Puna District, Hawai‘i Island (TMK: 1-6-143: por. of 18 and 39)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

**McGerty, Leann and Robert Spear**

2000 *An Archaeological Inventory Survey of the Proposed K.S.B.E. East Hawai‘i Campus, Kea‘au Ahupua‘a, Puna District, Island of Hawai‘i (TMK 1-6-03: por. 12)*. Scientific Consultant Services, Inc., Honolulu, Hawai‘i.

**McNarie, Alan**

2006 The Arsenic Hotel. *The Hawai‘i Island Journal*. Electronic document, <http://www.hawaiiislandjournal.com/2006/0520a.html>.

**Rosendahl, Paul and Alan Walker**

1992 *Archaeological Field Inspection of TMK 3-1-7-17:3, Land of Ola‘a, Puna District, Hawai‘i*. Paul H. Rosendahl, Ph.D., Inc, Hilo, Hawai‘i.

**McEldowney, H.**

1979 *Archaeological and Historical Literature Search and Research Design: Lava Flow Control Study, Hilo, Hawaii*. Bishop Museum, Department of Anthropology, Honolulu, Hawai‘i.

**National Cooperative Soil Survey (NCSS)**

2012 Panaewa Series. United States Department of Agriculture. Accessed at <[https://soilseries.sc.gov.usda.gov/OSD\\_Docs/P/PANAWEA.html](https://soilseries.sc.gov.usda.gov/OSD_Docs/P/PANAWEA.html)>.

**Sato, H., W. Ikeda, R. Paeth, R. Smythe, and M. Takehiro**

1973 *Soil Survey of the Island of Hawaii, State of Hawaii*. U.S. Department of Agriculture, U.S. Government Printing Office, Washington, D.C.

**U.S. Department of Agriculture**

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

**USGS (U.S. Geological Survey)**

1965 Orthophoto Aerial Photograph, Hilo and Mountain View, Hawai‘i. USGS Information Services, Denver, Colorado

**Walker, Alan, Kepā Maly, and Paul Rosendahl**

1997 *Historical and Archaeological Research Proposed Kea‘au High School Site Land of Kea‘au, Puna District, Island of Hawai‘i (TMK: 1-6-03: Por 3, 15, 84)*. Paul H. Rosendahl, Ph.D., Inc, Hilo, Hawai‘i.



**Wall, Walter E.**

1928 Island of Hawai'i map, Hawai'i Territory Survey [HTS]. Hawai'i Land Survey Division, Department of Accounting and General Services, Honolulu, Hawai'i.

**Wheeler, Momi, Sarah Wilkinson, and Hallett H. Hammatt**

2015 *Archaeological Literature Review and Field Inspection for Buildings B, D, E and G Demolition Project at Kea'au Middle School, Kea'au Ahupua'a, Puna District, Island of Hawai'i, TMK [3] 1-6-002:001 and 1-6-003:059*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Wilkes, Charles**

1845 *Narrative of the U.S. Exploring Expedition during the Years 1838-1842*, Vol. IV. Lea and Blanchard, Philadelphia, Pennsylvania.

**Wilkinson, Sarah, A. Mitchell, and H. Hammatt**

2010 *Draft Archaeological Inventory Survey Report for the Kea'au-Pāhoa Road Widening Project, Kea'au Ahupua'a to Waiakahiula Ahupua'a, Puna District, Hawai'i Island TMK: (3) 1-5 (various plats and parcels); 1-6 (various plats and parcels)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Wilkinson, Sarah and Hallett H. Hammatt**

2016 *Archaeological Monitoring Plan for the Kea'au Middle School Buildings B, D, E, and G Demolition Project, Kea'au Ahupua'a, Puna District, Island of Hawai'i, TMK: [3] 1-6-002:001 (por.)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Wilkinson, Sarah, Rosanna Runyon, and Hallett H. Hammatt**

2008 *Archaeological Monitoring Report for Kea'au Middle School, Hawai'i InterIsland DOE Cesspool Project, Kea'au Ahupua'a, Puna District, Island of Hawai'i, TMK: [3] 1-6-002:001 and 1-6-003:059*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Wright, John C.**

1973 Hawaii Register of Historic Places Short Form for Keaau and Nine Mile Camps. State of Hawai'i, Department of Land and Natural Resources, Honolulu, Hawai'i.

**Yent M., and J. Ota**

1982 *Archaeological Reconnaissance Survey, Nanawale Forest Reserve, Halepua'a Section, Puna, Hawaii Island*. On file, State Historic Preservation Office, Department of Land and Natural Resources, Kapolei, Hawai'i.

# Appendix A State & National Register Forms for Proposed Kea'au District (SIHP #50-10-44-7389)

United States Department of the Interior  
National Park Service

## National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

**1. Name of Property**

Known as: Oyama (Akiyama Store) Dress Shop, Ohara Beauty, Jehovah Church, Arima Kayama,  
historic name - Matayama, Matsuyama, Kanegawa - residential and commercial uses

other names/site number - Kea'au Makai Village

**2. Location**

street & number Old Volcano Highway - Milo - Pahoa Highway  not for publication

city or town Kea'au  vicinity

state Hawai'i code \_\_\_\_\_ county Hawai'i code \_\_\_\_\_ zip code 96749

**3. State/Federal Agency Certification**

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this  nomination  
 request for determination of eligibility meets the documentation standards for registering properties in the National Register of  
Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property  
 meets  does not meet the National Register criteria. I recommend that this property be considered significant  
 nationally  statewide  locally. ( See continuation sheet for additional comments.)

Signature of certifying official/Title \_\_\_\_\_ Date \_\_\_\_\_

State of Federal agency and bureau \_\_\_\_\_

In my opinion, the property  meets  does not meet the National Register criteria. ( See continuation sheet for additional  
comments.)

Signature of certifying official/Title \_\_\_\_\_ Date \_\_\_\_\_

State of Federal agency and bureau \_\_\_\_\_

**4. National Park Service Certification**

I hereby certify that the property is:

<input type="checkbox"/> entered in the National Register. <input type="checkbox"/> See continuation sheet.	Signature of the Keeper _____	Date of Action _____
<input type="checkbox"/> determined eligible for the National Register <input type="checkbox"/> See continuation sheet.	_____	_____
<input type="checkbox"/> determined not eligible for the National Register.	_____	_____
<input type="checkbox"/> removed from the National Register.	_____	_____
<input type="checkbox"/> other, (explain:)	_____	_____

<u>Oyama Store</u>	<u>Kea'au Hawai'i</u>															
Name of Property	County and State															
<b>5. Classification</b>																
<b>Ownership of Property</b> <small>(Check as many boxes as apply)</small>	<b>Category of Property</b> <small>(Check only one box)</small>	<b>Number of Resources within Property</b> <small>(Do not include previously listed resources in the count.)</small>														
<input checked="" type="checkbox"/> private <input type="checkbox"/> public-local <input type="checkbox"/> public-State <input type="checkbox"/> public-Federal	<input type="checkbox"/> building(s) <input type="checkbox"/> district <input type="checkbox"/> site <input type="checkbox"/> structure <input type="checkbox"/> object	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;">Contributing</td> <td style="width: 50%; text-align: center;">Noncontributing</td> </tr> <tr> <td style="text-align: center;">Nineteen</td> <td></td> </tr> <tr> <td style="border-top: 1px solid black;"></td> <td style="border-top: 1px solid black;">buildings</td> </tr> <tr> <td style="border-top: 1px solid black;"></td> <td style="border-top: 1px solid black;">sites</td> </tr> <tr> <td style="border-top: 1px solid black;"></td> <td style="border-top: 1px solid black;">structures</td> </tr> <tr> <td style="border-top: 1px solid black;"></td> <td style="border-top: 1px solid black;">objects</td> </tr> <tr> <td style="border-top: 1px solid black;"></td> <td style="border-top: 1px solid black;">Total</td> </tr> </table>	Contributing	Noncontributing	Nineteen			buildings		sites		structures		objects		Total
Contributing	Noncontributing															
Nineteen																
	buildings															
	sites															
	structures															
	objects															
	Total															
<b>Name of related multiple property listing</b> <small>(Enter "N/A" if property is not part of a multiple property listing.)</small>		<b>Number of contributing resources previously listed in the National Register</b>														
<hr/>		<hr/>														
<b>6. Function or Use</b>																
<b>Historic Functions</b> <small>(Enter categories from instructions)</small>	<b>Current Functions</b> <small>(Enter categories from instructions)</small>															
Domestic - Homes _____ Commerce/Trade _____ Social - Gathering Spot _____ Religion - Jehovah Church, Buddhist Church (rooms for minister) _____ Health Care - Old Torigoe Building _____ Landscape - Exceptional trees, remains of homes, _____ sweeping views of Pacific Ocean, Kapoho side _____ _____ _____	Kea'au Historical Society _____ Psychic, Store, Hawai'ian offices, WAPA, _____ Plantation Homes _____ _____ _____ _____															
<b>7. Description</b>																
<b>Architectural Classification</b> <small>(Enter categories from instructions)</small>	<b>Materials</b> <small>(Enter categories from instructions)</small>															
Two tall buildings _____ <del>Typical Hawaii Small Village Style</del> _____ Self-enclosed, unique to the era village caught in time and reflective of what was originally built by the people who lived here. _____	foundation <u>Cement, Post and Pier</u> _____ walls <u>Wood</u> _____ roof <u>Iron</u> _____ other _____ _____															
<b>Narrative Description</b> <small>(Describe the historic and current condition of the property on one or more continuation sheets.)</small>																
<p>This village center and various outer buildings are all that remain of a thriving community which lined the Old Volcano Highway in a solid stretch of commercial buildings backed by extensive residential and camps. this made Kea'au equal to Honoka'a as the second largest community on the Big Island .</p> <p>What remains gives a precious look into the past, a style of architecture with back catwalks, allowing store keepers to enter from their rear dwellings. A style built for smaller humans, close quarters in a bucolic setting, among fruit trees with vistas of the sea.</p>																

<p><u>Oyama Store</u> Name of Property</p>	<p><u>Kea'au Hawai'i</u> County and State</p>
<p><b>8. Statement of Significance</b></p>	
<p><b>Applicable National Register Criteria</b> (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)</p> <p><input checked="" type="checkbox"/> <b>A</b> Property is associated with events that have made a significant contribution to the broad patterns of our history.</p> <p><input type="checkbox"/> <b>B</b> Property is associated with the lives of persons significant in our past.</p> <p><input type="checkbox"/> <b>C</b> Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.</p> <p><input type="checkbox"/> <b>D</b> Property has yielded, or is likely to yield, information important in prehistory or history.</p> <p><b>Criteria Considerations</b> (Mark "x" in all the boxes that apply.)</p> <p>Property is:</p> <p><input type="checkbox"/> <b>A</b> owned by a religious institution or used for religious purposes.</p> <p><input type="checkbox"/> <b>B</b> removed from its original location.</p> <p><input type="checkbox"/> <b>C</b> a birthplace or grave.</p> <p><input type="checkbox"/> <b>D</b> a cemetery.</p> <p><input type="checkbox"/> <b>E</b> a reconstructed building, object, or structure.</p> <p><input type="checkbox"/> <b>F</b> a commemorative property.</p> <p><input type="checkbox"/> <b>G</b> less than 50 years of age or achieved significance within the past 50 years.</p>	<p><b>Areas of Significance</b> (Enter categories from instructions)</p> <p>Architecture _____</p> <p>Commerce _____</p> <p>Ethnic Heritage - Japanese _____</p> <p>Exploration - Settlement _____</p> <p>Health - Medicine _____</p> <p>Religion _____</p> <p>Social History _____</p> <p>_____</p> <p>_____</p> <p><b>Period of Significance</b></p> <p>_____</p> <p>_____</p> <p>_____</p> <p><b>Significant Dates</b></p> <p>1920 - 1950 _____</p> <p>_____</p> <p>_____</p> <p><b>Significant Person</b> (Complete if Criterion B is marked above)</p> <p><u>Haruko Akiyama - sold buildings for preservati</u> <u>Kaliko Kanaele - Hawaiian leader occupied "</u></p> <p><b>Cultural Affiliation</b> <u>Japanese and Filipino</u></p> <p>_____</p> <p>_____</p> <p><b>Architect/Builder</b> <u>Community Members</u></p> <p>_____</p> <p>_____</p>
<p><b>Narrative Statement of Significance</b> (Explain the significance of the property on one or more continuation sheets.)</p>	
<p><b>9. Major Bibliographical References</b></p>	
<p><b>Bibliography</b> (Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)</p>	
<p><b>Previous documentation on file (NPS):</b></p> <p><input type="checkbox"/> preliminary determination of individual listing (36 CFR 67) has been requested</p> <p><input type="checkbox"/> previously listed in the National Register</p> <p><input type="checkbox"/> previously determined eligible by the National Register</p> <p><input type="checkbox"/> designated a National Historic Landmark</p> <p><input type="checkbox"/> recorded by Historic American Buildings Survey</p> <p># _____</p>	<p><b>Primary location of additional data:</b></p> <p><input type="checkbox"/> State Historic Preservation Office</p> <p><input type="checkbox"/> Other State agency</p> <p><input type="checkbox"/> Federal agency</p> <p><input type="checkbox"/> Local government</p> <p><input type="checkbox"/> University</p> <p><input type="checkbox"/> Other</p> <p><b>Name of repository:</b></p> <p>_____</p>

<u>Oyama Store</u>	<u>Kea'au Hawaii</u>												
Name of Property	County and State												
<b>10. Geographical Data</b>													
Acreage of Property _____													
<b>UTM References</b> (Place additional UTM references on a continuation sheet.)													
1 <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 40px; height: 15px;"></td><td style="width: 40px; height: 15px;"></td></tr><tr><td style="font-size: 8px;">Zone</td><td style="font-size: 8px;">Easting</td><td style="font-size: 8px;">Northing</td></tr></table>				Zone	Easting	Northing	3 <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 40px; height: 15px;"></td><td style="width: 40px; height: 15px;"></td></tr><tr><td style="font-size: 8px;">Zone</td><td style="font-size: 8px;">Easting</td><td style="font-size: 8px;">Northing</td></tr></table>				Zone	Easting	Northing
Zone	Easting	Northing											
Zone	Easting	Northing											
2 <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 40px; height: 15px;"></td><td style="width: 40px; height: 15px;"></td></tr><tr><td style="font-size: 8px;">Zone</td><td style="font-size: 8px;">Easting</td><td style="font-size: 8px;">Northing</td></tr></table>				Zone	Easting	Northing	4 <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 40px; height: 15px;"></td><td style="width: 40px; height: 15px;"></td></tr><tr><td style="font-size: 8px;">Zone</td><td style="font-size: 8px;">Easting</td><td style="font-size: 8px;">Northing</td></tr></table>				Zone	Easting	Northing
Zone	Easting	Northing											
Zone	Easting	Northing											
<input type="checkbox"/> See continuation sheet													
<b>Verbal Boundary Description</b> (Describe the boundaries of the property on a continuation sheet.)													
<b>Boundary Justification</b> (Explain why the boundaries were selected on a continuation sheet.)													
1-6-02-03,4,5,6,7 Bordered by old Vol Hwy, Mamoa St, lot 84 and Pahoa Road													
<b>11. Form Prepared By</b>													
name/title <u>Sandra F. Bonk, Executive Director</u>													
organization <u>Kea'au Historical Society</u> date _____													
street & number <u>c/o Lovey Scott, HCR 1, Box 5711</u> telephone <u>968-8472 (Bonk) 966-8905 (Scott)</u>													
city or town <u>Kea'au</u> state <u>Hawaii</u> zip code <u>96749</u>													
<b>Additional Documentation</b> Submit the following items with the completed form:													
<b>Continuation Sheets</b>													
<b>Maps</b>													
A USGS map (7.5 or 15 minute series) indicating the property's location. attached													
A Sketch map for historic districts and properties having large acreage or numerous resources.													
<b>Photographs</b> yes													
Representative black and white photographs of the property.													
<b>Additional Items</b> (Check with the SHPO or FPO for any additional items)													
<b>Property Owner</b> (Complete this item at the request of SHPO or FPO.)													
name <u>WH Shipman or Kaliko Kanaele contested (in Circuit Court)</u>													
street & number <u>PO 950 or 930</u> telephone <u>S=9669325 K=966-7097</u>													
city or town <u>Kea'au</u> state <u>Hi</u> zip code <u>96749</u>													
<small><b>Paperwork Reduction Act Statement:</b> This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).</small>													
<small><b>Estimated Burden Statement:</b> Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form should be sent to Washington, DC 20543-0102 and the Office of Management and Budget, Paperwork Project (0307-0042), Washington, DC 20503-9042.</small>													

OMB Approval No. 1024-0018

NPS Form 10-900-a  
(2-79)

**United States Department of the Interior  
National Park Service**

**National Register of Historic Places  
Continuation Sheet**

Section number 7 Page 1

---

The commercial area of Kea'au consists of one and two story wooden structures lining two sides of the street. The area is situated along two city blocks and is a moderate example of false front towns. The commercial area includes 24 separate features consisting of stores, residences, garages, a theater, and various other structures.

False front structures are either one or two stories, and usually are covered with horizontal siding. An ornamental cornice is supported by carved brackets and is usually the only decorative feature on the buildings. Windows are often four light square paned display windows which usually flank the double entrance doors. These commercial buildings often have a glassed architecture to give added light and ventilation.

Another building type consists of a two story wooden structure with a gable roof. This architectural type usually has a second floor balcony often partially enclosed with old lumber. Diamond pattern balustrades enclose the upper porch area and boards and battens are surface cover.

One house included in the commercial area is architecturally interesting. It is building number 28 on the sketch. This one-story wooden house has intersecting gables with curved bargeboard endings. Scalloped shingles cover the gable ends and a rectangular louvered vent adds to the gable end design. A front porch runs along two-thirds the length of the house.

Many of the shops have been converted to residences and only a few of the stores are in operation. They include the Kea'au Steak House, Morita's Fountain, the Y. Isa Grocery Store, the H. Suzuki Store, a barber shop and a repair shop. the Kea'au Bakery is also open and a hula studio and laundromat have moved into two of the older buildings.

Plans to tear down the commercial area and construct a shopping center have been made.

Informant Herbert Shipman  
Surveyed by John C. Wright December 1973

NPS Form 10-900-a  
(2-89)

OAS Approval No. 1024-0018

United States Department of the Interior  
National Park Service

**National Register of Historic Places  
Continuation Sheet**

Section number 7 Page 2

Kea'au, located nine miles from Hilo, is a small community of 951 people. It is being recommended for Reserve status based on its historical association with the sugar mill and plantation as well as other agricultural pursuits in the area.

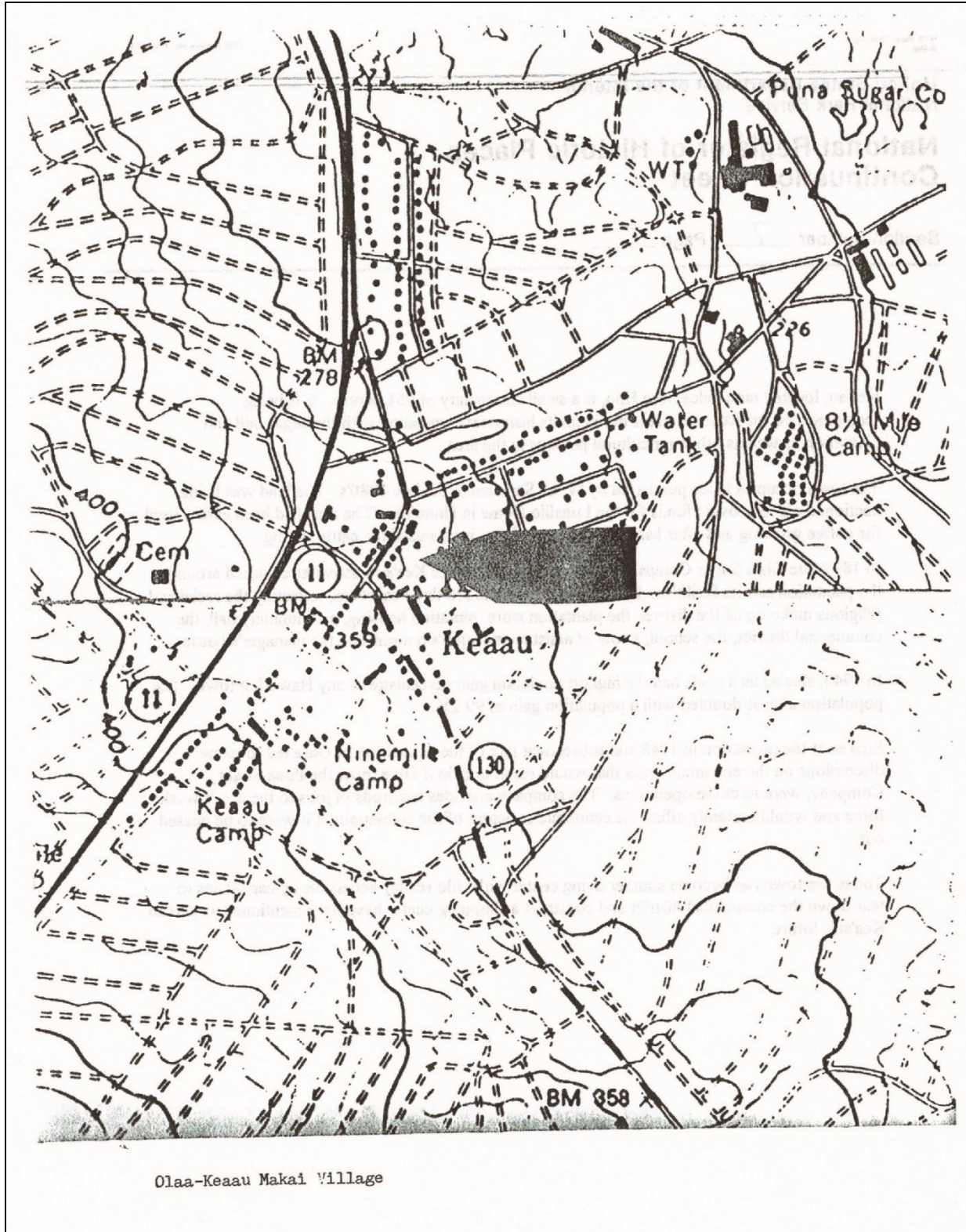
The town occupies lands purchased by W. C. Shipman in the late 1880's. The land was being auctioned off to provide funds for the Lunalilo Home in Honolulu. The area had been earlier used for coffee growing and after Mr. Shipman's purchase, it was used for cattle raising.

In 1899, the Ola'a Sugar Company was formed and much of Kea'au's activities centered around the plantation and its facilities. Included in the district are three churches, reflecting the racial and religious make-up of the district, the plantation store, plantation housing, a community hall, the commercial district, the school, a row of assistant manager's houses, and the manager's house.

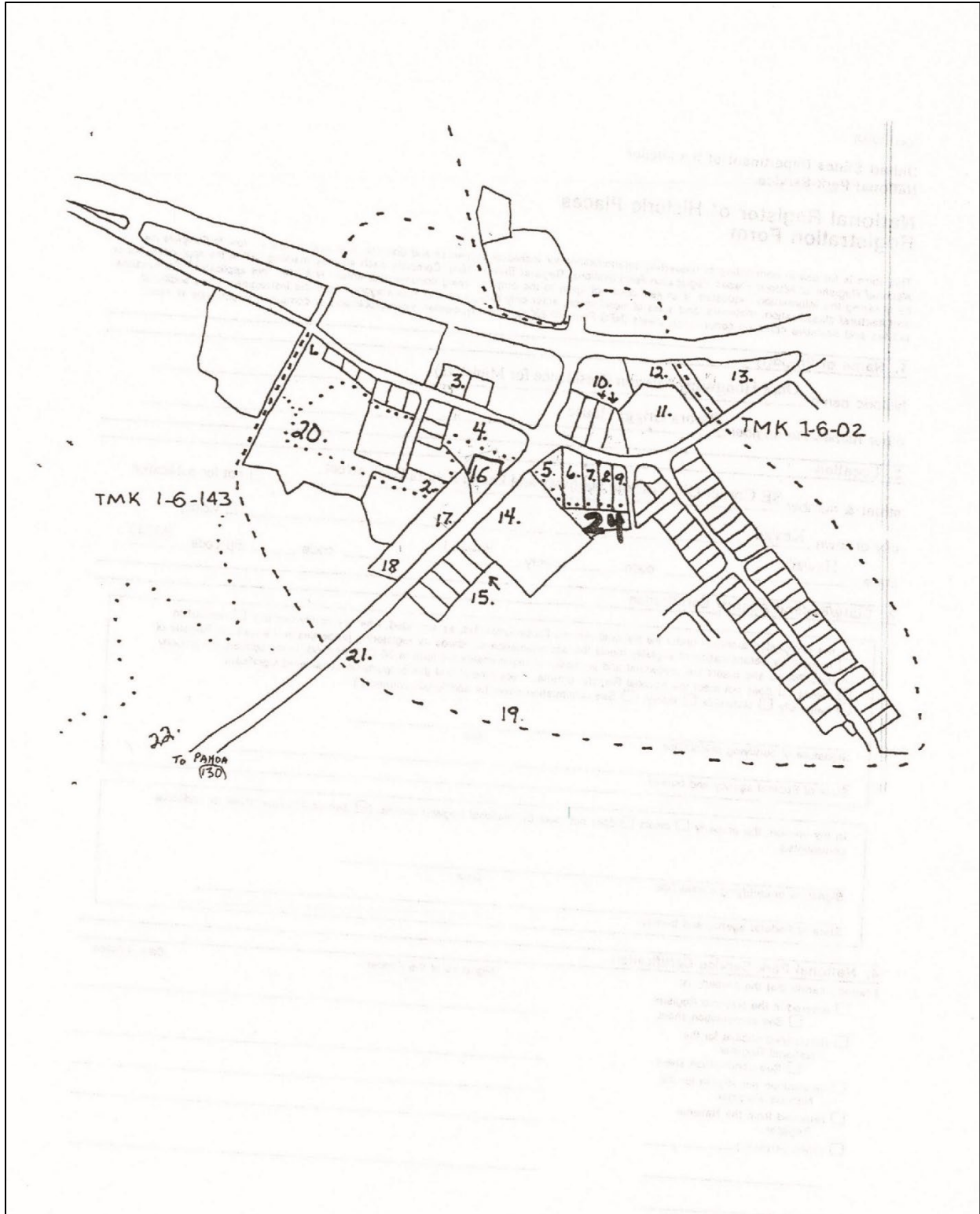
In 1940, Kea'au as a town had the highest population gain percentage of any Hawaiian town. The population almost doubled with a population gain of 99.2%.

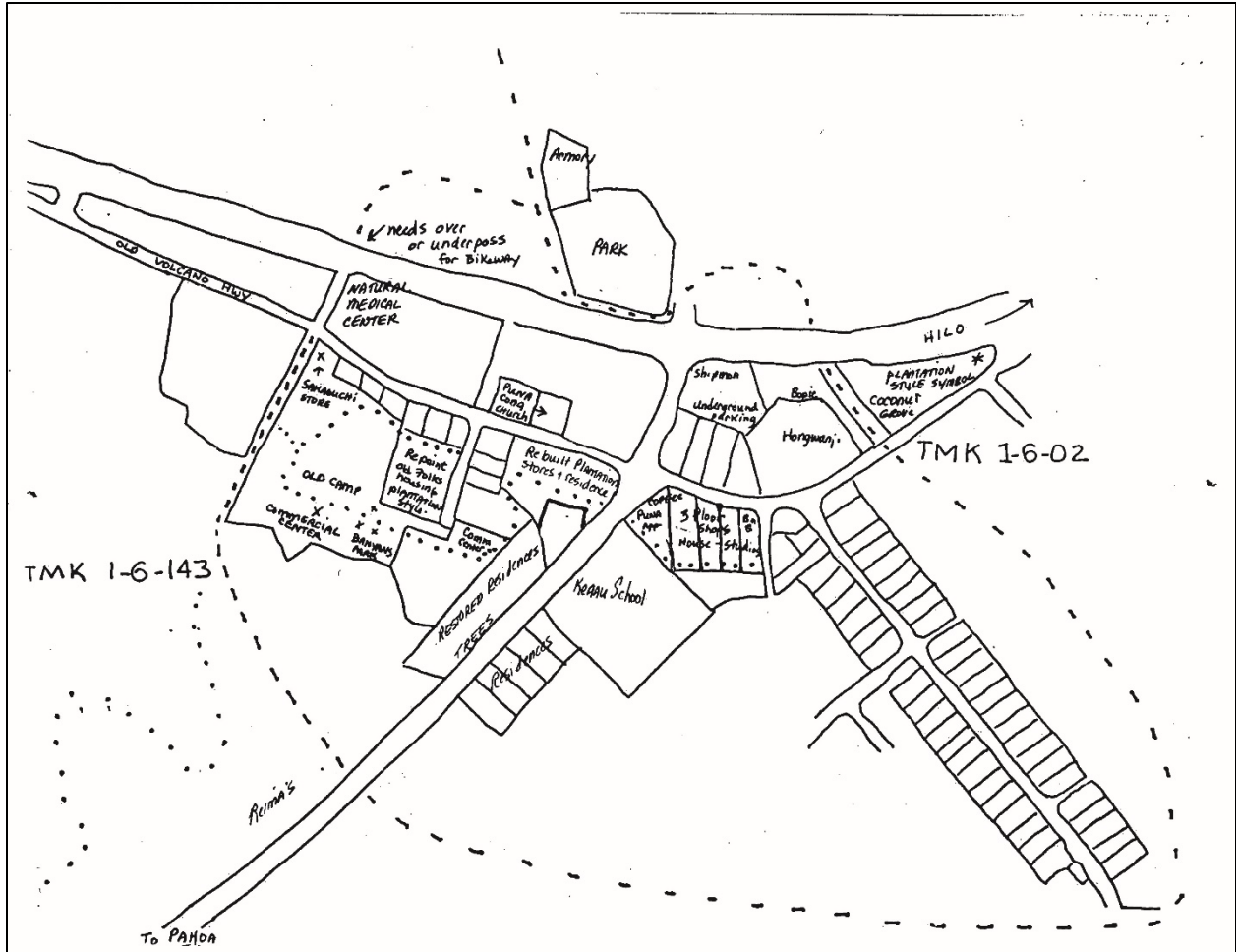
Strikes at the plantation in 1948 and subsequent talk of the liquidation of Ola'a led to many discussions on the economic crisis that would result in Hilo if Ola'a, now the Puna Sugar Company, were to cease operations. The company provides hundreds of jobs to the area's work force and would certainly affect the economic structure of the community if it were to be phased out.

Today the town has become another dying center with Hilo readily accessible by car. Plans to tear down the commercial district and construct a shopping center have been mentioned as part of Kea'au's future.









Source (Bonk 1995)

# **APPENDIX C**

Preliminary Engineering Report  
Kea'au & Mountain View Public Library Planning

Coffman Engineers

May 10, 2023



# Preliminary Engineering Report

Kea'au & Mountain View Public Library Planning

Kea'au, Hawaii County, Hawaii

TMK: (3) 1-6-002:001

May 10, 2023



745 Fort Street  
Suite 400  
Honolulu, HI 96913

# Table of Contents

1. INTRODUCTION .....	1
2. EXISTING CONDITIONS .....	1
2.1 Topography.....	1
2.2 Drainage .....	1
2.3 Wastewater.....	2
2.4 Domestic Water and Fire Water .....	2
2.4.1 Domestic Water .....	2
2.4.2 Fire Water.....	2
2.5 Electrical and Telecommunication Facilities .....	2
3. PROPOSED CONDITIONS .....	2
3.1 Site .....	3
3.2 Drainage .....	3
3.3 Wastewater.....	4
3.4 Domestic Water and Fire Water .....	4
3.4.1 Domestic Water .....	4
3.4.2 Fire Water.....	5
3.5 Electrical and Telecommunication Facilities .....	5
4. References.....	6

## Appendices:

### Appendix A

- A1 – Existing Site Map
- A2 – Proposed Site Map
- A3 – Existing Drainage Condition Plan
- A4 – Proposed Drainage Condition Plan
- A5 – Existing Condition Hydrograph Reports
- A6 – Proposed Drainage Hydrograph Reports
- A7 – Flood Hazard Assessment Report
- A8 – NOAA Precipitation Data
- A9 – Web Soil Survey

### Appendix B

- B1 – Proposed Utility Plan
- B2 – Sewer Demand Calculations
- B3 – Water Demand Calculations

# 1. INTRODUCTION

The subject project proposes to construct a single-story, 12,000 square foot public library on Kea'au Middle School's property in Kea'au, Hawaii. The site is located on approximately 1.75 acres of land owned by the Department of Education (DOE). The proposed library will serve both Kea'au and Mountain View communities and replace two existing public libraries at Kea'au Middle School and Mountain View Elementary School.

An Environmental Assessment is required to analyze the proposed land use. This Preliminary Engineering Report (PER) will provide civil and electrical assessments of the existing site conditions and proposed improvements including access and parking, grading and drainage, potable and fire water, sanitary sewer, electrical, and telecommunication needs.

## 2. EXISTING CONDITIONS

The project site is located 230-feet east of Old Volcano Road (also known as Highway 130) and Keaau-Paho Road intersection. The parcel is identified as TMK is 3-1-6-002:001 and is bounded by Holy Rosary Mission to the north, Kea'au-Paho Road to the west, Kea'au Middle School to the east, and residential property to the south. The existing site is primarily composed of AC pavement and grass. The AC pavement served as access to building B and G that have since been demolished. An existing unnamed drainage way is located on the north side of the site and flows from west to east.

The site is located within Flood Zone X per FEMA FIRM panel no. 15516611765F, an area determined to be outside the 0.2% annual chance floodplain. Zoning for this property is RS-10 per maps published by the County of Hawaii Planning Department. See Appendix A1 for the Existing Site Plan.

### 2.1 Topography

The elevation of the project site ranges from approximately 326-feet to 346-feet mean sea level (MSL), sloping from south to north from the access road towards the opposite side of the property. The site generally is flat through the middle of the property with an average slope of 1-2%. The highest slopes on the site may be observed at the entrance of the property at approximately 10%.

Access to the site is provided by two existing one-way AC pavement driveways along Kea'au-Paho Road, the ingress and egress being located furthest south and north, respectively. The USDA Web Soil Survey identifies the soil on the project as Panaewa very cobbly hydrous loam.

### 2.2 Drainage

The site consists of an open grass field with runoff that discharges either into the existing open drainageway, north of the project site, or existing dry wells, east of the project site near Kea'au Middle School. There are no collection systems currently on the site and runoff is generally allowed to sheet flow towards the drainageway or dry wells.

Drainage calculations were prepared by following the Hawaii County Storm Drainage Standards, dated October 1970, applying the minimum time of concentration allowed by the County of Hawaii. Runoff calculations were completed using a 10-year, 1-hour storm interval

frequency for the 1.75 acre project site. See Appendix A for existing drainage plan and calculations.

Based on analysis of the site, there are three drainage areas. Drainage Area 1 is located on the north side of the property and is approximately 0.19 acres in size with an estimated peak flow of 0.63 cubic feet per second (CFS). Runoff from Drainage Area 1 sheet flows offsite and discharges in the existing drainageway.

Drainage Area 2 is located generally in the middle of the site (south of Drainage Area 1) and is the largest of the three drainage areas and is approximately 1.16 acres in size with an estimated peak flow of 6.42 CFS. Runoff from Drainage Area 2 sheet flows east into the existing Kea'au Middle School grass field and dry well.

Drainage Area 3, the southernmost drainage area on the site is approximately 0.58 acres in size with an estimated peak flow of 2.57 CFS. Runoff from the Drainage Area 3 sheet flows east offsite towards the Kea'au Middle School grass field.

The state receiving water for the entire site is classified as Marine AA by the Hawaii Department of Health Hawaii Administrative Rules (HAR) Chapter 11-54.

## **2.3 Wastewater**

Hawaii County has a record of one septic system currently serving Kea'au Middle School property including pre-existing service to the since demolished Buildings B and G. The location and size of the septic system is unknown. There is no public sewer system located within the vicinity of the site.

## **2.4 Domestic Water and Fire Water**

### **2.4.1 Domestic Water**

Potable water is provided to the site through an existing 6" ductile iron main north of the property in Keaau-Pahoa Road, owned by the Department of Water Supply. The property has a 2.5" copper lateral providing water service through an existing 3-inch water meter. The water meter is located within DOE property near the right-of-way between the existing drainageway and asphalt access road. The identification number for the water meter is 15558541. A backflow preventer was observed in the vicinity of the water meter, the size is unknown.

### **2.4.2 Fire Water**

Fire water is provided to the site through an existing 6" ductile iron main north of the property in Keaau-Pahoa Road, owned by the Department of Water Supply. The property has an existing 6" detector meter, the identification number is 15558261. The detector meter is located within DOE property near the rock wall at the Keaau Middle School access road, the backflow preventer is also 6". The detector meter and service lateral limits are unknown to DWS.

## **2.5 Electrical and Telecommunication Facilities**

Keaau Middle School is served from HELCo via a new underground 12.47KV primary lines. An existing HELCo pad mounted transformer steps down the voltage to utilization level and serves a new outdoor metering switchboard.



### 3. PROPOSED CONDITIONS

Onsite improvements in support of the proposed library include parking, existing driveway and retaining wall modifications, grading, Individual Wastewater System (IWS), water line improvements, drainage structures, chain link fence, and gates.

Offsite improvements include a realigned access driveway, an ADA compliant pedestrian concrete walkway into the project site, and other roadway improvements as recommended in the project's Traffic Impact Assessment Report (TIAR) and as required by the State Department of Transportation, Highways Division. See Appendix A2 for the Proposed Site Plan.

#### 3.1 Site

The project proposes realigned access driveway connections along Kea'au-Pahoa Road. Similar to the existing layout, the proposed driveways ingress and egress will be located south and north, respectively, along Kea'au-Pahoa Road. The existing site grade will remain in areas of property where no construction is occurring. The proposed access road will have a slope of 15%, the parking lot will have an average slope of 1-2%.

Following the Hawaii County Code Chapter 26, the proposed driveways will be constructed at a slope less than 15% with an inside and outside turning radius of 30-feet and 60-feet, respectively, for fire truck access. The proposed driveways will also be complemented with new sidewalks to allow safe access to the site for pedestrians. The retaining and rock walls on site may require repairs, a structural inspection should be conducted to determine the structure's durability.

The proposed parking lot will have 42 parking stalls, 3 of which are ADA stalls, thus exceeding the minimum County of Hawaii requirements for the size of the parking lot. Additionally, 4 are specially tailored towards electrical vehicles.

Areas disturbed during construction will be permanently stabilized with buildings, pavements, and vegetation.

#### 3.2 Drainage

Site drainage improvements will be designed in accordance with Hawaii County Storm Drainage Standards, dated October 1970. Stormwater runoff is calculated using a 10-year, 1-hour storm. See Appendix A for proposed drainage plan and calculations.

Drainage Area 1 is located furthest north of the project site, with an area and peak flow of 0.33 acres and 1.90 cfs, respectively. Runoff from Drainage Area 1 flows offsite towards the existing drainageway. Runoff shall be mitigated with the use of a retention basin or other water quantity treatment methods such that runoff to the drainageway shall not increase or shall have negligible effect on adjacent or downstream properties.

Three dry wells are located within the AC paved portion of the site. Dry wells greater than a 5-foot diameter are required to be designed and approved by a structural engineer. Each dry well is responsible for a perspective drainage area. Drainage areas 2,3, and 4 account for 0.17 ac, 0.16 ac, and 0.29 ac of runoff with peak flows of 1.69 cfs, 1.60 cfs, and 2.89 cfs, respectively.

Drainage Areas 5, 6, and 7 flow towards the Middle School and are ultimately captured by the existing dry wells offsite. Drainage areas 5, 6, and 7 account for 0.15 ac, 0.15 ac, and 0.41 ac of runoff with peak flows of 0.48 cfs, 0.40 cfs, and 3.00 cfs. The current volume capacity of the existing dry wells are unknown. Further design and investigation are required to determine the total allowable runoff of the existing drywells.

The landscaped area and grasscrete pavers west of the dry wells may be considered self-mitigating if the system can contain the runoff before reaching other drainage areas along the AC pavement. Drainage Area 8 has an area of 0.32 acres with a peak flow of 1.06 cfs.

Hawaii County does not have requirements for stormwater quality, however low impact development practices, such as grasscrete pavers, landscape areas, basins, and drywells are proposed to help mitigate stormwater runoff quantity and treat stormwater runoff quality. A basin can be installed in the northern portion of the site (north of the parking lot). When the project is ultimately designed, the designer shall comply with the current stormwater quality standards should there be one instated.

A potential drainage system may be designed for Kea'au Town.

### **3.3 Wastewater**

Wastewater generated onsite will be processed by an Independent Wastewater System (IWS). The IWS is to be designed in accordance with Hawaii Administrative Rules 11-62-31.1.

The proposed IWS assumes the proposed library will have 20 employees and 160 visitors per day for a total wastewater load of 1,200 gallons per day (gpd). Therefore, the septic tank is approximately 1,500 gallons, with a 540 square foot absorption bed for the leach field. The leach field shall be on grades no greater than 8% with the bottom of the absorption bed being at least 18 inches below the finished grade. The septic tank and leach field will be located plan east of the proposed library. See Appendix A for proposed site plan. See Appendix B for sewer utility plan and calculations.

The County of Hawai'i is currently preparing a programmatic Environmental Impact Statement for wastewater system improvements in the Puna District. These improvements would include proposed wastewater infrastructure or package plants envisioned for the Kea'au Town area. A sewer lift station and force main system may be required to discharge sewer into the street system due to the lower finished floor elevation of the library in relation highway elevation and the future invert connection elevations of the highway sewer system. The IWS system can be modified by installing a sump manhole and pump system, given service is provided in the street fronting the library, and a portion of the proposed IWS sewer line is maintained.

### **3.4 Domestic Water and Fire Water**

#### **3.4.1 Domestic Water**

Potable water will be provided to the site in accordance with the State of Hawaii: Water System Standards (2002) and the Department of Water Supply Amendments (2020). The existing 2.5" water line and 3" meter will need to be reactivated. Usage restoration must be approved by DWS prior to reactivation of water service. Water pressures shall be verified for the minimum requirements prior to reactivation of water service.

The daily consumption rate for the proposed library is determined by the number of employees and daily library users, and the average daily demand for a school. These values are

determined by the Water System Standards Table 100-18 and 100-20. It is assumed that the potable water will service 20 employees and expect 219 library users daily, thus will require 20 gallons per day (gpd) per employee and 3 gpd per library visitor. The total daily demand will be 817 gpd. The proposed library has a water fixture units count of 57.9, which is equal to 55 gpm of peak hour flow. For a water demand of 55 gpm, a 1.5" water meter will be required. See appendix B for domestic water calculations and plan

### **3.4.2 Fire Water**

Per Hawaii County Code Chapter 26, fire water rules and regulations must follow the NFPA Chapter 1 Standards unless otherwise specified by the Water System Standards and Department of Water Supply Amendments.

Fire water service to the proposed library will be provided from the existing fire water line and meter. Per the International Building Code (IBC), a fire sprinkler system will be required for the proposed building and will be provided for in the design of the improvements. If a Type II-B and V-B educational building exceed 14,500 square feet (sqft) and 9,500 sqft, respectively, the installation of a fire sprinkler system will be required.

Additionally, a fire hydrant will be required onsite in a location that will provide fire hydrant coverage within 450-foot hose lay length to the nearest building opening. The Water System Standards Table 100-19 requires fire hydrants to meet a minimum flow rate of 2,000 gallons per minute (gpm) for 2 hours with a residual pressure of 20 pounds per square inch (psi). A permanent cleanout shall be installed at the terminal point of all dead-end lines, regardless of fire hydrant installation.

## **3.5 Electrical and Telecommunication Facilities**

Since the Hawaii State Public Library System is a separate entity from the DOE, the new public library can be fed from a new utility pole provided along Keaau-Pahoa Road and separately metered. A line extension will be required from the existing 12.47KV overhead line to a new pole fronting the project site. New underground 12.47KV lines will be provided to feed a new HELCo pad-mounted transformer. New electrical service equipment can either be wall mounted to the exterior of the new library building or provided in a new indoor electrical room with the meter located on an exterior wall for utility access.

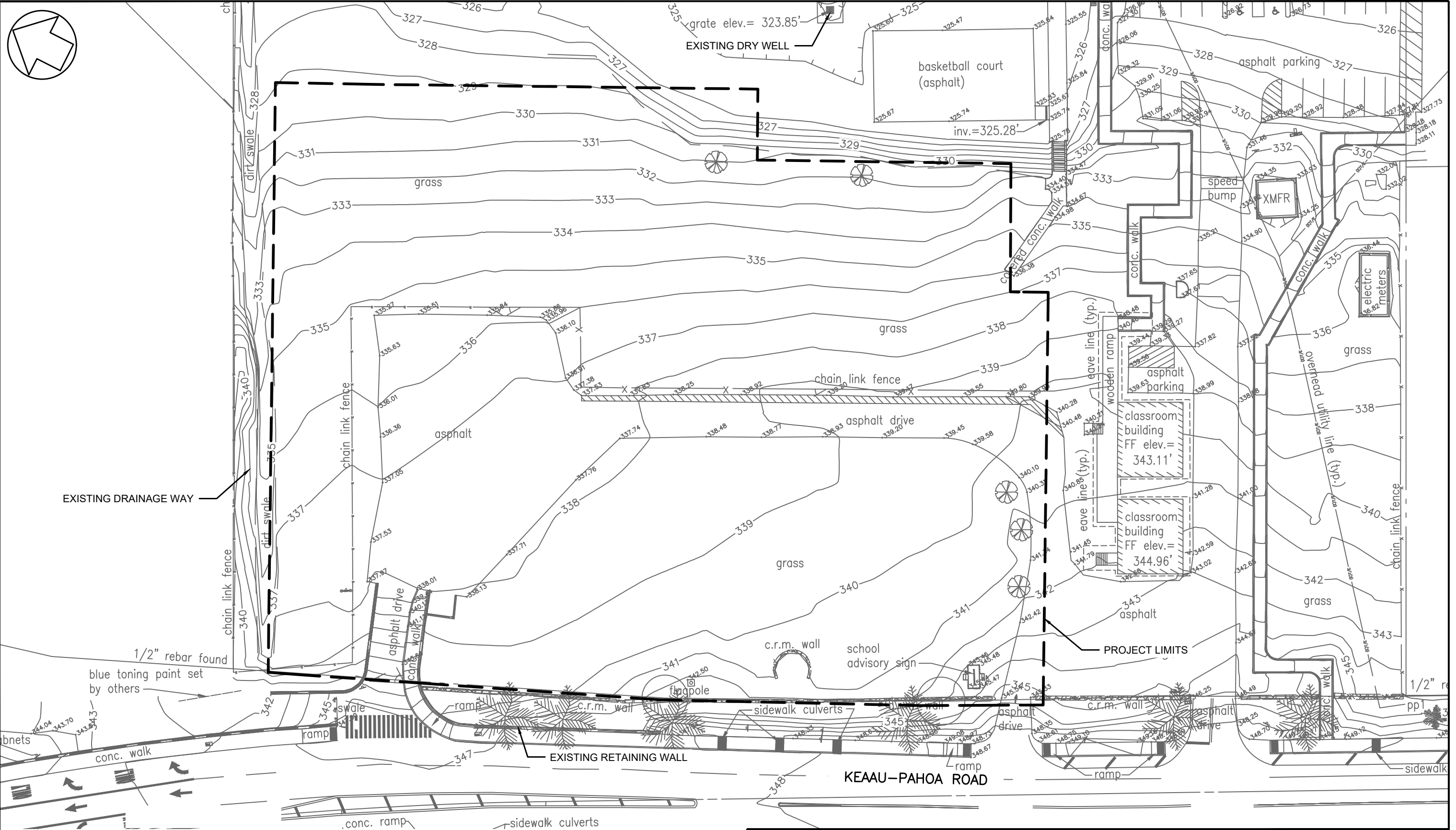
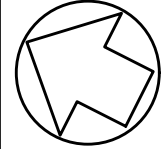
Telephone and catv service can be provided from the existing overhead lines along Keaau-Pahoa Road by Hawaiian Telcom and Spectrum respectively. New overhead telephone and catv lines can be extended overhead to a new pole fronting the project site and transitioned to underground ducts routed to serve the new library building. Telephone and catv service equipment can either be wall mounted to the exterior of the new library building or provided in an indoor telecom room.

Emergency power will not be required for the facility; therefore, a standby emergency generator will not be required.

#### **4. References**

County of Hawaii Department of Public Works, Hilo Hawaii, November 2020  
Flood Hazard Assessment Tool, Hawaii National Flood Insurance Program, 2021  
Hawaii Administrative Rules, Department of Health  
Hawaii County Code 1983, 2016 Edition as Amended  
International Building Code Fire Protection, International Code Council  
Water System Standards, State of Hawaii, 2002  
Web Soil Survey, United States Department of Agriculture

# **APPENDIX A: DRAINAGE PLANS AND CALCULATIONS**



EXISTING DRAINAGE WAY

EXISTING DRY WELL

basketball court  
(asphalt)

speed bump

XMFR

electric meters

classroom building  
FF elev.=  
343.11'

classroom building  
FF elev.=  
344.96'

PROJECT LIMITS

KEAAU-PAHOA ROAD

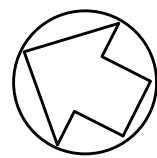
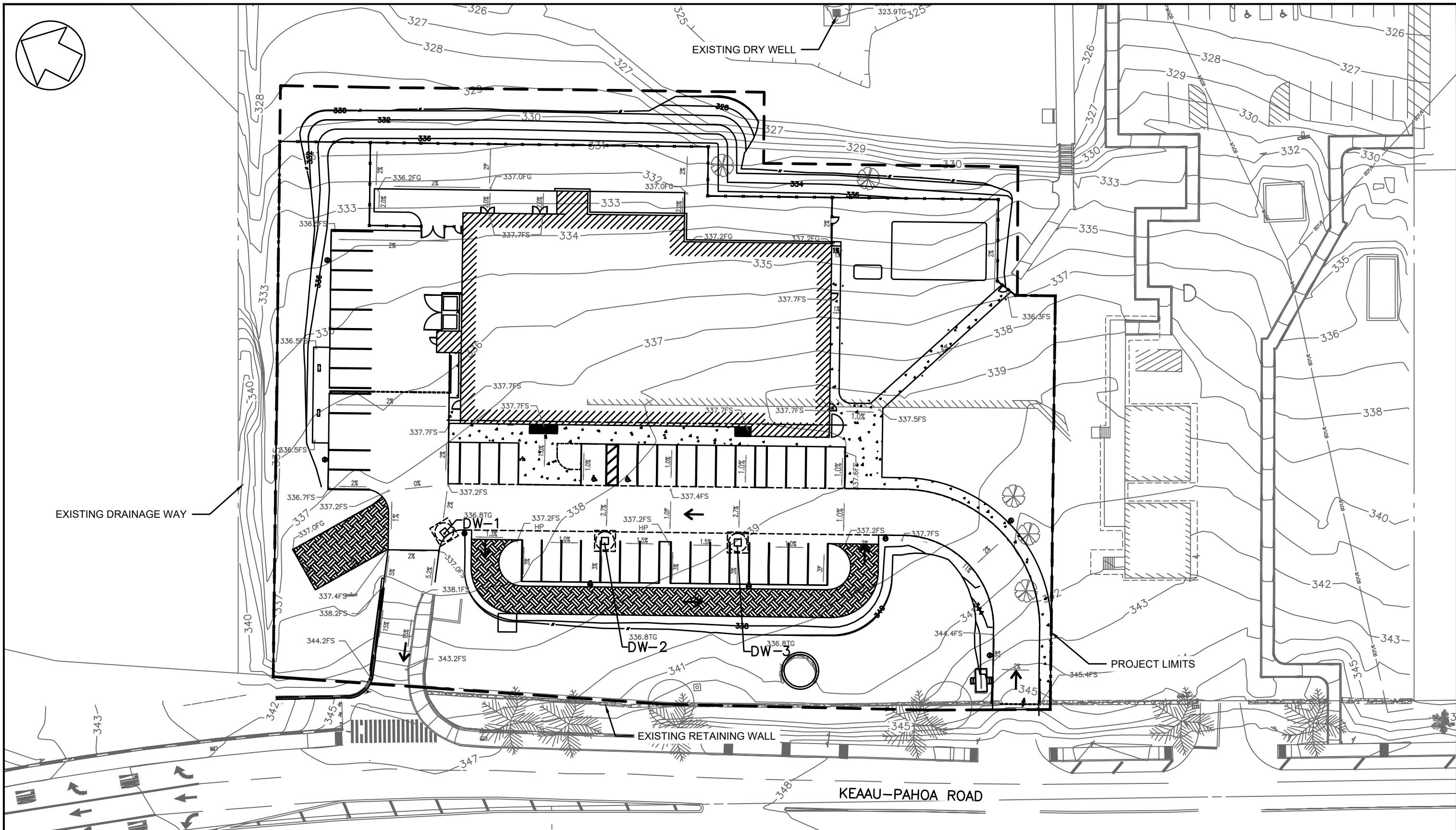


**COFFMAN ENGINEERS**  
745 Fort Street, Suite 400  
Honolulu, HI 96813  
ph 808.687.8884  
www.coffman.com

**EXISTING SITE MAP**

PROJECT	DAGS KEA'AU & MOUNTAIN VIEW PUBLIC LIBRARY PLANNING	LOCATION	KEA'AU, HI
CLIENT	HHF	DATE	2/1/2023

EXHIBIT NO.  
**1**  
OF 4



EXISTING DRAINAGE WAY

EXISTING DRY WELL

EXISTING RETAINING WALL

KEAAU-PAHOA ROAD

PROJECT LIMITS



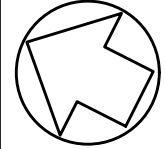
**COFFMAN ENGINEERS**  
 745 Fort Street, Suite 400  
 Honolulu, HI 96813  
 ph 808.687.8884  
 www.coffman.com

**PROPOSED SITE MAP**

PROJECT DAGS KEA'AU & MOUNTAIN VIEW PUBLIC LIBRARY PLANNING	LOCATION KEA'AU, HI
CLIENT HHF	DATE 2/1/2023

EXHIBIT NO.

**2**  
OF 4



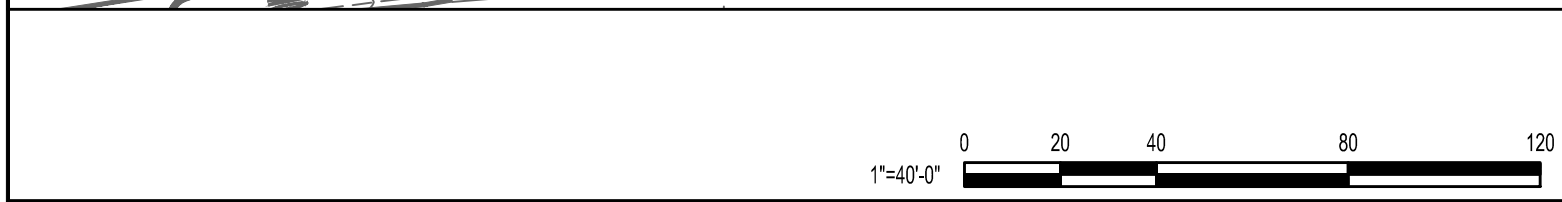
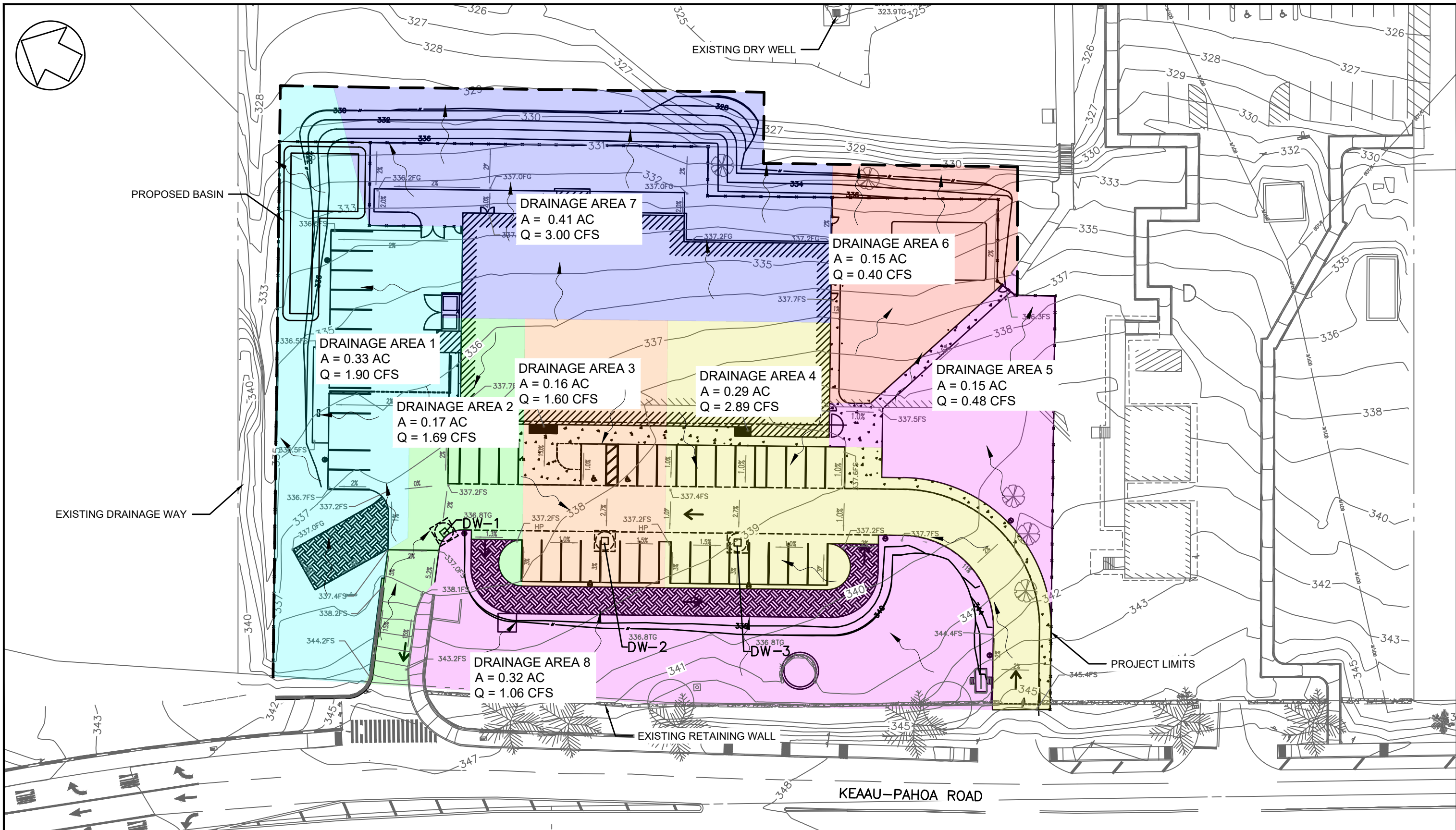
**COFFMAN ENGINEERS**  
745 Fort Street, Suite 400  
Honolulu, HI 96813  
Ph 808.687.8884  
www.coffman.com

**EXISTING DRAINAGE CONDITION**

PROJECT	DAGS KEA'AU & MOUNTAIN VIEW PUBLIC LIBRARY PLANNING	LOCATION	KEA'AU, HI
CLIENT	HHF	DATE	2/22/2023

EXHIBIT NO.  
**3**  
OF 4





**COFFMAN ENGINEERS**  
 745 Fort Street, Suite 400  
 Honolulu, HI 96813  
 ph 808.687.8884  
 www.coffman.com

PROPOSED DRAINAGE CONDITION	
PROJECT DAPS KEA'AU & MOUNTAIN VIEW PUBLIC LIBRARY PLANNING	LOCATION KEA'AU, HI
CLIENT HHF	DATE 2/22/2023

# EXISTING DRAINAGE Hydrograph 10-yr Summary

Project Name:

02-01-2023

Hydrology Studio v 3.0.0.26

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (min)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Drainage Area 1	0.631	5	189	---		
2	Rational	Drainage Area 2	6.422	5	1,927	---		
3	Rational	Drainage Area 3	2.569	5	771	---		

# Hydrograph Report

Project Name:

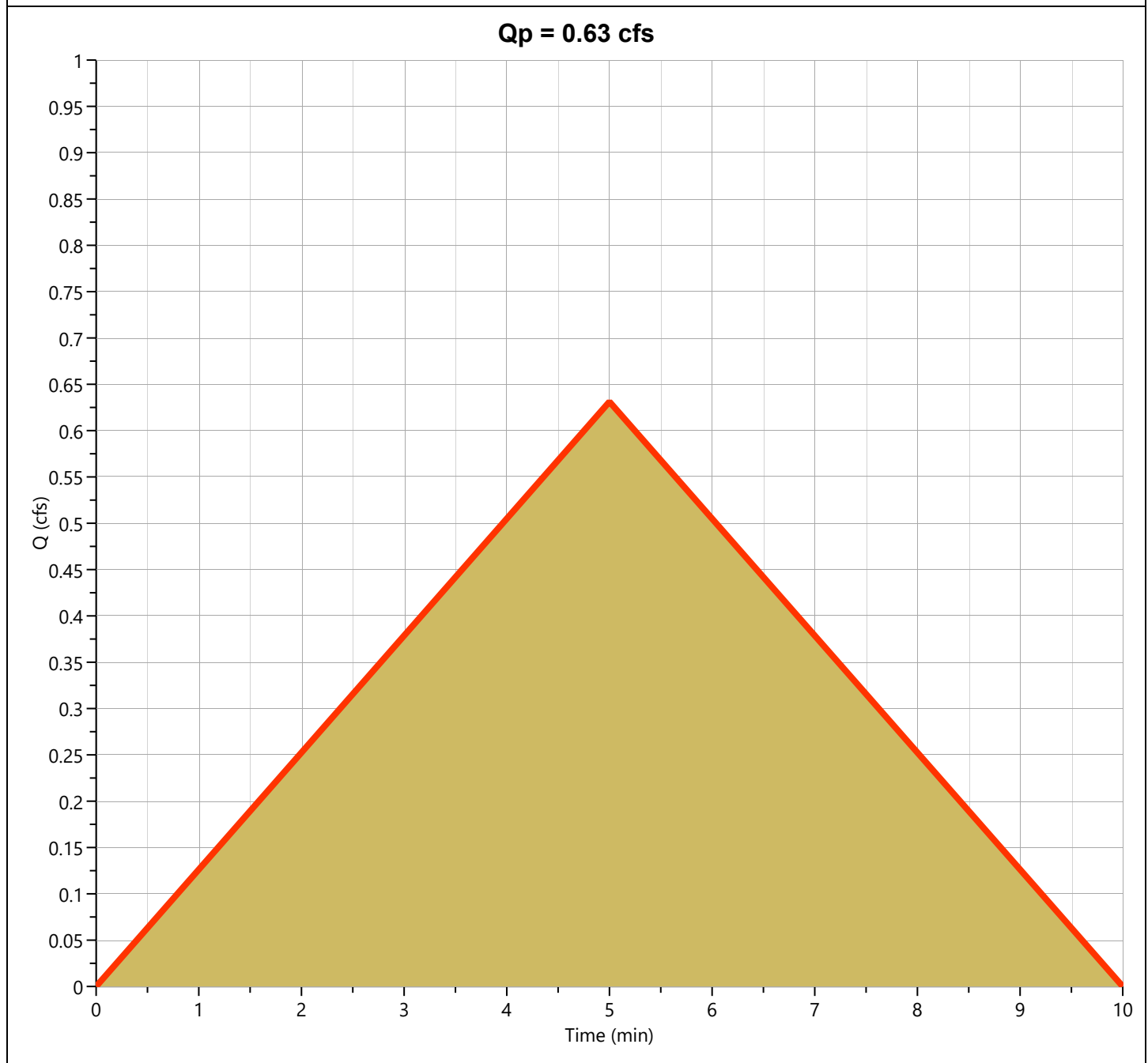
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage Area 1

## Hyd. No. 1

Hydrograph Type	= Rational	Peak Flow	= 0.631 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 189 cuft
Drainage Area	= 0.19 ac	Runoff Coeff.	= 0.3
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



# Hydrograph Report

Project Name:

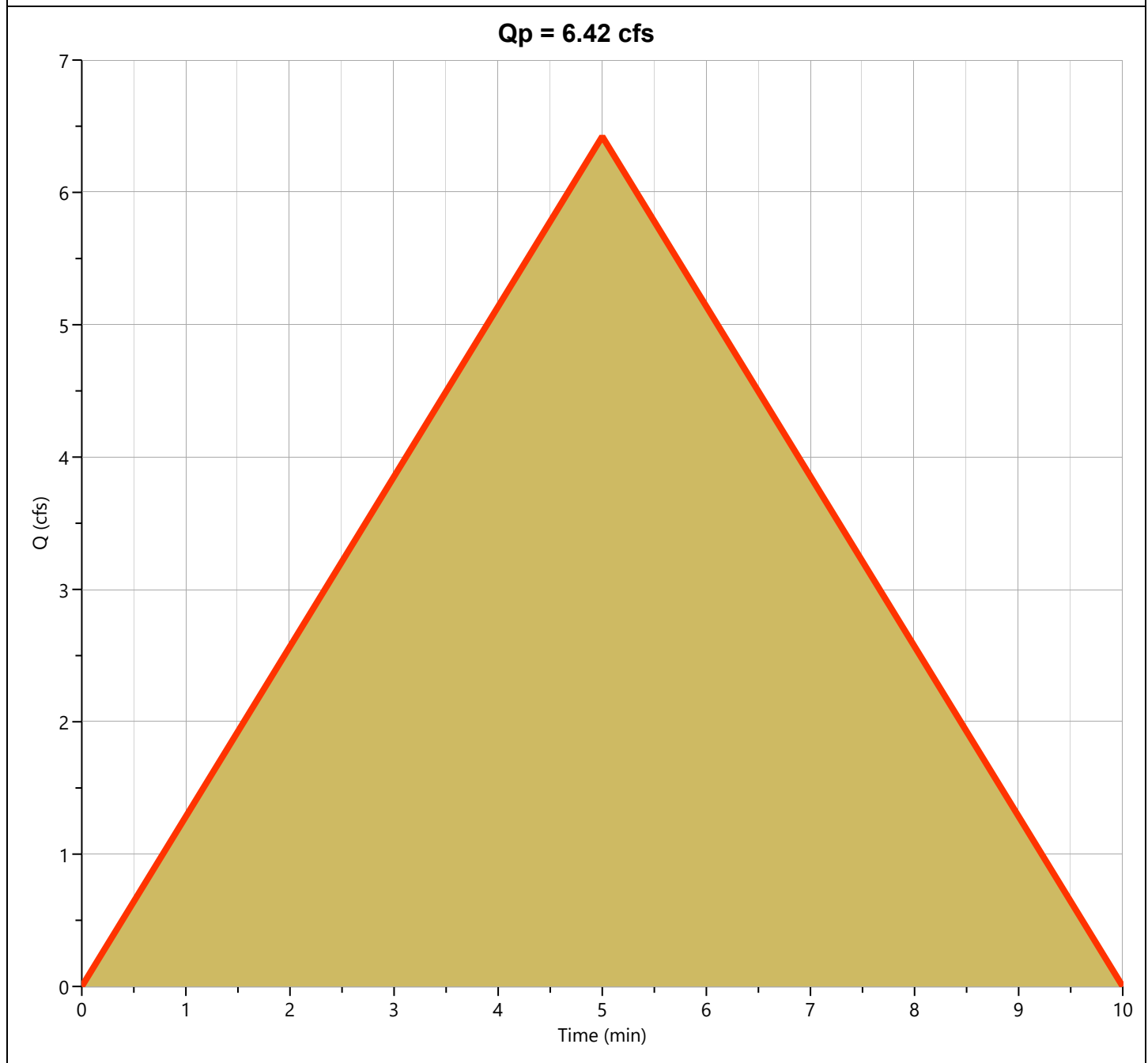
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage Area 2

## Hyd. No. 2

Hydrograph Type	= Rational	Peak Flow	= 6.422 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 1,927 cuft
Drainage Area	= 1.16 ac	Runoff Coeff.	= 0.5
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



# Hydrograph Report

Project Name:

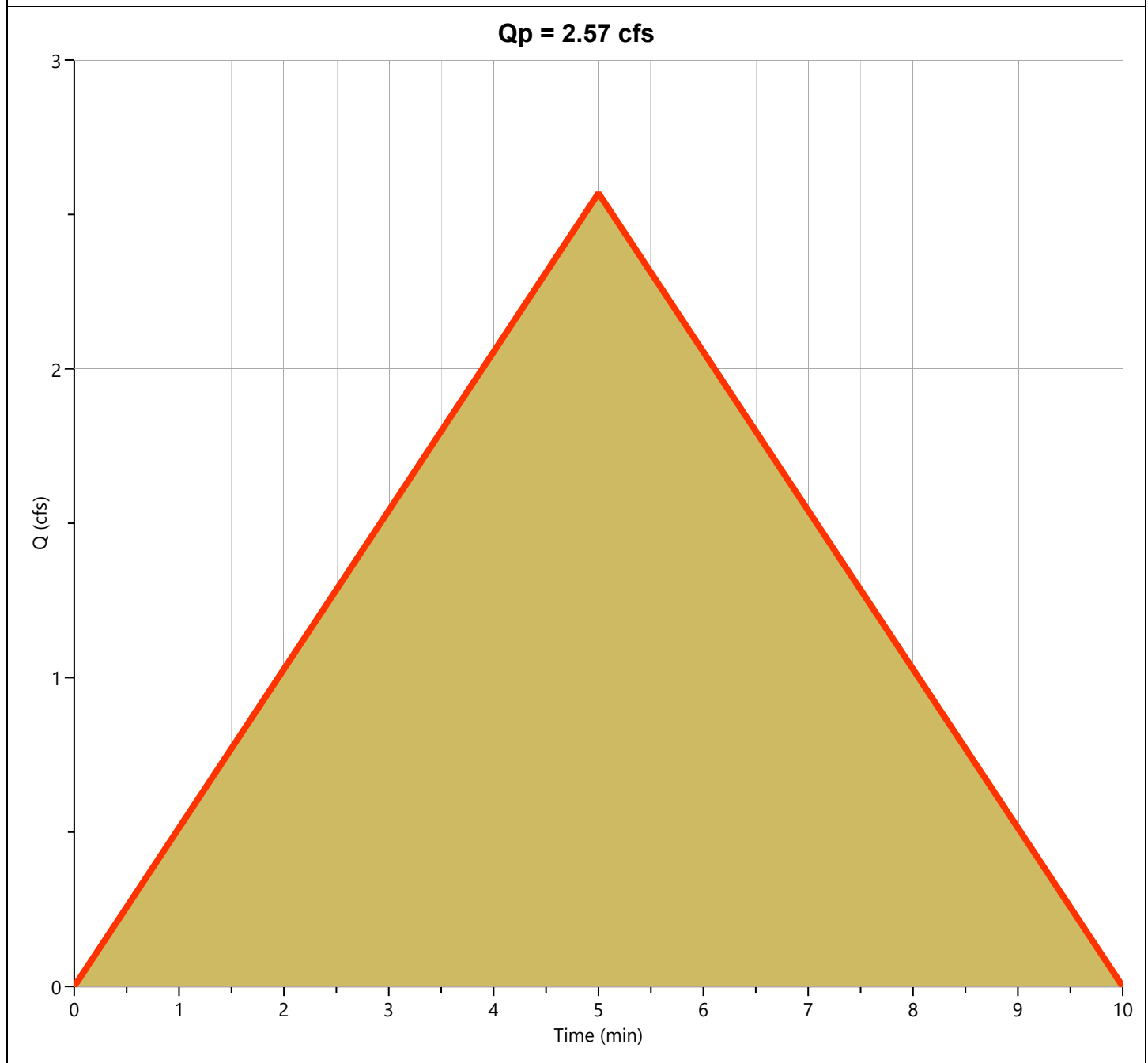
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage Area 3

## Hyd. No. 3

Hydrograph Type	= Rational	Peak Flow	= 2.569 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 771 cuft
Drainage Area	= 0.58 ac	Runoff Coeff.	= 0.4
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



# PROPOSED DRAINAGE Hydrograph 10-yr Summary

Project Name:

02-01-2023

Hydrology Studio v 3.0.0.26

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (min)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Drainage Area 1	1.900	5	570	---		
2	Rational	Drainage Area 2	1.694	5	508	---		
3	Rational	Drainage Area 3	1.595	5	478	---		
4	Rational	Drainage Area 4	2.890	5	867	---		
5	Rational	Drainage area 5	0.482	5	145	---		
6	Rational	Drainage Area 6	0.399	5	120	---		
7	Rational	Drainage Area 7	2.996	5	899	---		
8	Rational	Drainage Area 8	1.063	5	319	---		

# Hydrograph Report

Project Name:

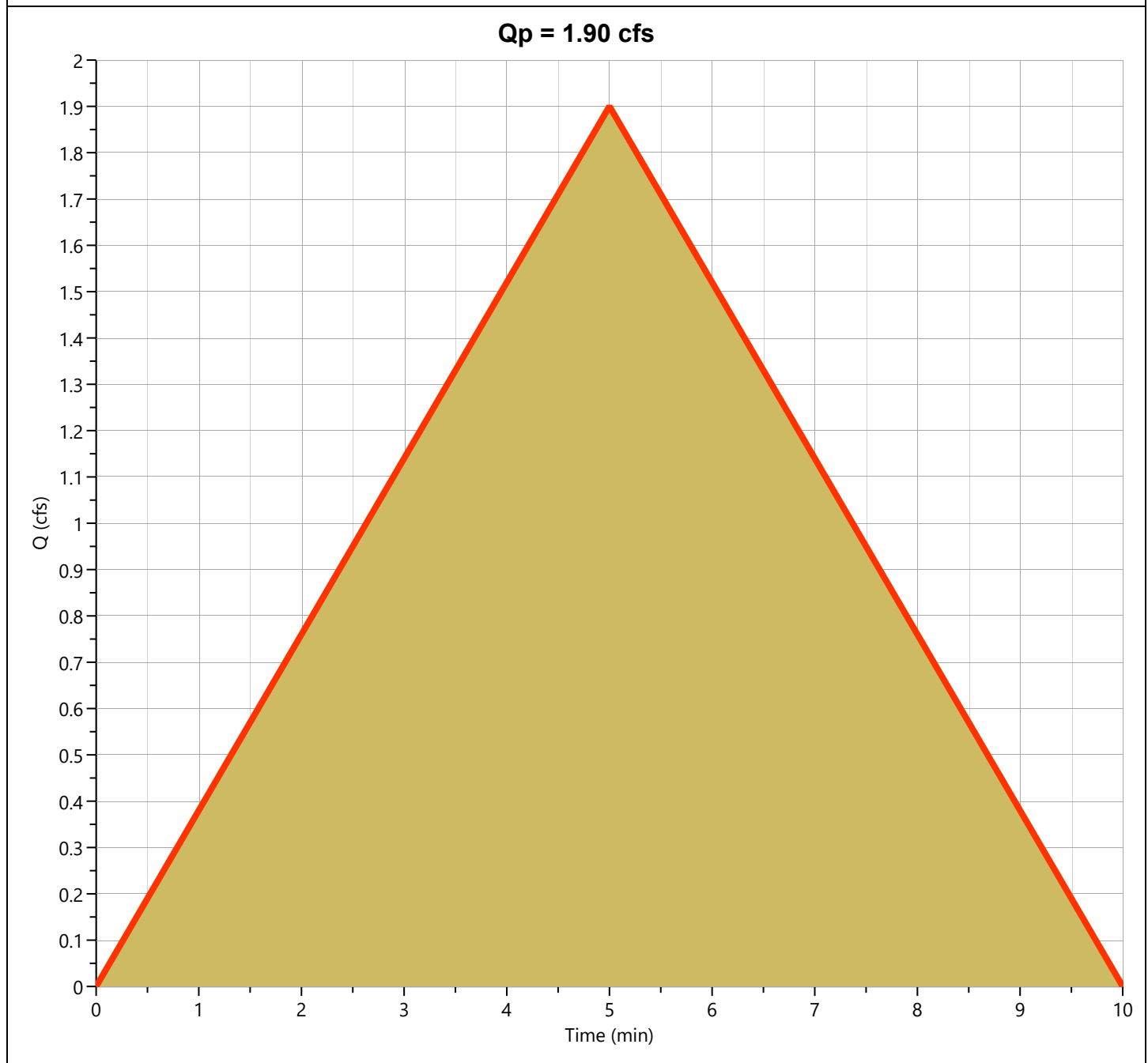
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage Area 1

## Hyd. No. 1

Hydrograph Type	= Rational	Peak Flow	= 1.900 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 570 cuft
Drainage Area	= 0.33 ac	Runoff Coeff.	= 0.52
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



# Hydrograph Report

Project Name:

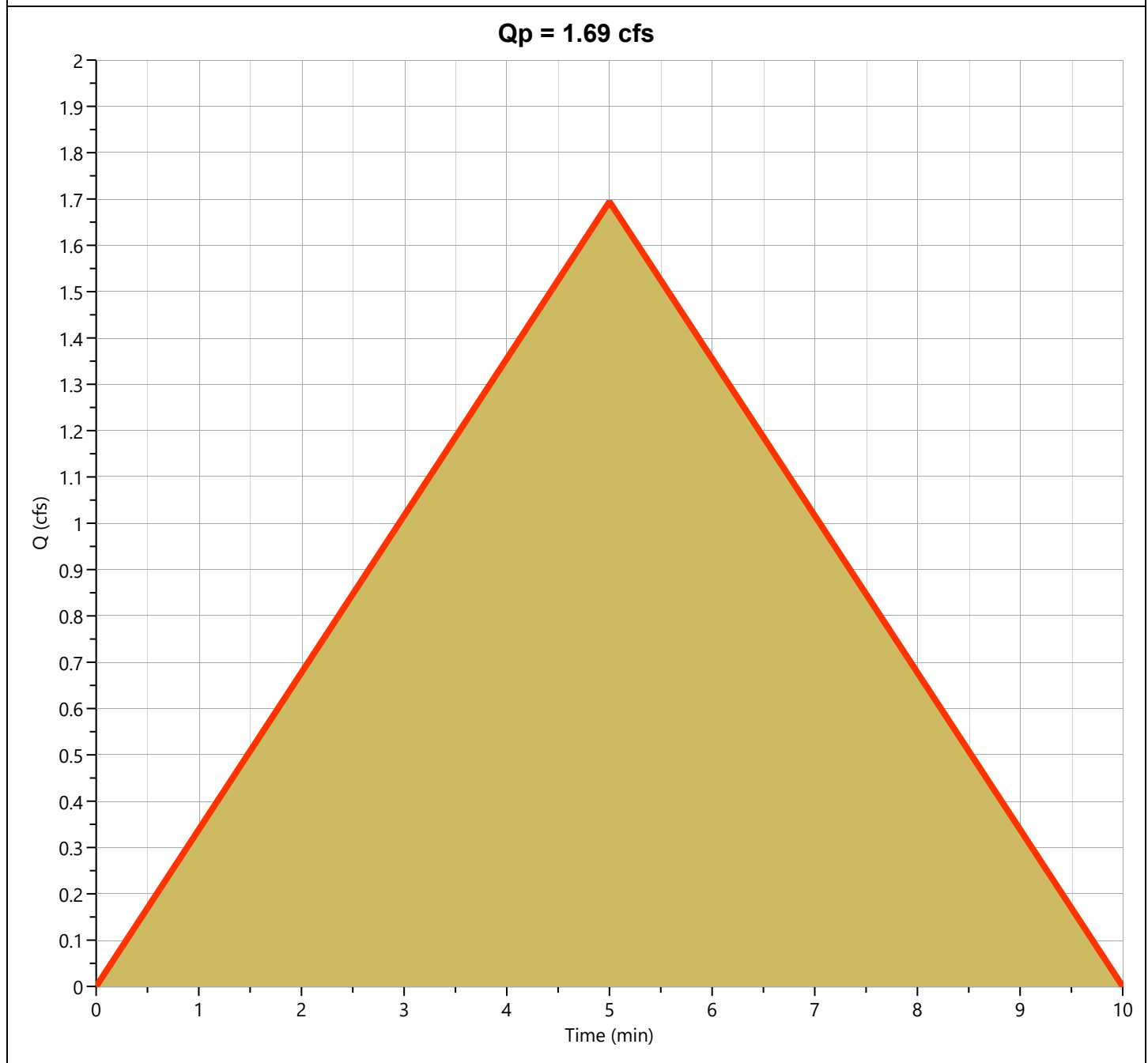
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage Area 2

## Hyd. No. 2

Hydrograph Type	= Rational	Peak Flow	= 1.694 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 508 cuft
Drainage Area	= 0.17 ac	Runoff Coeff.	= 0.9
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1





# Hydrograph Report

Project Name:

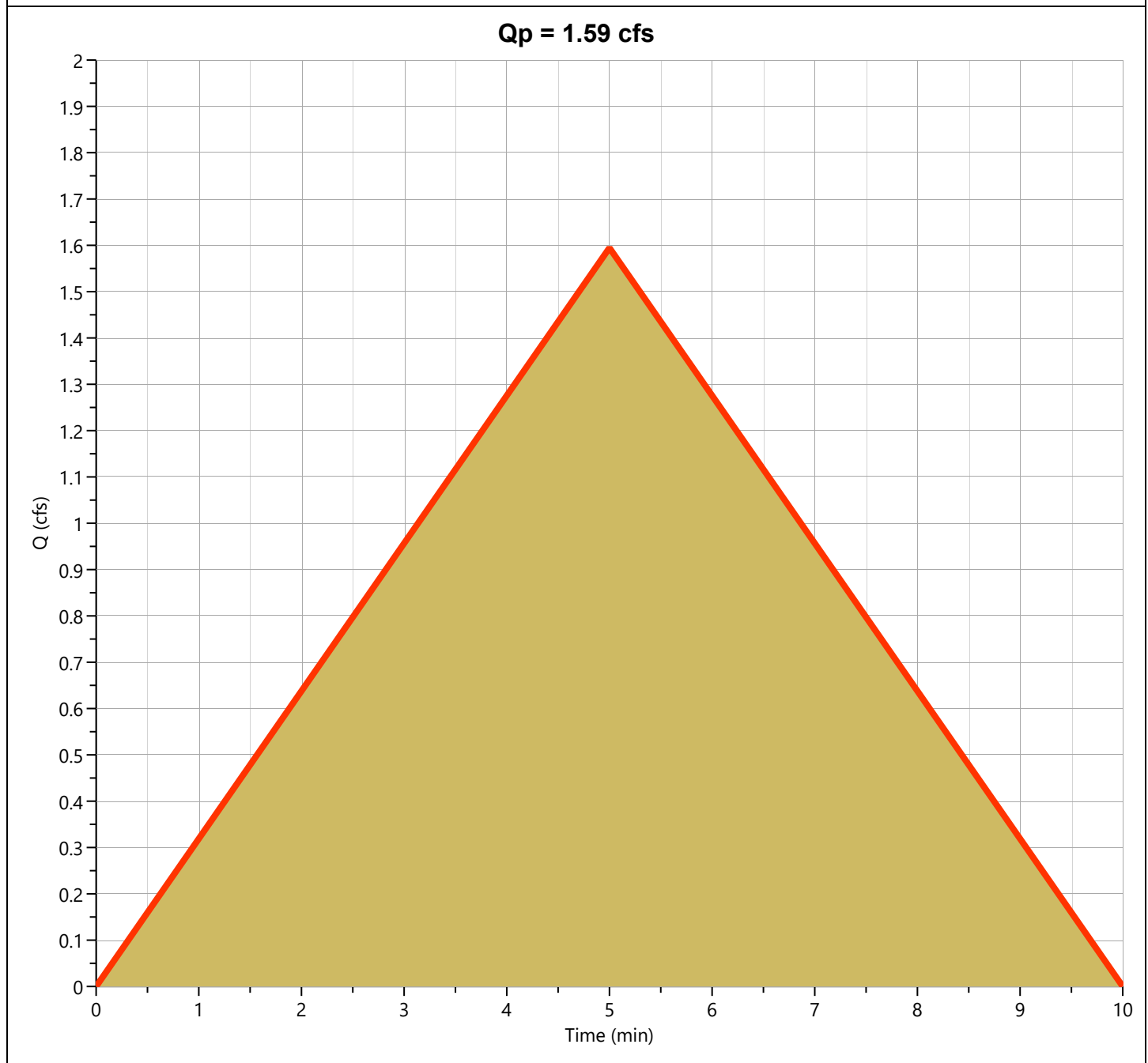
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage Area 3

## Hyd. No. 3

Hydrograph Type	= Rational	Peak Flow	= 1.595 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 478 cuft
Drainage Area	= 0.16 ac	Runoff Coeff.	= 0.9
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



# Hydrograph Report

Project Name:

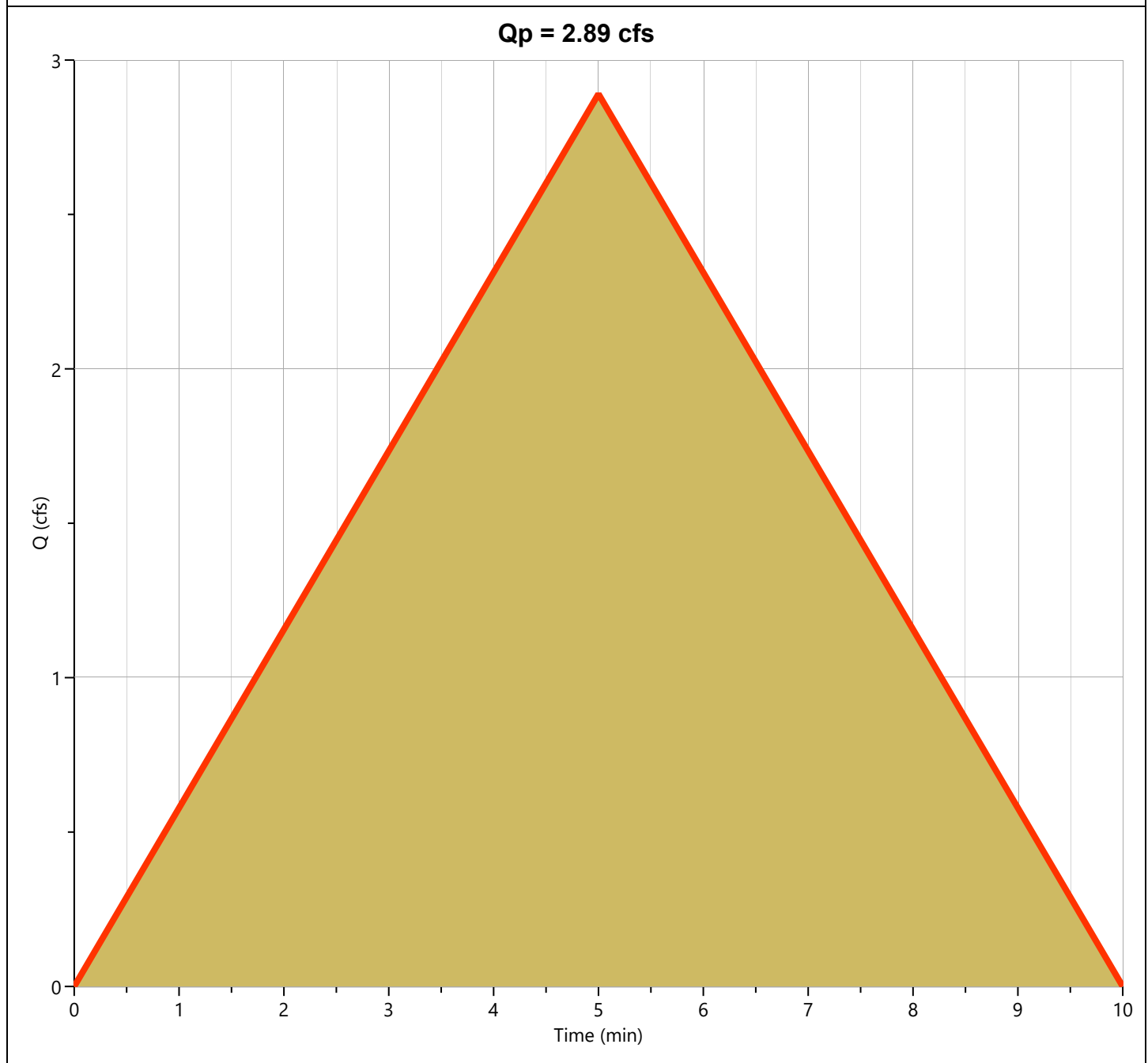
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage Area 4

## Hyd. No. 4

Hydrograph Type	= Rational	Peak Flow	= 2.890 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 867 cuft
Drainage Area	= 0.29 ac	Runoff Coeff.	= 0.9
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



# Hydrograph Report

Project Name:

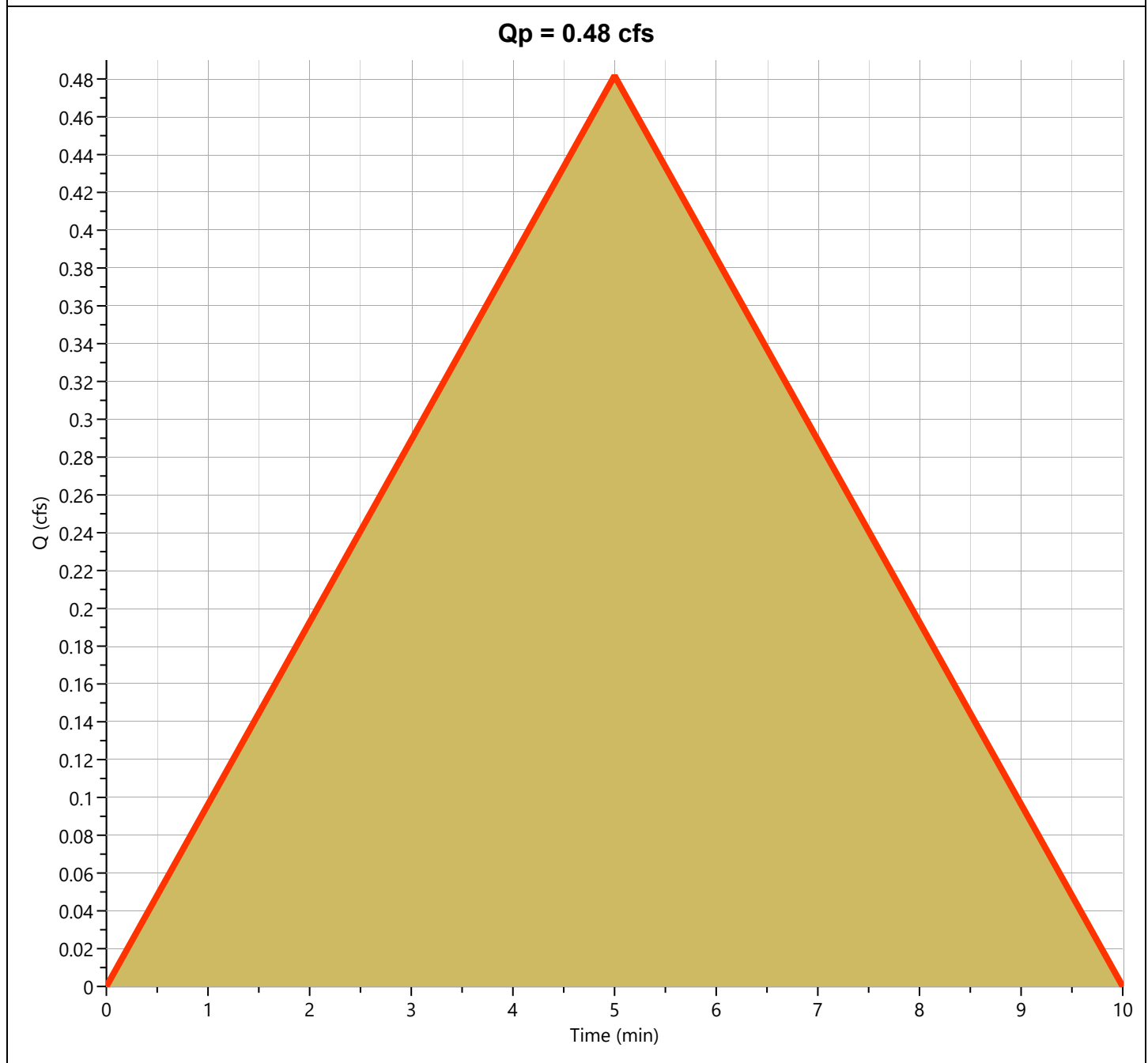
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage area 5

## Hyd. No. 5

Hydrograph Type	= Rational	Peak Flow	= 0.482 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 145 cuft
Drainage Area	= 0.15 ac	Runoff Coeff.	= 0.29
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



# Hydrograph Report

Project Name:

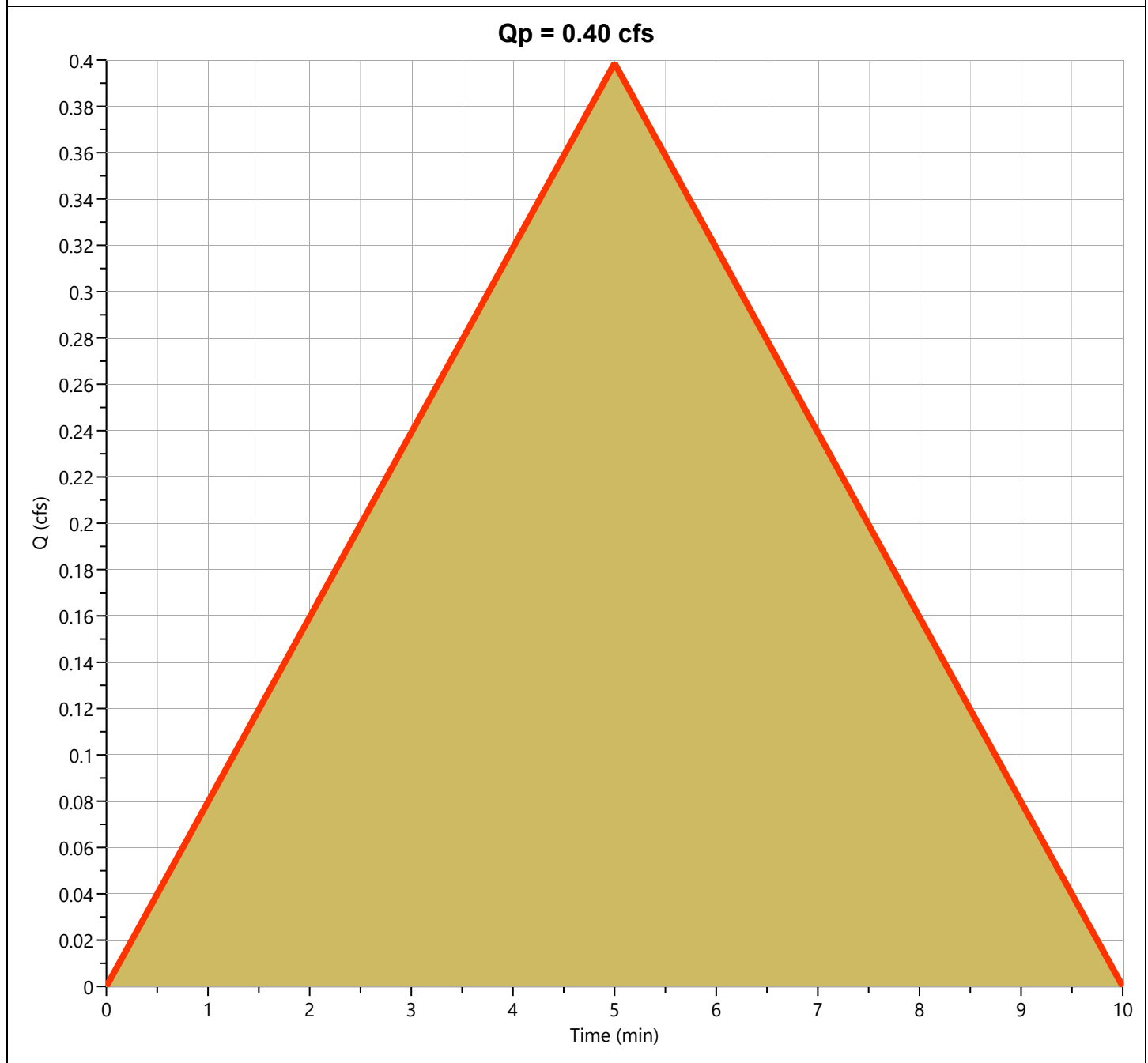
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage Area 6

## Hyd. No. 6

Hydrograph Type	= Rational	Peak Flow	= 0.399 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 120 cuft
Drainage Area	= 0.15 ac	Runoff Coeff.	= 0.24
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



# Hydrograph Report

Project Name:

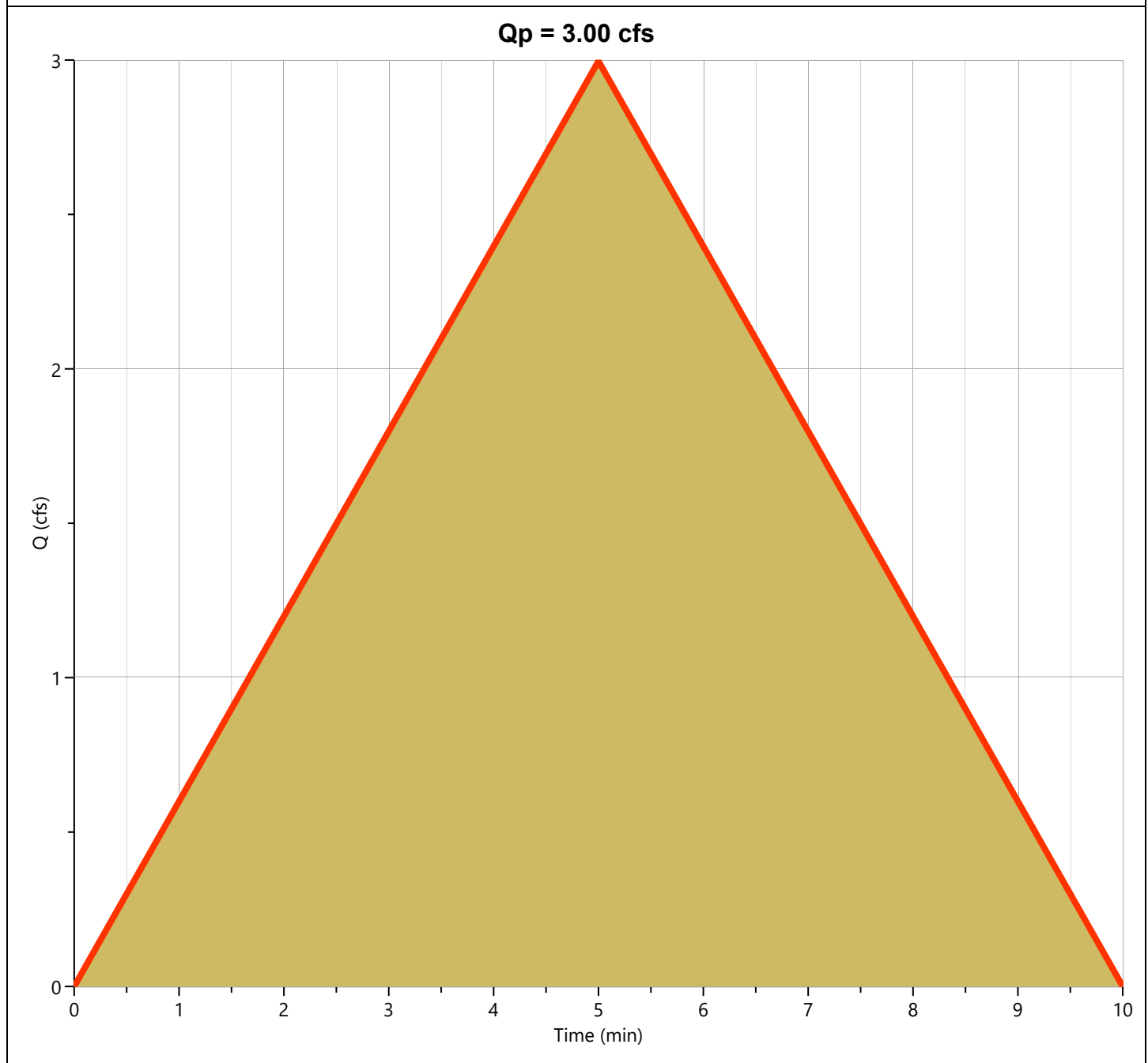
Hydrology Studio v 3.0.0.26

02-01-2023

## Drainage Area 7

## Hyd. No. 7

Hydrograph Type	= Rational	Peak Flow	= 2.996 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 899 cuft
Drainage Area	= 0.41 ac	Runoff Coeff.	= 0.66
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



# Hydrograph Report

Project Name:

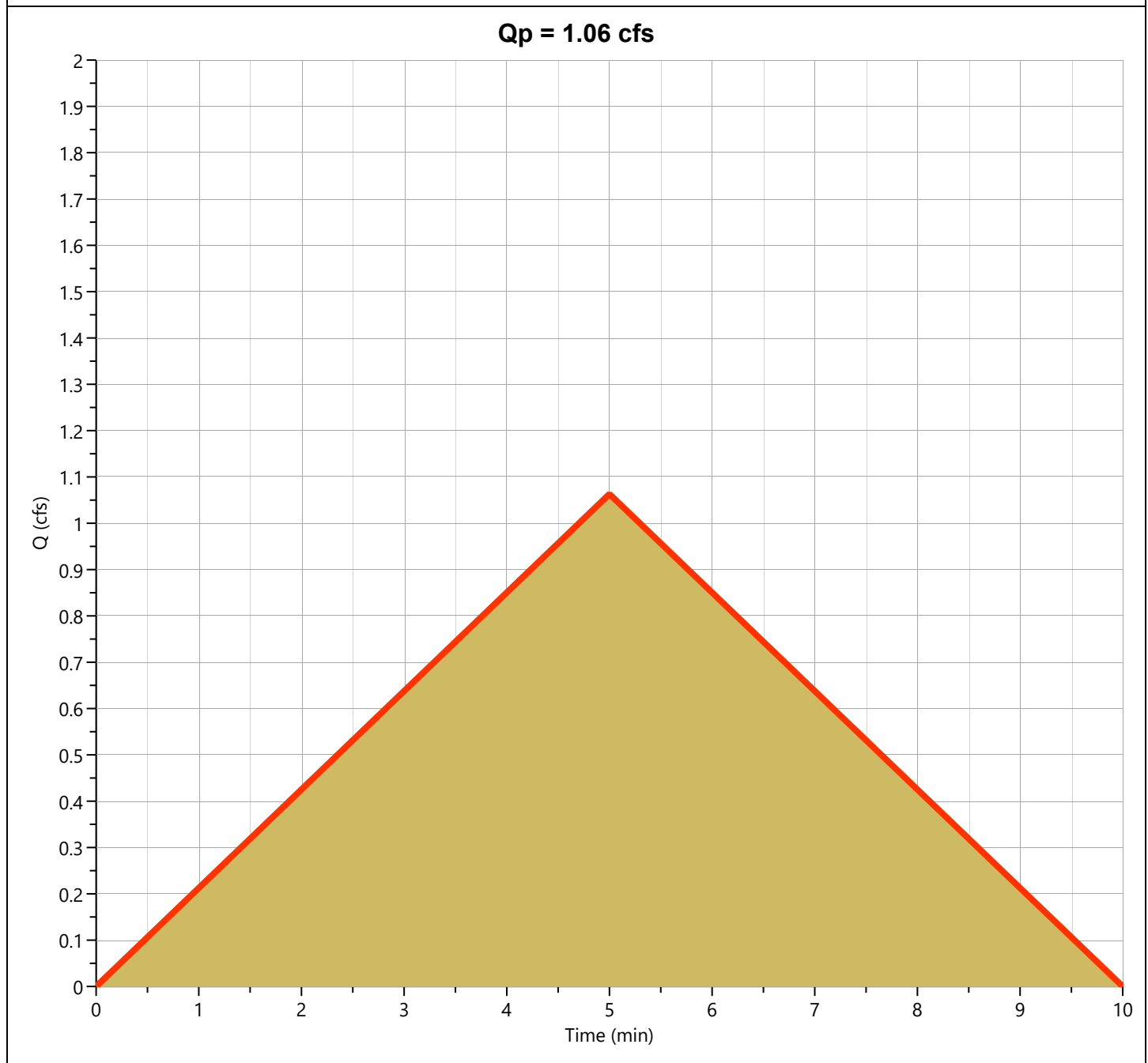
Hydrology Studio v 3.0.0.26

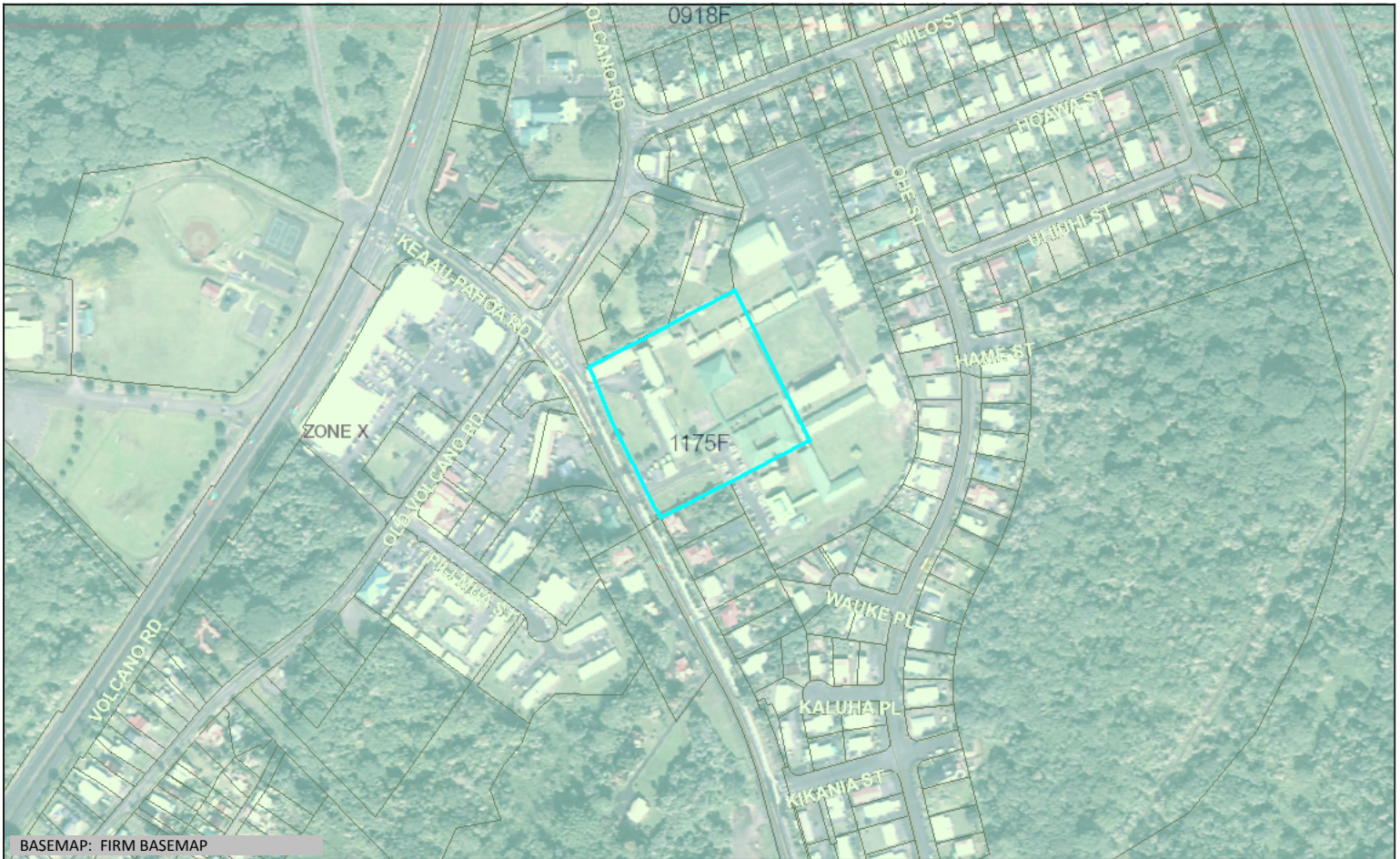
02-01-2023

## Drainage Area 8

## Hyd. No. 8

Hydrograph Type	= Rational	Peak Flow	= 1.063 cfs
Storm Frequency	= 10-yr	Time to Peak	= 5 min
Time Interval	= 1 min	Runoff Volume	= 319 cuft
Drainage Area	= 0.32 ac	Runoff Coeff.	= 0.3
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
IDF Curve	= Keaau Rainfall Intensity.idf	Intensity	= 11.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1





BASEMAP: FIRM BASEMAP



# Flood Hazard Assessment Report

www.hawaiiinfip.org

## Property Information

COUNTY: HAWAII  
 TMK NO: (3) 1-6-002:001  
 WATERSHED: KAAHAKINI  
 PARCEL ADDRESS: 16-565 KEAAU PAHOA RD  
 KEAAU, HI 96749

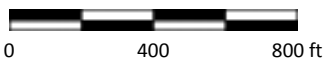
## Notes:

## Flood Hazard Information

FIRM INDEX DATE: SEPTEMBER 29, 2017  
 LETTER OF MAP CHANGE(S): NONE  
 FEMA FIRM PANEL: 1551661175F  
 PANEL EFFECTIVE DATE: SEPTEMBER 29, 2017

THIS PROPERTY IS WITHIN A TSUNAMI EVACUATION ZONE: NO  
 FOR MORE INFO, VISIT: <http://www.scd.hawaii.gov/>

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO  
 FOR MORE INFO, VISIT: <http://dlnreg.hawaii.gov/dam/>



*Disclaimer: The Hawaii Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use, accuracy, completeness, and timeliness of any information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR, its officers, and employees from any liability which may arise from its use of its data or information.*

*If this map has been identified as 'PRELIMINARY', please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determinations to be used for compliance with local floodplain management regulations.*

## FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND

(Note: legend does not correspond with NFHL)

**SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD** - The 1% annual chance flood (100-year), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

	<b>Zone A:</b> No BFE determined.
	<b>Zone AE:</b> BFE determined.
	<b>Zone AH:</b> Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
	<b>Zone AO:</b> Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
	<b>Zone V:</b> Coastal flood zone with velocity hazard (wave action); no BFE determined.
	<b>Zone VE:</b> Coastal flood zone with velocity hazard (wave action); BFE determined.
	<b>Zone AEF:</b> Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

**NON-SPECIAL FLOOD HAZARD AREA** - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

	<b>Zone XS (X shaded):</b> 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.
	<b>Zone X:</b> Areas determined to be outside the 0.2% annual chance floodplain.

## OTHER FLOOD AREAS

	<b>Zone D:</b> Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase applies, but coverage is available in participating communities.
--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



**NOAA Atlas 14, Volume 4, Version 3**  
**Location name: Keaau, Hawaii, USA\***  
**Latitude: 19.6224°, Longitude: -155.0392°**  
**Elevation: 344.35 ft\*\***  
 \* source: ESRI Maps  
 \*\* source: USGS



**POINT PRECIPITATION FREQUENCY ESTIMATES**

S. Perica, D. Martin, B. Lin, T. Parzybok, D. Riley, M. Yekta, L. Hiner, L.-C. Chen, D. Brewer, F. Yan, K. Maitaria, C. Trypaluk, G. M. Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aerals](#)

**PF tabular**

<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)<sup>1</sup></b>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
<b>5-min</b>	<b>0.541</b> (0.501-0.598)	<b>0.655</b> (0.606-0.748)	<b>0.812</b> (0.750-0.927)	<b>0.928</b> (0.852-1.06)	<b>1.08</b> (0.976-1.25)	<b>1.19</b> (1.06-1.38)	<b>1.29</b> (1.14-1.52)	<b>1.40</b> (1.22-1.67)	<b>1.53</b> (1.30-1.86)	<b>1.64</b> (1.36-2.01)
<b>10-min</b>	<b>0.802</b> (0.743-0.887)	<b>0.972</b> (0.898-1.11)	<b>1.20</b> (1.11-1.38)	<b>1.38</b> (1.26-1.58)	<b>1.60</b> (1.45-1.85)	<b>1.76</b> (1.58-2.05)	<b>1.92</b> (1.70-2.26)	<b>2.08</b> (1.81-2.47)	<b>2.28</b> (1.93-2.76)	<b>2.43</b> (2.02-2.99)
<b>15-min</b>	<b>1.01</b> (0.933-1.11)	<b>1.22</b> (1.13-1.39)	<b>1.51</b> (1.40-1.73)	<b>1.73</b> (1.59-1.98)	<b>2.00</b> (1.82-2.32)	<b>2.21</b> (1.98-2.58)	<b>2.41</b> (2.13-2.84)	<b>2.61</b> (2.27-3.10)	<b>2.86</b> (2.43-3.47)	<b>3.05</b> (2.53-3.75)
<b>30-min</b>	<b>1.42</b> (1.31-1.57)	<b>1.72</b> (1.59-1.96)	<b>2.13</b> (1.97-2.43)	<b>2.43</b> (2.23-2.79)	<b>2.82</b> (2.56-3.26)	<b>3.11</b> (2.79-3.63)	<b>3.39</b> (3.00-3.99)	<b>3.67</b> (3.19-4.37)	<b>4.02</b> (3.42-4.88)	<b>4.29</b> (3.57-5.28)
<b>60-min</b>	<b>1.87</b> (1.73-2.06)	<b>2.26</b> (2.09-2.58)	<b>2.80</b> (2.59-3.20)	<b>3.20</b> (2.94-3.67)	<b>3.71</b> (3.37-4.29)	<b>4.09</b> (3.67-4.77)	<b>4.46</b> (3.94-5.25)	<b>4.83</b> (4.20-5.75)	<b>5.29</b> (4.50-6.42)	<b>5.64</b> (4.69-6.94)
<b>2-hr</b>	<b>2.63</b> (2.43-2.94)	<b>3.27</b> (3.02-3.73)	<b>4.12</b> (3.80-4.70)	<b>4.75</b> (4.37-5.45)	<b>5.59</b> (5.08-6.47)	<b>6.23</b> (5.60-7.27)	<b>6.86</b> (6.07-8.08)	<b>7.50</b> (6.53-8.94)	<b>8.35</b> (7.09-10.1)	<b>8.99</b> (7.48-11.1)
<b>3-hr</b>	<b>3.09</b> (2.84-3.45)	<b>3.92</b> (3.62-4.47)	<b>4.96</b> (4.56-5.66)	<b>5.74</b> (5.27-6.58)	<b>6.78</b> (6.14-7.84)	<b>7.57</b> (6.78-8.84)	<b>8.36</b> (7.39-9.85)	<b>9.16</b> (7.96-10.9)	<b>10.2</b> (8.67-12.4)	<b>11.0</b> (9.16-13.6)
<b>6-hr</b>	<b>4.27</b> (3.89-4.81)	<b>5.34</b> (4.94-6.10)	<b>6.84</b> (6.30-7.81)	<b>7.98</b> (7.32-9.16)	<b>9.52</b> (8.62-11.0)	<b>10.7</b> (9.59-12.5)	<b>11.9</b> (10.5-14.0)	<b>13.1</b> (11.4-15.6)	<b>14.8</b> (12.6-17.9)	<b>16.1</b> (13.4-19.8)
<b>12-hr</b>	<b>5.71</b> (5.20-6.45)	<b>7.21</b> (6.66-8.24)	<b>9.29</b> (8.57-10.6)	<b>10.9</b> (10.0-12.5)	<b>13.1</b> (11.9-15.2)	<b>14.9</b> (13.3-17.4)	<b>16.7</b> (14.7-19.6)	<b>18.6</b> (16.1-22.1)	<b>21.1</b> (17.9-25.6)	<b>23.2</b> (19.2-28.4)
<b>24-hr</b>	<b>7.30</b> (6.59-8.12)	<b>9.32</b> (8.38-10.3)	<b>12.1</b> (10.9-13.5)	<b>14.3</b> (12.8-16.0)	<b>17.4</b> (15.4-19.5)	<b>19.8</b> (17.4-22.3)	<b>22.4</b> (19.5-25.3)	<b>25.0</b> (21.5-28.5)	<b>28.7</b> (24.3-33.0)	<b>31.6</b> (26.4-36.6)
<b>2-day</b>	<b>9.75</b> (8.86-10.7)	<b>12.4</b> (11.2-13.7)	<b>16.0</b> (14.5-17.7)	<b>18.8</b> (17.0-20.9)	<b>22.7</b> (20.4-25.4)	<b>25.8</b> (23.0-28.9)	<b>29.0</b> (25.6-32.6)	<b>32.3</b> (28.2-36.5)	<b>36.8</b> (31.6-42.0)	<b>40.3</b> (34.2-46.5)
<b>3-day</b>	<b>10.9</b> (9.87-11.9)	<b>13.8</b> (12.5-15.2)	<b>17.8</b> (16.2-19.7)	<b>21.0</b> (19.0-23.3)	<b>25.3</b> (22.7-28.2)	<b>28.7</b> (25.5-32.0)	<b>32.1</b> (28.4-36.1)	<b>35.7</b> (31.2-40.3)	<b>40.5</b> (34.9-46.3)	<b>44.3</b> (37.6-51.0)
<b>4-day</b>	<b>12.0</b> (10.9-13.2)	<b>15.2</b> (13.8-16.8)	<b>19.7</b> (17.9-21.7)	<b>23.2</b> (20.9-25.6)	<b>27.9</b> (25.0-31.0)	<b>31.5</b> (28.1-35.2)	<b>35.2</b> (31.1-39.5)	<b>39.1</b> (34.2-44.1)	<b>44.3</b> (38.1-50.5)	<b>48.3</b> (41.0-55.5)
<b>7-day</b>	<b>14.2</b> (12.9-15.7)	<b>18.1</b> (16.4-20.0)	<b>23.3</b> (21.1-25.9)	<b>27.4</b> (24.7-30.4)	<b>32.8</b> (29.3-36.6)	<b>37.0</b> (32.8-41.4)	<b>41.2</b> (36.2-46.4)	<b>45.4</b> (39.6-51.5)	<b>51.2</b> (43.9-58.6)	<b>55.6</b> (47.1-64.2)
<b>10-day</b>	<b>16.6</b> (15.0-18.3)	<b>20.9</b> (19.0-23.1)	<b>26.8</b> (24.2-29.7)	<b>31.3</b> (28.2-34.7)	<b>37.3</b> (33.4-41.6)	<b>41.8</b> (37.2-46.9)	<b>46.4</b> (40.9-52.3)	<b>51.1</b> (44.6-57.9)	<b>57.3</b> (49.2-65.6)	<b>62.0</b> (52.5-71.6)
<b>20-day</b>	<b>23.1</b> (21.1-25.6)	<b>28.7</b> (26.1-31.7)	<b>36.1</b> (32.7-40.0)	<b>41.7</b> (37.7-46.3)	<b>49.1</b> (44.1-54.8)	<b>54.8</b> (48.8-61.4)	<b>60.4</b> (53.3-68.0)	<b>66.1</b> (57.7-74.9)	<b>73.5</b> (63.2-84.2)	<b>79.2</b> (67.2-91.5)
<b>30-day</b>	<b>28.6</b> (26.0-31.6)	<b>35.1</b> (31.9-38.8)	<b>43.8</b> (39.6-48.4)	<b>50.4</b> (45.4-55.9)	<b>59.1</b> (52.9-65.9)	<b>65.8</b> (58.5-73.6)	<b>72.4</b> (63.8-81.5)	<b>79.1</b> (69.0-89.6)	<b>88.0</b> (75.6-101)	<b>94.7</b> (80.2-109)
<b>45-day</b>	<b>35.7</b> (32.5-39.5)	<b>43.4</b> (39.4-48.0)	<b>53.8</b> (48.6-59.6)	<b>61.7</b> (55.5-68.5)	<b>72.2</b> (64.5-80.6)	<b>80.3</b> (71.2-90.0)	<b>88.3</b> (77.7-99.6)	<b>96.5</b> (84.1-110)	<b>107</b> (92.1-123)	<b>116</b> (97.8-134)
<b>60-day</b>	<b>41.3</b> (37.4-45.4)	<b>49.8</b> (45.2-54.9)	<b>61.3</b> (55.5-67.7)	<b>70.1</b> (63.2-77.7)	<b>81.8</b> (73.3-91.3)	<b>91.0</b> (80.8-102)	<b>100</b> (88.1-113)	<b>110</b> (95.4-124)	<b>122</b> (105-140)	<b>132</b> (112-152)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

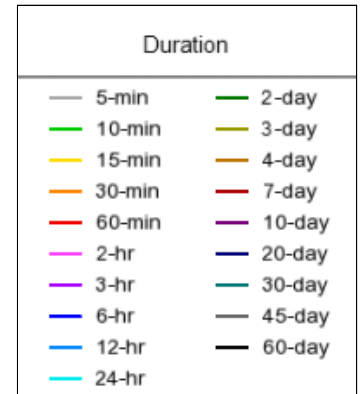
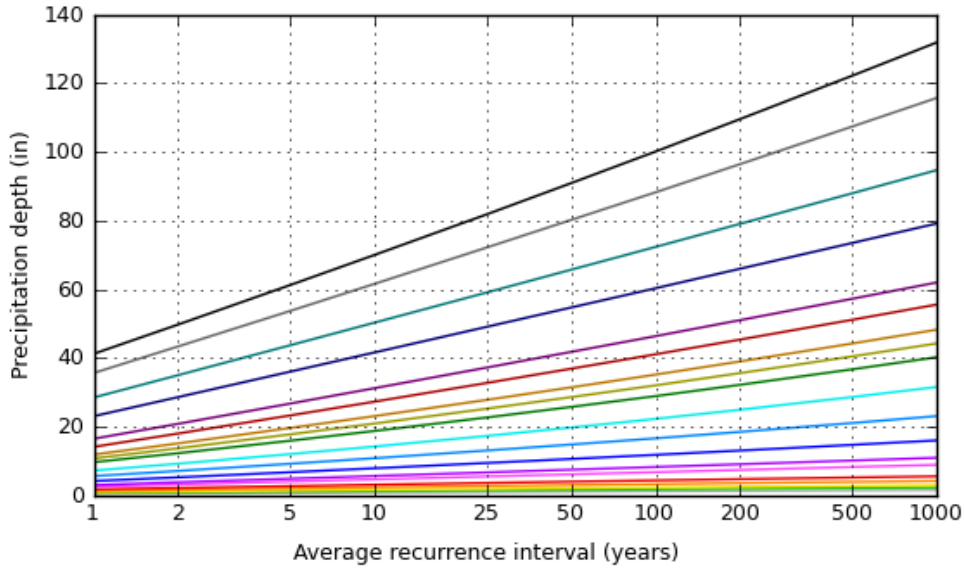
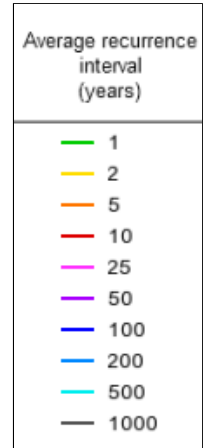
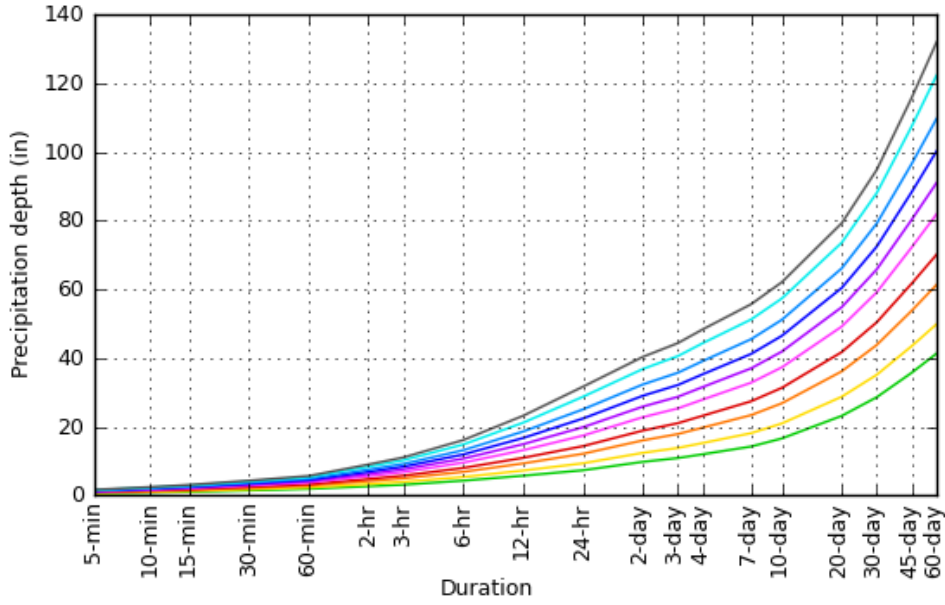
[Back to Top](#)

**PF graphical**



### PDS-based depth-duration-frequency (DDF) curves

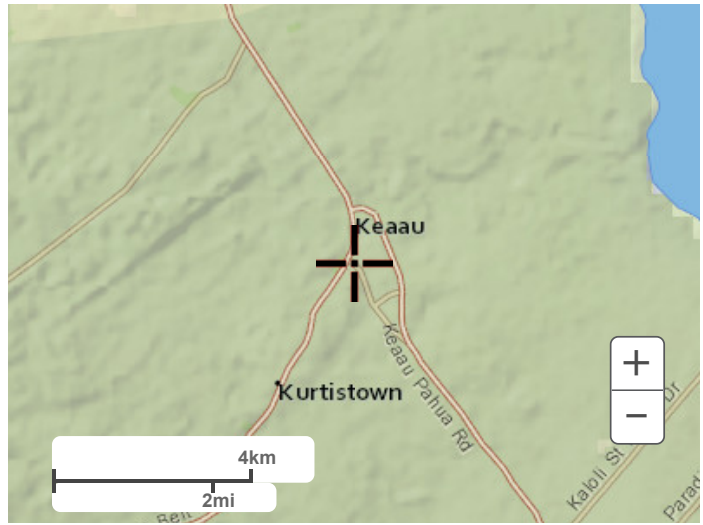
Latitude: 19.6224°, Longitude: -155.0392°



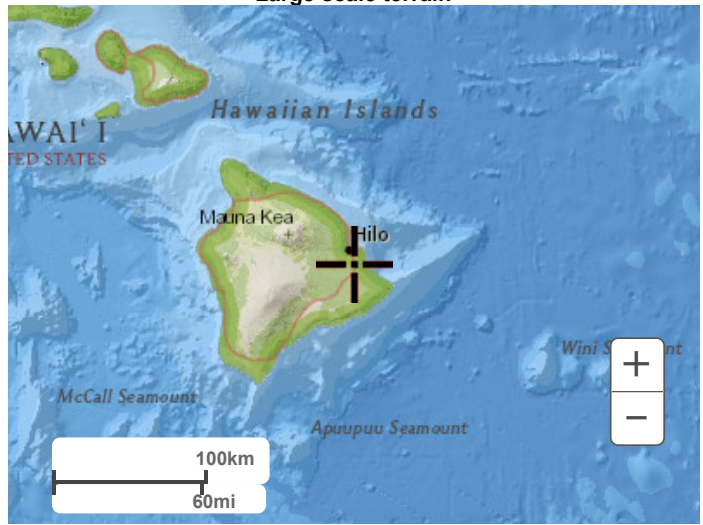
[Back to Top](#)

## Maps & aerials

Small scale terrain



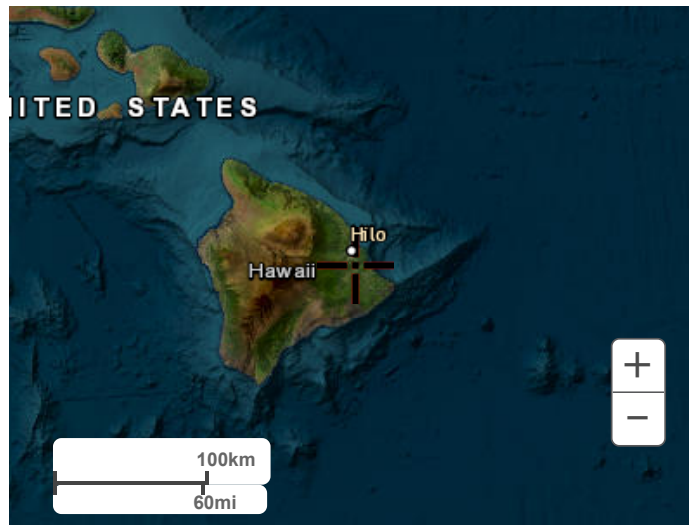
Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

---

[US Department of Commerce](#)  
[National Oceanic and Atmospheric Administration](#)  
[National Weather Service](#)  
[National Water Center](#)  
1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)

Soil Map—Island of Hawaii Area, Hawaii



Soil Map may not be valid at this scale.

Map Scale: 1:900 if printed on B portrait (11" x 17") sheet.


0 10 20 40 60 80 100 120 140 160 180 200 Meters

0 40 80 120 160 200 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 5N WGS84

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Hawaii Area, Hawaii  
 Survey Area Data: Version 15, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

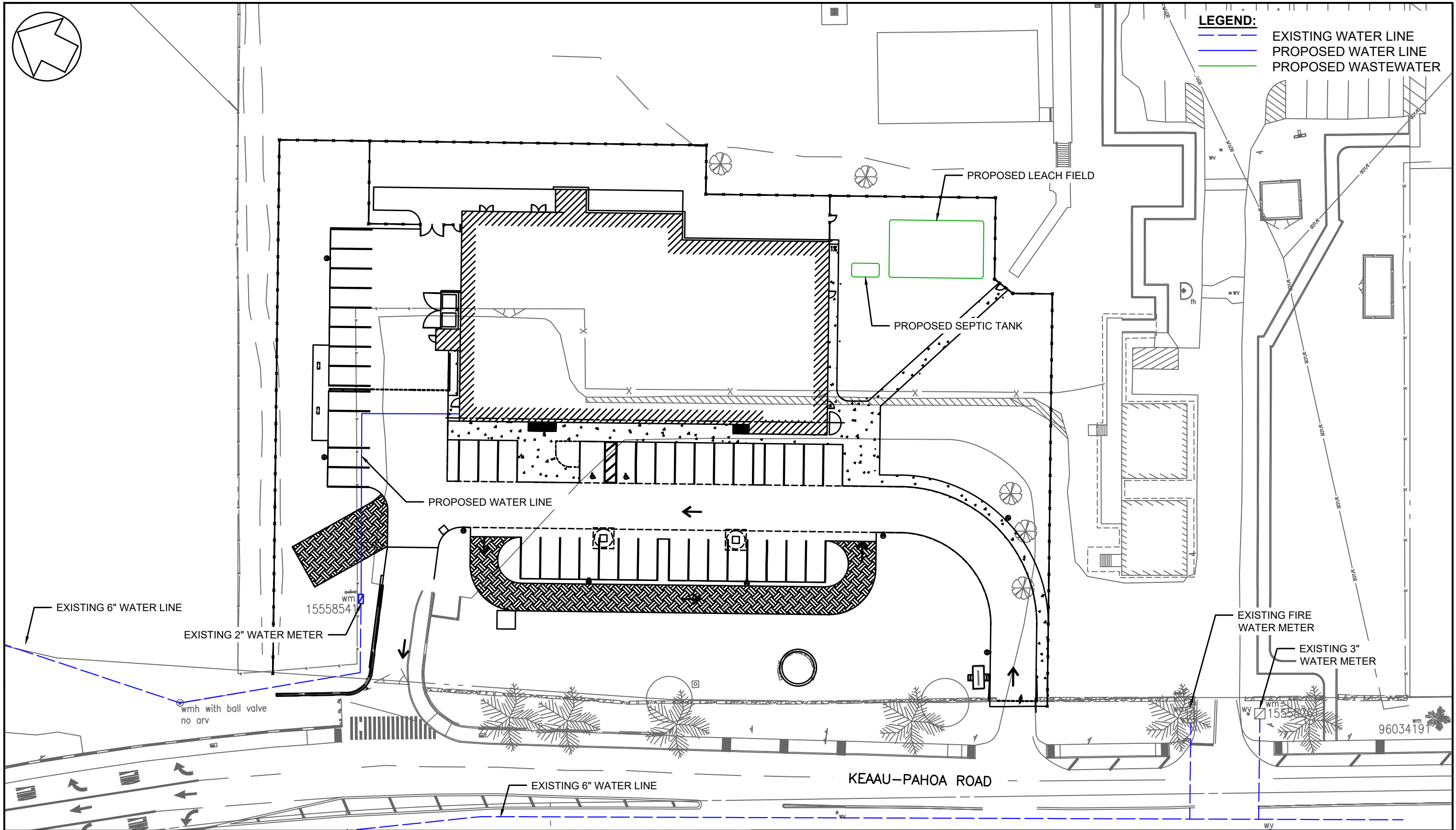
Date(s) aerial images were photographed: Jan 3, 2019—Jun 28, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
629	Panaewa very cobbly hydrous loam, 2 to 10 percent slopes	3.7	100.0%
<b>Totals for Area of Interest</b>		<b>3.7</b>	<b>100.0%</b>

# APPENDIX B: UTILITY PLAN AND CALCULATIONS



**COFFMAN ENGINEERS**  
 745 Fort Street, Suite 400  
 Honolulu, HI 96813  
 ph 808.687.8884  
 www.coffman.com

PROPOSED UTILITY PLAN	
PROJECT DAGS KEA'AU & MOUNTAIN VIEW PUBLIC LIBRARY PLANNING	LOCATION KEA'AU, HI
CLIENT HHF	DATE 2/22/2023

EXHIBIT NO.  
**1**  
 OF 1



**KEAAU MOUNTAIN VIEW LIBRARY  
KEAAU, PUNA, ISLAND OF HAWAII  
TMK: (3) 1-6-002: 001**

**Area calculations/Maximum allowed wastewater load:**

Total Property Area: 5.97 acres = 260,053 sf.

Total usable area = land area – building footprints

260,053 – 38,110 = 221,943 sf.

Maximum allowed wastewater load = 221,943 sf x (1,000gal/10,000sf) = 22,194 gpd

Maximum allowed wastewater load = 22,194 gpd

**Estimate of Wastewater Generation:**

20 Workers working in Library and 160 Library visitors

(20)–Employees x 20 gpd/employee = 400 gpd

(160)–Visitors x 5 gpd/visitor = 800 gpd

Total wastewater load for Septic System = 1,200 gpd.

**Septic Tank Selection:**

$(Q - 800) \times 1.25 + 1000 =$

$(1200 - 800) \times 1.25 + 1000 = 1,500$

Use (1) 1500–gallon septic tank

Septic tank lies within non–traffic area

The Septic Tank shall be non–traffic rated

**Absorption Field Design:**

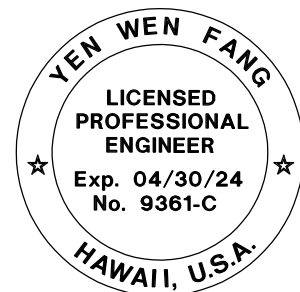
Assumed Percolation Rate = 2 min./inch with 3' of suitable soil replacement

Based on 2 min./inch: 85 sqft per bedroom is required for absorption field

Equivalent bedrooms (1rm = 200 gpd)  $1200 / 200 = 6$  rooms

Use (1) 18'x30' Absorbtion Bed = 540 sf bed > required 510 sf

The absorption bed lies within non–traffic area



THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION,  
CONSTRUCTION OF THIS PROJECT  
WILL BE UNDER MY OBSERVATION.

\_\_\_\_\_  
SIGNATURE



455 E. Lanikaula St.  
Hilo Hawai'i 96720  
Main (808) 933-7900 www.epinc.pro  
Hawai'i | Las Vegas

**KEAAU MT. VIEW LIBRARY**

**EPJN: 14107-22-01**

PUNA, HAWAII  
TMK: (3) 1-6-002: 001

PREPARED BY OH  
CHECKED BY YWF  
DATE 12/16/2022

14107-22-01

February 16, 2023

County of Hawaii  
Department of Water Supply  
345 Kekūanāoʻa Street  
Hilo, HI 96720

Attention: Manager-Chief Engineer,

**Subject: Keaʻau-Mountain View Public Library**  
DAGS Project No. 11-36-6628  
16-565 Keaʻau-Pahoa Road  
TMK: 1-6-002:001

Submitted herein is the water demand calculation for the proposed Keaau-Mountain View Public Library for your review and approval. The proposed Keaau-Mountain View Public Library will replace the two existing public libraries in the Keaʻau and Mountain View areas that are both located on Department of Education (DOE) public school campuses. The two existing libraries have restricted community access and library operations. The new Keaʻau-Mountain View Library will be located on the Keaʻau Middle School property along the Keaʻau Pahoa Road and will provide the communities with better access to the library's resources.

KEAAU PUBLIC LIBRARY

Total Occupancy Load = 227 (8 Employees and 219 Library Users)  
8 Employees x 20 gpd/Employees = 160 gpd  
Library users = 219 library users x 3 gpd/user = 657 gpd

Total Water Average Daily Demand

160 gpd + 657 gpd = 817 gpd

The proposed Keaʻau-Mountain View Public Library has a water fixture units count of 57.9, which is equal to 55 gpm of peak hour flow (see attached "Exhibit A").

Page 2 of 2  
County of Hawaii  
Manager-Chief Engineer

**Conclusion:**

The Kea'au-Mountain View Public Library project water usage has an average 817 gpd and peak hour flow of 55 gpm.

Sincerely,

ENGINEERING PARTNERS, INC.

Yen Wen Fang, P.E.  
Principal

# “EXHIBIT A”

Engineering Partners, INC.

Job Name: KEA'AU-MOUNTAIN VIEW PUBLIC LIBRARY

## PROPOSED DOMESTIC

		ultra flow private	ultra flow public	private	public	
Water Closet - Flush Valve		3.4	5.6	6	10	
	Qty	0	5	0	0	28.00
Water Closet - Flush Tank		1.7	1.7	2.5	2.5	
	Qty	0	0	0	0	0.00
Urinal		1	2.8	3	4	
	Qty	0	1	0	0	2.80
Lavatory		0.6	1.2	1	1	
	Qty	0	7	0	0	8.40
Hand sink		1.6	3.2	1.5	1.5	
	Qty	0	1	0	0	3.20
Shower		1.6	3.2	2	2	
	Qty	0	0	0	0	0.00
Bathub / Shower		1.6	4	4	4	
	Qty	0	0	0	0	0.00
Drinking Fountain / Water cooler		0	2	0.5	0.5	
	Qty	0	2	0	0	4.00
Laundry tray		2	4	2	4	
	Qty	0	0	0	0	0.00
Service sink / Mop sink		2	4	1.5	3	
	Qty	0	1	0	0	4.00
Dishwasher		1.6	4	1.5	1.5	
	Qty	0	0	0	0	0.00
Bar sink		1	*	1	2	
	Qty	0	*	0	0	0.00
First Hose Bibb		2.5	*	*	*	
	Qty	1			0	2.50
Additional Hose Bibbs		1				
	Qty	5				5.00
Ice machine		1				
	Qty	0				0.00
EWC		1				
	Qty	0				0.00
make-up water		1				
	Qty	0				0.00
Washer Machine		1.6	4	4	4	
	Qty	0	0	0	0	0.00
Coffee/Tea		0.5				
	Qty	0				0.00
water station		1				
	Qty	0				0.00
hot well		1				
	Qty	0				0.00
pitcher rinser		1				
	Qty	0				0.00
kettle		1				
	Qty	0				0.00
3-comp sink		2	4	4	4	
	Qty	0			0	0.00
<b>Total Fixture Units</b>						<b>57.90</b>

**WATER FLOW REQUIREMENTS**

**PROJECT NAME: KEA'AU-MOUNTAIN VIEW PUBLIC LIBRARY**  
**DAGS PROJECT NO.: 11-36-6628**

**DATE: 2/15/2023**

<b>A. PROPOSED DOMESTIC:</b>	<u>57.90</u>	<b>F.U.'S</b>	<u>54.0</u>	<b>GPM'S</b>
<b>B. PROPOSED OTHERS:</b>	<u>0</u>	<b>F.U.'S</b>	<u>0.0</u>	<b>GPM'S</b>
<b>C. TOTAL PROPOSED:</b> (DO NOT include irrigation gpm if less than domestic and done during off-peak hours.)	<u>57.9</u>	<b>F.U.'S</b>	<u>54.0</u>	<b>GPM'S</b>
<b>D. DEMOLISHED: DOMESTIC</b> (All fixtures being removed) DEMO PERMIT # _____ DATE: _____	<u>0.00</u>	<b>F.U.'S</b>	<u>0.0</u>	<b>GPM'S</b>
<b>E. DEMOLISHED: OTHER</b> DEMO PERMIT # _____ DATE: _____	<u>0</u>	<b>F.U.'S</b>	<u>0.0</u>	<b>GPM'S</b>
<b>F. TOTAL DEMOLITION:</b> (Add D and E)	<u>0</u>	<b>F.U.'S</b>	<u>0.0</u>	<b>GPM'S</b>
<b>G. NET CHANGE:</b> (Subtract F from C above)	<u>57.9</u>	<b>F.U.'S</b>	<u>54.0</u>	<b>GPM'S</b>
<b>H. EXISTING DOMESTIC TO REMAIN:</b> (Other fixtures serviced by this meter but not affected by project including irrigation)	<u>0</u>	<b>F.U.'S</b>	<u>0.0</u>	<b>GPM'S</b>
<b>I. GRAND TOTAL</b> (Add C and H)	<u>57.9</u>	<b>F.U.'S</b>	<u>55.0</u>	<b>GPM'S</b>

**CALCULATION CRITERIA**

**USE (1) FOR FLUSH TANK:  
 OR FLUSH VALVE : (2)**

**2**

**WATER DEMAND SCHEDULE**

**FIXTURE UNITS            57.9 FU**  
**GALLONS PER MIN.      55.0 GPM**



# **APPENDIX D**

Traffic Impact Analysis Report  
Kea'au-Mountain View Public Library  
Final

Austin, Tsutsumi & Associates  
July 10, 2023





---

# TRAFFIC IMPACT ANALYSIS REPORT KEAAU-MOUNTAIN VIEW PUBLIC LIBRARY KEAAU, ISLAND OF HAWAII, HAWAII

**FINAL**

July 10, 2023

Prepared for:

HHF Planners  
733 Bishop St. Ste. 2590  
Honolulu, Hawaii 96813



*Austin, Tsutsumi & Associates, Inc.*

Civil Engineers • Surveyors  
501 Sumner Street, Suite 521  
Honolulu, Hawaii 96817-5031  
Telephone: (808) 533-3646  
Facsimile: (808) 526-1267  
E-mail: [atahnl@atahawaii.com](mailto:atahnl@atahawaii.com)  
Honolulu • Wailuku, Hawaii

---

**TRAFFIC IMPACT ANALYSIS REPORT  
KEAAU-MOUNTAIN VIEW PUBLIC LIBRARY**

Keaau, Island of Hawaii, Hawaii

**FINAL**

Prepared for

**HHF Planners  
733 Bishop St. Ste. 2590  
Honolulu, Hawaii 96813**

Prepared by  
**Austin, Tsutsumi & Associates, Inc.**

Civil Engineers • Surveyors  
Honolulu • Wailuku, Hawaii

July 10, 2023

## TABLE OF CONTENTS

	<u>Page</u>
1. INTRODUCTION.....	1-4
1.1 Project Description.....	1
1.2 Study Methodology.....	1
1.2.1 Analysis Methodology.....	2
1.2.2 Study Area Intersection Analysis.....	2
2. EXISTING CONDITIONS.....	5-9
2.1 Pedestrian Facilities.....	5
2.2 Bicycle Facilities.....	5
2.3 Bus Transit.....	5
2.4 Roadway System.....	5
2.5 Crash Data.....	5
2.6 Existing Traffic Volumes.....	6
2.7 Existing Field Observations.....	6
2.8 Existing Intersection Analysis.....	6
3. BASE YEAR 2027 TRAFFIC CONDITIONS.....	10-14
3.1 De Facto Growth Rate.....	10
3.2 Background Developments.....	10
3.3 Trip Generation.....	11
3.4 Trip Distribution & Assignment.....	11
3.5 Planned Roadway Projects.....	11
3.6 Base Year 2027 Intersection Analysis.....	11
4. FUTURE YEAR 2027 TRAFFIC CONDITIONS.....	15-19
4.1 Project Description.....	15

**TABLE OF CONTENTS**  
**Cont'd**

4.2	Trip Generation.....	15
4.3	Trip Distribution & Assignment.....	15
4.4	Future Year 2027 Analysis.....	16
4.5	Recommendations.....	16
5.	CONCLUSIONS.....	20-21
5.1	Existing Conditions.....	20
5.2	Base Year 2027 Conditions.....	20
5.3	Future Year 2027 Conditions.....	20
6.	REFERENCES.....	22

**TABLE OF CONTENTS**  
**Cont'd**

**TABLES**

2.1	EXISTING CONDITIONS LOS SUMMARY .....	9
3.1	BASE YEAR 2027 CONDITIONS LOS SUMMARY .....	14
4.1	PROJECT TRIP GENERATION .....	15
4.2	FUTURE YEAR 2027 CONDITIONS LOS SUMMARY .....	19

**FIGURES**

1.1	PROJECT LOCATION .....	3
1.2	PROJECT SITE PLAN .....	4
2.1	EXISTING PEDESTRIAN, BICYCLE, AND TRANSIT FACILITIES.....	7
2.2	EXISTING LANE CONFIGURATIONS, VOLUMES, AND LOS.....	8
3.1	BACKGROUND DEVELOPMENTS.....	12
3.2	BASE YEAR 2027 LANE CONFIGURATIONS, VOLUMES, AND LOS .....	13
4.1	PROJECT GENERATED TRIPS .....	17
4.2	FUTURE YEAR 2027 LANE CONFIGURATIONS, VOLUMES, AND LOS	18

**TABLE OF CONTENTS**  
**Cont'd**

**APPENDICES**

- A. LOS CRITERIA
- B. TRAFFIC COUNT DATA
- C. LOS WORKSHEETS



TERRANCE S. ARASHIRO, P.E.  
ADRIENNE W.L.H. WONG, P.E., LEED AP  
DEANNA M.R. HAYASHI, P.E.  
PAUL K. ARITA, P.E.  
ERIK S. KANESHIRO, L.P.L.S., LEED AP  
MATT K. NAKAMOTO, P.E.  
GARRETT K. TOKUOKA, P.E.

## TRAFFIC IMPACT ANALYSIS REPORT

### Keaau-Mountain View Public Library

#### Keaau, Island of Hawaii, Hawaii

## 1. INTRODUCTION

This report documents the findings of a traffic study conducted by Austin, Tsutsumi, and Associates, Inc. (ATA) to evaluate the traffic impacts resulting from the proposed Keaau-Mountain View Public Library Project (hereinafter referred to as the “Project”) located in Keaau, Hawaii.

### 1.1 Project Description

The Project proposes to construct an approximately 12,000 square-foot (SF) public library in the District of Puna on the Island of Hawaii. The proposed library will replace the existing libraries at Keaau Middle School and Mountain View Elementary School. The Project site is situated near the intersection of Keaau-Pahoa Road and Old Volcano Road across the Keaau Plaza bus stop. The Project includes a community room that is planned to serve as a special purpose meeting room that will be accessible outside of operating library hours.

Currently, vehicle access to the Project site is provided via one (1) ingress driveway and one (1) egress driveway along Keaau-Pahoa Road. The Project includes up to 42 parking stalls for visitors and staff. A pedestrian walkway is proposed along the ingress driveway to connect to the existing sidewalks along Keaau-Pahoa Road. In addition, a pedestrian connection between the proposed library and existing covered walkway to Keaau Middle School will be provided. Construction of the Project is anticipated to be completed by Year 2027.

See Figure 1.1 for the Project Location. See Figure 1.2 for the Project Site Plan.

### 1.2 Study Methodology

This study will address the following:

- Assess existing traffic operating conditions during the weekday school (SCH) and PM peak hours of traffic as well as the weekend midday (WE) peak hour of traffic within the study area.
- Traffic Projections for Base Year 2027 (without the Project).
- Estimate the vehicular trips that will be generated by the Project.

- Traffic projections for the Project for Future Year 2027 (with Project).
- Provide recommendations for roadway improvements or other mitigative measures, as appropriate, to reduce or eliminate the adverse impacts resulting from traffic generated by the Project.

### **1.2.1 Analysis Methodology**

Level of Service (LOS) is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions at LOS A to congested conditions at LOS F. The Highway Capacity Manual (HCM), 6<sup>th</sup> Edition, includes methods for calculating volume-to-capacity (v/c) ratios, delays, and corresponding LOS that were used in this study. See Appendix A for LOS Criteria.

Analyses for the study intersections were performed using the traffic analysis software Synchro, which is able to prepare reports based on the methodologies described in the HCM. These reports contain control delay results as based on intersection lane geometry, signal timing, and hourly traffic volumes. Based on the vehicular delay at each intersection, a LOS is assigned to each approach and intersection movement as a qualitative measure of performance. These results, as confirmed or refined by field observations, constitute the technical analysis that will form the basis of the recommendations outlined in this report.

### **1.2.2 Study Area Intersection Analysis**

Intersection analysis was performed at the following study intersections due to their proximity to the proposed Project:

1. Keaau-Pahoa Road/Old Volcano Road (Signalized)
2. Keaau-Pahoa Road/Project Exit Driveway (Unsignalized)
3. Keaau-Pahoa Road/Project Entrance Driveway (Unsignalized)
4. Keaau-Pahoa Road/Keaau Middle School Driveway (Unsignalized)



**NOTE:**  
THIS DRAWING IS FOR  
ILLUSTRATIVE PURPOSES ONLY.  
DO NOT USE FOR CONSTRUCTION.

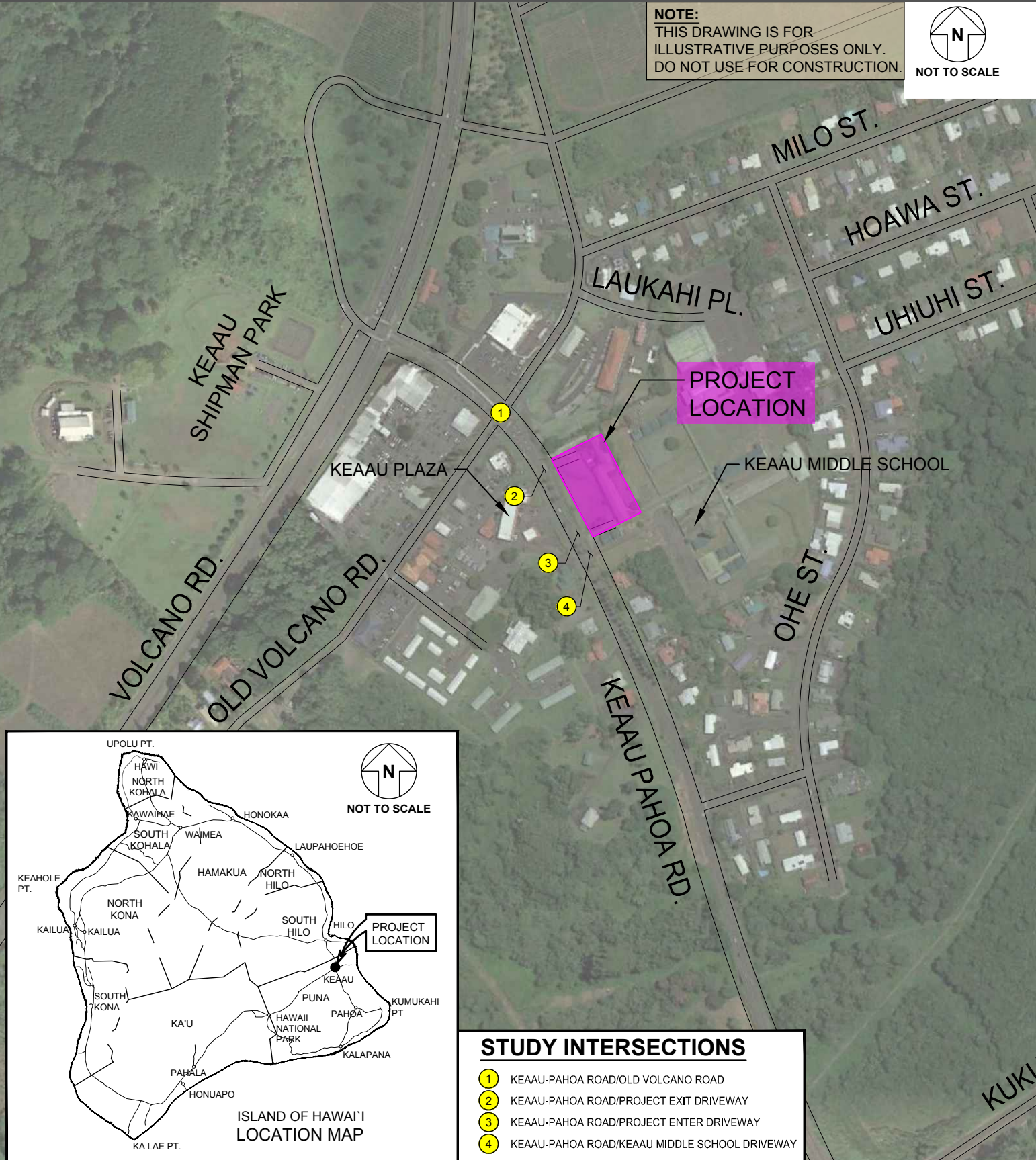


FIGURE 1.1

PROJECT LOCATION

# KEAAU-MOUNTAIN VIEW PUBLIC LIBRARY TIAR



NOT TO SCALE

**NOTE:**  
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES  
ONLY. DO NOT USE FOR CONSTRUCTION. SITE  
PLAN OBTAINED FROM HHF PLANNERS.

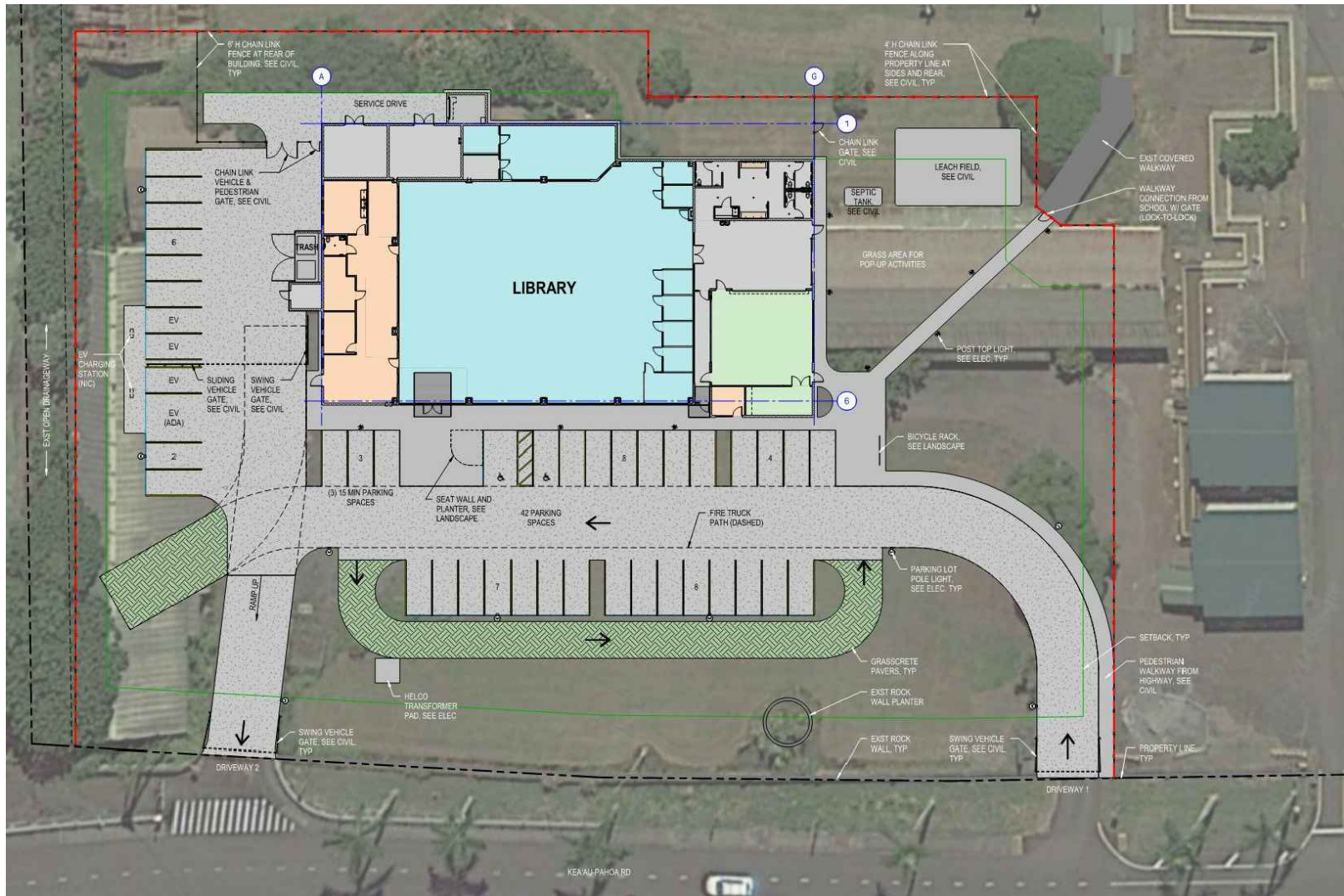


FIGURE 1.2

PROJECT SITE PLAN

## **2. Existing Conditions**

### **2.1 Pedestrian Facilities**

A continuous sidewalk runs along the east side of Keaau-Pahoa Road adjacent to the Project site, while the west side of the street has a sidewalk between Old Volcano Road and the driveway of Keaau Plaza. Continuous sidewalks are present along both sides of Old Volcano Road within the study area. A marked crosswalk is provided at the Project exit driveway. Marked crosswalks are also provided at each approach of the signalized Keaau-Pahoa Road/Old Volcano Road intersection.

The existing pedestrian facilities in the study area are shown in Figure 2.1.

### **2.2 Bicycle Facilities**

There are no dedicated bicycle facilities within the study area. However, according to the 2022 Bike Plan Hawaii Refresh, shoulder bikeways are proposed along Volcano Road and along Keaau-Pahoa Road between Volcano Road and Keaau-Pahoa Bypass Road.

The existing bicycle facilities in the study area are shown in Figure 2.1.

### **2.3 Bus Transit**

The Hawaii County Mass Transit Agency operates Hele-On Bus, which provides 14 different routes with service in North, East, and West Hawaii. Service is provided Monday through Saturday with limited service on Sundays and holidays. There are five (5) bus routes with stops on Old Volcano Road and one (1) bus route that stops on Keaau-Pahoa Road. Most routes generally run at least once during the PM commuter peak.

There are four (4) bus stops near the Project located on Old Volcano Road and Keaau-Pahoa Road.

The existing transit facilities in the study area are shown in Figure 2.1.

### **2.4 Roadway System**

The following are brief descriptions of the existing roadways in the vicinity of the Project:

Keaau-Pahoa Road (State Route 139) is generally a two-way, two-lane, north-south roadway within the study area. It begins at its intersection with Mamalahoa Highway to the north and terminates to the south at its intersection with Pahoa Bypass Road and Nawahiokalaniopuu Public Charter School (PSC). The posted speed limit along this roadway is 25 miles per hour (mph) in the vicinity of the Project.

Old Volcano Road is a two-way, two-lane, east-west local roadway that begins at its intersection with Mamalahoa Highway to the west and terminates to the east at its intersection with Keaau Loop. It has a posted speed limit of 25 mph in the vicinity of the Project.

### **2.5 Crash Data**

The Hawaii Department of Transportation (HDOT) publishes fatal crash data on the HDOT Highway Program Status map online. Based on HDOT crash data between 2012 and 2021 there

was one (1) fatality that involved a pedestrian and occurred at the intersection of Hawaii Belt Road and Old Volcano Road in 2013 with no primary contributing factor listed. This online database only shows fatal crashes.

Additionally, the most recent six (6) years of crash data (2017-2022) was provided by HDOT, which includes both fatal and non-fatal crashes. HDOT crash data shows that there have been five (5) crashes since 2018 along Keaau-Pahoa Road, four of which occurred at its intersection with Old Volcano Road and one occurring at its intersection with Kikania Street. However, these did not involve pedestrians and were not fatal.

## **2.6 Existing Traffic Volumes**

Turning movement traffic counts and pedestrian counts were conducted at the study intersections on Thursday, September 15, 2022 and Saturday, September 17, 2022.

Based on the count data, the SCH, weekday PM, and WE peak hours of traffic within the study area generally occur between 2:15 PM and 3:15 PM, 3:15 and 4:15, and 11:00 AM and 12:00 PM, respectively. Traffic count data is provided in Appendix B.

## **2.7 Existing Field Observations**

During the SCH peak hour of traffic, vehicle queues were observed along Keaau-Pahoa Road in the northbound (NB) direction extending from the Mamalahoa Highway (Volcano Road) intersection. Vehicle queues formed around 2:30 PM due to a relatively high number of vehicles making a NB left at the Keaau-Pahoa Road/Old Volcano Road intersection and lasted around 30 minutes with the queue clearing by 3:00 PM. Relatively moderate pedestrian activity within the study area was observed during the SCH peak hour of traffic.

The PM and WE peak hours of traffic were observed to experience relatively light traffic conditions. During both the PM peak and the WE peak, light pedestrian activity was observed.

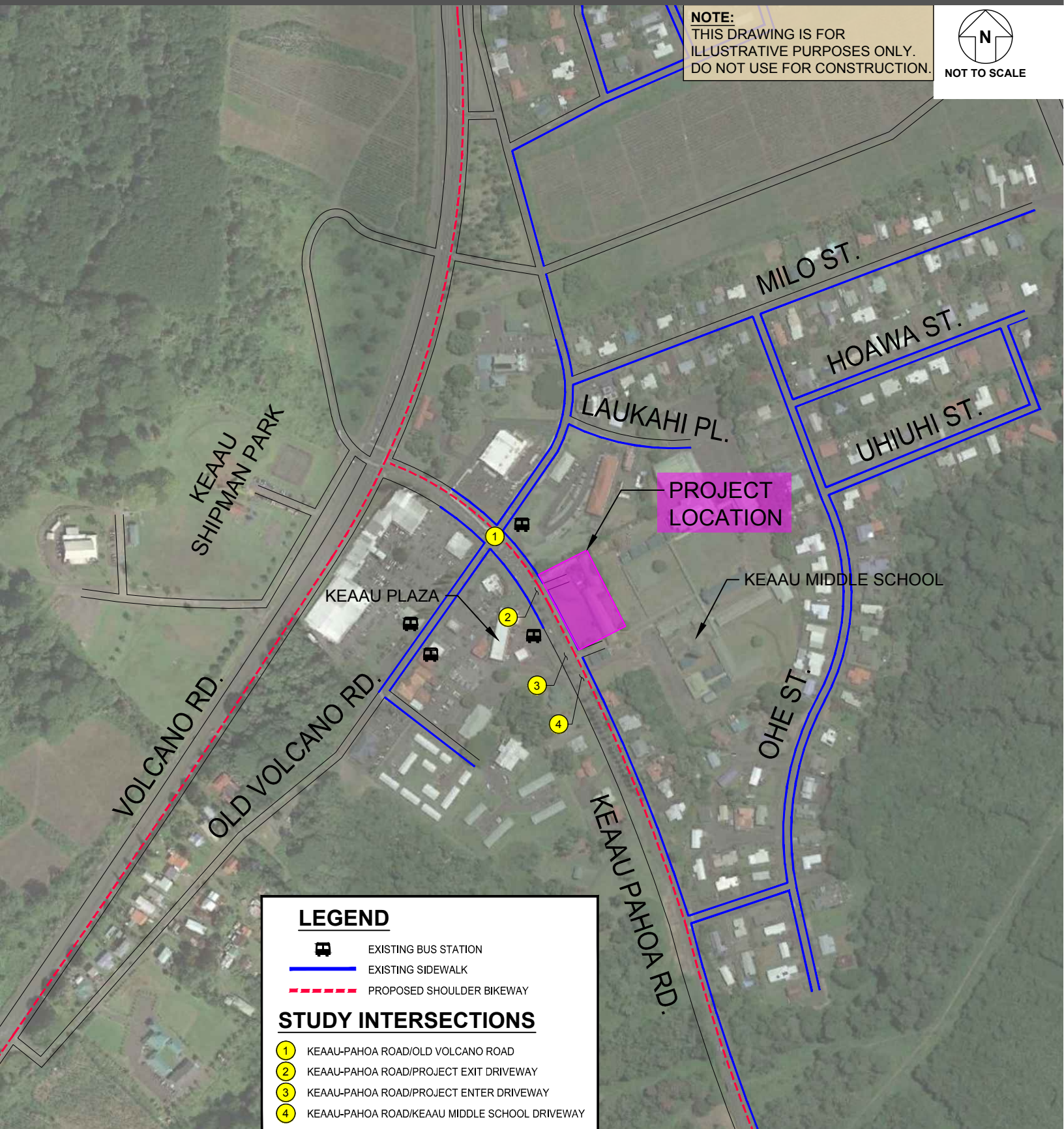
Although AM peak was not studied, signage was observed to restrict left turn movements into the Project driveway between 7:30 AM and 8:30 AM as well as left turn movements out of the Project driveway between 7:00 AM and 8:30 AM.

## **2.8 Existing Intersection Analysis**




All movements at the study intersections currently operate at LOS C or better during the SCH, PM, and WE peak hours of traffic except for the NB left-turn at the Keaau-Pahoa Road/Old Volcano Road intersection, which operates at an LOS F and overcapacity during the peak SCH hour. However, as mentioned, this only lasts for approximately 30 minutes. During other peak hours, the NB left-turn movement operates at an LOS B.

Table 2.1 shows a summary of the existing delay, v/c ratio, and LOS. Figure 2.2 shows the existing traffic volumes and lane configuration at the study intersections. LOS worksheets are provided in Appendix C.

**NOTE:**  
THIS DRAWING IS FOR  
ILLUSTRATIVE PURPOSES ONLY.  
DO NOT USE FOR CONSTRUCTION.



**LEGEND**

-  EXISTING BUS STATION
-  EXISTING SIDEWALK
-  PROPOSED SHOULDER BIKEWAY

**STUDY INTERSECTIONS**





-  1 KEAAU-PAHOA ROAD/OLD VOLCANO ROAD
-  2 KEAAU-PAHOA ROAD/PROJECT EXIT DRIVEWAY
-  3 KEAAU-PAHOA ROAD/PROJECT ENTER DRIVEWAY
-  4 KEAAU-PAHOA ROAD/KEAAU MIDDLE SCHOOL DRIVEWAY

FIGURE 2.1

EXISTING PEDESTRIAN, BICYCLE,  
AND TRANSIT FACILITIES

# KEAAU-MOUNTAIN VIEW PUBLIC LIBRARY TIAR

DATE OF COUNTS:  
 THURSDAY, SEPTEMBER 15, 2022  
 SATURDAY, SEPTEMBER 17, 2022

SCH PEAK HOUR:  
 2:15 PM - 3:15 PM

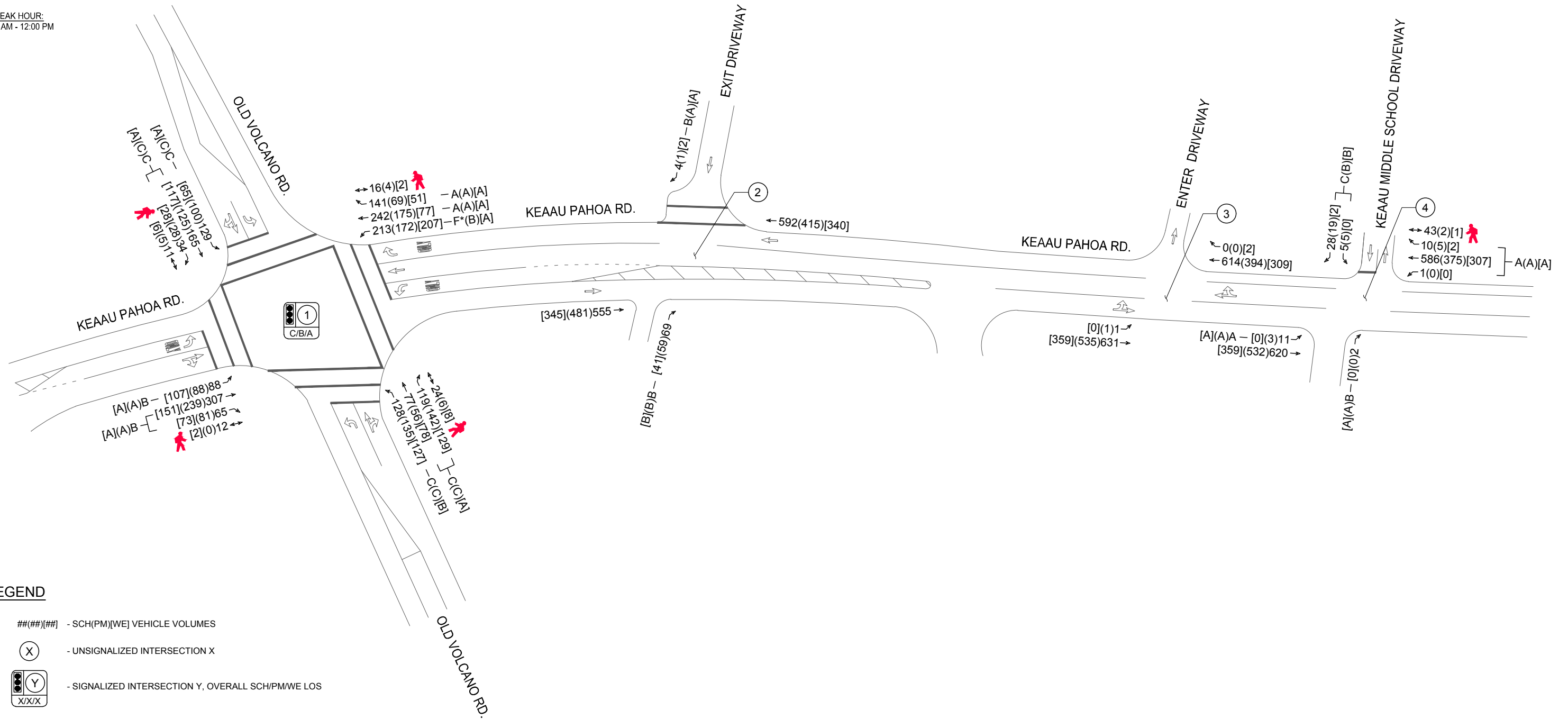
PM PEAK HOUR:  
 3:15 PM - 4:15 PM

WE PEAK HOUR:  
 11:00 AM - 12:00 PM

**NOTE:**  
 THIS DRAWING IS FOR  
 ILLUSTRATIVE PURPOSES ONLY.  
 DO NOT USE FOR CONSTRUCTION.



NOT TO SCALE



## LEGEND

##(##)[##] - SCH(PM)[WE] VEHICLE VOLUMES

(X) - UNSIGNALIZED INTERSECTION X

(Y) - SIGNALIZED INTERSECTION Y, OVERALL SCH/PM/WE LOS  
 X/X/X

X(X)|X| - SCH(PM)[WE] LOS  
 \*DENOTES OVERCAPACITY CONDITIONS V/C > 1

FIGURE 2.2

EXISTING LANE CONFIGURATIONS, VOLUMES, AND LOS



**TABLE 2.1: LOS SUMMARY TABLE  
 EXISTING CONDITIONS**

Intersection	Existing 2022 Conditions								
	SCH			PM			WE		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
<b>1: Keaau-Pahoa Rd &amp; Old Volcano Rd</b>									
NB LT	114.3	1.12	F*	10.7	0.28	B	9.9	0.39	A
NB TH	9.2	0.28	A	6.1	0.16	A	6.3	0.12	A
NB RT	8.5	0.18	A	5.3	0.02	A	6.0	0.03	A
EB LT	29.8	0.50	C	31.5	0.49	C	10.2	0.26	B
EB TH/RT	20.3	0.23	C	24.4	0.29	C	8.3	0.23	A
WB LT	26.4	0.47	C	28.8	0.34	C	9.3	0.13	A
WB TH/RT	21.9	0.42	C	24.9	0.35	C	8.4	0.26	A
SB LT	12.1	0.18	B	7.3	0.12	A	7.3	0.17	A
SB TH/RT	11.2	0.45	B	7.1	0.30	A	7.0	0.31	A
OVERALL	33.4	-	C	15.3	-	B	8.4	-	A
<b>2: Keaau-Pahoa Rd &amp; Keaau Library Exit</b>									
EB RT	13.5	0.15	B	12.4	0.12	B	10.8	0.07	B
WB RT	10.4	0.01	B	9.6	0.00	A	9.4	0.00	A
OVERALL	0.8	-	-	0.8	-	-	0.6	-	-
<b>4: Keaau-Pahoa Rd &amp; Keaau Middle School</b>									
NB LT/TH/RT	8.9	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT/TH/RT	13.0	0.01	B	0.0	0.00	A	0.0	0.00	A
WB LT/TH/RT	18.6	0.12	C	13.3	0.06	B	10.1	0.00	B
SB LT/TH/RT	9.2	0.01	A	8.2	0.00	A	0.0	0.00	A
OVERALL	0.6	-	-	0.3	-	-	0.0	-	-

Notes:

\* Denotes overcapacity conditions v/c ≥ 1.

### 3. BASE YEAR 2027 TRAFFIC CONDITIONS

The Year 2027 was selected to reflect the Project completion year. The Base Year 2027 scenario represents the traffic conditions within the study area without the Project.

#### 3.1 De Facto Growth Rate

Background traffic growth in the study area was estimated based on the HDOT island of Hawaii 2035 Travel Demand Forecasting Model (TDFM). The forecasting model uses population forecasts from the Hawaii County General Plan to distribute households and vehicular trips across predetermined Traffic Analysis Zones (TAZs) based upon existing TAZ household distributions. Based on the TDFM and previous traffic studies in the area, a background growth rates of 0.5% was applied along Keaau-Pahoa Road to estimate Base Year 2027 conditions without the Project.

#### 3.2 Background Developments

In addition to the de facto growth rate, background projects that are anticipated to generate traffic within the Project study area are added to the existing roadway network. The known developments are listed below based on the best information available at the time of this report:

- Keaau Villages Master Plan – This project proposes a mixed-use, walkable community adjacent to the existing Keaau Village. It plans to provide housing for various income levels as well as space for commercial development. Construction of this project is divided into multiple sub-areas over the course of three phases. Phase 1 is expected to be completed by Year 2023, Phase 2 is expected to be completed by Year 2028, and Phase 3 is expected to be completed by Year 2038. A TIAR for the Keaau Villages Master Plan was completed by Wilson Okamoto Corporation (WOC) in July 2017.
- Keaau Zero Waste Facility – This project is located north of the Project site, west of Volcano Road. The project proposes to construct a Zero Waste Facility to grow algae on a commercial scale using waste product from produce. Construction was anticipated to begin in late 2019. The project estimates approximately 12 employees. According to the draft EA dated April 2018, no significant impact to traffic is anticipated. Additional traffic generated by the Keaau Zero-Waste Facility is assumed to be accounted for in the de facto growth rate.
- Kurtistown Subdivision – This project proposes to construct a 63-lot residential subdivision located in Kurtistown, north of Mamalahoa Highway/Volcano Road between Huina Road and S Road. Access to the subdivision will be provided via Huina road. Additional traffic generated by the Kurtistown Subdivision is assumed to be accounted for in the de facto growth rate. This project is expected to be constructed by 2026.
- Pahoa Park Phase 2 Expansion – Pahoa Park is located south of Pahoa Village Road with access via Kauhale Street. The Pahoa Park Phase 2 Expansion proposes to provide additional recreational uses including a youth baseball field, multi-use field, maintenance yard, potential archery range, community center, covered playground, amphitheater with a covered stage, and additional parking areas. Phase 1 was completed in 2016. According to the Pahoa Park Master Plan TIAR dated December 13, 2013, the full buildout Phase 2 would be completed after 10 years. However, additional traffic generated by the Pahoa Park Phase 2 is assumed to be accounted for in the de facto growth rate.



- Pahoa Affordable Housing – This project proposes to construct a 30-unit affordable housing development on a vacant parcel south of Pahoa bypass Road and east of Post Office Road. Construction of this project was not known at the time of this report. However, additional traffic generated by the 30 affordable housing units is assumed to be accounted for in the de facto growth rate.
- Kupuna Housing – As part of the recovery efforts from the 2018 Kilauea eruption, Hope Services plans to construct Kupuna housing units south of Pahoa Bypass Road near Milk & Honey Road. Due to the low anticipated trip generation, the project trips were assumed to be included in the de facto growth rate.

Background developments are shown in Figure 3.1.

### **3.3 Trip Generation**

Trip generation for the background developments is based on previously conducted traffic studies for their respective projects.

### **3.4 Trip Distribution & Assignment**

Trips generated by the background developments were assigned throughout the study area generally based upon previous traffic studies and/or existing traffic patterns.

### **3.5 Planned Roadway Projects**

There were no planned roadway projects identified in the 2035 Transportation Plan for the District of Hawaii and the most current Hawaii Statewide Transportation Improvement Program (STIP) at the time of this report.

The Keaau Villages Master Plan identifies two (2) projects within the study area 1) additional turn lanes at the Mamalahoa Highway/Keaau-Pahoa Road intersection and 2) widening Keaau-Pahoa Road between Mamalahoa Highway and Old Volcano Road to include two (2) northbound lanes. It is assumed that the Keaau Villages Master Plan is responsible for these improvements.

### **3.6 Base Year 2027 Intersection Analysis**

Under Base Year 2027 conditions, all movements at the study intersections are expected to continue operating similar to existing conditions during the SCH, PM, and WE peak hours of traffic with the exception of the following intersection movements:

#### **[1] Keaau-Pahoa Road/Old Volcano Road**

- The NB left-turn approach at this intersection is anticipated to continue operating at an LOS F with delay increasing by roughly 110% (~127 seconds). However, from observations, these conditions are only expected to last for about 30 minutes and are not expected to hinder traffic operations for majority of the day.

Table 3.1 shows a summary of the Base Year 2027 delay, v/c ratio, and LOS. Figure 3.2 shows the Base Year 2027 traffic volumes and lane configuration at the study intersections. LOS worksheets are provided in Appendix C.

# KEAAU-MOUNTAIN VIEW PUBLIC LIBRARY TIAR

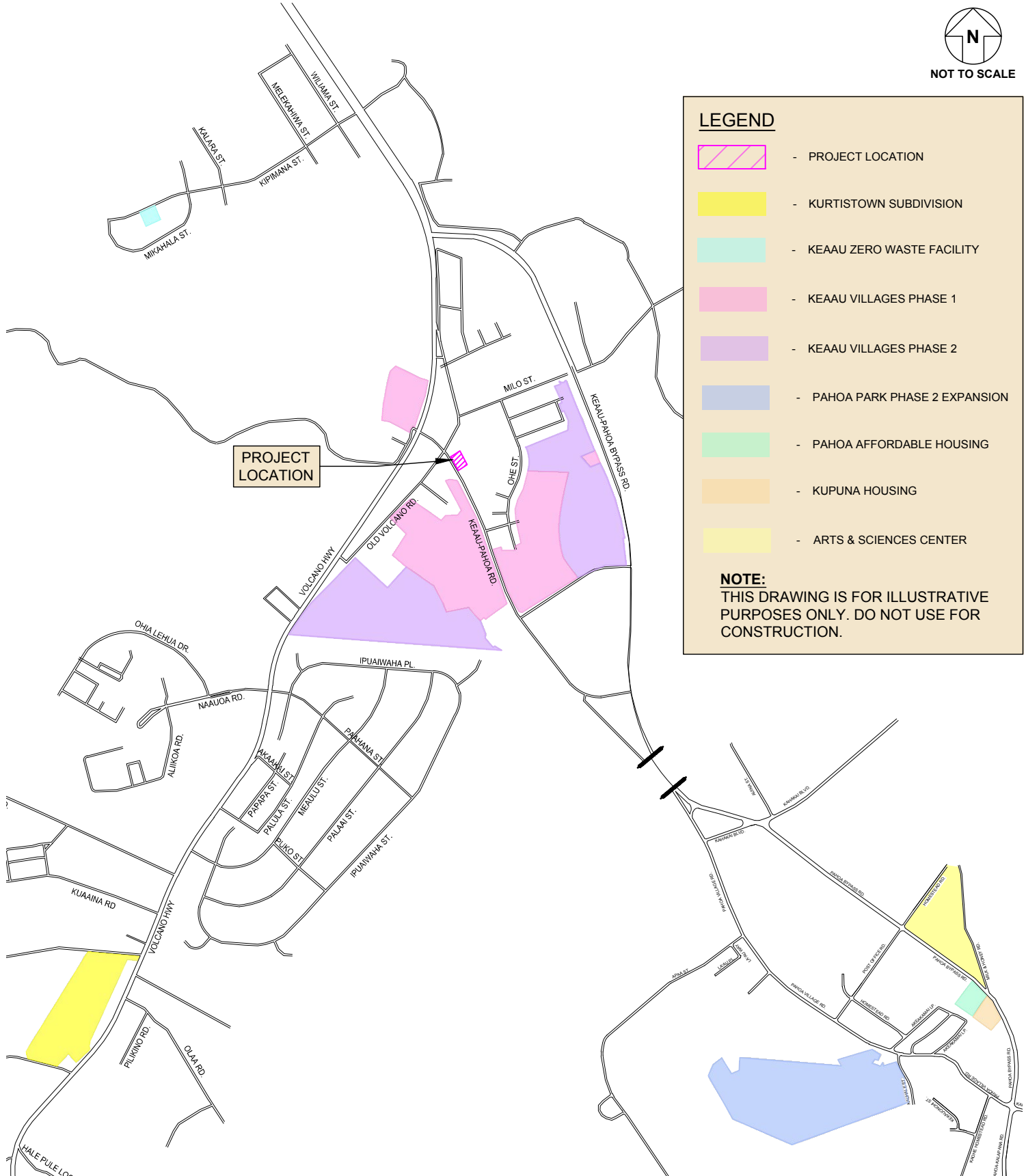
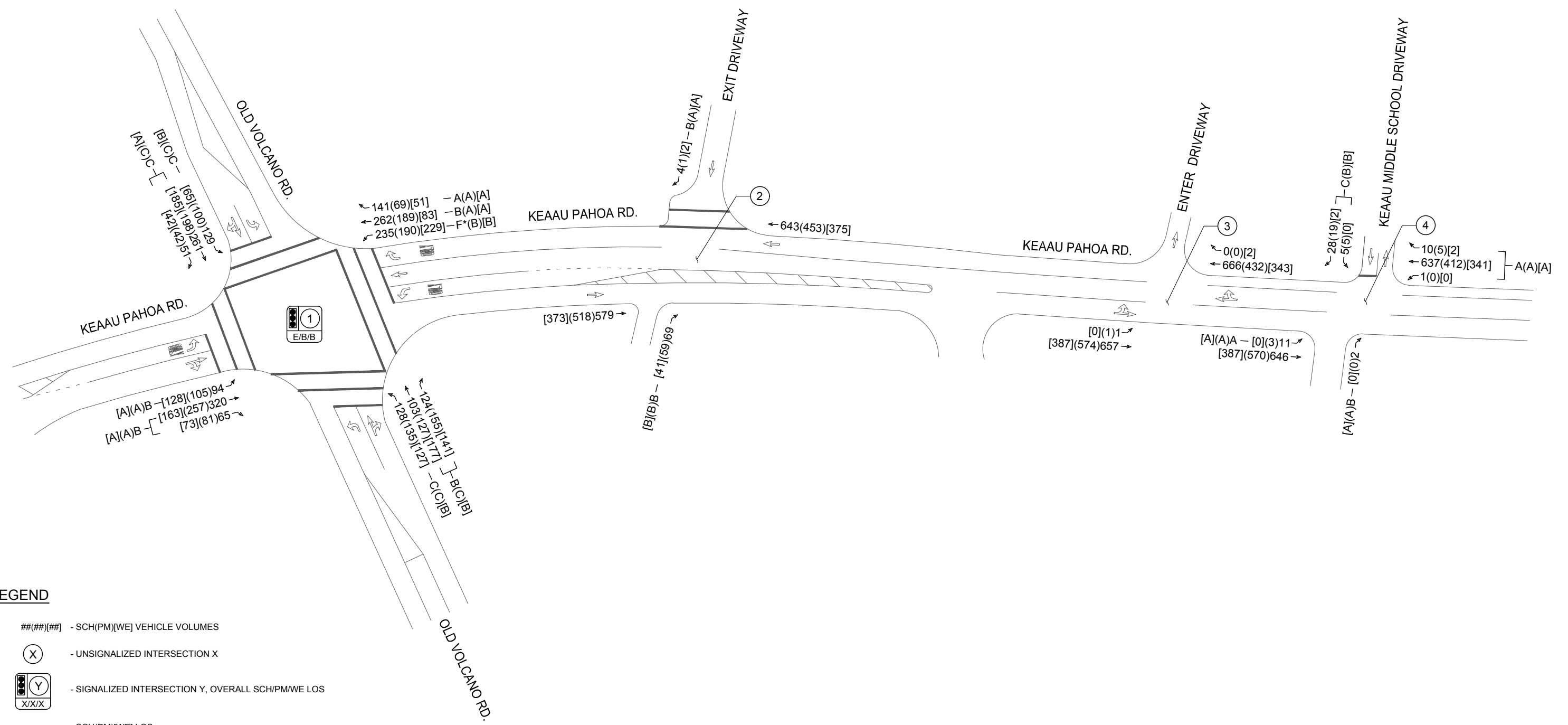


FIGURE 3.1

BACKGROUND DEVELOPMENTS



**NOTE:**  
 THIS DRAWING IS FOR  
 ILLUSTRATIVE PURPOSES ONLY.  
 DO NOT USE FOR CONSTRUCTION.



- LEGEND**
- ##(##)[##] - SCH(PM)[WE] VEHICLE VOLUMES
  - (X) - UNSIGNALIZED INTERSECTION X
  - (Y) - SIGNALIZED INTERSECTION Y, OVERALL SCH/PM/WE LOS
  - X(X)X - SCH(PM)[WE] LOS  
 \*DENOTES OVERCAPACITY CONDITIONS V/C > 1

FIGURE 3.2



**TABLE 3.1: LOS SUMMARY TABLE  
BASE YEAR CONDITIONS**

Intersection	Existing 2022 Conditions									Base Year 2027								
	SCH			PM			WE			SCH			PM			WE		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
<b>1: Keaau-Pahoa Rd &amp; Old Volcano Rd</b>																		
NB LT	114.3	1.12	F*	10.7	0.28	B	9.9	0.39	A	240.9	1.43	F*	14.7	0.35	B	12.5	0.47	B
NB TH	9.2	0.28	A	6.1	0.16	A	6.3	0.12	A	11.8	0.33	B	7.9	0.19	A	7.5	0.13	A
NB RT	8.5	0.18	A	5.3	0.02	A	6.0	0.03	A	9.8	0.10	A	7.0	0.04	A	7.2	0.02	A
EB LT	29.8	0.50	C	31.5	0.49	C	10.2	0.26	B	32.6	0.57	C	31.3	0.50	C	12.2	0.29	B
EB TH/RT	20.3	0.23	C	24.4	0.29	C	8.3	0.23	A	18.3	0.30	B	23.7	0.51	C	10.2	0.49	B
WB LT	26.4	0.47	C	28.8	0.34	C	9.3	0.13	A	24.8	0.45	C	30.6	0.39	C	12.6	0.17	B
WB TH/RT	21.9	0.42	C	24.9	0.35	C	8.4	0.26	A	21.4	0.58	C	23.2	0.47	C	9.5	0.37	A
SB LT	12.1	0.18	B	7.3	0.12	A	7.3	0.17	A	15.6	0.21	B	9.9	0.16	A	8.9	0.21	A
SB TH/RT	11.2	0.45	B	7.1	0.30	A	7.0	0.31	A	14.2	0.51	B	9.2	0.34	A	8.4	0.33	A
OVERALL	33.4	-	C	15.3	-	B	8.4	-	A	57.5	-	E	17.3	-	B	10.2	-	B
<b>2: Keaau-Pahoa Rd &amp; Keaau Library Exit</b>																		
EB RT	13.5	0.15	B	12.4	0.12	B	10.8	0.07	B	13.9	0.16	B	12.8	0.12	B	11.0	0.07	B
WB RT	10.4	0.01	B	9.6	0.00	A	9.4	0.00	A	10.6	0.01	B	9.8	0.00	A	9.5	0.00	A
OVERALL	0.8	-	-	0.8	-	-	0.6	-	-	0.8	-	-	0.7	-	-	0.6	-	-
<b>4: Keaau-Pahoa Rd &amp; Keaau Middle School</b>																		
NB LT/TH/RT	8.9	0.00	A	0.0	0.00	A	0.0	0.00	A	9.0	0.00	A	0.0	0.00	A	0.0	0.00	A
EB LT/TH/RT	13.0	0.01	B	0.0	0.00	A	0.0	0.00	A	13.3	0.01	B	0.0	0.00	A	0.0	0.00	A
WB LT/TH/RT	18.6	0.12	C	13.3	0.06	B	10.1	0.00	B	18.5	0.12	C	14.1	0.06	B	10.4	0.00	B
SB LT/TH/RT	9.2	0.01	A	8.2	0.00	A	0.0	0.00	A	9.1	0.01	A	8.3	0.00	A	0.0	0.00	A
OVERALL	0.6	-	-	0.3	-	-	0.0	-	-	0.6	-	-	0.3	-	-	0.0	-	-

Notes:

\* Denotes overcapacity conditions v/c ≥ 1.

## 4. FUTURE YEAR 2027 TRAFFIC CONDITIONS

The Future Year 2027 scenario represents the traffic conditions within the Project study area with the full build-out of the Project.

### 4.1 Project Description

The Project proposes to construct an approximately 12,000 SF public library in the District of Puna on the Island of Hawaii. The proposed library will replace the existing libraries at Keaau Middle School and Mountain View Elementary School. The Project site is situated near the intersection of Keaau-Pahoa Road and Old Volcano Road across the Keaau Plaza bus stop. The Project includes a community room that is planned to serve as a special purpose meeting room that will be accessible outside of operating library hours.

Currently, vehicle access to the Project site is provided via one (1) ingress driveway and one (1) egress driveway along Keaau-Pahoa Road. The Project includes up to 42 parking stalls for visitors and staff. A pedestrian walkway is proposed along the ingress driveway to connect to the existing sidewalks along Keaau-Pahoa Road. In addition, a pedestrian connection between the proposed library and existing covered walkway to Keaau Middle School will be provided. Refer to Figure 1.2. Construction of the Project is anticipated to be completed by Year 2027.

### 4.2 Trip Generation

The Institute of Transportation Engineers (ITE) publishes trip rates, Trip Generation Manual, 11<sup>th</sup> Edition, based upon historical data from similar land uses. ITE trip generation for libraries is based on data taken in the 1980's to 2000's and did not reflect existing observations. Instead, Hawaii State public Library System (HSPLS) provided existing daily trip counts for the existing Keaau Library. These existing daily trip counts and ITE's data were used to estimate the number of vehicular trips generated by the proposed Project. Adjustments for increases in both building area and population served were applied to these existing daily trip counts. As shown in Table 4.1, the Project is projected to conservatively generate 42(30)[43] new external trips during the SCH(PM)[WE] peak hours of traffic.

**Table 4.1: Project Trip Generation**

Land Use	Independent Variable	Weekday SCH Peak Hour			Weekday PM Peak Hour			Weekend Peak Hour		
		Enter (vph)	Exit (vph)	Total (vph)	Enter (vph)	Exit (vph)	Total (vph)	Enter (vph)	Exit (vph)	Total (vph)
Library (ITE 590)	12,000 SF GFA	23	24	47	15	17	32	25	22	47
Existing Trips		-1	-4	-5	-1	-1	-2	-2	-2	-4
Net New Trips		22	20	42	14	16	30	23	20	43

### 4.3 Trip Distribution & Assignment

Existing traffic data and communities served were used to determine the project trip distributions at the Keaau-Pahoa Road/Old Volcano Road intersection.

The Project-generated trip distribution is shown in Figure 4.1.

#### **4.4 Future Year 2027 Analysis**

Under Future Year 2027 conditions, all movements at the study intersections are expected to continue operating similar to Base Year 2027 conditions during the SCH, PM, and WE peak hours of traffic.

Table 4.2 shows a summary of the Future Year 2027 delay, v/c ratio, and LOS. Figure 4.2 shows the Future Year 2027 traffic volumes and lane configuration at the study intersections. LOS worksheets are provided in Appendix C.

#### **4.5 Recommendations**

Congestion along Keaau-Pahoa Road during the SCH peak hour of traffic exists due to a sudden influx of vehicles that enters the traffic flow. Moreover, a relatively high number of these vehicles want to make a NB left turn at the intersection with Old Volcano Road, which leads to a queue forming for approximately 30 minutes.

The worsening of traffic operations (LOS and capacity) between each scenario can mostly be attributed to the volume increases due to the projected background growth (without the Project). The Project-generated traffic accounts for roughly 1% of the total Future Year 2027 traffic projections at the Keaau-Pahoa Road/Old Volcano Road intersection during the SCH, PM, and WE peak hours of traffic. There is expected to be an increase of vehicle delay by roughly 6% (~16 seconds) between Base Year 2027 (without Project) and Future Year 2027 (with Project) conditions during the SCH peak hour of traffic. Thus, no intersection capacity improvements are recommended at the study intersections. As mentioned above, the Keaau Villages Master Plan identifies two (2) projects within the study area 1) additional turn lanes at the Mamalahoa Highway/Keaau-Pahoa Road intersection and 2) widening Keaau-Pahoa Road between Mamalahoa Highway and Old Volcano Road to include two (2) northbound lanes. It is assumed that the Keaau Villages Master Plan is responsible for these improvements.

Per HDOT's request, the Project is recommended to provide pedestrian connection between 1) the library and the middle school and 2) the library and the highway. As mentioned above, a pedestrian walkway is proposed along the ingress driveway to connect to the existing sidewalks along Keaau-Pahoa Road. In addition, a pedestrian connection between the proposed library and existing covered walkway to Keaau Middle School will be provided.

It is recommended that the Project extend the left-turn restriction into/out of the Project driveways to include the SCH peak (2:00 PM to 3:30 PM).



**NOTE:**  
 THIS DRAWING IS FOR  
 ILLUSTRATIVE PURPOSES ONLY.  
 DO NOT USE FOR CONSTRUCTION.

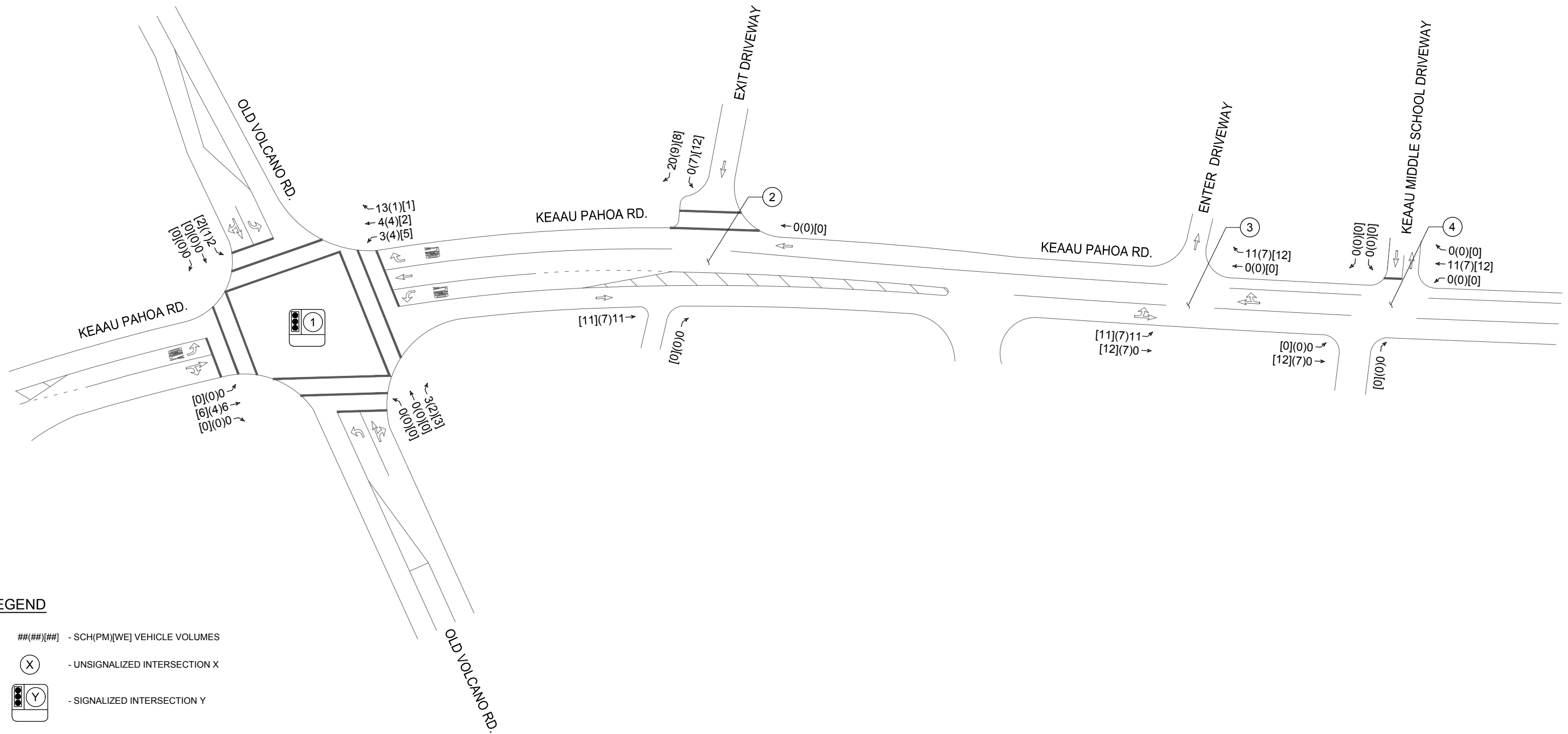


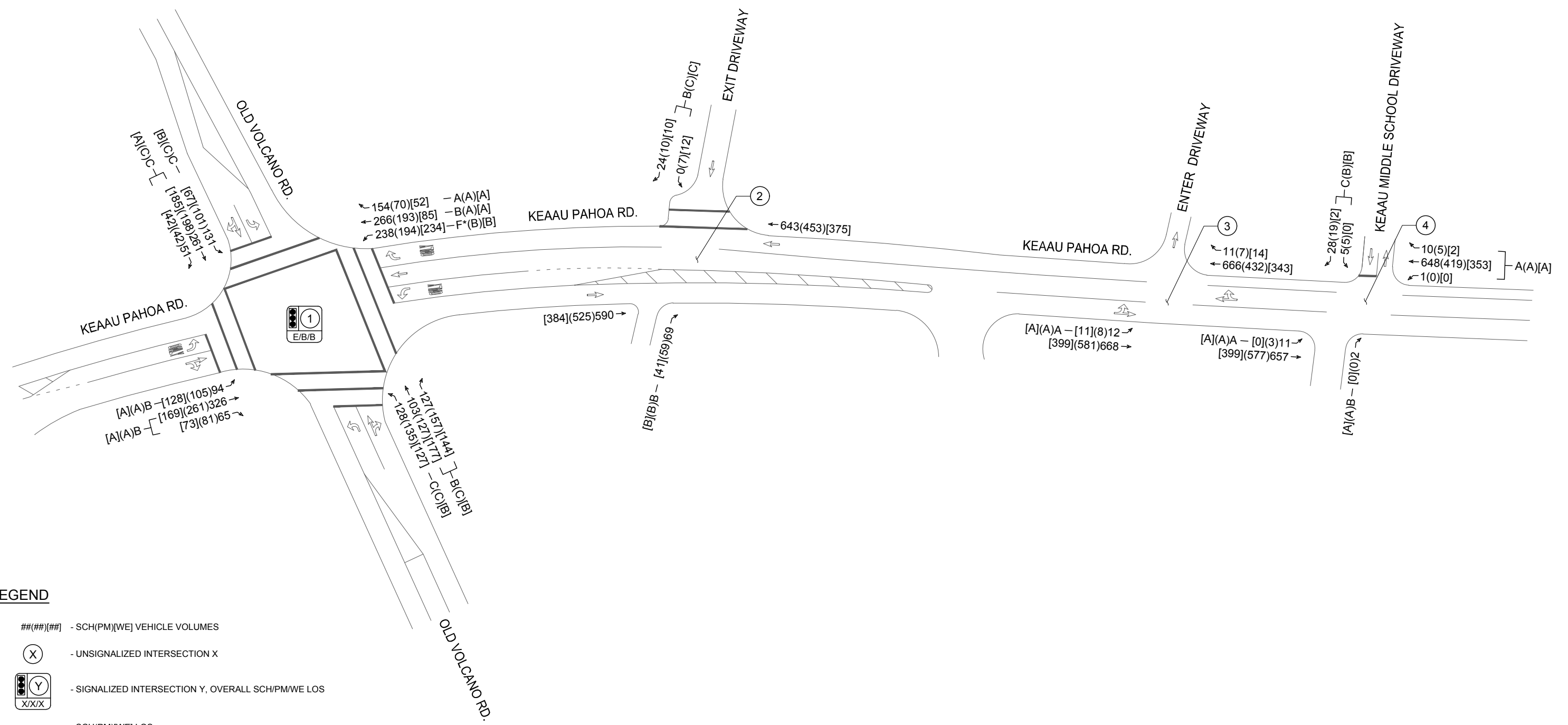
FIGURE 4.1

PROJECT GENERATED TRIPS



NOT TO SCALE

**NOTE:**  
 THIS DRAWING IS FOR  
 ILLUSTRATIVE PURPOSES ONLY.  
 DO NOT USE FOR CONSTRUCTION.



**LEGEND**

- ##(##)[##] - SCH(PM)[WE] VEHICLE VOLUMES
- (X) - UNSIGNALIZED INTERSECTION X
- (Y) - SIGNALIZED INTERSECTION Y, OVERALL SCH/PM/WE LOS
- X(X)|X - SCH(PM)[WE] LOS  
 \*DENOTES OVERCAPACITY CONDITIONS V/C > 1

**FIGURE 4.2**

**FUTURE YEAR 2027  
 LANE CONFIGURATIONS, VOLUMES, AND LOS**





**TABLE 4.2: LOS SUMMARY TABLE  
FUTURE YEAR CONDITIONS**

Intersection	Existing 2022 Conditions									Base Year 2027									Future Year 2027											
	SCH			PM			WE			SCH			PM			WE			SCH			PM			WE					
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS			
<b>1: Keaau-Pahoa Rd &amp; Old Volcano Rd</b>																														
NB LT	114.3	1.12	F*	10.7	0.28	B	9.9	0.39	A	240.9	1.43	F*	14.7	0.35	B	12.5	0.47	B	256.5	1.46	F*	15.0	0.36	B	12.7	0.48	B			
NB TH	9.2	0.28	A	6.1	0.16	A	6.3	0.12	A	11.8	0.33	B	7.9	0.19	A	7.5	0.13	A	11.8	0.33	B	8.0	0.19	A	7.5	0.13	A			
NB RT	8.5	0.18	A	5.3	0.02	A	6.0	0.03	A	9.8	0.10	A	7.0	0.04	A	7.2	0.02	A	9.9	0.12	A	7.0	0.04	A	7.1	0.02	A			
EB LT	29.8	0.50	C	31.5	0.49	C	10.2	0.26	B	32.6	0.57	C	31.3	0.50	C	12.2	0.29	B	32.6	0.57	C	31.3	0.50	C	12.5	0.29	B			
EB TH/RT	20.3	0.23	C	24.4	0.29	C	8.3	0.23	A	18.3	0.30	B	23.7	0.51	C	10.2	0.49	B	18.3	0.31	B	23.7	0.51	C	10.5	0.50	B			
WB LT	26.4	0.47	C	28.8	0.34	C	9.3	0.13	A	24.8	0.45	C	30.6	0.39	C	12.6	0.17	B	25.0	0.46	C	30.7	0.40	C	13.0	0.18	B			
WB TH/RT	21.9	0.42	C	24.9	0.35	C	8.4	0.26	A	21.4	0.58	C	23.2	0.47	C	9.5	0.37	A	21.4	0.58	C	23.2	0.47	C	9.7	0.37	A			
SB LT	12.1	0.18	B	7.3	0.12	A	7.3	0.17	A	15.6	0.21	B	9.9	0.16	A	8.9	0.21	A	15.8	0.22	B	10.0	0.16	A	8.9	0.21	A			
SB TH/RT	11.2	0.45	B	7.1	0.30	A	7.0	0.31	A	14.2	0.51	B	9.2	0.34	A	8.4	0.33	A	14.4	0.52	B	9.3	0.34	A	8.4	0.33	A			
OVERALL	33.4	-	C	15.3	-	B	8.4	-	A	57.5	-	E	17.3	-	B	10.2	-	B	60.1	-	E	17.3	-	B	10.4	-	B			
<b>2: Keaau-Pahoa Rd &amp; Keaau Library Exit</b>																														
EB RT	13.5	0.15	B	12.4	0.12	B	10.8	0.07	B	13.9	0.16	B	12.8	0.12	B	11.0	0.07	B	14.0	0.16	B	12.9	0.12	B	11.1	0.07	B			
WB RT	10.4	0.01	B	9.6	0.00	A	9.4	0.00	A	10.6	0.01	B	9.8	0.00	A	9.5	0.00	A	10.8	0.04	B	18.1	0.06	C	15.6	0.07	C			
OVERALL	0.8	-	-	0.8	-	-	0.6	-	-	0.8	-	-	0.7	-	-	0.6	-	-	0.9	-	-	1.0	-	-	1.0	-	-			
<b>3: Keaau-Pahoa Rd &amp; Keaau Library Entrance</b>																														
SB LT																			9.6	0.02	A	8.4	0.01	A	8.1	0.01	A			
OVERALL																			0.1	-	-	0.1	-	-	0.1	-	-			
<b>4: Keaau-Pahoa Rd &amp; Keaau Middle School</b>																														
NB LT/TH/RT	8.9	0.00	A	0.0	0.00	A	0.0	0.00	A	9.0	0.00	A	0.0	0.00	A	0.0	0.00	A	9.1	0.00	A	0.0	0.00	A	0.0	0.00	A			
EB LT/TH/RT	13.0	0.01	B	0.0	0.00	A	0.0	0.00	A	13.3	0.01	B	0.0	0.00	A	0.0	0.00	A	13.4	0.01	B	0.0	0.00	A	0.0	0.00	A			
WB LT/TH/RT	18.6	0.12	C	13.3	0.06	B	10.1	0.00	B	18.5	0.12	C	14.1	0.06	B	10.4	0.00	B	20.7	0.14	C	14.3	0.06	B	10.5	0.00	B			
SB LT/TH/RT	9.2	0.01	A	8.2	0.00	A	0.0	0.00	A	9.1	0.01	A	8.3	0.00	A	0.0	0.00	A	9.5	0.02	A	8.3	0.00	A	0.0	0.00	A			
OVERALL	0.6	-	-	0.3	-	-	0.0	-	-	0.6	-	-	0.3	-	-	0.0	-	-	0.6	-	-	0.3	-	-	0.0	-	-			

Notes:  
\* Denotes overcapacity conditions v/c ≥ 1.

## **5. CONCLUSION**

The Project proposes to construct an approximately 12,000 SF public library in the District of Puna on the Island of Hawaii. The proposed library will replace the existing libraries at Keaau Middle School and Mountain View Elementary School. The Project site is situated near the intersection of Keaau-Pahoa Road and Old Volcano Road across the Keaau Plaza bus stop. The Project includes a community room that is planned to serve as a special purpose meeting room that will be accessible outside of operating library hours.

Currently, vehicle access to the Project site is provided via one (1) ingress driveway and one (1) egress driveway along Keaau-Pahoa Road. The Project includes up to 42 parking stalls for visitors and staff. A pedestrian walkway is proposed along the ingress driveway to connect to the existing sidewalks along Keaau-Pahoa Road. In addition, a pedestrian connection between the proposed library and existing covered walkway to Keaau Middle School will be provided. Construction of the Project is anticipated to be completed by Year 2027.

### **5.1 Existing Conditions**

All movements at the study intersections currently operate at LOS C or better during the SCH, PM, and WE peak hours of traffic except for the NB left-turn at the Keaau-Pahoa Road/Old Volcano Road intersection, which operates at an LOS F and overcapacity during the peak SCH hour. However, as mentioned above, this only lasts for approximately 30 minutes. During other peak hours, the NB left-turn movement operates at an LOS B.

### **5.2 Base Year 2027 Conditions**

Under Base Year 2027 conditions, all movements at the study intersections are expected to continue operating similar to existing conditions during the SCH, PM, and WE peak hours of traffic with the exception of the NB left-turn approach at the Keaau-Pahoa Road/Old Volcano Road intersection, which is anticipated to continue operating at an LOS F with delay increasing by roughly 127 seconds. However, from observations, these conditions are only expected to last for about 30 minutes and are not expected to hinder traffic operations for majority of the day.

### **5.3 Future Year 2027 Conditions**

The Project is anticipated to conservatively generate 42(30)[43] new external trips during the SCH(PM)[WE] peak hours of traffic. Under Future Year 2027 conditions, all movements at the study intersections are expected to continue operating similar to Base Year 2027 conditions during the SCH, PM, and WE peak hours of traffic.

The worsening of traffic operations (LOS and capacity) between each scenario can mostly be attributed to the volume increases due to the projected background growth (without the Project). The Project-generated traffic accounts for roughly 1% of the total Future Year 2027 traffic projections at the Keaau-Pahoa Road/Old Volcano Road intersection during the SCH, PM, and WE peak hours of traffic. Thus, no intersection capacity improvements are recommended at the study intersections. It is assumed that Keaau Villages Master Plan will provide additional turn lanes at the Mamalahoa Highway/Keaau-Pahoa Road intersection and a second northbound lane on Keaau-Pahoa road north of Old Volcano Road.

Per HDOT's request, the Project is recommended to provide pedestrian connection between 1) the library and the middle school and 2) the library and the highway. As mentioned above, a

pedestrian walkway is proposed along the ingress driveway to connect to the existing sidewalks along Keaau-Pahoa Road. In addition, a pedestrian connection between the proposed library and existing covered walkway to Keaau Middle School will be provided.

It is recommended that the Project extend the left-turn restriction into/out of the Project driveways to include the SCH peak (2:00 PM to 3:30 PM).

## **6. REFERENCES**

1. Transportation Research Board, Highway Capacity Manual, 6<sup>th</sup> Edition, 2016.
2. City & County of Honolulu Department of Transportation, Bike Plan Hawaii Refresh, 2022.
3. Institute of Transportation Engineers, Trip Generation, 11<sup>th</sup> Edition, 2021



---

---

# APPENDICES

---

---



## APPENDIX A

### LEVEL OF SERVICE CRITERIA

---

## LEVEL OF SERVICE (LOS) CRITERIA

### VEHICULAR LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS (HCM 6<sup>th</sup> Edition)

Level of service for vehicles at signalized intersections is directly related to delay values and is assigned on that basis. Level of Service is a measure of the acceptability of delay values to motorists at a given intersection. The criteria are given in the table below.

Level-of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec./veh.)
A	< 10.0
B	>10.0 and ≤ 20.0
C	>20.0 and ≤ 35.0
D	>35.0 and ≤ 55.0
E	>55.0 and ≤ 80.0
F	> 80.0

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

### VEHICULAR LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 6<sup>th</sup> Edition)

The level of service criteria for vehicles at unsignalized intersections is defined as the average control delay, in seconds per vehicle.

LOS delay threshold values are lower for two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections than those of signalized intersections. This is because more vehicles pass through signalized intersections, and therefore, drivers expect and tolerate greater delays. While the criteria for level of service for TWSC and AWSC intersections are the same, procedures to calculate the average total delay may differ.

Level of Service Criteria for Two-Way Stop-Controlled Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤ 10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	> 50



## APPENDIX B

### TRAFFIC COUNT DATA

---





# Austin Tsutsumi & Associates

501 Sumner Street, Suite 521  
Honolulu, HI 96817-5013

Phone: 533-3646 Fax: 526-1267

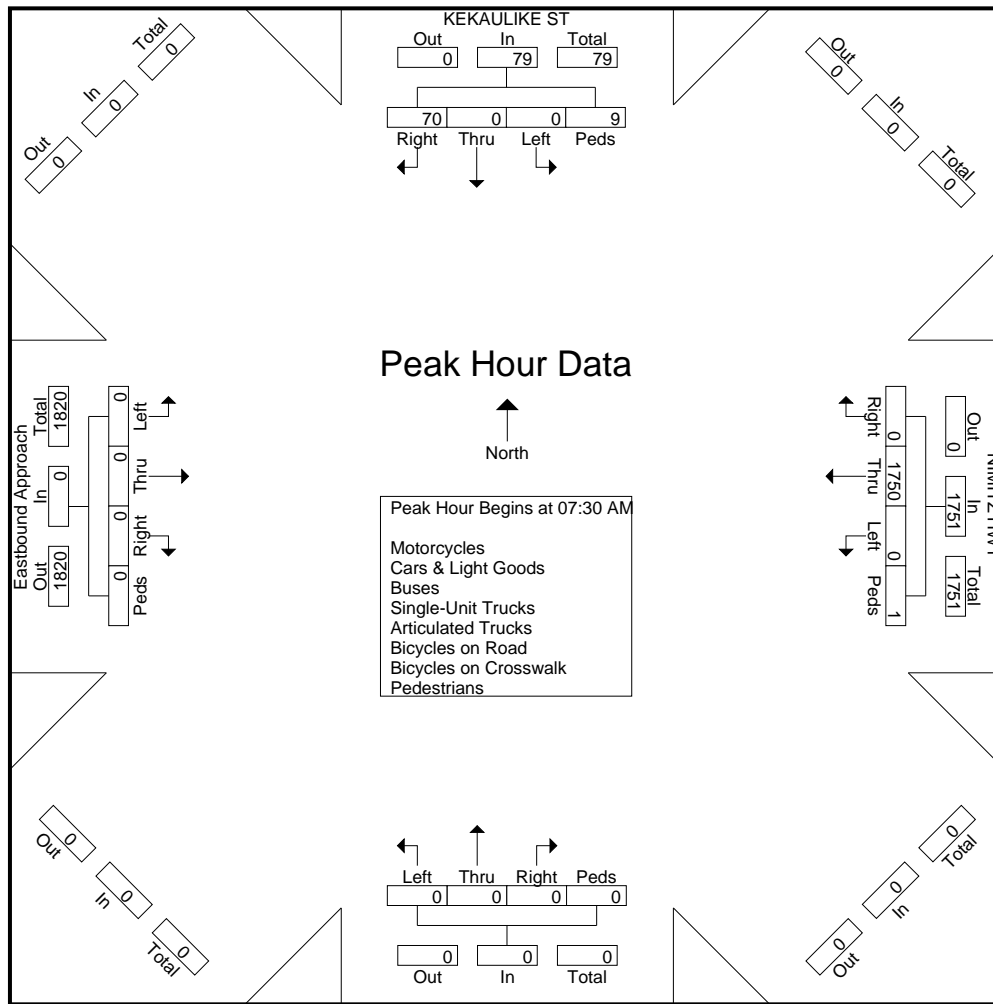
File Name : Kekaulike St - Nimitz Hwy

Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR

Start Date : 1/27/2022

Page No : 2

Start Time	KEKAULIKE ST Southbound					NIMITZ HWY Westbound					Northbound					Eastbound Approach Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	15	4		466				466	0	0	0	0	0	0	0	0	0	0	485
07:45 AM	0	0	7	4	11	0	461	0	0	461	0	0	0	0	0	0	0	0	0	0	472
08:00 AM	0	0	28		29	0	380	0	0	380	0	0	0	0	0	0	0	0	0	0	409
08:15 AM	0	0	20	0	20	0	443	0	1	444	0	0	0	0	0	0	0	0	0	0	464
Total Volume	0	0	70	9	79	0	1750	0	1	1751	0	0	0	0	0	0	0	0	0	0	1830
% App. Total																					
PHF	.000	.000	.625	.563	.681	.000	.939	.000	.250	.939	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.943





# Austin Tsutsumi & Associates

501 Sumner Street Suite 521

Honolulu, Hawaii 96817

Phone: (808) 533-3646 Fax: (808) 533-1267

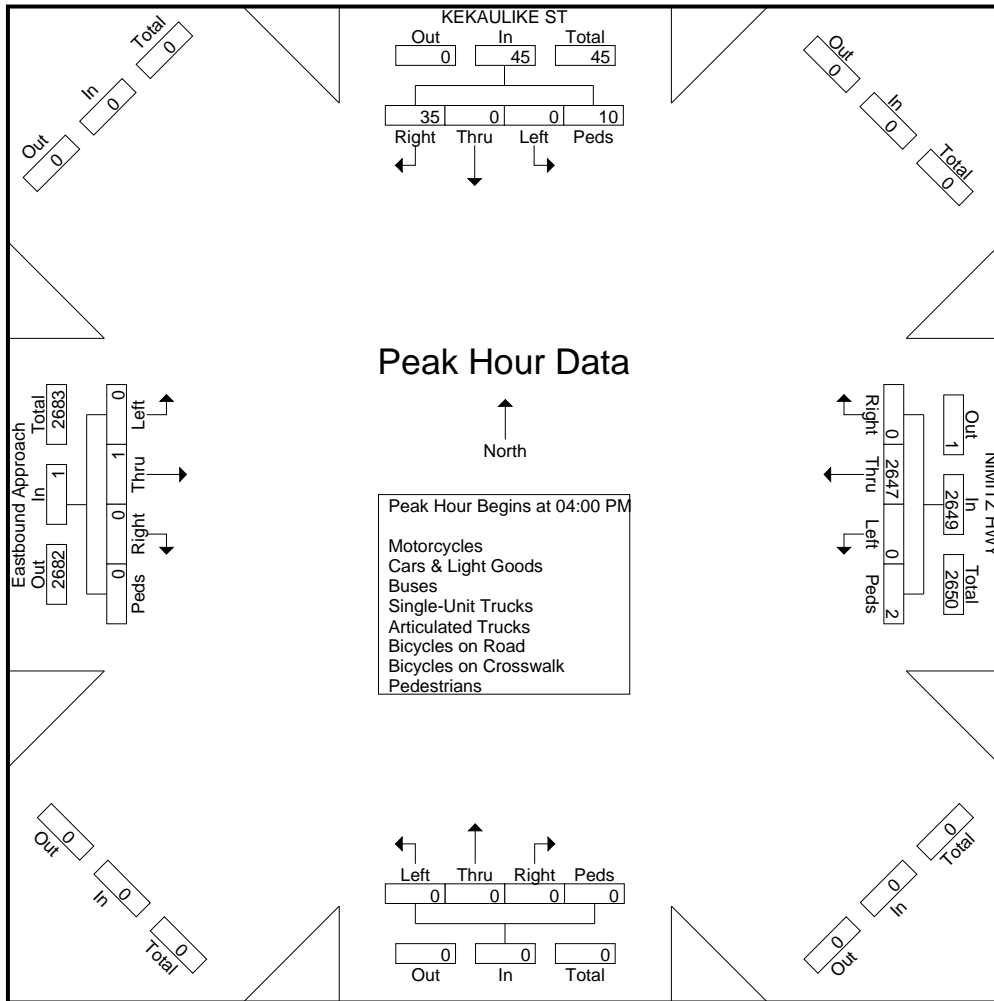
File Name : Kekaulike St - Nimitz Hwy

Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR

Start Date : 1/27/2022

Page No : 2

Start Time	KEKAULIKE ST Southbound					NIMITZ HWY Westbound					Northbound					Eastbound Approach Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	13	2	15	0	638	0	0	638	0	0	0	0	0	0	0	0	0	0	653
04:15 PM	0	0	8	2	10	0	645	0	1	646	0	0	0	0	0	0	0	0	0	0	656
04:30 PM	0	0	8	4	12	0	635	0	0	635	0	0	0	0	0	0	0	0	0	0	647
04:45 PM	0	0	6	2	8	0	729	0	1	730	0	0	0	0	0	0	1	0	0	1	739
Total Volume	0	0	35	10	45	0	2647	0	2	2649	0	0	0	0	0	0	1	0	0	1	2695
% App. Total	0	0	77.8	22.2		0	99.9	0	0.1		0	0	0	0		0	100	0	0		
PHF	.000	.000	.673	.625	.750	.000	.908	.000	.500	.907	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.912



# Austin Tsutsumi & Associates

501 Sumner Street Suite 521

Honolulu, Hawaii 96817

Phone: (808) 533-3646 Fax: (808) 533-1267

File Name : Kekaulike St - King St

Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR

Start Date : 1/27/2022

Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

Start Time	KEKAULIKE ST Southbound				KING ST Westbound				KEKAULIKE ST Northbound				KING ST Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00 AM	0	0	0	7	0	0	0	14	0	0	0	9	0	212	10	32	284
07:15 AM	0	0	0	3	0	0	0	0	0	0	0	11	0	297	11	39	361
07:30 AM	0	0	0	17	0	0	0	19	0	0	0	12	0	314	11	36	409
07:45 AM	0	0	0	10	1	0	0	45	0	0	0	20	0	310	14	47	447
Total	0	0	0	37	1	0	0	78	0	0	0	52	0	1133	46	154	1501
08:00 AM	0	0	0	21	0	0	0	63	0	0	0	35	0	258	29	64	470
08:15 AM	0	0	0	21	0	0	0	52	0	0	0	35	0	209	23	115	455
08:30 AM	0	0	0	24	0	0	0	105	0	0	0	65	0	181	13	123	511
08:45 AM	0	0	0	22	0	0	0	75	0	0	0	64	0	157	17	156	491
Total	0	0	0	88	0	0	0	295	0	0	0	199	0	805	82	458	1927
Grand Total	0	0	0	125	1	0	0	373	0	0	0	251	0	1938	128	612	3428
Apprch %	0	0	0	100	0.3	0	0	99.7	0	0	0	100	0	72.4	4.8	22.9	
Total %	0	0	0	3.6	0	0	0	10.9	0	0	0	7.3	0	56.5	3.7	17.9	
Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	35	2	0	37
% Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8	1.6	0	1.1
Cars & Light Goods	0	0	0	0	0	0	0	0	0	0	0	0	0	1806	124	0	1930
% Cars & Light Goods	0	0	0	0	0	0	0	0	0	0	0	0	0	93.2	96.9	0	56.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	64	0	0	64
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3	0	0	1.9
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	26	2	0	28
% Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3	1.6	0	0.8
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1
Bicycles on Road	0	0	0	0	1	0	0	0	0	0	0	0	0	5	0	0	6
% Bicycles on Road	0	0	0	0	100	0	0	0	0	0	0	0	0	0.3	0	0	0.2
Bicycles on Crosswalk	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0.3	0	0	0	0.4	0	0	0	0	0.1
Pedestrians	0	0	0	125	0	0	0	372	0	0	0	250	0	0	0	612	1359
% Pedestrians	0	0	0	100	0	0	0	99.7	0	0	0	99.6	0	0	0	100	39.6

# Austin Tsutsumi & Associates

501 Sumner Street Suite 521

Honolulu, Hawaii 96817

Phone: (808) 533-3646 Fax: (808) 533-1267

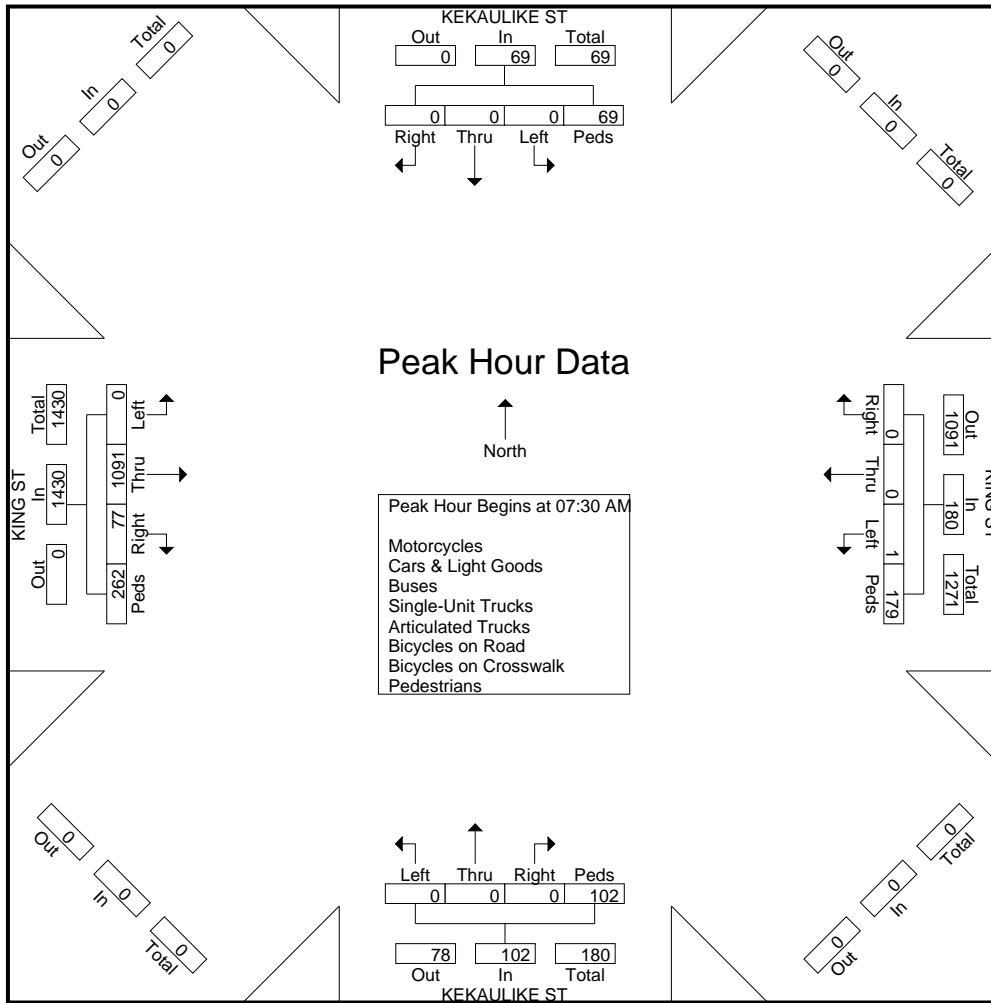
File Name : Kekaulike St - King St

Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR

Start Date : 1/27/2022

Page No : 2

Start Time	KEKAULIKE ST Southbound					KING ST Westbound					KEKAULIKE ST Northbound					KING ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	17	17	0	0	0	19	19	0	0	0	12	12	0	<b>314</b>	11	36	361	409
07:45 AM	0	0	0	10	10	1	0	0	45	46	0	0	0	20	20	0	310	14	47	371	447
08:00 AM	0	0	0	21	21	0	0	0	63	63	0	0	0	35	35	0	258	29	64	351	470
08:15 AM	0	0	0	21	21	0	0	0	52	52	0	0	0	35	35	0	209	23	115	347	455
Total Volume	0	0	0	69	69	1	0	0	179	180	0	0	0	102	102	0	1091	77	262	1430	1781
% App. Total	0	0	0	100		0.6	0	0	99.4		0	0	0	100		0	76.3	5.4	18.3		
PHF	.000	.000	.000	.821	.821	.250	.000	.000	.710	.714	.000	.000	.000	.729	.729	.000	.869	.664	.570	.964	.947



# Austin Tsutsumi & Associates

501 Sumner Street Suite 521

Honolulu, Hawaii 96817

Phone: (808) 533-3646 Fax: (808) 533-1267

File Name : Kekaulike St - King St

Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR

Start Date : 1/27/2022

Page No : 1

Groups Printed- Motorcycles - Cars & Light Goods - Buses - Unit Trucks - Articulated Trucks - Bicycles on Road - Bicycles on Crosswalk - Pedestrians

Start Time	KEKAULIKE ST Southbound				KING ST Westbound				KEKAULIKE ST Northbound				KING ST Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
03:30 PM	0	0	0	8	0	0	0	18	0	0	0	19	0	272	11	24	352
03:45 PM	0	0	0	4	0	0	0	20	0	0	0	10	0	268	12	31	345
Total	0	0	0	12	0	0	0	38	0	0	0	29	0	540	23	55	697
04:00 PM	0	0	0	6	0	0	0	14	0	0	0	9	0	287	7	14	337
04:15 PM	0	0	0	0	0	0	0	16	0	0	0	11	0	257	10	6	300
04:30 PM	0	0	0	1	0	0	0	14	0	0	1	4	0	295	8	12	335
04:45 PM	0	0	0	2	0	0	0	11	0	0	0	11	0	268	6	10	308
Total	0	0	0	9	0	0	0	55	0	0	1	35	0	1107	31	42	1280
05:00 PM	0	0	0	0	0	0	0	8	0	0	0	11	0	237	3	1	260
05:15 PM	0	1	0	0	0	0	0	3	0	0	0	10	0	259	8	6	287
Grand Total	0	1	0	21	0	0	0	104	0	0	1	85	0	2143	65	104	2524
Apprch %	0	4.5	0	95.5	0	0	0	100	0	0	1.2	98.8	0	92.7	2.8	4.5	
Total %	0	0	0	0.8	0	0	0	4.1	0	0	0	3.4	0	84.9	2.6	4.1	
Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0	56
% Motorcycles	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6	0	0	2.2
Cars & Light Goods	0	0	0	0	0	0	0	0	0	0	1	0	0	2009	64	0	2074
% Cars & Light Goods	0	0	0	0	0	0	0	0	0	0	100	0	0	93.7	98.5	0	82.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	67	0	0	67
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1	0	0	2.7
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
% Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	0	1	0	0	0	0	0	0	0	0	0	0	0	7	1	0	9
% Bicycles on Road	0	100	0	0	0	0	0	0	0	0	0	0	0	0.3	1.5	0	0.4
Bicycles on Crosswalk	0	0	0	0	0	0	0	3	0	0	0	4	0	0	0	2	9
% Bicycles on Crosswalk	0	0	0	0	0	0	0	2.9	0	0	0	4.7	0	0	0	1.9	0.4
Pedestrians	0	0	0	21	0	0	0	101	0	0	0	81	0	0	0	102	305
% Pedestrians	0	0	0	100	0	0	0	97.1	0	0	0	95.3	0	0	0	98.1	12.1

# Austin Tsutsumi & Associates

501 Sumner Street Suite 521

Honolulu, Hawaii 96817

Phone: (808) 533-3646 Fax: (808) 533-1267

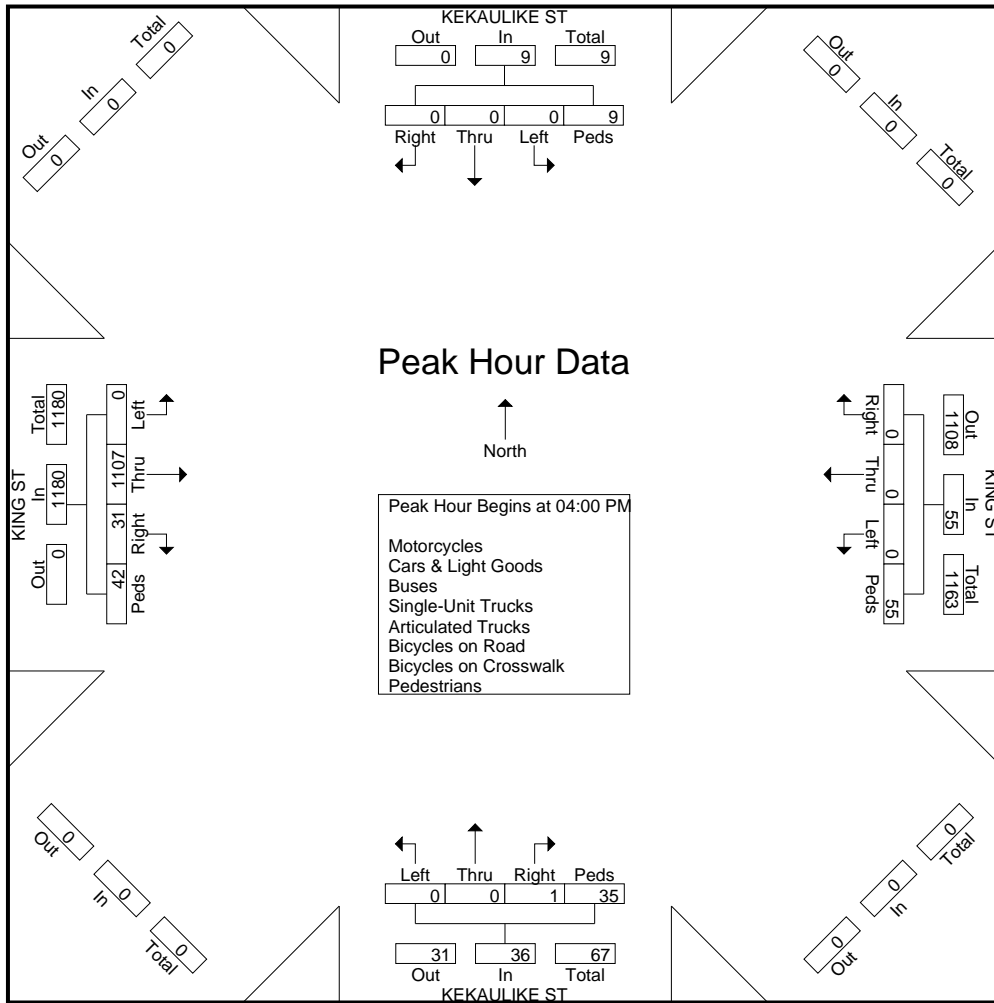
File Name : Kekaulike St - King St

Site Code : 22-200 Hale O Kekaulike & Chinatown Hotel TIAR

Start Date : 1/27/2022

Page No : 2

Start Time	KEKAULIKE ST Southbound					KING ST Westbound					KEKAULIKE ST Northbound					KING ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	6	6	0	0	0	14	14	0	0	0	9	9	0	287	7	14	308	337
04:15 PM	0	0	0	0	0	0	0	0	16	16	0	0	0	11	11	0	257	10	6	273	300
04:30 PM	0	0	0	1	1	0	0	0	14	14	0	0	1	4	5	0	295	8	12	315	335
04:45 PM	0	0	0	2	2	0	0	0	11	11	0	0	0	11	11	0	268	6	10	284	308
Total Volume	0	0	0	9	9	0	0	0	55	55	0	0	1	35	36	0	1107	31	42	1180	1280
% App. Total	0	0	0	100		0	0	0	100		0	0	2.8	97.2		0	93.8	2.6	3.6		
PHF	.000	.000	.000	.375	.375	.000	.000	.000	.859	.859	.000	.000	.250	.795	.818	.000	.938	.775	.750	.937	.950







AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
CIVIL ENGINEERS • SURVEYORS

## APPENDIX C

### LOS WORKSHEETS

---



---

---

**APPENDIX C**  
LOS WORKSHEETS  
Existing Conditions

---

---

# HCM 6th Signalized Intersection Summary

## 1: Keau-Pahoa Rd & Old Volcano Rd

12/15/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷	↷	↶	↷	↷
Traffic Volume (veh/h)	128	77	119	129	165	34	213	242	141	88	307	65
Future Volume (veh/h)	128	77	119	129	165	34	213	242	141	88	307	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.97		0.96	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1132	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	88	37	187	204	28	367	292	160	100	374	89
Peak Hour Factor	0.80	0.88	0.80	0.69	0.81	0.77	0.87	0.83	0.88	0.88	0.82	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	375	158	401	486	67	327	1059	885	547	824	196
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1125	1233	519	1228	1600	220	560	1870	1563	933	1456	346
Grp Volume(v), veh/h	160	0	125	187	0	232	367	292	160	100	0	463
Grp Sat Flow(s),veh/h/ln	1125	0	1752	1228	0	1820	560	1870	1563	933	0	1802
Q Serve(g_s), s	10.2	0.0	4.1	10.4	0.0	7.8	32.1	6.2	3.8	4.7	0.0	11.5
Cycle Q Clear(g_c), s	18.0	0.0	4.1	14.5	0.0	7.8	43.6	6.2	3.8	10.9	0.0	11.5
Prop In Lane	1.00		0.30	1.00		0.12	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	321	0	532	401	0	553	327	1059	885	547	0	1021
V/C Ratio(X)	0.50	0.00	0.23	0.47	0.00	0.42	1.12	0.28	0.18	0.18	0.00	0.45
Avail Cap(c_a), veh/h	403	0	660	490	0	686	327	1059	885	547	0	1021
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.6	0.0	20.1	25.5	0.0	21.4	27.1	8.6	8.1	11.4	0.0	9.7
Incr Delay (d2), s/veh	1.2	0.0	0.2	0.8	0.0	0.5	87.3	0.6	0.4	0.7	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	1.7	3.0	0.0	3.3	14.0	2.5	1.3	1.0	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.8	0.0	20.3	26.4	0.0	21.9	114.3	9.2	8.5	12.1	0.0	11.2
LnGrp LOS	C	A	C	C	A	C	F	A	A	B	A	B
Approach Vol, veh/h		285			419			819				563
Approach Delay, s/veh		25.6			23.9			56.2				11.4
Approach LOS		C			C			E				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		48.6		28.4		48.6		28.4				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		38.0		29.0		38.0		29.0				
Max Q Clear Time (g_c+I1), s		45.6		20.0		13.5		16.5				
Green Ext Time (p_c), s		0.0		0.9		3.9		1.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				33.4								
HCM 6th LOS				C								

HCM 6th TWSC  
2: Keaau-Pahoa Rd & Keaau Library Exit

12/15/2022

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕			↕	
Traffic Vol, veh/h	0	0	69	0	0	4	0	592	0	0	555	0
Future Vol, veh/h	0	0	69	0	0	4	0	592	0	0	555	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	75	0	0	4	0	643	0	0	603	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	603	-	-	322	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	-	-
Pot Cap-1 Maneuver	0	0	498	0	0	674	0	0
Stage 1	0	0	-	0	0	-	0	0
Stage 2	0	0	-	0	0	-	0	0
Platoon blocked, %								
Mov Cap-1 Maneuver	-	-	498	-	-	674	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.5		10.4		0		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	498	674	-
HCM Lane V/C Ratio	-	0.151	0.006	-
HCM Control Delay (s)	-	13.5	10.4	-
HCM Lane LOS	-	B	B	-
HCM 95th %tile Q(veh)	-	0.5	0	-

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	5	0	28	1	586	10	11	620	0
Future Vol, veh/h	0	0	2	5	0	28	1	586	10	11	620	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	43	43	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	2	5	0	30	1	637	11	12	674	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1358	1391	674	1387	1386	686	674	0	0	691	0	0
Stage 1	698	698	-	688	688	-	-	-	-	-	-	-
Stage 2	660	693	-	699	698	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	126	142	455	120	143	447	917	-	-	904	-	-
Stage 1	431	442	-	436	447	-	-	-	-	-	-	-
Stage 2	452	445	-	430	442	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	115	133	455	112	134	429	917	-	-	867	-	-
Mov Cap-2 Maneuver	115	133	-	112	134	-	-	-	-	-	-	-
Stage 1	430	432	-	417	428	-	-	-	-	-	-	-
Stage 2	419	426	-	419	432	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13		18.6		0		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	917	-	-	455	300	867	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.12	0.014	-
HCM Control Delay (s)	8.9	0	-	13	18.6	9.2	0
HCM Lane LOS	A	A	-	B	C	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-

# HCM 6th Signalized Intersection Summary

## 1: Keau-Pahoa Rd & Old Volcano Rd

12/15/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	56	142	100	125	28	172	175	69	88	239	81
Future Volume (veh/h)	135	56	142	100	125	28	172	175	69	88	239	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	61	56	109	136	17	187	190	20	96	260	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	212	194	323	386	48	662	1183	1000	785	867	267
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.63	0.63	0.63	0.63	0.63	0.63
Sat Flow, veh/h	1223	892	819	1263	1627	203	1039	1870	1580	1169	1371	422
Grp Volume(v), veh/h	147	0	117	109	0	153	187	190	20	96	0	340
Grp Sat Flow(s),veh/h/ln	1223	0	1711	1263	0	1831	1039	1870	1580	1169	0	1793
Q Serve(g_s), s	8.8	0.0	4.3	6.0	0.0	5.4	7.7	3.2	0.4	2.8	0.0	6.6
Cycle Q Clear(g_c), s	14.1	0.0	4.3	10.3	0.0	5.4	14.3	3.2	0.4	6.0	0.0	6.6
Prop In Lane	1.00		0.48	1.00		0.11	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	299	0	406	323	0	435	662	1183	1000	785	0	1134
V/C Ratio(X)	0.49	0.00	0.29	0.34	0.00	0.35	0.28	0.16	0.02	0.12	0.00	0.30
Avail Cap(c_a), veh/h	469	0	644	498	0	689	662	1183	1000	785	0	1134
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	24.0	28.2	0.0	24.4	9.6	5.8	5.3	7.0	0.0	6.4
Incr Delay (d2), s/veh	1.3	0.0	0.4	0.6	0.0	0.5	1.1	0.3	0.0	0.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	1.8	1.8	0.0	2.3	1.8	1.2	0.1	0.7	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.5	0.0	24.4	28.8	0.0	24.9	10.7	6.1	5.3	7.3	0.0	7.1
LnGrp LOS	C	A	C	C	A	C	B	A	A	A	A	A
Approach Vol, veh/h		264			262			397				436
Approach Delay, s/veh		28.4			26.5			8.2				7.1
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.7		23.3		53.7		23.3				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		38.0		29.0		38.0		29.0				
Max Q Clear Time (g_c+I1), s		16.3		16.1		8.6		12.3				
Green Ext Time (p_c), s		2.1		1.0		2.8		1.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				15.3								
HCM 6th LOS				B								

HCM 6th TWSC  
2: Keaau-Pahoa Rd & Keaau Library Exit

12/15/2022

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗			↗	
Traffic Vol, veh/h	0	0	59	0	0	1	0	415	0	0	481	0
Future Vol, veh/h	0	0	59	0	0	1	0	415	0	0	481	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	64	0	0	1	0	451	0	0	523	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	523	-	-	226	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	-	-
Pot Cap-1 Maneuver	0	0	553	0	0	778	0	0
Stage 1	0	0	-	0	0	-	0	0
Stage 2	0	0	-	0	0	-	0	0
Platoon blocked, %								
Mov Cap-1 Maneuver	-	-	553	-	-	778	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.4		9.6		0		0	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	553	778	-
HCM Lane V/C Ratio	-	0.116	0.001	-
HCM Control Delay (s)	-	12.4	9.6	-
HCM Lane LOS	-	B	A	-
HCM 95th %tile Q(veh)	-	0.4	0	-

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	5	0	19	0	375	5	3	532	0
Future Vol, veh/h	0	0	0	5	0	19	0	375	5	3	532	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	0	21	0	408	5	3	578	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1006	1000	579	997	998	413	579	0	0	415	0	0
Stage 1	585	585	-	413	413	-	-	-	-	-	-	-
Stage 2	421	415	-	584	585	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	220	243	515	223	244	639	995	-	-	1144	-	-
Stage 1	497	498	-	616	594	-	-	-	-	-	-	-
Stage 2	610	592	-	498	498	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	212	241	515	222	242	638	994	-	-	1142	-	-
Mov Cap-2 Maneuver	212	241	-	222	242	-	-	-	-	-	-	-
Stage 1	497	496	-	615	593	-	-	-	-	-	-	-
Stage 2	590	591	-	496	496	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		13.3		0		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	994	-	-	-	459	1142	-	-
HCM Lane V/C Ratio	-	-	-	-	0.057	0.003	-	-
HCM Control Delay (s)	0	-	-	0	13.3	8.2	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-



# HCM 6th Signalized Intersection Summary

## 1: Keau-Pahoa Rd & Old Volcano Rd

12/15/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	78	129	65	117	28	207	77	51	107	151	73
Future Volume (veh/h)	127	78	129	65	117	28	207	77	51	107	151	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	138	85	36	71	127	15	225	84	19	116	164	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	530	368	156	545	485	57	577	699	590	681	522	150
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1234	1241	526	1257	1639	194	1169	1870	1581	1289	1397	400
Grp Volume(v), veh/h	138	0	121	71	0	142	225	84	19	116	0	211
Grp Sat Flow(s),veh/h/ln	1234	0	1767	1257	0	1832	1169	1870	1581	1289	0	1797
Q Serve(g_s), s	2.9	0.0	1.6	1.4	0.0	1.8	5.1	0.9	0.2	2.0	0.0	2.5
Cycle Q Clear(g_c), s	4.7	0.0	1.6	2.9	0.0	1.8	7.6	0.9	0.2	2.9	0.0	2.5
Prop In Lane	1.00		0.30	1.00		0.11	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	530	0	523	545	0	543	577	699	590	681	0	671
V/C Ratio(X)	0.26	0.00	0.23	0.13	0.00	0.26	0.39	0.12	0.03	0.17	0.00	0.31
Avail Cap(c_a), veh/h	1266	0	1576	1294	0	1635	1492	2163	1828	1690	0	2078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.9	0.0	8.0	9.2	0.0	8.1	9.4	6.2	6.0	7.2	0.0	6.7
Incr Delay (d2), s/veh	0.3	0.0	0.2	0.1	0.0	0.3	0.4	0.1	0.0	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5	0.3	0.0	0.5	1.0	0.2	0.1	0.4	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	0.0	8.3	9.3	0.0	8.4	9.9	6.3	6.0	7.3	0.0	7.0
LnGrp LOS	B	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		259			213			328			327	
Approach Delay, s/veh		9.3			8.7			8.7			7.1	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.3		14.0		16.3		14.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		27.0		35.0		27.0				
Max Q Clear Time (g_c+I1), s		9.6		6.7		4.9		4.9				
Green Ext Time (p_c), s		1.4		1.1		1.8		1.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				8.4								
HCM 6th LOS				A								

HCM 6th TWSC  
2: Keaau-Pahoa Rd & Keaau Library Exit

12/15/2022

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕↕			↕	
Traffic Vol, veh/h	0	0	41	0	0	2	0	340	0	0	345	0
Future Vol, veh/h	0	0	41	0	0	2	0	340	0	0	345	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	45	0	0	2	0	370	0	0	375	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	375	-	-	185	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	-	-
Pot Cap-1 Maneuver	0	0	670	0	0	826	0	0
Stage 1	0	0	-	0	0	-	0	0
Stage 2	0	0	-	0	0	-	0	0
Platoon blocked, %								
Mov Cap-1 Maneuver	-	-	670	-	-	826	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.8		9.4		0		0	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	670	826	-
HCM Lane V/C Ratio	-	0.067	0.003	-
HCM Control Delay (s)	-	10.8	9.4	-
HCM Lane LOS	-	B	A	-
HCM 95th %tile Q(veh)	-	0.2	0	-

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	2	0	307	2	0	359	0
Future Vol, veh/h	0	0	0	0	0	2	0	307	2	0	359	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	2	0	334	2	0	390	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	726	727	390	726	726	336	390	0	0	337	0	0
Stage 1	390	390	-	336	336	-	-	-	-	-	-	-
Stage 2	336	337	-	390	390	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	340	351	658	340	351	706	1169	-	-	1222	-	-
Stage 1	634	608	-	678	642	-	-	-	-	-	-	-
Stage 2	678	641	-	634	608	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	339	351	658	340	351	705	1169	-	-	1221	-	-
Mov Cap-2 Maneuver	339	351	-	340	351	-	-	-	-	-	-	-
Stage 1	634	608	-	677	641	-	-	-	-	-	-	-
Stage 2	676	640	-	634	608	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.1	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1169	-	-	-	705	1221	-
HCM Lane V/C Ratio	-	-	-	-	0.003	-	-
HCM Control Delay (s)	0	-	-	0	10.1	0	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-



---

---

# APPENDIX C

## LOS WORKSHEETS

Base Year 2027 Conditions

---

---

# HCM 6th Signalized Intersection Summary

## 1: Keau-Pahoa Rd & Old Volcano Rd

12/15/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	103	124	129	261	51	235	262	141	94	320	65
Future Volume (veh/h)	128	103	124	129	261	51	235	262	141	94	320	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.98		0.97	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1132	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	117	69	187	322	52	405	316	82	107	390	85
Peak Hour Factor	0.80	0.88	0.80	0.69	0.81	0.77	0.87	0.83	0.88	0.88	0.82	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	385	227	416	553	89	284	965	805	503	765	167
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1000	1087	641	1170	1562	252	554	1870	1560	980	1483	323
Grp Volume(v), veh/h	160	0	186	187	0	374	405	316	82	107	0	475
Grp Sat Flow(s),veh/h/ln	1000	0	1728	1170	0	1815	554	1870	1560	980	0	1806
Q Serve(g_s), s	11.9	0.0	6.0	10.6	0.0	12.9	26.4	7.6	2.1	5.5	0.0	13.3
Cycle Q Clear(g_c), s	24.8	0.0	6.0	16.6	0.0	12.9	39.7	7.6	2.1	13.1	0.0	13.3
Prop In Lane	1.00		0.37	1.00		0.14	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	280	0	612	416	0	642	284	965	805	503	0	932
V/C Ratio(X)	0.57	0.00	0.30	0.45	0.00	0.58	1.43	0.33	0.10	0.21	0.00	0.51
Avail Cap(c_a), veh/h	302	0	651	443	0	683	284	965	805	503	0	932
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	18.0	24.0	0.0	20.2	29.6	10.8	9.5	14.7	0.0	12.2
Incr Delay (d2), s/veh	2.2	0.0	0.3	0.8	0.0	1.1	211.3	0.9	0.3	1.0	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	2.4	2.9	0.0	5.5	22.0	3.2	0.7	1.3	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	0.0	18.3	24.8	0.0	21.4	240.9	11.8	9.8	15.6	0.0	14.2
LnGrp LOS	C	A	B	C	A	C	F	B	A	B	A	B
Approach Vol, veh/h		346			561			803				582
Approach Delay, s/veh		24.9			22.5			127.1				14.5
Approach LOS		C			C			F				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.7		32.3		44.7		32.3				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		38.0		29.0		38.0		29.0				
Max Q Clear Time (g_c+I1), s		41.7		26.8		15.3		18.6				
Green Ext Time (p_c), s		0.0		0.4		3.9		2.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				57.5								
HCM 6th LOS				E								

HCM 6th TWSC  
2: Keaau-Pahoa Rd & Keaau Library Exit

12/15/2022

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗			↗	
Traffic Vol, veh/h	0	0	69	0	0	4	0	643	0	0	579	0
Future Vol, veh/h	0	0	69	0	0	4	0	643	0	0	579	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	75	0	0	4	0	699	0	0	629	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	629	-	-	350	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	-	-
Pot Cap-1 Maneuver	0	0	481	0	0	647	0	0
Stage 1	0	0	-	0	0	-	0	0
Stage 2	0	0	-	0	0	-	0	0
Platoon blocked, %								
Mov Cap-1 Maneuver	-	-	481	-	-	647	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.9		10.6		0		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBT EBLn1WBLn1		SBT	
Capacity (veh/h)	-	481	647	-
HCM Lane V/C Ratio	-	0.156	0.007	-
HCM Control Delay (s)	-	13.9	10.6	-
HCM Lane LOS	-	B	B	-
HCM 95th %tile Q(veh)	-	0.5	0	-

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	5	0	28	1	637	10	11	646	0
Future Vol, veh/h	0	0	2	5	0	28	1	637	10	11	646	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	2	5	0	30	1	692	11	12	702	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1441	1431	702	1427	1426	698	702	0	0	703	0	0
Stage 1	726	726	-	700	700	-	-	-	-	-	-	-
Stage 2	715	705	-	727	726	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	110	134	438	113	135	440	895	-	-	895	-	-
Stage 1	416	430	-	430	441	-	-	-	-	-	-	-
Stage 2	422	439	-	415	430	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	101	131	438	110	132	440	895	-	-	895	-	-
Mov Cap-2 Maneuver	101	131	-	110	132	-	-	-	-	-	-	-
Stage 1	415	421	-	429	440	-	-	-	-	-	-	-
Stage 2	392	438	-	404	421	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.3		18.5		0		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	895	-	-	438	303	895	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.118	0.013	-	-
HCM Control Delay (s)	9	0	-	13.3	18.5	9.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-	-

# HCM 6th Signalized Intersection Summary

## 1: Keau-Pahoa Rd & Old Volcano Rd

12/15/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	127	155	100	198	42	190	189	69	105	257	81
Future Volume (veh/h)	135	127	155	100	198	42	190	189	69	105	257	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	138	113	109	215	30	207	205	38	114	279	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	272	223	280	461	64	585	1090	920	696	824	224
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.58	0.58	0.58	0.58	0.58	0.58
Sat Flow, veh/h	1129	946	775	1122	1604	224	1025	1870	1580	1135	1414	385
Grp Volume(v), veh/h	147	0	251	109	0	245	207	205	38	114	0	355
Grp Sat Flow(s),veh/h/ln	1129	0	1721	1122	0	1827	1025	1870	1580	1135	0	1799
Q Serve(g_s), s	9.5	0.0	9.4	6.9	0.0	8.5	10.1	4.0	0.8	4.0	0.0	7.9
Cycle Q Clear(g_c), s	18.0	0.0	9.4	16.3	0.0	8.5	18.0	4.0	0.8	8.0	0.0	7.9
Prop In Lane	1.00		0.45	1.00		0.12	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	294	0	495	280	0	525	585	1090	920	696	0	1048
V/C Ratio(X)	0.50	0.00	0.51	0.39	0.00	0.47	0.35	0.19	0.04	0.16	0.00	0.34
Avail Cap(c_a), veh/h	394	0	648	380	0	688	585	1090	920	696	0	1048
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.0	0.0	22.9	29.7	0.0	22.6	13.0	7.5	6.9	9.4	0.0	8.4
Incr Delay (d2), s/veh	1.3	0.0	0.8	0.9	0.0	0.6	1.7	0.4	0.1	0.5	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	3.8	1.9	0.0	3.7	2.5	1.6	0.3	1.0	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	0.0	23.7	30.6	0.0	23.2	14.7	7.9	7.0	9.9	0.0	9.2
LnGrp LOS	C	A	C	C	A	C	B	A	A	A	A	A
Approach Vol, veh/h		398			354			450				469
Approach Delay, s/veh		26.5			25.5			11.0				9.4
Approach LOS		C			C			B				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		49.9		27.1		49.9		27.1				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		38.0		29.0		38.0		29.0				
Max Q Clear Time (g_c+I1), s		20.0		20.0		10.0		18.3				
Green Ext Time (p_c), s		2.2		1.5		3.0		1.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				17.3								
HCM 6th LOS				B								



HCM 6th TWSC  
 2: Keaau-Pahoa Rd & Keaau Library Exit

12/15/2022

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗			↗	
Traffic Vol, veh/h	0	0	59	0	0	1	0	453	0	0	518	0
Future Vol, veh/h	0	0	59	0	0	1	0	453	0	0	518	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	64	0	0	1	0	492	0	0	563	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	563	-	-	246	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	-	-
Pot Cap-1 Maneuver	0	0	525	0	0	755	0	0
Stage 1	0	0	-	0	0	-	0	0
Stage 2	0	0	-	0	0	-	0	0
Platoon blocked, %								
Mov Cap-1 Maneuver	-	-	525	-	-	755	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.8		9.8		0		0	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	525	755	-
HCM Lane V/C Ratio	-	0.122	0.001	-
HCM Control Delay (s)	-	12.8	9.8	-
HCM Lane LOS	-	B	A	-
HCM 95th %tile Q(veh)	-	0.4	0	-

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	5	0	19	0	412	5	3	570	0
Future Vol, veh/h	0	0	0	5	0	19	0	412	5	3	570	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	0	21	0	448	5	3	620	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1088	1082	621	1079	1080	453	621	0	0	455	0	0
Stage 1	627	627	-	453	453	-	-	-	-	-	-	-
Stage 2	461	455	-	626	627	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	193	217	487	196	218	607	960	-	-	1106	-	-
Stage 1	471	476	-	586	570	-	-	-	-	-	-	-
Stage 2	581	569	-	472	476	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	186	215	487	195	216	606	959	-	-	1104	-	-
Mov Cap-2 Maneuver	186	215	-	195	216	-	-	-	-	-	-	-
Stage 1	471	474	-	585	569	-	-	-	-	-	-	-
Stage 2	561	568	-	470	474	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		14.1		0		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	959	-	-	-	421	1104	-	-
HCM Lane V/C Ratio	-	-	-	-	0.062	0.003	-	-
HCM Control Delay (s)	0	-	-	0	14.1	8.3	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-

# HCM 6th Signalized Intersection Summary

## 1: Keau-Pahoa Rd & Old Volcano Rd

12/15/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	177	141	65	185	42	229	83	51	128	163	73
Future Volume (veh/h)	127	177	141	65	185	42	229	83	51	128	163	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	138	192	108	71	201	34	249	90	12	139	177	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	479	390	220	422	543	92	532	718	607	647	538	152
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1137	1119	629	1073	1556	263	1152	1870	1581	1290	1402	396
Grp Volume(v), veh/h	138	0	300	71	0	235	249	90	12	139	0	227
Grp Sat Flow(s),veh/h/ln	1137	0	1748	1073	0	1819	1152	1870	1581	1290	0	1798
Q Serve(g_s), s	3.9	0.0	5.0	2.1	0.0	3.6	7.3	1.2	0.2	2.9	0.0	3.3
Cycle Q Clear(g_c), s	7.5	0.0	5.0	7.1	0.0	3.6	10.6	1.2	0.2	4.1	0.0	3.3
Prop In Lane	1.00		0.36	1.00		0.14	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	479	0	610	422	0	635	532	718	607	647	0	690
V/C Ratio(X)	0.29	0.00	0.49	0.17	0.00	0.37	0.47	0.13	0.02	0.21	0.00	0.33
Avail Cap(c_a), veh/h	903	0	1262	822	0	1313	1168	1750	1479	1359	0	1682
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.9	0.0	9.6	12.4	0.0	9.1	11.9	7.5	7.2	8.8	0.0	8.1
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.2	0.0	0.4	0.6	0.1	0.0	0.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.6	0.4	0.0	1.2	1.6	0.4	0.0	0.7	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	0.0	10.2	12.6	0.0	9.5	12.5	7.5	7.2	8.9	0.0	8.4
LnGrp LOS	B	A	B	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h		438			306			351				366
Approach Delay, s/veh		10.8			10.2			11.1				8.6
Approach LOS		B			B			B				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.4		18.0		19.4		18.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		27.0		35.0		27.0				
Max Q Clear Time (g_c+I1), s		12.6		9.5		6.1		9.1				
Green Ext Time (p_c), s		1.5		2.3		1.9		1.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				10.2								
HCM 6th LOS				B								

HCM 6th TWSC  
 2: Keaau-Pahoa Rd & Keaau Library Exit

12/15/2022

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗			↗	
Traffic Vol, veh/h	0	0	41	0	0	2	0	375	0	0	373	0
Future Vol, veh/h	0	0	41	0	0	2	0	375	0	0	373	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	45	0	0	2	0	408	0	0	405	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	405	-	-	204	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.93	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	-	-	3.319	-	-
Pot Cap-1 Maneuver	0	0	645	0	0	803	0	0
Stage 1	0	0	-	0	0	-	0	0
Stage 2	0	0	-	0	0	-	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	645	-	-	803	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11		9.5		0		0	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	645	803	-
HCM Lane V/C Ratio	-	0.069	0.003	-
HCM Control Delay (s)	-	11	9.5	-
HCM Lane LOS	-	B	A	-
HCM 95th %tile Q(veh)	-	0.2	0	-

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	2	0	341	2	0	387	0
Future Vol, veh/h	0	0	0	0	0	2	0	341	2	0	387	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	2	0	371	2	0	421	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	794	795	421	794	794	373	421	0	0	374	0	0
Stage 1	421	421	-	373	373	-	-	-	-	-	-	-
Stage 2	373	374	-	421	421	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	306	320	632	306	321	673	1138	-	-	1184	-	-
Stage 1	610	589	-	648	618	-	-	-	-	-	-	-
Stage 2	648	618	-	610	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	305	320	632	306	321	672	1138	-	-	1183	-	-
Mov Cap-2 Maneuver	305	320	-	306	321	-	-	-	-	-	-	-
Stage 1	610	589	-	647	617	-	-	-	-	-	-	-
Stage 2	646	617	-	610	589	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.4	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1138	-	-	-	672	1183	-
HCM Lane V/C Ratio	-	-	-	-	0.003	-	-
HCM Control Delay (s)	0	-	-	0	10.4	0	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-



---

---

# APPENDIX C

## LOS WORKSHEETS

Future Year 2027 Conditions

---

---

# HCM 6th Signalized Intersection Summary

## 1: Keau-Pahoa Rd & Old Volcano Rd

01/17/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	103	127	131	261	51	238	266	154	94	326	65
Future Volume (veh/h)	128	103	127	131	261	51	238	266	154	94	326	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.98		0.97	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1132	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	117	72	190	322	52	410	320	97	107	398	85
Peak Hour Factor	0.80	0.88	0.80	0.69	0.81	0.77	0.87	0.83	0.88	0.88	0.82	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	378	233	414	553	89	280	965	805	495	769	164
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1000	1068	657	1167	1562	252	550	1870	1560	963	1489	318
Grp Volume(v), veh/h	160	0	189	190	0	374	410	320	97	107	0	483
Grp Sat Flow(s),veh/h/ln	1000	0	1725	1167	0	1815	550	1870	1560	963	0	1807
Q Serve(g_s), s	11.9	0.0	6.1	10.9	0.0	12.9	26.1	7.7	2.5	5.6	0.0	13.6
Cycle Q Clear(g_c), s	24.8	0.0	6.1	17.0	0.0	12.9	39.7	7.7	2.5	13.3	0.0	13.6
Prop In Lane	1.00		0.38	1.00		0.14	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	280	0	611	414	0	642	280	965	805	495	0	933
V/C Ratio(X)	0.57	0.00	0.31	0.46	0.00	0.58	1.46	0.33	0.12	0.22	0.00	0.52
Avail Cap(c_a), veh/h	302	0	650	440	0	683	280	965	805	495	0	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	18.0	24.2	0.0	20.2	29.8	10.9	9.6	14.8	0.0	12.3
Incr Delay (d2), s/veh	2.2	0.0	0.3	0.8	0.0	1.1	226.7	0.9	0.3	1.0	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	2.4	3.0	0.0	5.5	22.9	3.2	0.9	1.3	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	0.0	18.3	25.0	0.0	21.4	256.5	11.8	9.9	15.8	0.0	14.4
LnGrp LOS	C	A	B	C	A	C	F	B	A	B	A	B
Approach Vol, veh/h		349			564			827			590	
Approach Delay, s/veh		24.9			22.6			132.9			14.6	
Approach LOS		C			C			F			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.7		32.3		44.7		32.3				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		38.0		29.0		38.0		29.0				
Max Q Clear Time (g_c+I1), s		41.7		26.8		15.6		19.0				
Green Ext Time (p_c), s		0.0		0.4		4.0		2.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				60.1								
HCM 6th LOS				E								

HCM 6th TWSC  
2: Keaau-Pahoa Rd & Keaau Library Exit

01/17/2023

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↔			↕			↕	
Traffic Vol, veh/h	0	0	69	0	0	24	0	643	0	0	590	0
Future Vol, veh/h	0	0	69	0	0	24	0	643	0	0	590	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	75	0	0	26	0	699	0	0	641	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	-	-	641	1378	1340	350	-	0	-	-	0	
Stage 1	-	-	-	699	699	-	-	-	-	-	-	
Stage 2	-	-	-	679	641	-	-	-	-	-	-	
Critical Hdwy	-	-	6.23	7.33	6.53	6.93	-	-	-	-	-	
Critical Hdwy Stg 1	-	-	-	6.53	5.53	-	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	6.13	5.53	-	-	-	-	-	-	
Follow-up Hdwy	-	-	3.319	3.519	4.019	3.319	-	-	-	-	-	
Pot Cap-1 Maneuver	0	0	474	113	152	647	0	-	0	0	-	0
Stage 1	0	0	-	397	441	-	0	-	0	0	-	0
Stage 2	0	0	-	440	469	-	0	-	0	0	-	0
Platoon blocked, %												
Mov Cap-1 Maneuver	-	-	474	95	152	647	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	95	152	-	-	-	-	-	-	-
Stage 1	-	-	-	397	441	-	-	-	-	-	-	-
Stage 2	-	-	-	370	469	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14		10.8		0		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	474	647	-
HCM Lane V/C Ratio	-	0.158	0.04	-
HCM Control Delay (s)	-	14	10.8	-
HCM Lane LOS	-	B	B	-
HCM 95th %tile Q(veh)	-	0.6	0.1	-



HCM 6th TWSC  
 3: Keaau-Pahoa Rd & Keaau Library Entrance

01/17/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖			↙
Traffic Vol, veh/h	0	0	666	11	12	668
Future Vol, veh/h	0	0	666	11	12	668
Conflicting Peds, #/hr	0	0	0	43	43	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	724	12	13	726

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	773	0	0	779
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	2.218
Pot Cap-1 Maneuver	0	399	-	-	838
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	383	-	-	804
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	804	-
HCM Lane V/C Ratio	-	-	0.016	-
HCM Control Delay (s)	-	-	0	9.6
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	5	0	28	1	648	10	11	657	0
Future Vol, veh/h	0	0	2	5	0	28	1	648	10	11	657	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	43	43	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	2	5	0	30	1	704	11	12	714	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1465	1498	714	1494	1493	753	714	0	0	758	0	0
Stage 1	738	738	-	755	755	-	-	-	-	-	-	-
Stage 2	727	760	-	739	738	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	106	122	431	101	123	410	886	-	-	853	-	-
Stage 1	410	424	-	401	417	-	-	-	-	-	-	-
Stage 2	415	414	-	409	424	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	96	114	431	94	115	393	886	-	-	818	-	-
Mov Cap-2 Maneuver	96	114	-	94	115	-	-	-	-	-	-	-
Stage 1	409	414	-	384	399	-	-	-	-	-	-	-
Stage 2	382	396	-	397	414	-	-	-	-	-	-	-























Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.4		20.7		0		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	886	-	-	431	265	818	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.135	0.015	-	-
HCM Control Delay (s)	9.1	0	-	13.4	20.7	9.5	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

# HCM 6th Signalized Intersection Summary

## 1: Keau-Pahoa Rd & Old Volcano Rd

01/05/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	127	157	101	198	42	194	193	70	105	261	81
Future Volume (veh/h)	135	127	157	101	198	42	194	193	70	105	261	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	138	116	110	215	30	211	210	37	114	284	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	269	226	277	461	64	581	1089	920	692	827	221
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.58	0.58	0.58	0.58	0.58	0.58
Sat Flow, veh/h	1129	934	785	1119	1604	224	1020	1870	1580	1131	1420	380
Grp Volume(v), veh/h	147	0	254	110	0	245	211	210	37	114	0	360
Grp Sat Flow(s),veh/h/ln	1129	0	1719	1119	0	1827	1020	1870	1580	1131	0	1800
Q Serve(g_s), s	9.5	0.0	9.5	7.0	0.0	8.5	10.5	4.1	0.8	4.1	0.0	8.0
Cycle Q Clear(g_c), s	18.0	0.0	9.5	16.5	0.0	8.5	18.5	4.1	0.8	8.1	0.0	8.0
Prop In Lane	1.00		0.46	1.00		0.12	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	294	0	495	277	0	526	581	1089	920	692	0	1049
V/C Ratio(X)	0.50	0.00	0.51	0.40	0.00	0.47	0.36	0.19	0.04	0.16	0.00	0.34
Avail Cap(c_a), veh/h	394	0	648	377	0	688	581	1089	920	692	0	1049
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.0	0.0	22.9	29.8	0.0	22.6	13.2	7.6	6.9	9.5	0.0	8.4
Incr Delay (d2), s/veh	1.3	0.0	0.8	0.9	0.0	0.6	1.8	0.4	0.1	0.5	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	3.9	1.9	0.0	3.7	2.5	1.6	0.3	1.0	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	0.0	23.7	30.7	0.0	23.2	15.0	8.0	7.0	10.0	0.0	9.3
LnGrp LOS	C	A	C	C	A	C	B	A	A	A	A	A
Approach Vol, veh/h		401			355			458			474	
Approach Delay, s/veh		26.5			25.5			11.1			9.5	
Approach LOS		C			C			B			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		49.9		27.1		49.9		27.1				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		38.0		29.0		38.0		29.0				
Max Q Clear Time (g_c+I1), s		20.5		20.0		10.1		18.5				
Green Ext Time (p_c), s		2.3		1.5		3.0		1.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				17.3								
HCM 6th LOS				B								

HCM 6th TWSC  
 2: Keaau-Pahoa Rd & Keaau Library Exit

01/05/2023

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↔			↕			↕	
Traffic Vol, veh/h	0	0	59	7	0	10	0	453	0	0	525	0
Future Vol, veh/h	0	0	59	7	0	10	0	453	0	0	525	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	64	8	0	11	0	492	0	0	571	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	571	1095	1063	246	-	0
Stage 1	-	-	-	492	492	-	-	-
Stage 2	-	-	-	603	571	-	-	-
Critical Hdwy	-	-	6.23	7.33	6.53	6.93	-	-
Critical Hdwy Stg 1	-	-	-	6.53	5.53	-	-	-
Critical Hdwy Stg 2	-	-	-	6.13	5.53	-	-	-
Follow-up Hdwy	-	-	3.319	3.519	4.019	3.319	-	-
Pot Cap-1 Maneuver	0	0	519	179	222	755	0	0
Stage 1	0	0	-	528	547	-	0	0
Stage 2	0	0	-	485	504	-	0	0
Platoon blocked, %							-	-
Mov Cap-1 Maneuver	-	-	519	157	222	755	-	-
Mov Cap-2 Maneuver	-	-	-	157	222	-	-	-
Stage 1	-	-	-	528	547	-	-	-
Stage 2	-	-	-	425	504	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.9	18.1	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	519	294	-
HCM Lane V/C Ratio	-	0.124	0.063	-
HCM Control Delay (s)	-	12.9	18.1	-
HCM Lane LOS	-	B	C	-
HCM 95th %tile Q(veh)	-	0.4	0.2	-

HCM 6th TWSC  
 3: Keaau-Pahoa Rd & Keaau Library Entrance

01/05/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖			↙
Traffic Vol, veh/h	0	0	432	7	8	581
Future Vol, veh/h	0	0	432	7	8	581
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	470	8	9	632

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	476	0	0	480
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	2.218
Pot Cap-1 Maneuver	0	589	-	-	1082
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	588	-	-	1080
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1080	-
HCM Lane V/C Ratio	-	-	0.008	-
HCM Control Delay (s)	-	-	0	8.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	5	0	19	0	419	5	3	577	0
Future Vol, veh/h	0	0	0	5	0	19	0	419	5	3	577	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	0	21	0	455	5	3	627	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1101	1095	627	1093	1093	460	627	0	0	462	0	0
Stage 1	633	633	-	460	460	-	-	-	-	-	-	-
Stage 2	468	462	-	633	633	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	189	214	484	192	214	601	955	-	-	1099	-	-
Stage 1	468	473	-	581	566	-	-	-	-	-	-	-
Stage 2	575	565	-	468	473	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	182	213	484	191	213	600	955	-	-	1097	-	-
Mov Cap-2 Maneuver	182	213	-	191	213	-	-	-	-	-	-	-
Stage 1	468	471	-	580	565	-	-	-	-	-	-	-
Stage 2	555	564	-	466	471	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		14.3		0		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	955	-	-	-	415	1097	-	-
HCM Lane V/C Ratio	-	-	-	-	0.063	0.003	-	-
HCM Control Delay (s)	0	-	-	0	14.3	8.3	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-

# HCM 6th Signalized Intersection Summary

## 1: Keau-Pahoa Rd & Old Volcano Rd

01/05/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↗	
Traffic Volume (veh/h)	127	177	144	67	185	42	234	85	52	128	169	73
Future Volume (veh/h)	127	177	144	67	185	42	234	85	52	128	169	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	138	192	111	73	201	34	254	92	12	139	184	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	474	384	222	414	540	91	531	730	617	651	552	150
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1137	1107	640	1070	1556	263	1144	1870	1581	1287	1415	385
Grp Volume(v), veh/h	138	0	303	73	0	235	254	92	12	139	0	234
Grp Sat Flow(s),veh/h/ln	1137	0	1746	1070	0	1819	1144	1870	1581	1287	0	1800
Q Serve(g_s), s	3.9	0.0	5.2	2.2	0.0	3.7	7.6	1.2	0.2	3.0	0.0	3.5
Cycle Q Clear(g_c), s	7.6	0.0	5.2	7.4	0.0	3.7	11.1	1.2	0.2	4.2	0.0	3.5
Prop In Lane	1.00		0.37	1.00		0.14	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	474	0	606	414	0	632	531	730	617	651	0	703
V/C Ratio(X)	0.29	0.00	0.50	0.18	0.00	0.37	0.48	0.13	0.02	0.21	0.00	0.33
Avail Cap(c_a), veh/h	885	0	1238	801	0	1289	1136	1718	1452	1331	0	1654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	9.8	12.8	0.0	9.3	12.0	7.4	7.1	8.8	0.0	8.1
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.2	0.0	0.4	0.7	0.1	0.0	0.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.7	0.5	0.0	1.2	1.6	0.4	0.0	0.7	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	0.0	10.5	13.0	0.0	9.7	12.7	7.5	7.1	8.9	0.0	8.4
LnGrp LOS	B	A	B	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h		441			308			358				373
Approach Delay, s/veh		11.1			10.5			11.2				8.6
Approach LOS		B			B			B				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.9		18.2		19.9		18.2				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		27.0		35.0		27.0				
Max Q Clear Time (g_c+I1), s		13.1		9.6		6.2		9.4				
Green Ext Time (p_c), s		1.6		2.4		2.0		1.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				10.4								
HCM 6th LOS				B								

HCM 6th TWSC  
2: Keaau-Pahoa Rd & Keaau Library Exit

01/05/2023

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↕			↕			↗	
Traffic Vol, veh/h	0	0	41	12	0	10	0	375	0	0	384	0
Future Vol, veh/h	0	0	41	12	0	10	0	375	0	0	384	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	45	13	0	11	0	408	0	0	417	0

Major/Minor	Minor2		Minor1		Major1			Major2			
Conflicting Flow All	-	-	417	848	825	204	-	0	-	-	0
Stage 1	-	-	-	408	408	-	-	-	-	-	-
Stage 2	-	-	-	440	417	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	7.33	6.53	6.93	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	6.53	5.53	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.13	5.53	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	3.519	4.019	3.319	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	635	268	307	803	0	-	0	0	-
Stage 1	0	0	-	592	596	-	0	-	0	0	-
Stage 2	0	0	-	595	590	-	0	-	0	0	-
Platoon blocked, %											
Mov Cap-1 Maneuver	-	-	635	249	307	803	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	249	307	-	-	-	-	-	-
Stage 1	-	-	-	592	596	-	-	-	-	-	-
Stage 2	-	-	-	553	590	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	11.1		15.6		0			0		
HCM LOS	B		C							

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	635	363	-
HCM Lane V/C Ratio	-	0.07	0.066	-
HCM Control Delay (s)	-	11.1	15.6	-
HCM Lane LOS	-	B	C	-
HCM 95th %tile Q(veh)	-	0.2	0.2	-



HCM 6th TWSC  
 3: Keaau-Pahoa Rd & Keaau Library Entrance

01/05/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↘			↖
Traffic Vol, veh/h	0	0	343	14	11	399
Future Vol, veh/h	0	0	343	14	11	399
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	373	15	12	434

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	382	0	0	389
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	2.218
Pot Cap-1 Maneuver	0	665	-	-	1170
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	664	-	-	1169
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1169
HCM Lane V/C Ratio	-	-	-	0.01
HCM Control Delay (s)	-	-	0	8.1
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	2	0	353	2	0	399	0
Future Vol, veh/h	0	0	0	0	0	2	0	353	2	0	399	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	2	0	384	2	0	434	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	821	822	435	820	821	386	435	0	0	387	0	0
Stage 1	435	435	-	386	386	-	-	-	-	-	-	-
Stage 2	386	387	-	434	435	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	293	309	621	294	309	662	1125	-	-	1171	-	-
Stage 1	600	580	-	637	610	-	-	-	-	-	-	-
Stage 2	637	610	-	600	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	292	308	620	294	308	661	1124	-	-	1170	-	-
Mov Cap-2 Maneuver	292	308	-	294	308	-	-	-	-	-	-	-
Stage 1	599	579	-	636	609	-	-	-	-	-	-	-
Stage 2	635	609	-	600	579	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.5	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1124	-	-	-	661	1170	-
HCM Lane V/C Ratio	-	-	-	-	0.003	-	-
HCM Control Delay (s)	0	-	-	0	10.5	0	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-