Mitchell D. Roth
Mayor

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74-5044 Ane Keohokālole Hwy
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County of Hawai'i
PLANNING DEPARTMENT

Zendo Kern
Director

Jeffrey W. Darrow
Deputy Director

East Hawai'i Office
101 Pauahi Street, Suite 3
Hilo, Hawai'i 96720
Phone (808) 961-8288
Fax (808) 961-8742

March 24, 2022

Mary Alice Evans, Director
Office of Planning and Sustainable Development
Environmental Review Program
235 S. Beretania Street, Room 702
Honolulu, Hawai'i 96813

Dear Ms. Evans,

SUBJECT: Publication of the Draft Environmental Assessment (DEA) Anticipated Finding of No Significant Impact (AFONSI) for the Frey Single-Family Residence Project
Applicant: Gregg Frey
TMK: (3) 7-5-019:020; North Kona District, Hawai'i

The County of Hawai'i Planning Department has reviewed the referenced project in conformance with Hawai'i Administrative Rules (HAR) Section 11-200.1-13 in order to evaluate the sum of effects of the proposed action on the quality of the environment, and to determine if there will be a "significant effect" on the environment. The thirteen (13) criteria listed in HAR 11-200.1-13(b) have been applied to the proposed project. Based on that review, the Planning Department provides the following analysis:

> Typically, a proposal to construct a single-family residence does not include any "significant effects" on the environment besides short term impacts such as noise, air quality, or sedimentation which are common to most construction projects. However, in this instance, the proposed dwelling is located on a small (~6700 sq. ft.) parcel and requires a Shoreline Setback Variance (SSV) to accommodate the proposed design which will be sited only 20 feet from the certified shoreline. While the proposed project will not irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, have a substantial adverse effect on welfare, public health, air or water quality, or scenic vistas, and will not involve a substantial degradation of environmental quality now, the Planning Department believes this project may have impacts in the future.
>
> Pursuant to HAR 11-200.1-13(b) – *The proposed [project] may have a significant effect on the environment if it may*, (8) *Be individually limited but cumulatively have substantial adverse effect upon the environment or involves a commitment for larger actions*. A review of coastal development in the vicinity of the subject parcel indicates that seawall construction is a common

practice as most development is located close to the shoreline, and therefore, is intimately linked to ocean impacts such as flooding, high tides, and sea level rise. While not part of the proposed plan, the Planning Department believes this project will undoubtably require in the future some form of shoreline hardening structure to preserve the coastal development sited only 20 feet from the current certified shoreline. As such, the proposed project may *involve a commitment for larger actions* such as the construction of a seawall or retaining wall.

Similarly, pursuant to HAR 11-200.1-13(b) – *The proposed [project] may have a significant effect on the environment if it may*, (11) *Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters*. The proposed project is located on a small (~6700 sq. ft.) parcel sited adjacent to *coastal waters* which has eroded almost 50% since it was subdivided in the 1960's. It is clear that this site is an *erosion prone area*, and as such may *suffer damage* by shoreline processes in the future.

The applicant has included a Coastal Erosion Study and Shoreline Assessment report within the Draft EA that indicates there is no plan to construct a seawall, and that the current level of erosion is negligible and will not have an impact on the environment or this proposed project. Based on our review, the Planning Department suggests that while the proposed project will not cause a significant [impact] effect to the environment now, there is a potential for adverse effects to the environment in the future.

The Planning Department hereby transmits this DEA-AFONSI determination for the **Frey Single Family Residence Project**, located on the subject parcel for publication in the next edition of "The Environmental Notice."

If there are any questions regarding this letter, please contact Alex J. Roy at (808) 961-8140 or via email at Alex.Roy@hawaiicounty.gov.

Sincerely,

Jeffrey W. Darrow
Jeffrey W. Darrow (Mar 28, 2022 06:49 HST)

JEFFREY W. DARROW
Deputy Planning Director

AJR:jaa
\\coh01\planning\public\wpwin60\czm\ea_eis_reviews\frey_sfr\pd_to_opsd_frey_dea_letter.doc

Cc (via e-mail): Land Planning Hawaii, LLC

From: webmaster@hawaii.gov
To: DBEDT OPSD Environmental Review Program
Subject: New online submission for The Environmental Notice
Date: Monday, March 28, 2022 10:09:09 AM

Action Name

Frey Single Family Residence

Type of Document/Determination

Draft environmental assessment and anticipated finding of no significant impact (DEA-AFNSI)

HRS §343-5(a) Trigger(s)

- (3) Propose any use within a shoreline area

Judicial district

North Kona, Hawai‘i

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

(3) 7-5-019:020

Action type

Applicant

Other required permits and approvals

Special Management Area Use Permit, Shoreline Setback Variance, Building Permit, Plan Approval, Grading and Grubbing Permits

Discretionary consent required

Ch 6E-42 review

Approving agency

County of Hawai’i Planning Department

Agency contact name

Alex Roy

Agency contact email (for info about the action)

alex.roy@hawaiicounty.gov

Email address or URL for receiving comments

planning@hawaiicounty.gov

Agency contact phone

(808) 961-8288

Agency address

101 PAUAHI STREET, SUITE 3
Hilo, HI 96720
United States
Map It

Applicant

Gregg Frey

Applicant contact name

Gregg Frey

Applicant contact email

gwfrey57@gmail.com

Applicant contact phone

(808) 333-3393

Applicant address

P.O. Box 2767
Issaquah, WA 98027
United States
Map It

Was this submittal prepared by a consultant?

Yes

Consultant

Land Planning Hawaii LLC

Consultant contact name

Katrina Kern

Consultant contact email

katrina@landplanninghawaii.com

Consultant contact phone

(808) 333-3393

Consultant address

194 Wiwoole St.
Hilo, HI 96720
United States
Map It

Action summary

The applicant is requesting a Shoreline Setback Variance (SSV) for the proposed project to allow construction of the residence and related development up to a 20-foot shoreline setback boundary. The proposed project involves the construction of a 2,024 square foot single-family residence with three (3) bedrooms and two and a half (2 ½) bathrooms, a kitchen, living/dining room, porte cochere with two (2) parking spaces, a pool and decks. Electricity will be provided to the home through Hawai‘i Electric Light Company, Inc. (Hawai‘i Electric) and water through an existing 5/8-inch waterline provided by the Department of Water Supply (DWS). The home will connect to the County sewer system.

Reasons supporting determination

Refer to Part 4, Significance Criteria, on page 85 of the Draft Environmental Assessment

Attached documents (signed agency letter & EA/EIS)

- 03-24-2022-LTR-TO-OPSD-FREY-DEA-AFONSI-FOR-PUBLICATION-signed.pdf
- Frey_DEA_Transmittal.pdf

Action location map

- Frey_KML_Subject-Site.zip

Authorized individual

Alex Roy

Authorization

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

DRAFT ENVIRONMENTAL ASSESSMENT

Frey Single-Family Residence
Special Management Area Major Use Permit and
Shoreline Setback Variance

March 2022

TMK: (3) 7-5-019: 020
Kailua-Kona, North Kona, County of Hawai‘i, State of Hawai‘i

APPLICANT:

Gregg Frey
P.O. Box 2767
Issaquah, Washington 98027

DETERMINING AGENCY:

County of Hawai‘i
Planning Department
101 Pauahi Street Suite 3
Hilo, Hawai‘i 96720

CONSULTANT:

Land Planning Hawai‘i LLC
194 Wiwo‘ole Street
Hilo, Hawai‘i 96720

This document is prepared pursuant to:
The Hawai‘i Environmental Policy Act,
Chapter 343, Hawai‘i Revised Statutes (HRS), and
Title 11, Chapter 200.1, Hawai‘i Department of Health Administrative Rules (HAR)

TABLE OF CONTENTS

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LIST OF EXHIBITS AND APPENDICES

ABBREVIATIONS

AAER	Average Annual Erosion Rate
AFI	Archaeological Field Inspection
BMP	Best Management Practices
CDP	Community Development Plan
CES	Coastal Erosion Study
CS	Coastal Slope
CZM	Coastal Zone Management
DEA	Draft Environmental Assessment
DLNR	Department of Land and Natural Resources
DPW	Department of Public Works
DWS	Department of Water Supply
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
HAR	Hawai‘i Administrative Rules
HCC	Hawai‘i County Code
HCCMAC	Hawai‘i Climate Change Mitigation and Adaptation Commission
HEPA	Hawai‘i Environmental Policy Act
HRS	Hawai‘i Revised Statues
IPCC	Intergovernmental Panel on Climate Change
KCDP	Kona Community Development Plan
LUPAG	Land Use Pattern Allocation Guide
NPDES	National Pollutant Discharge Elimination System
OHA	Overall Hazard Assessment
PD	Planning Department
SCRF	Shoreline Change Reference Features
SLH	Sessions of Laws Hawai‘i
SMA	Special Management Area
SSV	Shoreline Setback Variance
SWPPP	Storm Water Pollution Prevention Plan

SUMMARY OF PROJECT, ENVIRONMENTAL IMPACTS, AND MITIGATION MEASURES

Mr. Gregg Frey is seeking a Special Management Area Major Use Permit (SMA) and Shoreline Setback Variance (SSV) to build a single-family residence at 75-5956 Ali‘i Drive, identified by TMK: (3) 7-5-019: 020 in Kailua-Kona, North Kona, County of Hawai‘i, State of Hawai‘i ("Property"). The Property is zoned Resort-Hotel V-1.25 and is located approximately 400 feet south from its intersection with Lunapule Road **(Figure 1)**. The parcel is outside the Conservation District but within the Special Management Area (SMA).

Based on a recent Certified Shoreline Survey, which was approved in November 2020, approximately 3,131 square-feet (45%) of the original parcel area (6,690 square-feet) is seaward of the shoreline. According to an opinion written by the Hawai‘i Office of the Attorney General (OP. No. 17-1) dated December 11, 2017, "*The state owns all land makai of the upper reaches of the wash of waves, usually evidenced by the edge of the vegetation or by the line or debris left by the wash of the waves"*. Based on this opinion, all land area *makai* of the certified shoreline is not owned by the applicant. The Certified Shoreline Survey can be seen in **Figures 2-6**. The map includes historic boundaries and depicts past and present certified shoreline surveys.

Prior to the passing of Senate Bill 2060 on September 15, 2020, and its revisions to State shoreline setback rules, this parcel would have been granted a 20-foot shoreline setback, leaving approximately 655 square-feet of buildable area. Enforcement of the 40-foot shoreline setback would leave approximately 90 square-feet of buildable area on the parcel. Our client closed escrow on the Property in August 2020 only after exhaustively researching the applicable restrictions and laws, as well as purchasing topographic surveys and a shoreline opinion to assist in the decision to purchase the Property. Prior to the September 15th, 2020, ruling, there were no issues that were able to be identified, as the lot was qualified for the 20-foot shoreline setback. However, due to the new rules that did away with provisions for 20-foot shoreline setbacks it is now necessary to seek relief from the 40-foot shoreline setback by way of a Shoreline Setback Variance.

Our client’s plans for building include four (4) stories with 2,024 square-feet of interior floor space and 757 square feet of lanai including a rooftop deck. The proposed dwelling would include three (3) bedrooms and two and a half (2 ½) bathrooms, a kitchen and living/dining room area, a porte cochere with two (2) parking spaces and a pool. The pool is proposed at grade underneath the home and will not extend beyond the requested 20-foot shoreline setback. Grading and grubbing will already need to occur in this area, therefore, this design will create the least ground disturbance (**Figures 7-13**). Electricity will be provided to the home through Hawai‘i Electric Light Company, Inc. (Hawai‘i Electric) and water through an existing 5/8-inch waterline provided by the Department of Water Supply (DWS). The home will connect to the County sewer system. The proposed design will comply with all County Zoning regulations and a 20-foot or greater shoreline setback.

The valuation of the project will exceed $500,000 therefore a Special Management Area Major Application is being submitted following the Environmental Assessment and concurrently with the Shoreline Setback Variance Application.

Earthwork would be limited due to the small size of the parcel. Under the proposed alternative the single-family residence would cover 652 square feet, plus proposed parking. Very minor and short-term impacts would occur to noise, air, and water quality during construction, which will be mitigated by Best Management Practices (BMPs) and appropriate grading and grubbing permits.

The subject Property shoreline consists of lava rock and boulders with hazardous footing and frequent rough surf. Lateral access along the shoreline will be unchanged under the proposed action. There are no sandy beaches adjacent to or nearby the subject Property, and no shoreline hardening is proposed. A Coastal Erosion Study and Shoreline Assessment was completed by Dr. Timothy Scheffler, Ph.D., and an Archaeological Field Inspection by Glenn G. Escott, MA. Both reports are summarized in the environmental assessment and can be seen in **Appendices 1 and 2.** Ocean views will be modestly impacted under the proposed request to construct a four (4) story single-family residence. The placement of the home and design features would be incorporated to mitigate these impacts. Views to and from Hualālai would not be impacted under the requested action.

A biotic survey of the Property was conducted, and no threatened or endangered species were reported. The Archaeological Study found no historical or archeological sites on the Property. It is also unlikely any cultural resources will be impacted by this request. However, in the event any such deposits are found, work will be halted immediately, and the State Historic Preservation Division will be contacted to determine the appropriate actions.

Existing roadways would not be impacted by the project. No zoning or density changes are requested and thus traffic should continue to be at a residential level and hence not any different than what exists today or the potential that exists today. Construction will occur off Ali‘i Drive, which is a County right-of-way. All rules and regulations outlined in Hawai‘i County Code, Chapter 22, County Streets will be strictly followed to minimize impacts to the roadway and traffic. In addition, the proposed action does not conflict with the Hawai‘i County General Plan, the Kona Community Development Plan or State Land Use regulations.

The appropriateness of the shoreline setback variance will depend on an evaluation of the facts and circumstances of this case against HRS § 205A-46 (a), which sets the criteria for granting shoreline setback variances and reads:

> A variance may be granted for a structure or activity otherwise prohibited in this part if the authority finds in writing, based on the record presented, that the proposed structure or activity is necessary for or ancillary to:
>
> > (8) Private facilities or improvements that will not adversely affect beach processes, result in flanking shoreline erosion, or artificially fix the shoreline; provided that the authority may consider any hardship that will result to the applicant if the facilities or improvements are not allowed within the shoreline area.

The request for shoreline setback variance will be evaluated thoroughly under the Special Management Area and Shoreline Setback Variance criteria established by Chapter 205A, HRS.

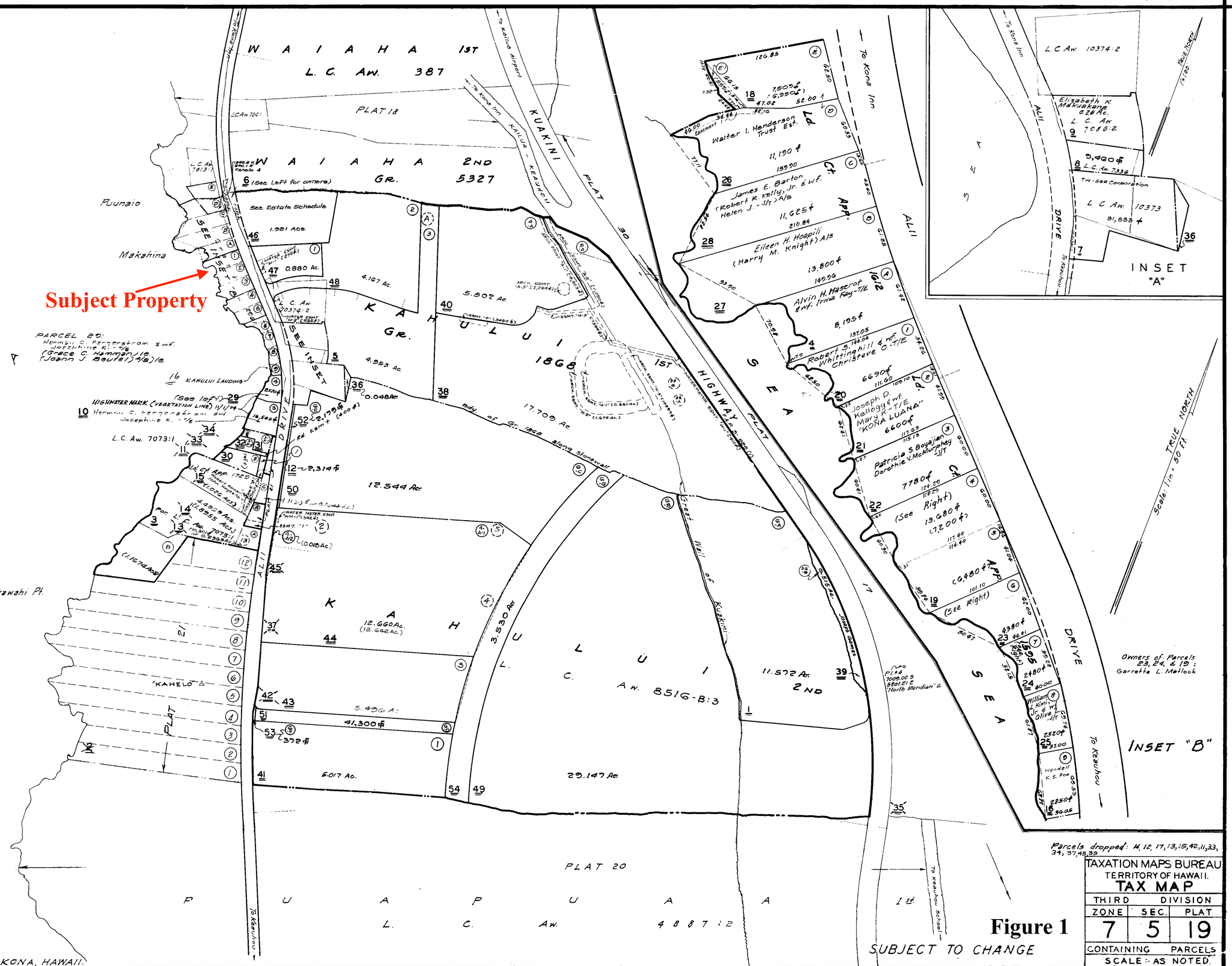
7 Daniel K. Komoku - dec'd -1/6
Heirs of Lydia K.N. Koohaoino - 1/1)
Arthur Komomua, Sr. - Rdm.) -1/6
Arthur Komomua, Sr. -1/6
Herbert N. Komomua 4
Ernest K. Komomua -1/6
Heirs of Joseph N. Komomua (0.12 Ac.) -2/6
See Estate Schedule for owners 4
int. over (31,883 sf. or 0.731 Ac.)

46 Heirs of Lydia K.N. Koohaoino - 1/1)
Arthur Komomua, Sr. - Rdm.) -1/6
Daniel K. Komomua - dec'd -1/6
Arthur Komomua, Sr. -1/6
Herbert Komomua 4 Ernest K. Komomua -1/6
Heirs of Joseph N. Komomua -2/6

30 Eve U.P. Mitchell - T/C
-15,203 ft

31 - 6,873 ft

32 - 6,550 ft



Parcels dropped: 14, 12, 17, 13, 15, 42, 11, 33, 34, 37, 45, 35

SUBJECT TO CHANGE

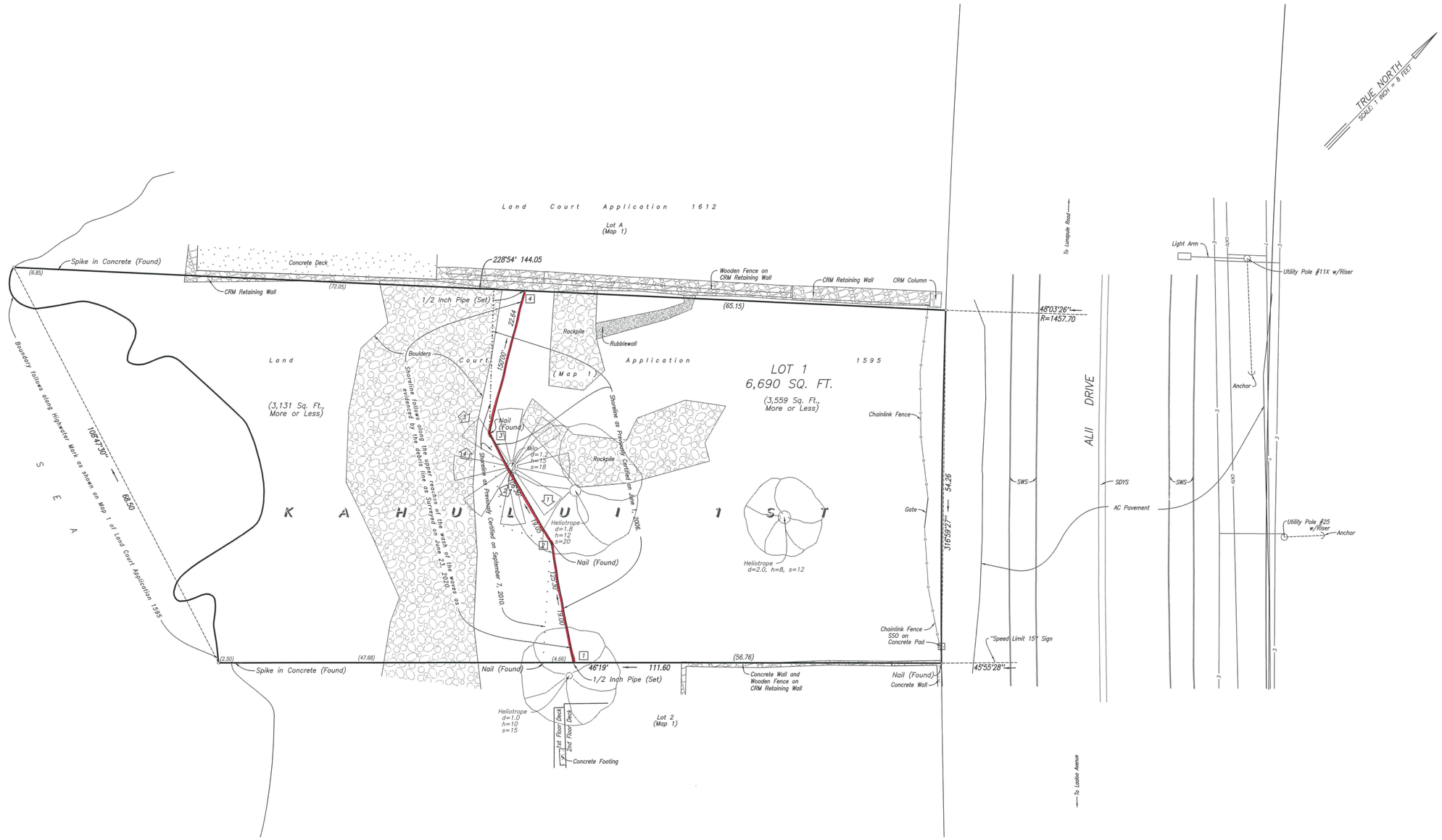
Figure 1

TAXATION MAPS BUREAU TERRITORY OF HAWAII. TAX MAP		
THIRD	DIVISION	
ZONE	SEC.	PLAT
7	5	19
CONTAINING	PARCELS	
SCALE :- AS NOTED.		

PRINTED.....

Par. of KAHULUI 1st. & 2nd. N. KONA, HAWAII.

Orig. No. 2734 (New.)
Source: T.M. Bureau & Survey Dept. (Reg. Map 1678)
By: P.K. June 1938



NOTES:

1. Azimuths are referred to Government Survey Triangulation Station "KAHELO".
2. The features, shown hereon, were located by an actual survey on the ground done between January 19, 2006 and June 23, 2020.
3. ABBREVIATIONS:
   AC=Asphalt Concrete
   BW=Bottom Wall
   CRM=Cement Rubble Masonry
   d=Trunk Diameter
   h=Height
   SSO=Sewer Stubout
   SDYS=Solid Double Yellow Striping
   SWS=Solid White Striping
   s=Canopy Spread Diameter
   TW=Top Wall
4. 1 Denotes photograph number and direction of view.
5. 1 Denotes number in photograph.

The shoreline as delineated in red is hereby certified as the shoreline as of

NOV 0 2 2020

Chairperson, Board of Land and Natural Resources

SHORELINE CERTIFICATION MAP SHOWING LOT 1 OF LAND COURT APPLICATION 1595 AS SHOWN ON MAP 1

At Kahului 1st, North Kona
Island and County of Hawaii, State of Hawaii

NICOLAS K. YAMASAKI
LICENSED PROFESSIONAL LAND SURVEYOR
No.12052
HAWAII, U.S.A.

This work was prepared by me or under my direct supervision.

NICOLAS K. YAMASAKI
Licensed Professional Land Surveyor
State of Hawaii Certificate Number LS-12052
Expiration Date: April 2022

8 4 0 8 16 24
SCALE IN FEET

Prepared For:
GREGG W. FREY
10220 181st Avenue SE
Issaquah, Washington 98027
Property Address: 75-5956 Alii Drive

Prepared By:
WES THOMAS ASSOCIATES
-- Land Surveyors --
75-5749 Kalawa Street
Kailua-Kona, Hawaii 96740-1817
TEL. (808) 329-2353
FAX (808) 329-5334 EMAIL surveys@wtahawaii.com

Figure 2

PROJECT NO.: 01183.61
DATE: . . . . . AUGUST 7, 2020
FIELD BOOK NO.: . . . 1217, 1270, 1382 AND 1386
TAX MAP KEY: . . . . 7-5-019:020 (3RD DIVISION)
REVISED: SEPTEMBER 15, 2020 (MOVE POINT NO. 1)

September 15, 2020 p:\00000-02999\01183.61\dgn\0118361slr1.dgn

Figure 3

PHOTOGRAPH NUMBER 1

DATE OF PHOTOGRAPHS:
JUNE 23, 2020

TIME OF PHOTOGRAPHS:
12:00 P.M.

WES THOMAS ASSOCIATES
-- Land Surveyors --
75-5749 Kalawa Street
Kailua-Kona, Hawaii 96740-1817
TEL. (808) 329-2353 FAX (808) 329-5334 EMAIL surveys@wtahawaii.com

PROJECT NO.: 01183.61
TAX MAP KEY: 7-5-019:020
(3RD DIVISION)

Figure 4

PHOTOGRAPH NUMBER 2

DATE OF PHOTOGRAPHS:
JUNE 23, 2020

TIME OF PHOTOGRAPHS:
12:00 P.M.

WES THOMAS ASSOCIATES
-- Land Surveyors --
75-5749 Kalawa Street
Kailua-Kona, Hawaii 96740-1817
TEL. (808) 329-2353 FAX (808) 329-5334 EMAIL surveys@wtahawaii.com

PROJECT NO.: 01183.61
TAX MAP KEY: 7-5-019:020
(3RD DIVISION)

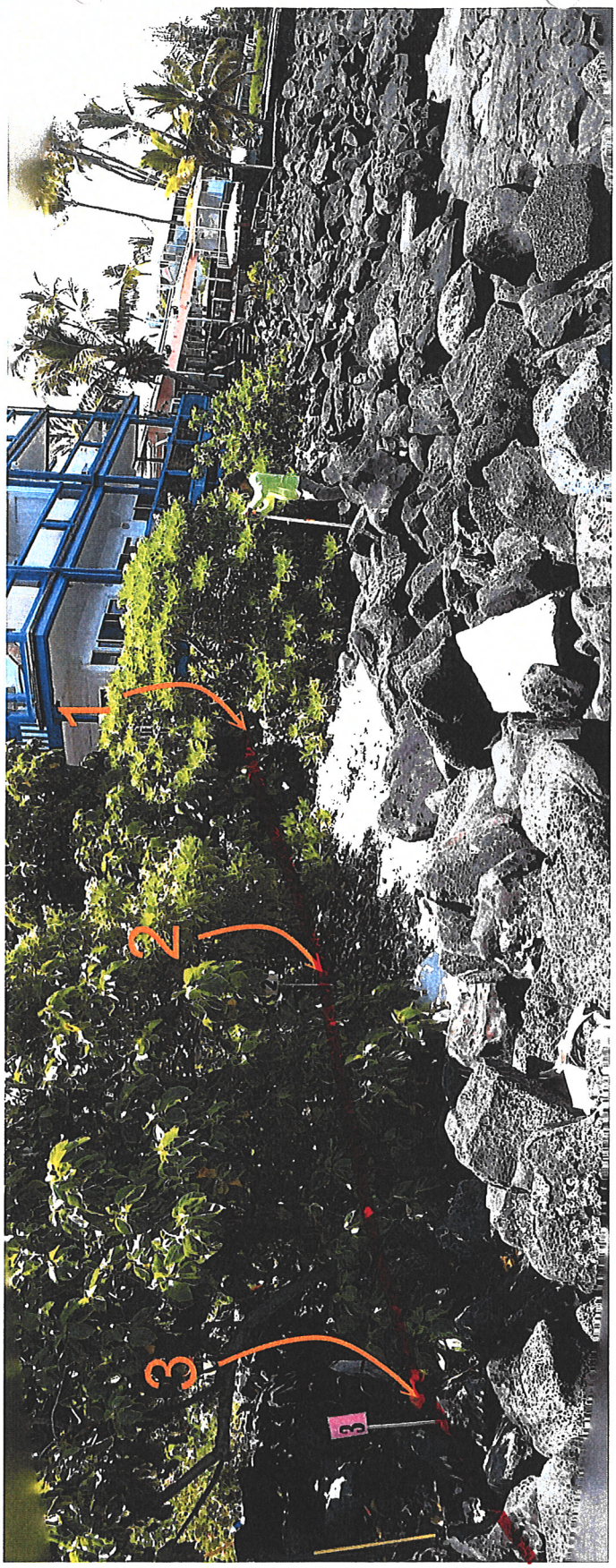


Figure 5

PHOTOGRAPH NUMBER 3

DATE OF PHOTOGRAPHS:
JUNE 23, 2020

TIME OF PHOTOGRAPHS:
12:00 P.M.

WES THOMAS ASSOCIATES
-- Land Surveyors --
75-5749 Kalawa Street
Kailua-Kona, Hawaii 96740-1817
TEL. (808) 329-2353 FAX (808) 329-5334 EMAIL surveys@wtahawaii.com

PROJECT NO.: 01183.61
TAX MAP KEY: 7-5-019:020
(3RD DIVISION)

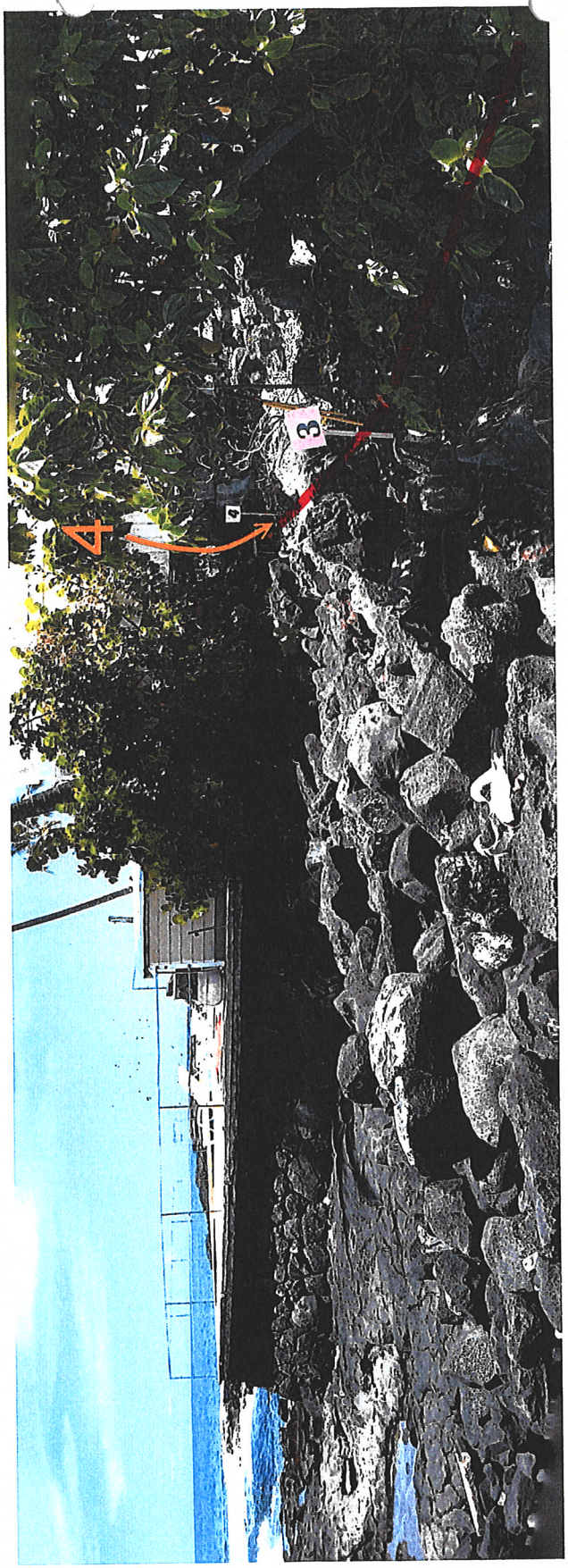


Figure 6

PHOTOGRAPH NUMBER 4

DATE OF PHOTOGRAPHS:
JUNE 23, 2020

TIME OF PHOTOGRAPHS:
12:00 P.M.

WES THOMAS ASSOCIATES
-- Land Surveyors --
75-5749 Kalawa Street
Kailua-Kona, Hawaii 96740-1817
TEL. (808) 329-2353 FAX (808) 329-5334 EMAIL surveys@wtahawaii.com

PROJECT NO.: 01183.61
TAX MAP KEY: 7-5-019:020
(3RD DIVISION)

2 GROUND FLOOR PLAN
SCALE: 1/4" = 1'-0"

Figure 7

bryan lindsey architect llc.
www.bla-architect.com
808.333.8833

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE MADE IN CONFORMITY WITH SUPERVISION OF CONSTRUCTION IS TO BE DEFINED IN SECTION 1-2, CHAPTER 10, TITLE V.I OF PROFESSIONAL AND VOCATIONAL LICENSING DIVISION, DEPT. OF REGULATORY AGENCIES, STATE OF HAWAII.

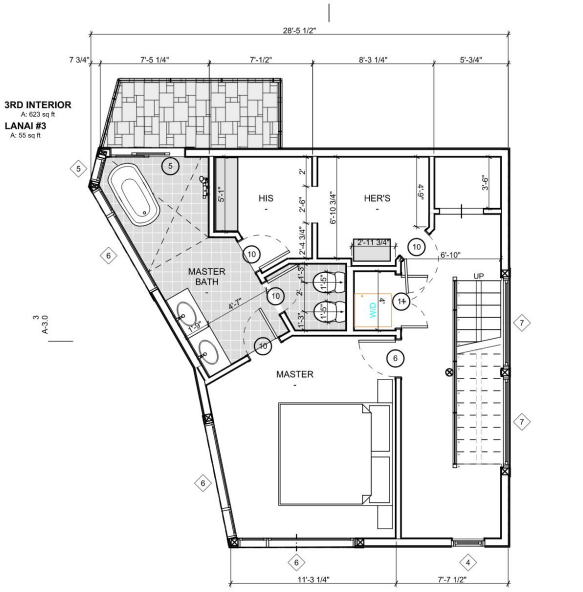
ARCHITECTURAL LICENSE
EXPIRATION DATE: APRIL 30, 2022

FREY, GREGG WILLIAM
75-5956 Alii Drive
Kailua-Kona
TMK:7-5-019-020

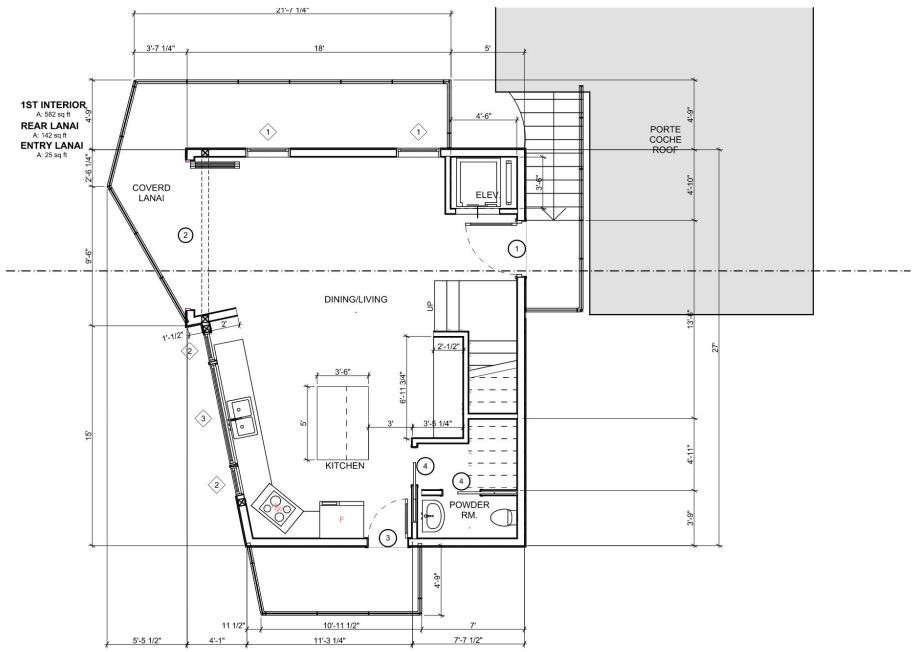
MARK	DATE	DESCRIPTION
	.	.

GROUND FLOOR PLAN

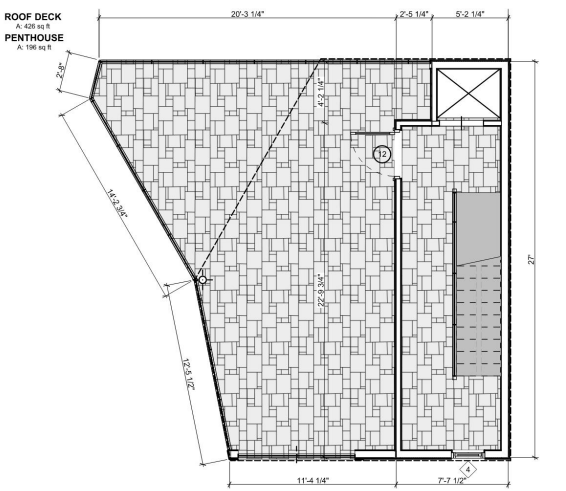
A-0.0



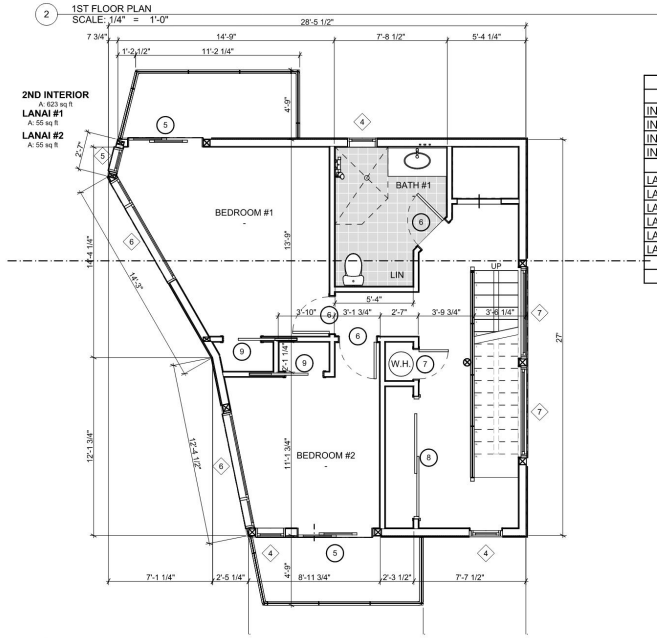
2 3RD FLOOR
SCALE: 1/4" = 1'-0"



2 1ST FLOOR PLAN
SCALE: 1/4" = 1'-0"



2 Roof Deck
SCALE: 1/4" = 1'-0"



2 2ND FLOOR
SCALE: 1/4" = 1'-0"

Area Calculation		
Zone Category	Zone Name	Measured Area
INTERIOR SPACE	1ST INTERIOR	582.23
INTERIOR SPACE	2ND INTERIOR	622.63
INTERIOR SPACE	3RD INTERIOR	622.63
INTERIOR SPACE	PENTHOUSE	196.26
		2,023.75 sq ft
LANAI SPACE	ENTRY LANAI	24.96
LANAI SPACE	LANAI #1	54.67
LANAI SPACE	LANAI #2	54.72
LANAI SPACE	LANAI #3	54.67
LANAI SPACE	REAR LANAI	142.03
LANAI SPACE	ROOF DECK	425.74
		756.79 sq ft
		2,780.54 sq ft

Figure 8

bryan lindsey architect llc.
www.bla-architect.com
808.333.6653

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE MADE WITH MY CONSTRUCTION SUPERVISION OF CONSTRUCTION IS TO BE DEFINED IN SECTION 1-2, CHAPTER 10, TITLE V.I OF PROFESSIONAL AND VOCATIONAL LICENSING DIVISION, DEPT. OF REGULATORY AGENCIES, STATE OF HAWAII.

ARCHITECTURAL LICENSE
EXPIRATION DATE: APRIL 30, 2022

FREY, GREGG WILLIAM
75-5956 Alii Drive
Kailua-Kona
TMK:7-5-019-020

MARK	DATE	DESCRIPTION

FLOOR PLANS

A-1.1

Window Types

WINDOW ID	1	2	3	4	4	5	6	7
SIZE	3'×8'	2'×4'	7'×4'	2'×8'	2'×8'	1'-8"×8'	8'×8'	6'×9'
HEAD HEIGHT	8'	8'	8'	8'	18'	8'	8'	9'
SHGC PROVIDED								

1 Window Types
NOT TO SCALE

DOOR TYPES

DOOR ID	1	2	3	4	5	6	7	8	9	10	11	12
DIMS	3'-6"×6'-8"	10'×8'	2'-8"×6'-8"	2'-6"×6'-8"	5'×8'	2'-6"×6'-8"	2'×6'-8"	8'×6'-8"	2'-6"×6'-8"	2'-4"×6'-8"	3'-7"×6'-8"	3'×6'-8"
NOTES												

2 Door Types
NOT TO SCALE

NOTE: ALL INTERIOR BEDROOM DOORS TO HAVE "HOLD OPEN" MECHANISMS INSTALLED

Figure 9

bryan lindsey architect llc
www.bryanlindsey.com
808.333.6653

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE MADE UNDER MY DIRECT SUPERVISION OF CONSTRUCTION IS TO BE DEFINED IN SECTION 1-2, CHAPTER 10, TITLE V.I OF PROFESSIONAL AND VOCATIONAL LICENSING DIVISION, DEPT. OF REGULATORY AGENCIES, STATE OF HAWAII.

ARCHITECTURAL LICENSE
EXPIRATION DATE: APRIL 30, 2022

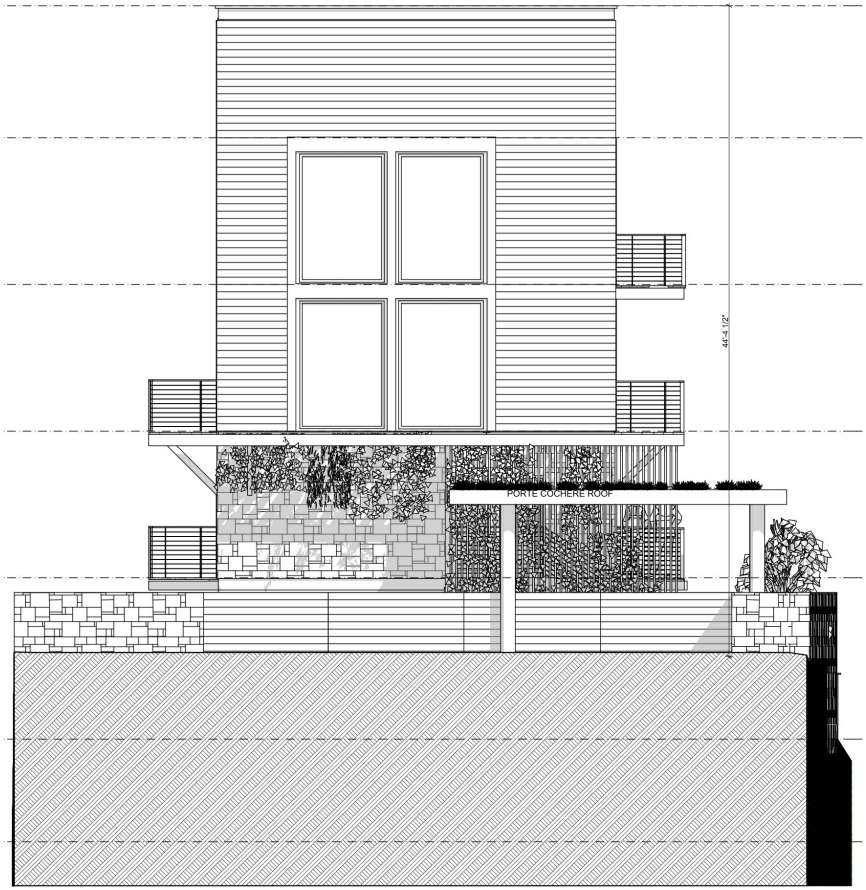
FREY, GREGG WILLIAM
75-5956 Alii Drive
Kailua-Kona
TMK:7-5-019-020

MARK	DATE	DESCRIPTION
	.	.

SCHEDULES

A-2

3 WEST ELEVATION
SCALE: 1/4" = 1'-0"



4 EAST ELEVATION
SCALE: 1/4" = 1'-0"

Figure 10

bryan lindsey architect llc.
www.bryanlindsey.com
808.333.8833

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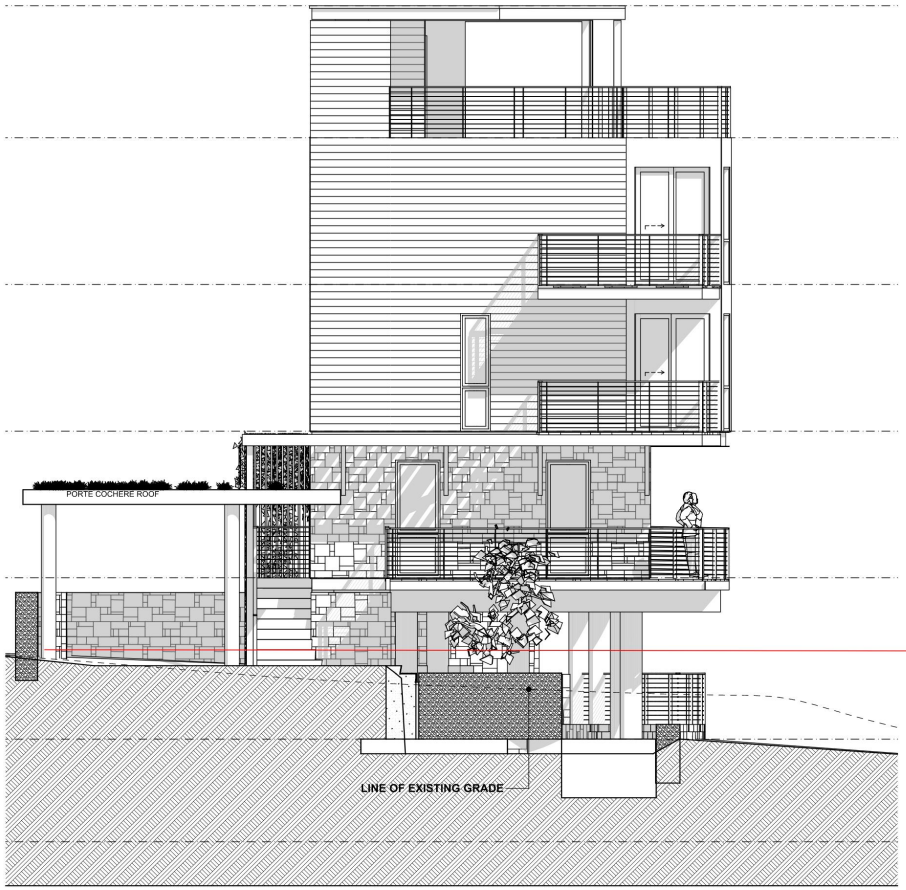
HOUSE ELEVATIONS

A-3.0



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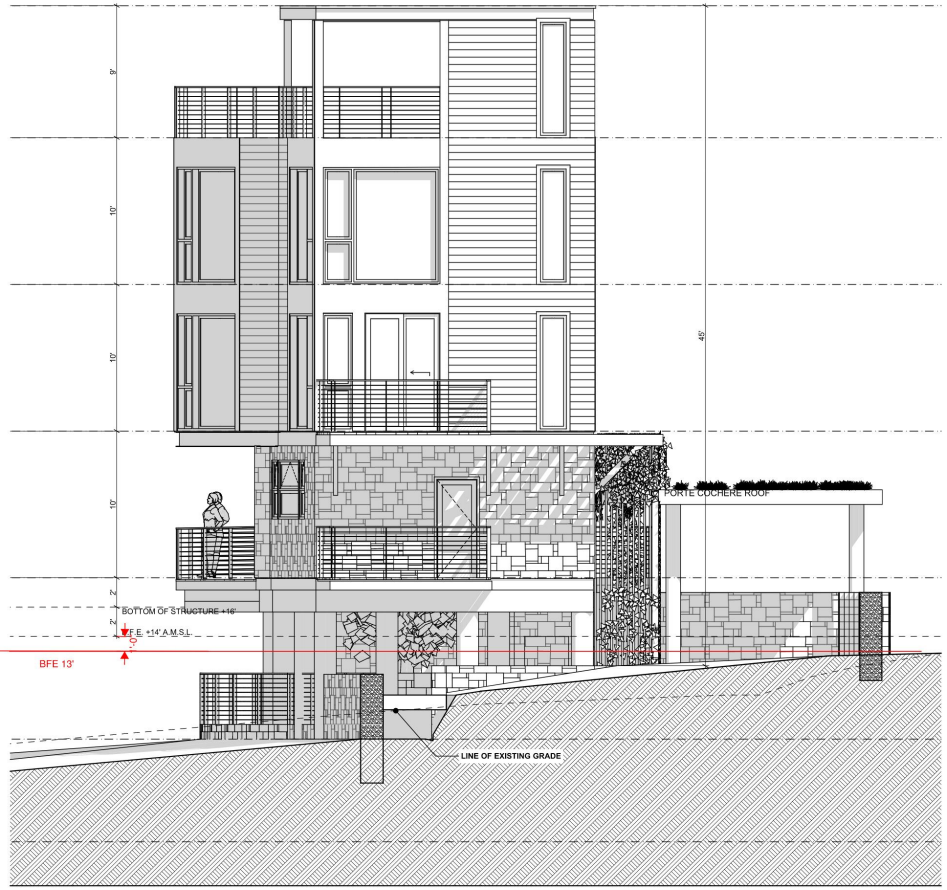
SCALE: 1/4" = 1'-0"



SEA LEVEL

2 SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

Figure 11

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FREY, GREGG WILLIAM
75-5956 Alii Drive
Kailua-Kona
TMK:7-5-019-020

MARK	DATE	DESCRIPTION
	.	.

HOUSE ELEVATIONS

A-3.1

Figure 12

bryan lindsey architect llc.
www.bryanlindsey.com
www.lanarchitect.com
808.333.8833

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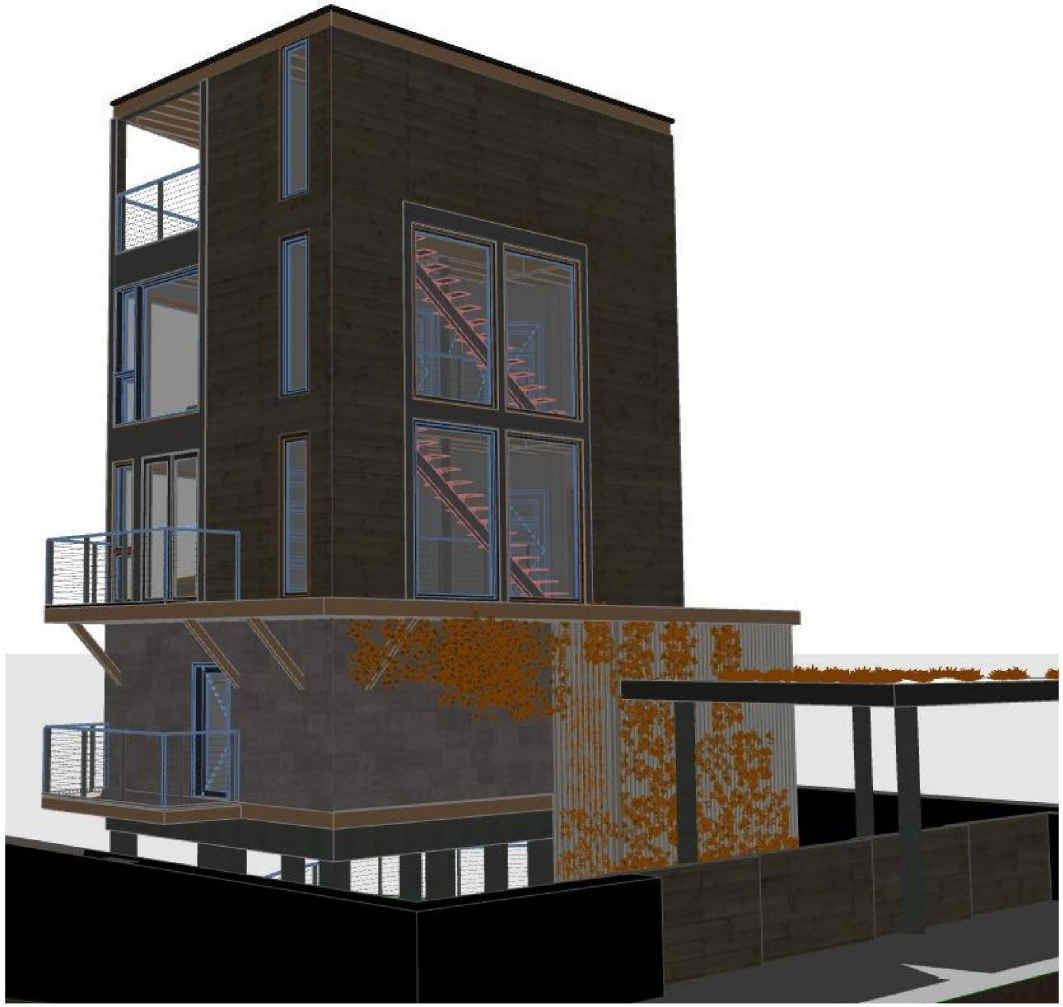
FREY, GREGG WILLIAM
75-5956 Alii Drive
Kailua-Kona
TMK:7-5-019-020

MARK	DATE	DESCRIPTION

SECTIONS

A-4.0



2 Perspective 2
SCALE: 1:30.74

1 Perspective 1
SCALE: 1:33.12

Figure 13

bryan lindsey architect llc.
www.bleardesign.com
808.333.6833

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EXPIRATION DATE: APRIL 30, 2022

MARK	DATE	DESCRIPTION
	.	.

FREY, GREGG WILLIAM
75-5956 Alii Drive
Kailua-Kona
TMK:7-5-019-020

Perspective

A-5.0

PART 1: PROJECT DESCRIPTION AND E.A. PROCESS

1.1 Project Description and Location

The subject Property for the proposed action is located at 75-5956 Ali'i Drive, identified by TMK: (3) 7-5-019: 020 in Kailua-Kona, North Kona, County of Hawai'i, State of Hawai'i. Mr. Gregg Frey plans to construct a four (4) story single-family residence with 2,024 square-feet of interior floor space and 757 square feet of lanai including a rooftop deck. The proposed dwelling would include three (3) bedrooms, two and a half (2 ½) bathrooms, a kitchen and living/dining room area, a porte cochere with two (2) parking spaces and a pool sited at grade beneath the building. Electricity will be provided to the home through Hawai'i Electric Light Company, Inc. (Hawai'i Electric) and water through an existing 5/8-inch waterline provided by the Department of Water Supply (DWS). The home will be connected to the County sewer system. The proposed design will comply with all County zoning regulations and a 20-foot shoreline setback. Alternatives are proposed that would also require front and side-yard setback variances.

The single-family residence would cover 652 square feet of the Property, plus proposed parking, and a pool. The east portion of the Property has been previously grubbed. There are two bulldozer push piles on the Property: one at the center and one extending from the north boundary rock wall. **Figures 14 and 15** show the proposed house footprint and the extent of Property that was previously bulldozed. Although this area will still need to be graded, it significantly reduces the extent of grubbing that will be required. Fragments of modern cement are present within these piles. The graded area along the northern boundary has been covered with red cinder, which was likely used to create a driveway. A chain link fence is present along the east boundary of the parcel, which fronts Ali'i Drive. Along the boundary there are two piles of cement and rock rubble. A rock-lined path is present near the southern boundary of the Property and leads from the east near the chain link fence to the western coastal flats.

A biotic survey found no endangered or threatened species on the Property. Vegetation such as Beach Heliotrope (*Tournefortia argentea*), Hawaiian Hau (*Hibiscus tiliaceus*), and Naupaka (*Scaevola taccada*) is present with some scattered Papaya (*Carica papaya*). Native Milo (*Thespesia populnea*) and non-native Bouganvillea (*Bougainvillea* sp.) are also on the Property.

The Coastal Erosion Survey and Shoreline Assessment conducted by Dr. Scheffler was prepared following the guidelines in the Hawai'i Coastal Hazard Mitigation Guidebook (Hwang et al. 2005). This study satisfies the Department of Land and Natural Resources (DLNR) requirement that an Average Annual Erosion Rate (AAER) be determined based on a formal Coastal Erosion Study (CES). After conducting two site surveys, Dr. Scheffler concluded that "conditions on the ground did not indicate that any major active erosion is taking place on the Property." He further states "original surface features on the lava platform are preserved in many places on the platform showing that little surficial erosion has taken place since the lava flows were formed, and that wave erosion has been minimal" (CES, p. 18 and 15). A maximum AAER of 0.93 +/- 0.21 inches per year was determined by reviewing historical photos dating back to 1954 using Shoreline Change Reference Features (SCRF). This is an approved methodology outlined in the Hawai'i Coastal Hazard Mitigation Guidebook (Hwang et al. 2005). **According to Dr. Scheffler, "Inspection of these photographs indicates that the general features of the coastline fronting the Property have not changed in that time (59 years). In fact, the**

configuration of coast and shoreline features correspond to those found in the field today (67 years)" (CES, p. 17). A discussion on the impacts of coastal hazards and the AAER can be found in Section 3.1.2 below. The full CES report is in **Appendix 1**.

A Pedestrian Survey and Archaeological Field Inspection conducted by Mr. Escott found no archeological sites, features, or historical resources. A summary of findings will be discussed in Section 3.2.2 below. The full report is in **Appendix 2.**

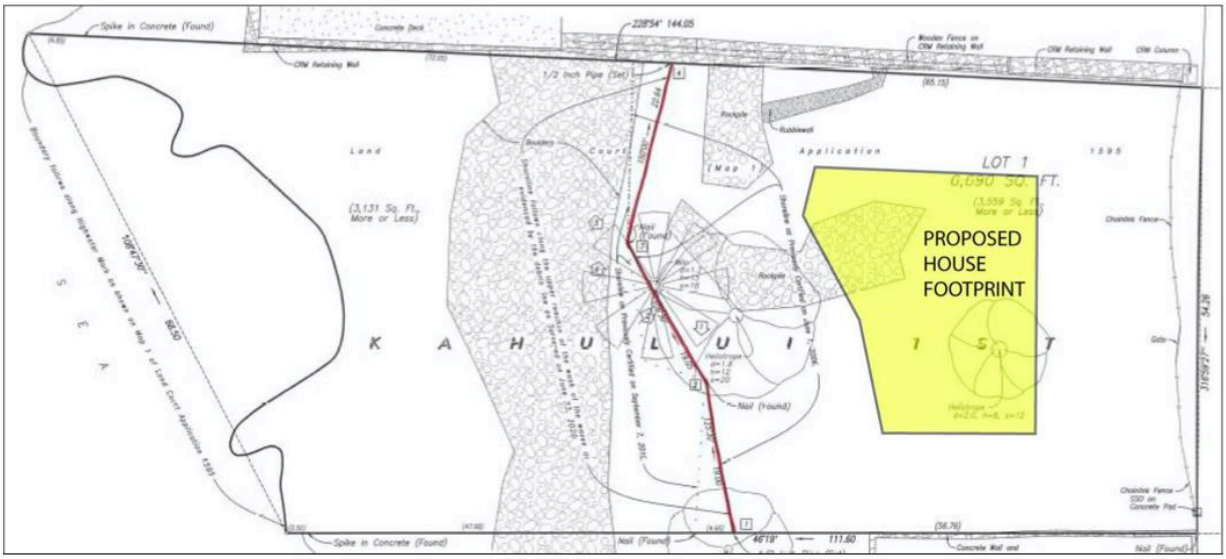


Figure 14: Proposed House Footprint

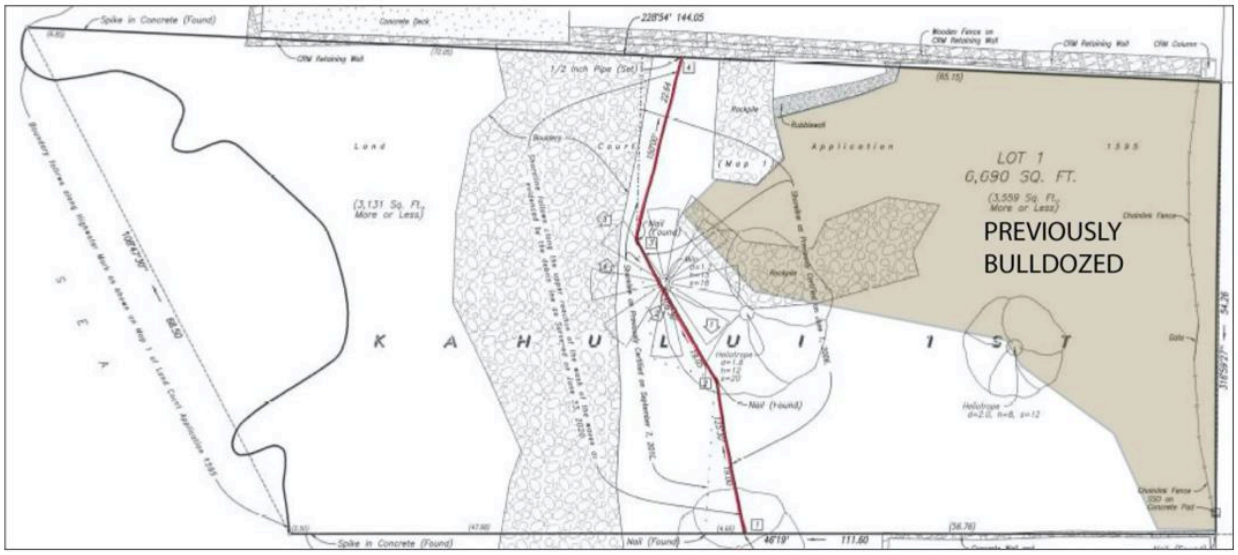


Figure 15: Area of Property Previously Bulldozed

1.2 Environmental Assessment Process

In 1974 the Hawai‘i State Legislature enacted the Hawai‘i Environmental Policy Act (HEPA), which requires State and County agencies to conduct an environmental impact analysis prior to making decisions on actions that may impact the environment.

This Environmental Assessment (EA) is being conducted in accordance with Chapter 343 of the Hawai‘i Revised Statutes (HRS), along with the implementing regulations, Title 11, Chapter 200.1, of the Hawai‘i Administrative Rules (HAR). This law is the basis for the environmental impact assessment process in the State of Hawai‘i. An EA is necessary for this subject site as it is located within the Shoreline Setback Area according to the County of Hawai‘i.

According to Chapter 343, an EA is prepared to determine impacts associated with a proposed action, develop mitigation measures for any discovered adverse impacts, and determine whether the impacts are significant (according to the thirteen specific criteria). If a study concludes that no significant impacts would occur from implementation of the proposed action, a Finding of No Significant Impact (FONSI) is prepared. If a study finds that significant impacts are expected to occur because of a proposed action, then an Environmental Impact Statement (EIS) is prepared to allow deeper investigation of impacts and allow more extensive public involvement.

The following EA discusses alternatives to the proposed action, existing environment and impacts associated with the proposed action, the anticipated determination and the findings made by the applicant in consultation with the County of Hawai‘i Planning Department and the expert consultants who prepared supporting studies for this EA.

1.3 Public Involvement and Agency Coordination

As part of the environmental assessment process, agency coordination and public involvement are crucial components to understand the impacts caused by the proposed action. The agencies, organizations, and individuals below have been consulted as part of the environmental assessment process. Copies of correspondence during the early consultation period can be found in **Appendix 3.**

State:

Department of Land and Natural Resources, Land Division
Department of Land and Natural Resources, Division of Aquatic Resources
Department of Land and Natural Resources, Division of Forestry and Wildlife
Department of Land and Natural Resources, Office of Conservation & Coastal Lands
Department of Land and Natural Resources, Engineering
Department of Land and Natural Resources, Historic Preservation
Hawai‘i Department of Transportation
Office of Hawaiian Affairs

County:

Planning Department
Fire Department
Police Department
Department of Environmental Management
Department of Public Works
Department of Water Supply
Civil Defense

Private:

Surrounding Property Owners within 300 feet of subject parcel

PART 2: ALTERNATIVES

2.1 Proposed Project, Alternative Sites, and Alternative Uses

Mr. Frey is proposing a four (4) story single-family home to accommodate a three (3) bedroom, two and a half (2 ½) bathroom dwelling. The proposed action and location are described in Section 1.1 above and illustrated in **Figures 7-13.** The proposed location of the home (utilizing a 20' shoreline setback) is the only logical option for development due to the extremely limited space available. There are two classes of alternatives to this action, which will be discussed in detail below. The alternatives include reducing the height of the home to three (3) or two (2) stories, and to seek a front-yard and/or side-yard setback variance instead of, or along with a shoreline setback variance.

2.1.1 Alternative Heights

An alternative to the proposed four (4) story single-family residence is to shorten it to three (3) or even two (2) stories. Although this alternative is possible, it is not reasonable, nor would it significantly reduce impacts to scenic views or natural resources. Alternative heights would reduce the livable area by a considerable amount and would represent a significant reduction in property rights and would generate undue hardship, with little to no benefit from an environmental perspective.

The following is a detailed discussion for both alternative heights (3 stories and 2 stories) and potential impacts to scenic views and natural resources. In each case the alternative height scenario applies to the proposed action. The analysis would be essentially the same for alternative heights applied to alternative setback scenarios evaluated in Section 2.1.2.

1. **Three (3) Stories**

   A three (3) story home would require the proposed penthouse and roof deck to be eliminated from the plans, which covers 622 square feet. This option would reduce the livable area from by approximately 22%.

   This alternative would not significantly reduce impacts to scenic views. The proposed position of the development with a 20-foot shoreline setback seeks to reduce scenic impacts from Ali'i Drive and neighbors to the north and south (**Figure 16 and 17**). The condominium complex *mauka* of Ali'i Drive is the main area where scenic views may be impacted. However, visual impacts from this viewpoint will be localized and limited since the condominiums are roughly the same height as the proposed four (4) story (45 foot) single-family residence. A reduction to three (3) stories (35 feet in height) would not significantly reduce these limited visual impacts. It should also be noted that there are two single-family residences approximately 100 and 170 feet to the northwest of the parcel on the *makai* side of Ali'i Drive that are similar in stories and height as the proposed residence. The home located 100 feet to the northwest is 4 stories and 40 feet tall, while the home located 170 feet to the northwest is 3 stories and

measures 35 feet tall. A list of building heights and the number of stories in the surrounding area is available in **Table 5** in Section 3.2.1.

The proposed penthouse and roof deck (4th floor) would have an open-air concept, which seeks to reduce visual impacts at this height. The enclosed portion of the rooftop (the penthouse) is provided for elevator and stairway access to the rooftop deck and covers only 196 square feet (**Figure 12**). Further, it is important to note again that the proposed home has only 652 square feet of footprint, therefore the view impacts from any vantage point will be localized and limited in extent.

This proposed penthouse and roof deck are important for adequate open space. If this area were to be eliminated, it would be very difficult to not only accommodate family, but also guests. Without the proposed penthouse and roof deck, the only open space in the home would be the kitchen and living/dining room, which would be 582 square feet. The proposed design of the home is extremely tight fitting already, therefore, eliminating the only open space of the home is unreasonable. It would generate considerable hardship to the applicant, significantly reducing their property rights, and would not significantly reduce any impacts to area view planes.

2. **Two (2) Stories**

A two (2) story home would require the penthouse and rooftop deck and at least one (1) bedroom and one (1) full bathroom to be eliminated from the current proposed plans, which covers 1,299 square feet. This option would reduce the livable area by approximately 47%.

This alternative would reduce the height of the proposed dwelling only by a moderate amount (refer to **Table 5**); however, the stark contrast of this parcel compared to others along the shoreline is the overall buildable area. The average home size to the north and south is over 2,000 square feet and generally consists of three (3) bedrooms, two (2) full bathrooms and one half (½) bathroom homes. Therefore, the proposed action is consistent with the average home size in the surrounding area. Further, this alternative height would impose detrimental limitations of the intended purpose and end use as a principal residence, while not significantly improving the impacts to view planes.

It is important to note that existing vegetation on the Property currently (and for the past several years) prevents ocean views from the ground, which will not change appreciably under any height alternative.

No alternative (lower) height would have additional or reduced impacts to environmental or cultural resources. The proposed home would be designed according to County building codes to withstand an acceptable level of seismic activity at any height and would assume the same risk as buildings of the same stature in the area under the proposed four (4) stories. This section of Ali‘i Drive is highly sought after and already highly developed. Virtually no development would be completely devoid of visual

impacts here. Each of these alternative height scenarios involve serious restriction of Mr. Frey's property rights while having little to no differential environmental impact. Further discussion of potential impacts relating to project alternatives is included in Part 3 of this EA.

2.1.2 Alternative Building Footprints Including Front and Side-Yard Setback Variances

The Property's zoning requires a 20-foot front-yard building setback from Ali'i Drive and 14-foot side-yard setbacks from the Property line. Under the proposed action (20-foot shoreline setback variance), plans put the dwelling at these setback lines. However, another alternative to the proposed action is to seek a front-yard and/or side-yard setback variance instead of or in combination with a shoreline setback variance. These alternatives include a full 40-foot shoreline setback with a 10-foot front-yard setback and 8-foot side-yard setback, or a 26-foot shoreline setback with a 14-foot front-yard setback and 11-foot side-yard setback. A brief discussion for each of these alternatives can be found below. Further discussion of potential impacts relating to setback alternatives is included in Part 3 of this EA.

1. **Proposed Action**

   The proposed action would not require the granting of front or side-yard setback variances. The potential adverse effects of locating the home closer to neighboring homes or the Ali'i Drive right-of-way are eliminated. In this alternative the home would be sited with a setback of 20-feet to the Certified Shoreline. **Figure 16** shows the building footprint of the proposed action with a 20-foot shoreline setback and appropriate front and side-yard setbacks as outlined above. **Figure 17** displays this building footprint overlaying an aerial view of the Property and surrounding area.

2. **Full 40-foot Shoreline Setback**

   If no shoreline setback variance were proposed, some buildable area could potentially be utilized by seeking only front and side-yard setback variances. If 8-foot side-yard setbacks were sought in lieu of the required 14-foot setbacks for a four (4) story building, and a 10-foot front-yard setback was also sought in lieu of the required 20-foot front-yard setback, this would allow for a building footprint of only 461 square feet. The shape of the buildable area is also extremely narrow, approximately 8-feet wide to 15.5-feet wide. Compared to the proposed action this alternative would reduce the buildable area by approximately 30% in an already very small buildable area. A structure 8-feet wide at its narrowest is severely limited in functionality. Seismic and wind loading stability design solutions for such an exceedingly narrow foundation layout would be extreme and may not be practical.

These requests for side (8') and front-yard setback(10') variances are considered the 'practical' limits considering the purpose of ensuring light and air circulation, providing safe fire separation distances, and preserving view planes.

Furthermore, ingress and egress from the home becomes difficult if at all possible, given the closeness of the home to Ali'i Drive. Some additional room for parking could be gained by eliminating some or all of the area planned for the at-grade pool beneath the home. However, at the maximum depth of the buildable area (15.5 feet) outside of the shoreline and front-yard setbacks, there is still not enough room for two (2) parking stalls with sufficient back-up and maneuvering space, especially given the need for structural support columns beneath the building. Section 25-4-53 of Hawai'i County Code gives the minimum dimensions for parking spaces. Eighteen (18) feet of length is required for a standard parking space and sixteen (16) feet of length for a compact parking space. Twenty-four (24) feet of "aisle width" is also required by Section 25-4-53 for backing and maneuvering space.

Figure 18 shows the building footprint with a full 40-foot shoreline setback with an 8-foot side-yard setback and 10-foot front-yard setback. **Figure 19** displays this same building footprint overlaying a simulated view of the subject Property and surrounding area. This alternative demonstrates the practical necessity of some shoreline setback variance for this Property in any workable scenario.

3. **Combined Shoreline and Front/Side-Yard Setback Variances**

An alternative involving both shoreline and front/side-yard setback variances is also possible. In this example we evaluate a request of a 26-foot shoreline setback in lieu of the required 40-foot setback, a 14-foot front-yard setback in lieu of the required 20-foot setback and a 11-foot side-yard setback in lieu of the required 14-foot setback.

This alternative has some of the same difficulties discussed in alternative 2 above (full 40-foot shoreline setback) however to a lesser extent given the increased front and side-yard setbacks. Some concern would still exist relating to the practicality of ingress and egress from the Property along with the slightly greater view plane impacts created by a building 3-feet wider on each side (11-foot instead of 14-foot side-yard setbacks). **Figures 20 and 21** show the building footprint of this alternative as well as an overlaying simulated view of the subject Property and surrounding area.

2.2 No Action

Under a No Action Alternative, the residence would not be built, and no improvements would be made to the land, therefore the status quo would remain. The lot would be undeveloped and unusable by the owner, which is an unreasonable action that deprives the applicant of reasonable use of the land. This EA considers the No Action Alternative as the baseline for this project and all environmental effects will be based off this alternative.

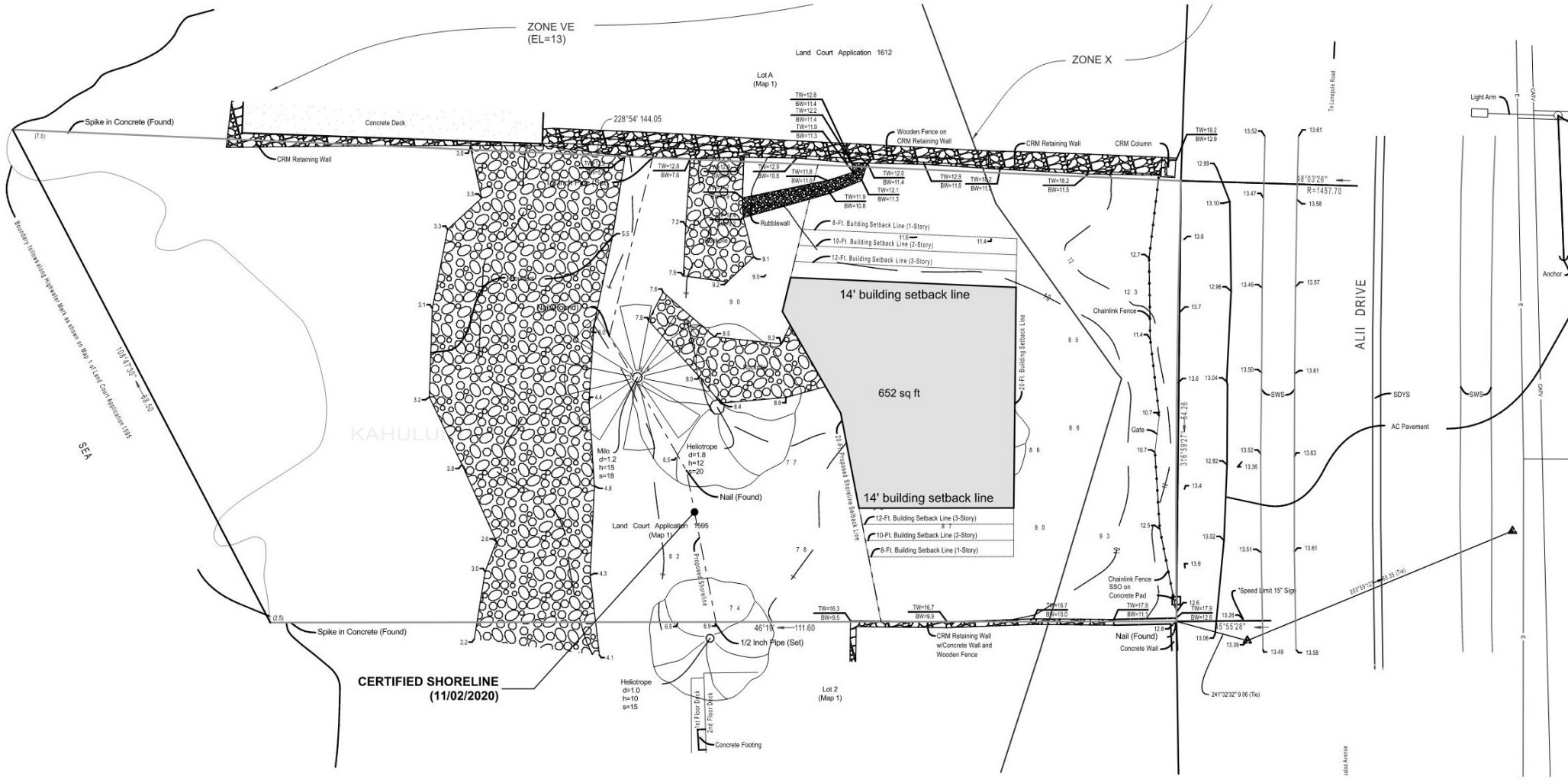
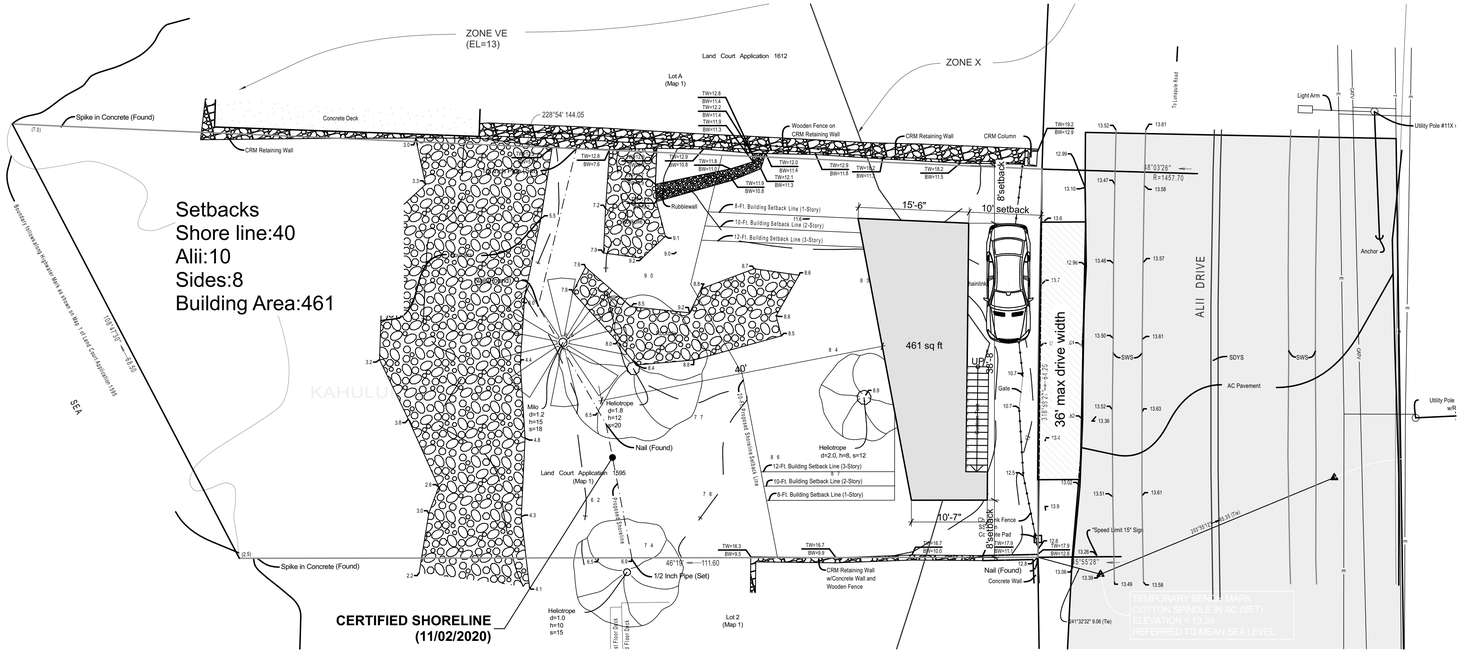

ZONE VE
(EL=13)
ZONE X
Land Court Application 1612
Lot A
(Map 1)
Spike in Concrete (Found)
Concrete Deck
CRM Retaining Wall
228°54' 144.05
Wooden Fence on
CRM Retaining Wall
CRM Retaining Wall
CRM Column
Rubblewall
8-Ft. Building Setback Line (1-Story)
10-Ft. Building Setback Line (2-Story)
12-Ft. Building Setback Line (3-Story)
14' building setback line
652 sq ft
14' building setback line
12-Ft. Building Setback Line (3-Story)
10-Ft. Building Setback Line (2-Story)
8-Ft. Building Setback Line (1-Story)
Chainlink Fence
Gate
Chainlink Fence
SSO on
Concrete Pad
Nail (Found)
Concrete Wall
CRM Retaining Wall
w/Concrete Wall and
Wooden Fence
Nail (Found)
Milo
d=1.2
h=15
s=18
Heliotrope
d=1.8
h=12
s=20
Nail (Found)
Land Court Application 1595
(Map 1)
Proposed Shoreline
Proposed Shoreline Setback Line
20-Ft.
46°15'
111.60
1/2 Inch Pipe (Set)
Spike in Concrete (Found)
CERTIFIED SHORELINE
(11/02/2020)
Heliotrope
d=1.0
h=10
s=15
1st Floor Deck
2nd Floor Deck
Concrete Footing
Lot 2
(Map 1)
Boundary follows ambulatory high water mark as shown on Map 1 of Land Court Application 1595
109°41'30"
SEA
KAHULUI
To Lanaipuhi Road
ALII DRIVE
SDYS
SWS
AC Pavement
"Speed Limit 15" Sign
Light Arm
Anchor
CATV
E
R=1457.70
316°59'27"
64.26
241°32'32" 9.06 (Tie)
203°57'17" 26.39 (Tie)

Figure 16

Figure 17



2 SITE PLAN
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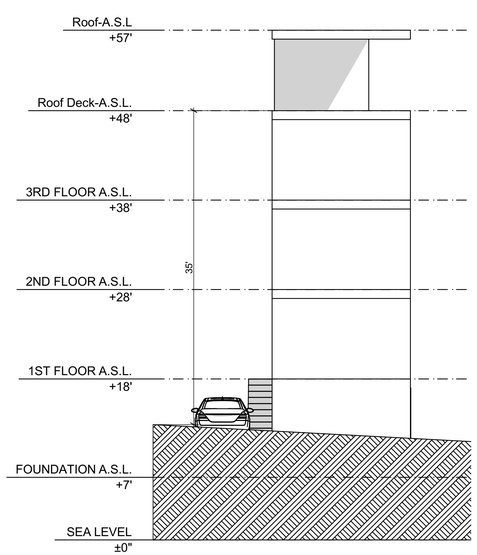

2 NORTH ELEVATION
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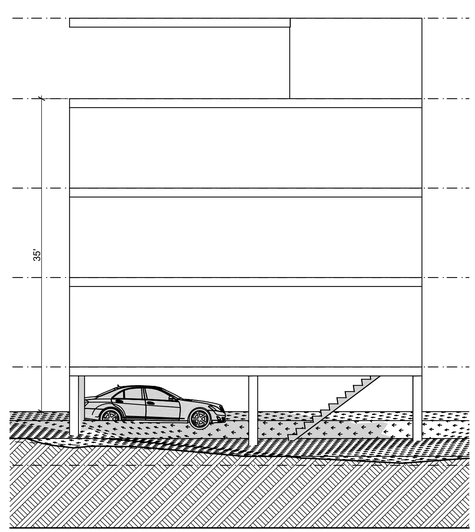

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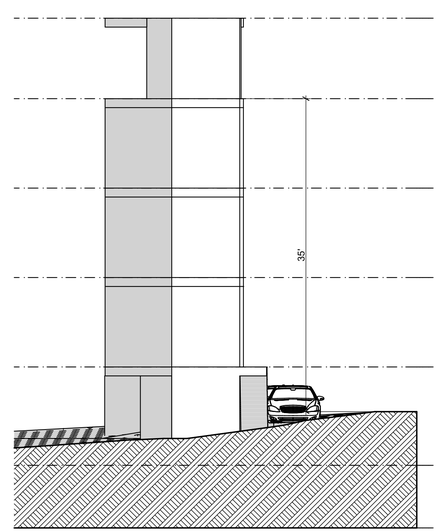

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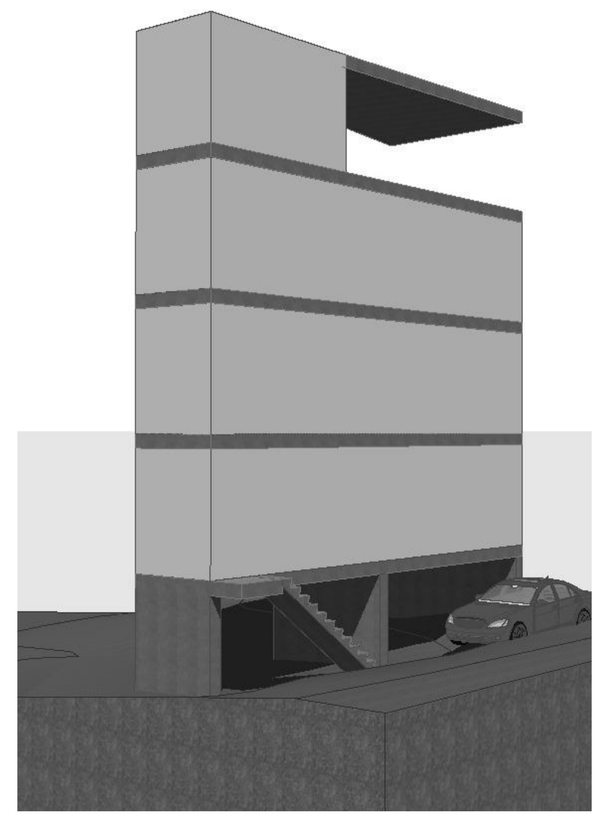

2 3D
SCALE: 1/4" = 1'-0"

Figure 18

bla
bryan lindsey, architect llc
www.blarchitect.com
808.333.8853

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ARCHITECTURAL LICENSE
EXPIRATION DATE: APRIL 30, 2022

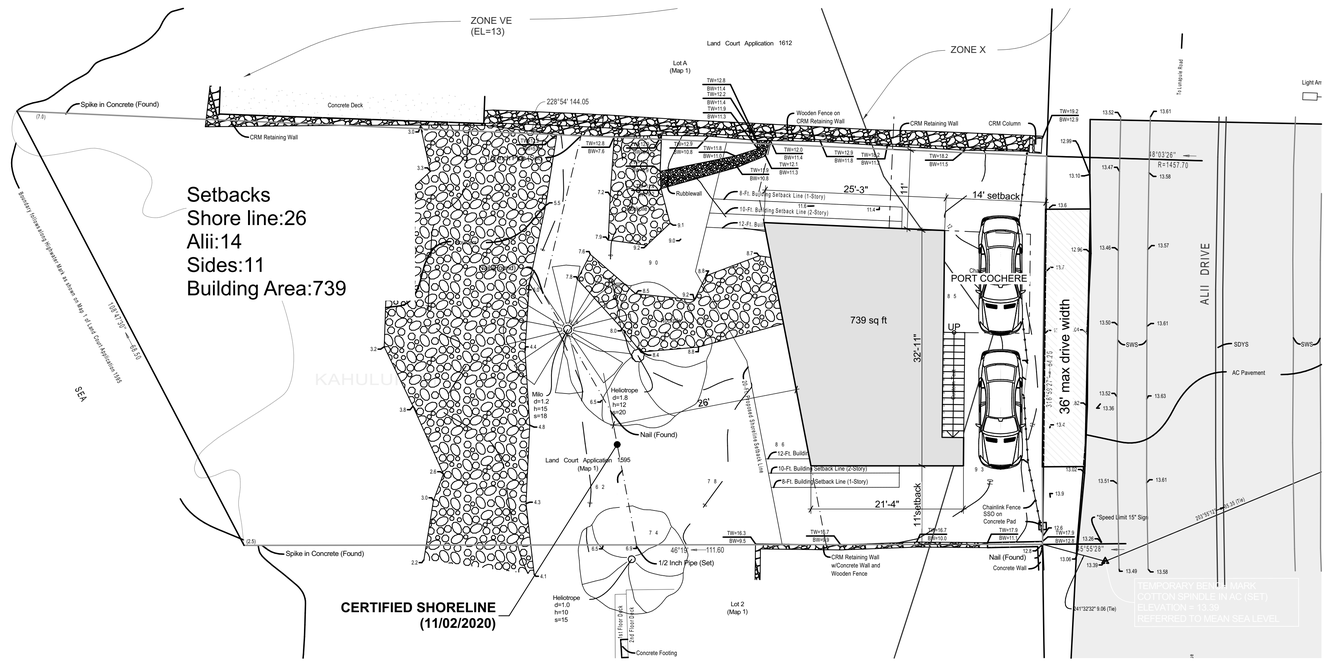
FREY, GREGG WILLIAM
75-5956 Alii Drive
Kailua-Kona
TMK:7-5-019-020

MARK	DATE	DESCRIPTION
	10-27-21	40' SETBACK STUDY

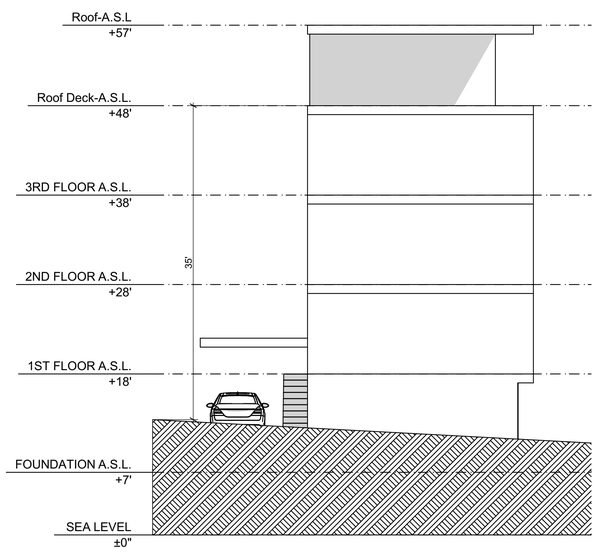
SITE PLAN

A-01

Figure 19



2 SITE PLAN
SCALE: 1" = 10'



2 NORTH ELEVATION
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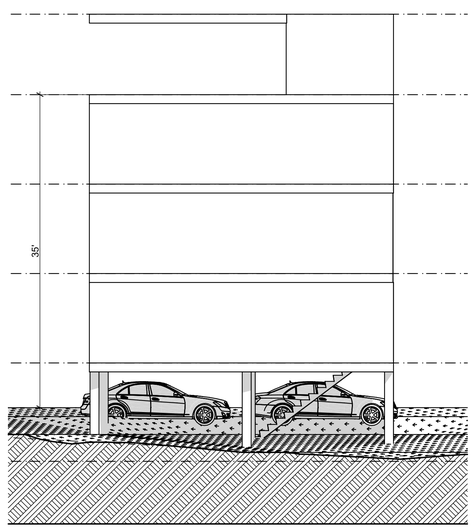
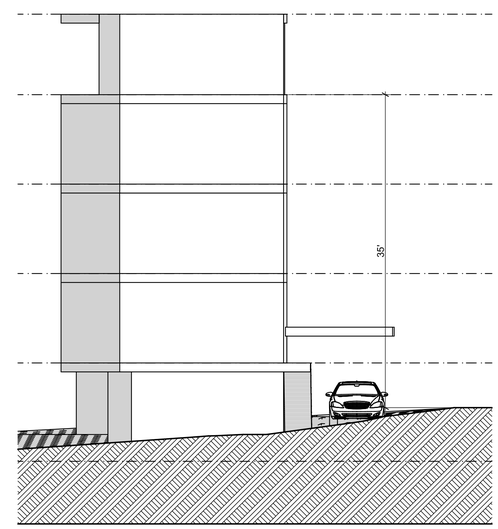
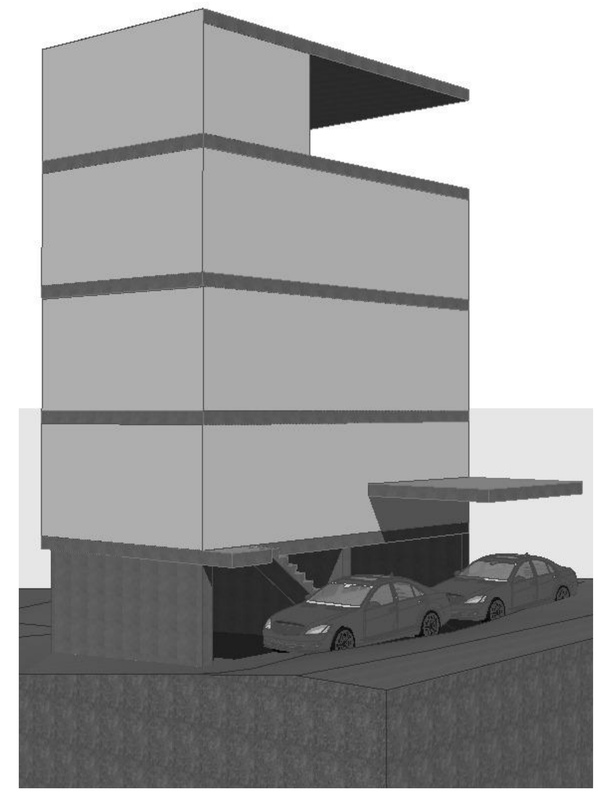


2 WEST ELEVATION
SCALE: 1/8" = 1'-0"



2 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



2 3D
SCALE: 1/4" = 1'-0"

Figure 20

bryan lindsey, architect llc
www.blarchitect.com
808.333.8853

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. SUPERVISION OF CONSTRUCTION IS TO BE DEFINED IN SECTION 1-2, CHAPTER 10, TITLE V.I OF PROFESSIONAL AND VOCATIONAL LICENSING DIVISION, DEPT. OF REGULATORY AGENCIES, STATE OF HAWAII.

ARCHITECTURAL LICENSE
EXPIRATION DATE: APRIL 30, 2022

FREY, GREGG WILLIAM
75-5956 Alii Drive
Kailua-Kona
TMK:7-5-019-020

MARK	DATE	DESCRIPTION
	10-27-21	26' SETBACK STUDY

SITE PLAN

A-01

Figure 21

PART 3: ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

3.1 Physical Environment

The subject Property is located on Ali‘i Drive just over one mile south from the Kailua-Kona city center. The Property is bounded by residential uses to the north and south, Ali‘i Drive to the east and Kahului Bay to the west. This 6,690 square foot Property has nearly 75 feet of shoreline, which is mainly comprised of lava rock and boulders with hazardous footing and frequent rough surf. There are no sandy beaches adjacent to or nearby the subject Property, and no shoreline hardening is proposed. A topographic survey of the site indicates that elevations on the Property vary from 0 to 13.9 feet above sea level, with the chosen residential site lying at roughly 10 feet above sea level. No threatened or endangered species were found on the Property. Typical flora consists of Beach Heliotrope, (*Tournefortia argentea*), Hawaiian Hau (*Hibiscus tiliaceus*), non-native Bougainvillea (*Bougainvillea* sp.) and other species similar in tolerance for hot and dry coastal environments. There are no scenic resources outlined in the General Plan within the general area of the Property.

Overall Hazard Assessment

There are many natural hazards that threaten life and properties on the Island of Hawai‘i. Characterizing the potential impact of such hazards on the proposed action is necessary for this environmental assessment to analyze risk.

Fletcher et al. (2004), and the United States Geological Survey (USGS) created the “Atlas of Natural Hazards in the Hawaiian Coastal Zone” to outline the history and relative intensity of coastal hazards in Hawai‘i. This Atlas designates an Overall Hazard Assessment (OHA) for coastal zones based on seven hazards: tsunamis, stream flooding, high waves, storms, erosion, sea level rise and volcanic/seismic activity. An area is given an OHA rating between 1 (low) and 7 (high) based on the average risk for the seven hazards outlined above. To determine the OHA of an area, each of the seven hazards must first be independently ranked between 1 (low) and 4 (high) according to the Fletcher et al. (2004) rating system. **Table 1** outlines the variables used to determine risk for each hazard.

Table 1: Hazard Intensity Rank Definitions (Fletcher et al., 2004)

Hazard	Low (1)	Moderately Low (2)	Moderately High (3)	High (4)
Tsunami	no history of tsunami flooding; steep coastal zone slope (≥45%)	history of tsunami flooding; steep coastal zone slope (≥45%)	history of tsunami flooding; historical damage; steep coastal zone slope (≥45%)	history of tsunami flooding; historical damage; gentle slope (<45%)

Stream Flooding	no history of coastal stream flooding and no reasonable basis for expected flooding due to low seasonal rainfall in watershed (<4.9 in per month); or steep coastal slope (>45%)	history of nondamaging flooding where streams or highlands with seasonal high rainfall are present (>7.9 in per month) and coastal slope >20%; or history of flood damage with full mitigation since last major flood	abundance of streams and high seasonal rainfall in watershed (>7.9 in per month) and history of damaging floods with partial mitigation or no mitigation where slope >20% and <45%	historically high flood damage on gentle slope, high watershed rainfall (>7.9 in per month) and no mitigation efforts or improvements since last damaging flood
High Waves	no reasonable basis to expect high waves	seasonal high waves 4-6 ft	seasonal high waves 6-8 ft with hazardous run-up and currents	seasonal high waves >12 ft, characterized by rapid onset
Storms	no history of overwash or high winds and no reason to expect them	minor historical overwash (<10 ft), and/or high winds (~40 mph gust)	historical overwash >10 ft on steep slope, and/or high winds with localized (isolated cases) structural damage (~40 mph sustained)	historical overwash >10 ft on moderate to gentle slope and/or high winds with widespread structural damage (~75 mph gust)
Erosion	long-term accretion (>10 yr) with no history of erosion, or dynamic cycles with consistent annual accretion	long-term stable or minor erosion/accretion cycles with erosion fully recovered by accretion; low rocky coasts; perched beaches	long-term erosion rate <1 ft/yr or highly dynamic erosion/ accretion cycles with significant lateral shifts in the shoreline	chronic long-term erosion >1 ft/yr, or beach is lost, or seawall at water- line for portions of the tidal cycle
Sea Level Rise (0.04 in = 1mm)	steep coastal slope where rise >0.04 in/yr or gentle slope where rise <0.04 in/yr	gentle or moderate slope where rise >0.04 in/yr or steep slope where rise >0.08 in/yr	gentle or moderate slope, where rise >0.08/yr or steep slope where rise >0.12 in/yr	gentle or moderate slope where rise >0.12 in/yr

Volcanic/ Seismic Activity	no history of volcanic or seismic activity, *UBC seismic zone factor ≤ 2	no volcanic activity in historical times; *UBC seismic zone factor ≤ 2, minor historic seismic damage	limited history of volcanism, *UBC seismic zone factor ≥ 2 recommended, historic seismic damage	frequent volcanism, *UBC seismic zone factor ≥ 2 recommended, frequent historic damage

*UBC, Uniform Building Code seismic zone factor

The above definitions show that both geology and slope are important variables in determining the hazardous character of the coastal zone. According to Fletcher et al. (2004), there are nine (9) main geologic features that may increase or decrease coastal hazard risk as seen in **Figure 22** below. These include Beach (B), Stream (S), Rocky (R), Headland (H), Developed (D), fringing (fr), barrier reef (br), embayed coast (e) and wetland (w). In this case, the Frey Property is located on the northern end of Kahului Bay, which is an embayed coast with developed beach, rocky areas, and fringing reefs. Coastal landscapes also have varying Coastal Slope (CS), which is a significant factor for determining hazard risk specifically for high waves, storm surges, sea level rise and tsunamis. A low CS can exacerbate the wave heights of these natural hazards as seen in **Table 1** above. The CS of this area is low, or less than 20%. Fletcher et al. (2002) ranks all of Hawai‘i Island a 4 for seismic hazard intensity, which means “frequent” seismic activity. Taking these factors into consideration, the OHA rating of the Property as determined by Fletcher et al. (2004), is high at 6 out of 7. The notable hazards of this area are tsunamis, stream flooding, storms, sea level rise and seismic/volcanic activity **(Table 2)**. A closer look at how these geological features impact coastal risk will be discussed in the Coastal Erosion Study in Section 3.1.2.

Table 2: Fletcher et al. (2004) Rating of Natural Hazards Impacting the Property Coastline

Hazard Type	**Relative Threat**	**Fletcher et al. Hazard Rating (1-4)**
Tsunami	High	4
Stream Flooding	High	4
High Waves	Moderately Low	2
Storms	Moderately High	3
Erosion	Moderately Low	2
Sea Level Rise	High	4
Volcanic/Seismic	High	4
Overall Hazard Assessment (1-7)	**High**	**6/7**

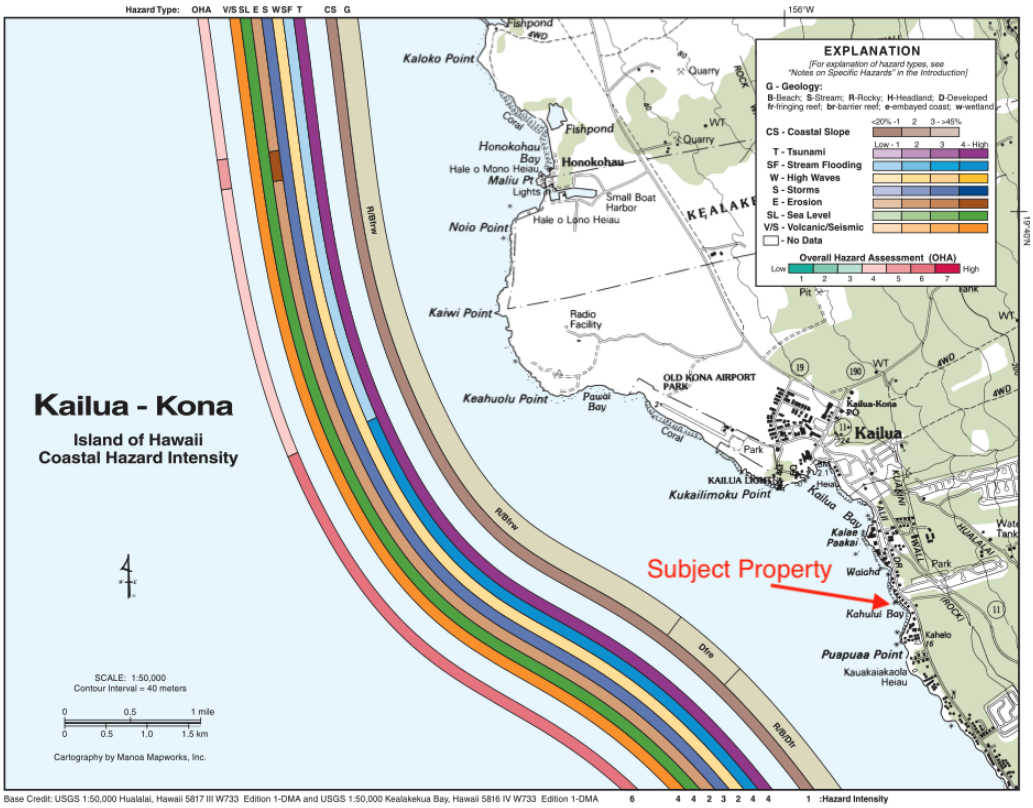


Figure 22: Overall Hazard Assessment of the Frey Property (Fletcher et al., 2004)

The OHA rating of the properties is significant for determining impacts from natural processes and mitigating measures to preserve resources. A closer look at the geology, floodplain, water and air quality, noise and scenic resources and hazardous conditions will be addressed below.

3.1.1 Geology, Soils, Geologic Hazards, and Climate

Environmental Setting

The subject Property is located on the southwest flank of Hualālai volcano. Hualālai is a dormant volcano reaching 8,271 feet above sea level. Geologic mapping of the volcano suggests that 80 percent of Hualālai's surface has been covered by lava flows in the past 5,000 years. This volcano has erupted six times between 1700 and 1801. The Ka'ūpūlehu flow (1800) and Huehue flow (1801) seen in **Figure 23** both flowed north of the subject Property. Although it has seen low activity since, it is still considered active. In 1929 a cluster of more than 6,200 earthquakes occurred over the course of a month. Scientists believe the earthquakes were a result of a magma intrusion beneath the volcano. Two large earthquakes measuring 6.5 on the Richter Scale, caused damage to houses and roadways. Although no eruption ensued, this activity is a significant reason why it is believed to be a dangerous volcano that is likely to erupt again, possibly within the next century.

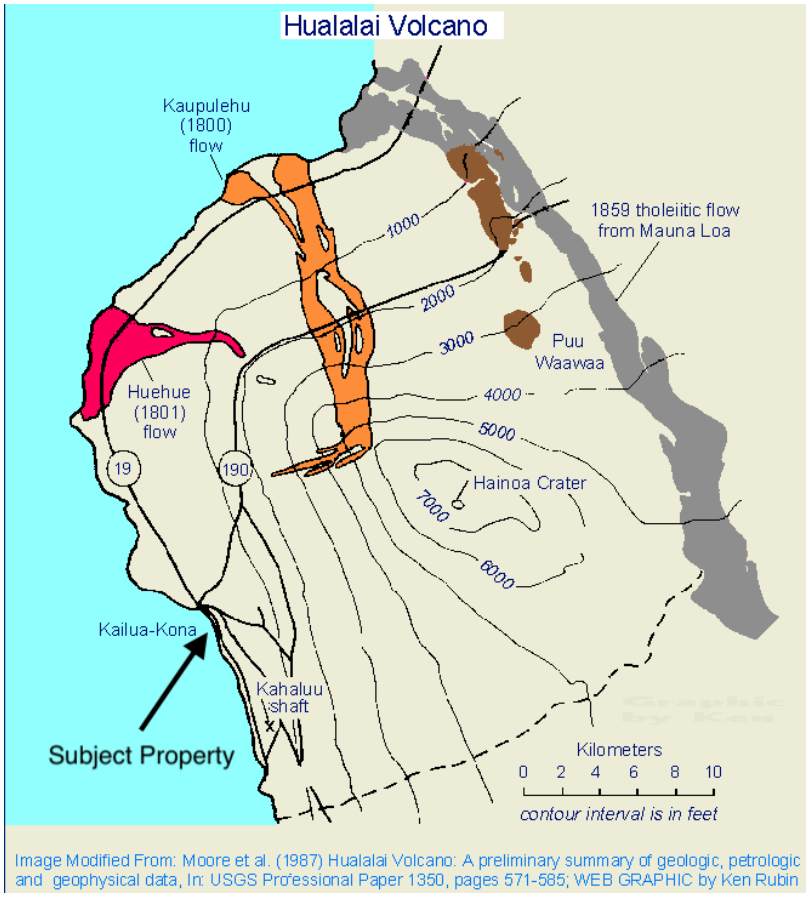


Figure 23: Hualālai 1800 and 1801 Flows in Relation to the Subject Property

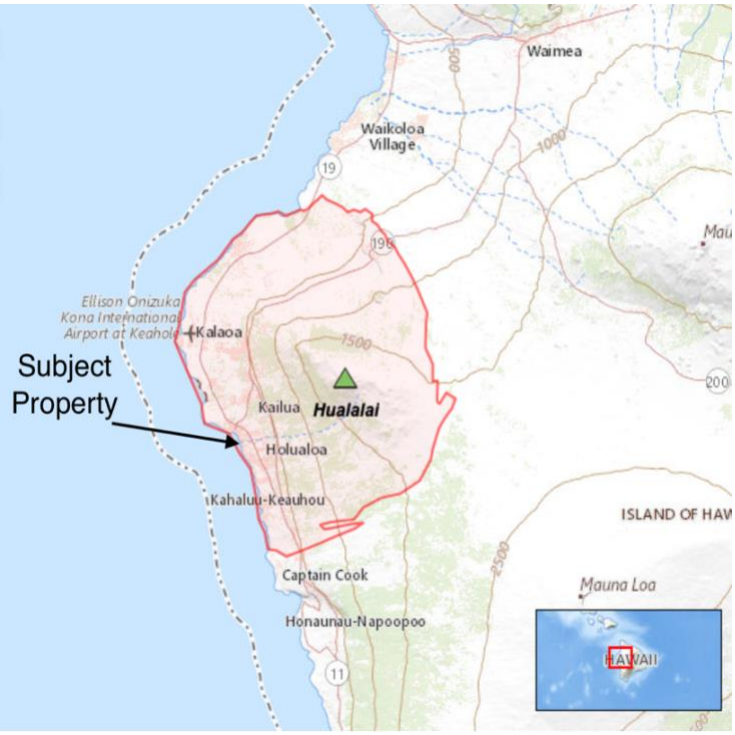


Figure 24: Extent of Hualālai Volcano in Relation to the Subject Property

The U.S. Geological Survey classifies this area as Lava Zone 4, on a scale of ascending risk 9 to 1 (Wright et al. 1992). This hazard risk is because Hualālai has steep slopes and is horizontally the third most active volcano on the island. Lava Zone 4 areas have had about 5 percent of the area covered with lava since 1800 and less than 15 percent of the area covered in the past 750 years. The Frey Property has not been impacted by lava in over 10,000 years (Wolfe and Morris, 1996). Figure 24 shows the extent of this volcano in relation to the Frey Property.

Aside from lava, the Island of Hawai‘i is also susceptible to earthquakes (USGS, 2000). As stated earlier, Fletcher et al. (2002) ranks all of Hawai‘i Island a 4 for seismic hazard intensity. There are six notable earthquakes that occurred on the West side of Hawai‘i Island that were 6.0 magnitude or greater on the Richter Scale since 1868 **(Figure 25).** Two occurred within the direct vicinity of the project area in 1929; one on September 25th, which was a recorded 6.2 magnitude, and one on October 5th, which was 6.5 magnitude. Other significant events occurred north and south of the subject Property that were large enough to have been felt at the project site. These include a 6.7 magnitude earthquake that occurred on October 15, 2006, which had a recorded depth of 39 kilometers. An earthquake that occurs at a depth greater than 15 kilometers are more broadly distributed and are caused by “flexure of the lithosphere due to the load of the island’s weight” (Klein et al., 2001 and Klein, 2016). South of the Property on August 21, 1921, recorded a 6.9 magnitude earthquake, which caused vast and significant damage to several areas across the island. Additional magnitude 6.3 and 6.2 earthquakes occurred in this vicinity in 1950 and 1952, respectively (Klein et al., 2001 and Klein, 2016).

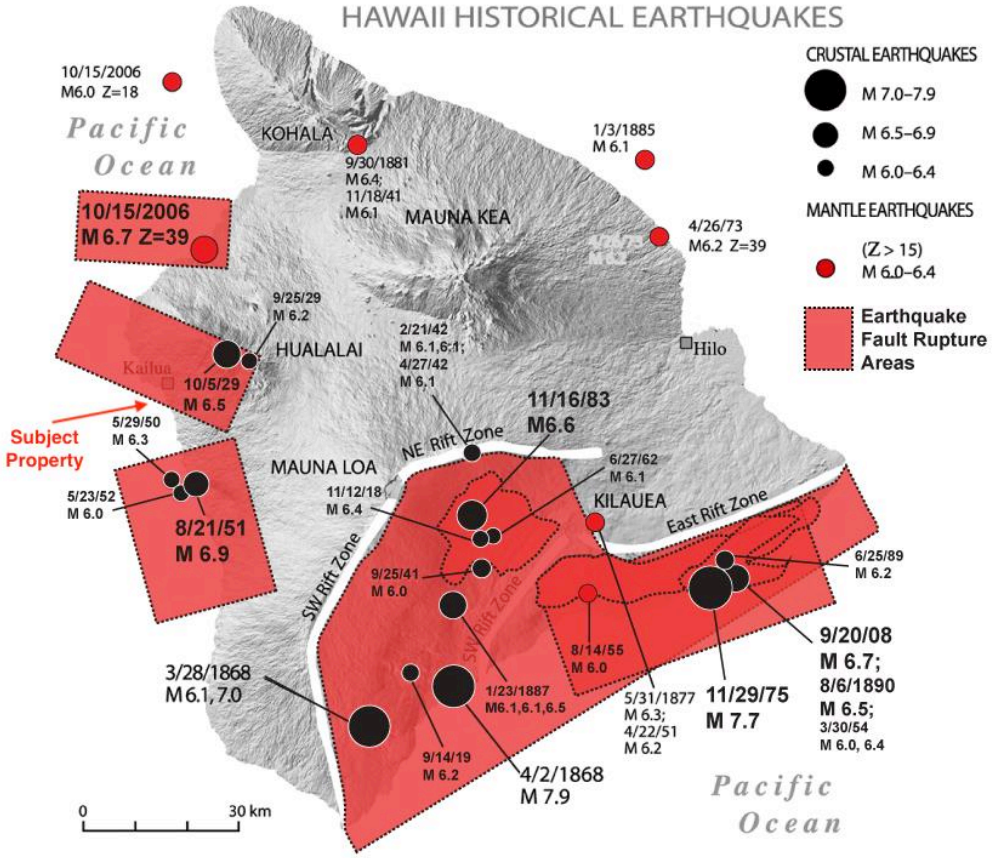


Figure 25: Historical Earthquakes of Hawai‘i County since 1868

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service "Web Soil Survey," soils in the area are classified as Waiaha-Punaluu-Lava complex with 2 to 10 percent slopes. This soil type is typically ash fields on pāhoehoe lava flows. A visual inspection of the soil conducted during an Archeological Field Inspection identified primarily coral and marine shells, waterworn gravels, cobbles and small boulders, and water worn coral fragments. The typical profile of the Waiaha soil type is 0 to 8 inches of medial silt loam, 8 to 15 inches of extremely cobbly medial fine sandy loam and 15 to 25 inches of bedrock. The depth to the water table in this area is more than 80 inches. This soil type is very well-drained, has a high runoff rate and low to moderately low capacity to transmit water (USDA, 2020).

Mean annual rainfall is between 30 to 40 inches and mean annual temperature ranges between 70 to 75 degrees Fahrenheit (USDA, 2020).

Impacts and Mitigation Measures

The proposed action to build one (1) single-family residence has no foreseeable impacts to the geology, geologic hazards, soil, or climate of the area. This Property has some inherent risk to natural geological processes, as with much of the Kailua-Kona region. The proposed home would be designed according to County building codes to withstand an acceptable level of seismic activity and would assume the same risk as buildings of the same stature in the area under the proposed four (4) stories.

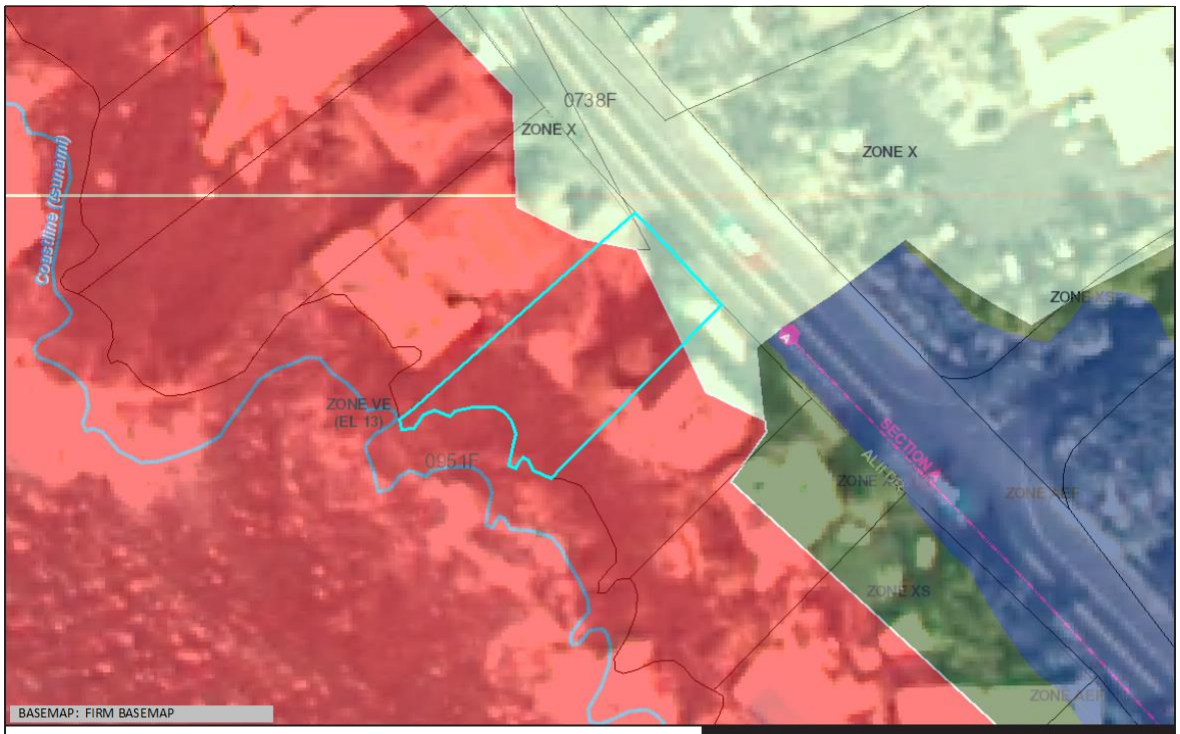
Proposed alternatives including differing height and or building setbacks do not increase (or decrease) the potential impacts due to the project on geologic hazards, soils, or climate of the area above the no-project alternative baseline.

3.1.2 Flood Zones and Shoreline Setting

Environmental Setting: Floodplain and Tsunamis

According to the Federal Emergency Management Agency (FEMA), the Flood Insurance Rate Map (FIRM) classifies the Property as Flood Zone VE, or an area subject to a 1% annual chance of inundation by a 100-year flood event. This flood zone also has additional hazards associated with it due to storm induced velocity wave action (DLNR, 2011). There is also a small portion on the *mauka* side of the Property that is classified as Flood Zone X, or outside of the 500-year floodplain **(Figure 26).**

The risk of tsunamis in this area is high due to the low-lying nature of the coast, and the geographic position in relation to highly seismic areas to the north and west including Japan, Tonga, and the Aleutian Islands. The most notable tsunamis to impact the Kailua-Kona coast occurred in 2011, 1960 and 1946. On March 11, 2011, the Tōhoku earthquake, which occurred in Japan, generated a tsunami that affected the Kona region. The tsunami overtopped Ali'i Drive and seemingly impacted the Frey Property directly. According to the Coastal Erosion Study conducted by Timothy E. Scheffler, historical imagery suggests that there may have been damage to trees on the Property presumably from this tsunami. However, the rock lined path on the subject Property appears to not have been disturbed by the tsunami. Initial damages in Kailua-Kona were roughly $14 million, but there was no loss of life.



Flood Hazard Assessment Report

www.hawaiinfip.org

FHAT Report

Property Information

COUNTY:	HAWAII
TMK NO:	(3) 7-5-019:020
WATERSHED:	WAIAHA
PARCEL ADDRESS:	ADDRESS NOT DETERMINED KAILUA KONA, HI 96740

Notes:

Flood Hazard Information

FIRM INDEX DATE:	SEPTEMBER 29, 2017
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	1551660951F
PANEL EFFECTIVE DATE:	SEPTEMBER 29, 2017

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: YES
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 40 80 ft

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 know 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:

- **Zone A:** No BFE determined.
- **Zone AE:** BFE determined.
- **Zone AH:** Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- **Zone AO:** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- **Zone V:** Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE:** Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF:** 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.

- **Zone XS (X shaded):** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X:** Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D:** Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.

Figure 26: Flood Hazard Assessment Report for Frey Property

Environmental Setting: Sea Level Rise and Storms

Since the single-family residence and related improvements will be located within proximity to the shoreline and within the SMA, it is important to consider the impacts of sea level rise. Sea level rise also factors into future rates of coastal retreat and erosion.

Climate change is a fundamental environmental issue that is particularly complex and far reaching. According to the United Nations' Intergovernmental Panel on Climate Change (IPCC), "Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems" (IPCC, 2014). The Hawai'i Climate Change Adaptation Commission (HCCAC) states that sea level rise is expected due to the increase of anthropogenic Greenhouse Gas emissions into the atmosphere:

> "Sea level rise is an inevitable outcome of global warming that will continue through many centuries even if human-generated global greenhouse gas (GHG) emissions were stopped today. Sea level is rising at increasing rates due to global warming of the atmosphere and oceans and melting of the glaciers and ice sheets. Rising sea level and projections of stronger and more frequent El Niño events and tropical cyclones in waters surrounding Hawai'i all indicate a growing vulnerability to coastal flooding and erosion" (HCCMAC, 2017).

Global mean air temperatures are projected to increase by 2.7 degrees Fahrenheit by the end of the century. Increases in air temperatures will subsequently lead to increased ocean temperatures, which are expected to be the highest in tropical and subtropical areas of the Northern Hemisphere. For Hawai'i this not only means rising sea levels, but also more contrast in the wet and dry season, which may lead to more frequent and intense precipitation and flooding.

Fletcher (2010) proposed that global sea levels will rise by 3.2 feet by the end of the 21st century. There are varying theories regarding when these rising levels will be felt globally. The Hawai'i Climate Change Mitigation and Adaptation Commission (HCCMAC) suggests that sea level rise of 3.2 feet can expected by 2100, however, according to Fletcher (2010), this level may be experienced as early as 2060. This report also states that Hawai'i Island is the least vulnerable island compared to neighboring islands, but particular areas such as Kona, Puakō, Kapoho and Hilo Bay may "face serious threats."

The Big Island is also sinking into the Earth's mantle because of the gravitational weight of its growing volcanoes, which can magnify sea level rise substantially. Relative sea level rise is a result of the combined eustatic water rise and land subsidence. Tidal records taken in Hilo and Honolulu since 1946 show higher sea level rise on Hawai'i Island, compared to O'ahu. Many factors could contribute to this variability; however, the most likely explanation is subsidence. Archeologists working at Pu'uhonua O Hōnaunau (City of Refuge) have estimated a rate of subsidence of 1 foot per century, or 3 millimeters per year. This rate was based on the flooding of dated archeological features such as petroglyphs. Apple and Macdonald (1966) suggest that these scientists recognized that the Kona region in particular was more vulnerable to sea level rise than global averages. Further evidence of this rate was found by Moore and Fornari (1984) who studied drowned reefs off the northwestern coast of Hawai'i Island. Their studies suggested a regional rate of subsidence between 1.8 and 3 millimeters per year over 255,000 years. This

data was further proven by Szabo et al. (1991) by dating coral reefs over 475,000 years, which concluded a subsidence rate of 2.6 millimeters per year. Subsidence in this area will exacerbate the impact of sea level rise, which is likely to cause shoreline transgression and increase coastal erosion over the next several decades (Moore and Fornari, 1984).

The adverse impacts of combined eustatic water rise and land subsidence can be demonstrated in the 1975 Kalapana earthquake, which occurred on Kilauea's rift. According to Hwang et al. (2007), the seismic activity caused land in Kapoho to suddenly drop 0.8 feet. Future events of this scale and magnitude because of subsidence are very difficult to predict. Hwang et al. (2007), estimates Kapoho may be subsiding at a continuous rate of between 0.31-0.67 inches/year. This is based on remote sending data, InSAR (Synthetic Aperture Radar Interferometry).

According to the Puna Community Development Plan, "the coastal areas of southeast Puna, as particularly evident in Kapoho, are subsiding at varying rates, up to as much as 0.7 inches per year. Extrapolated over a 50-year period – which is a reasonable lifespan for a house – the subsidence would be nearly 3 feet. As evidence of this phenomenon, many of the lots in the Kapoho area are already submerged."

There have also been observed impacts of sea level rise and subsidence closer to the subject Property after the 2011 Tōhoku earthquake and tsunami. Puʻuhonua O Hōnaunau (City of Refuge), which is roughly 21 miles south of the Frey Property, was inundated by roughly 1 meter of water (Johnson et al., 2015). Further, the Coastal Erosion Study commissioned for this report suggests there is physical evidence of direct impacts from this event on the Frey Property.

Figure 27 below shows the potential impacts of sea level rise of 3.2 feet on the Property. Significant impacts will likely not be seen for 20 to 80 years depending on varying estimates as discussed above. Increased wave action and sea level rise will have some effects on coastal erosion, although these rates are very difficult to forecast and are generally episodic in nature. Specific findings of the Coastal Erosion Study will be discussed below.

According to Collins et al., 2019, as outlined in an IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, climate change and subsequent sea level rise will likely increase the intensity and frequency of storms.

> "The average intensity of tropical cyclones, the proportion of Category 4 and 5 tropical cyclones and the associated average precipitation rates are projected to increase for a 2°C global temperature rise above any baseline period (*medium confidence*). Rising mean sea levels will contribute to higher extreme sea levels associated with tropical cyclones (*very high confidence*). Coastal hazards will be exacerbated by an increase in the average intensity, magnitude of storm surge and precipitation rates of tropical cyclones."

Historically the Island of Hawaiʻi has been viewed as largely protected from experiencing storms of this magnitude due to the presence of Mauna Loa and Mauna Kea. However, recent years have shown that storms such as Iselle (2014) and Lane (2018) can have very damaging effects to the island.

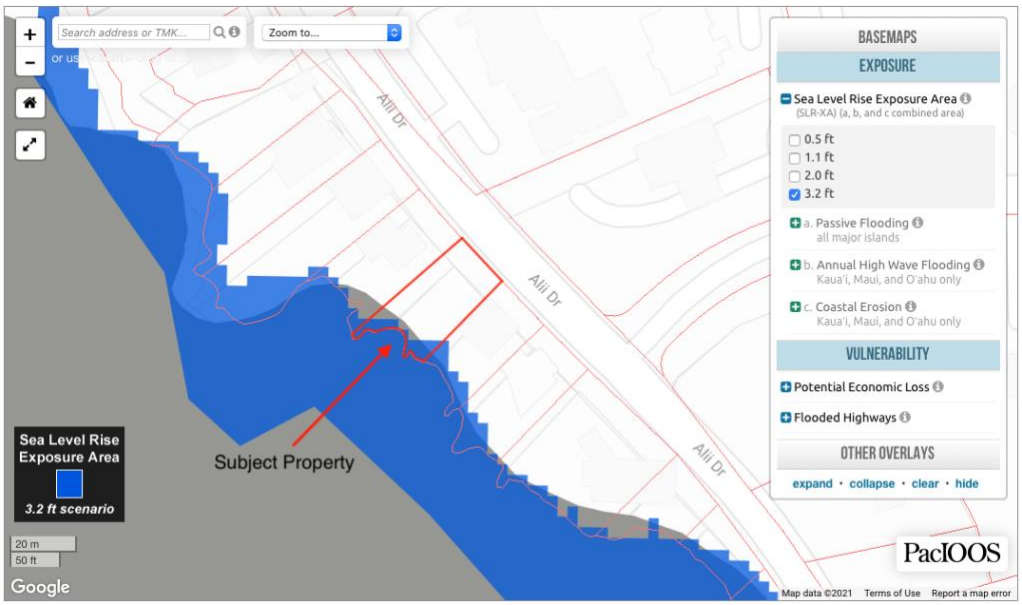


Figure 27: Impacts of 3.2 Foot Sea Level Rise on the Frey Property

On August 8, 2014, Hurricane Iselle made landfall in the Puna District of Hawaiʻi County. What started as a Category 4 hurricane, Iselle made landfall as a moderate tropical storm with sustained wind speeds of 70 mph. Significant damage was felt in the southeastern portions of the Big Island, especially in the Waiʻōpae area, which is a coastal stretch dotted with anchialine ponds and tide pools, known as the Kapoho Tide Pools. Many homes were heavily damaged in this area. Most of the southeastern portion of the Big Island experienced high winds, heavy rain, downed trees, and power lines, cutting thousands of people off from electricity, water, and transportation for several days (Kimberlain et al., 2018).

Hurricane Lane occurred in late August 2018 and brought significant damage to the Hawaiian Islands from flash flooding and mudslides. Over a four-day period, Hawaiʻi Island received an average of 17 inches of rain and up to 159 structures were damaged, making it the wettest tropical storm to impact the Islands. Although most of the flooding impacts were concentrated to Hilo, much of the leeward side, including Kona, experienced impacts (Beven, 2019).

High waves often occur outside of hurricane conditions on Hawaiʻi's shorelines and can be generated by distant storms in the Northern and Southern hemisphere. The four dominant regimes responsible for large swells in Hawaiʻi are North Pacific Swell, Trade Wind Swell, South Swell, and Kona Storms. North swells typically occur in winter months and can range between 10 and 20 feet. In contrast, South Swells occurring in the summer only reach an average height of 4-6 feet (Fletcher et al., 2004). The Frey Property is most affected by Kona Storms, which are low pressure fronts that generate locally and move from the northwest to the southeast. These storms are notoriously unpredictable and can generate potential wave heights more than ten meters (Scheffler, 2021). According to Scheffler (2021), these storms must have a "westerly element" to impact Kailua-Kona directly since Maui, Lanai and Molokai create a natural buffer from west Hawaiʻi. Extreme wave events can occur especially when coupled with hurricanes and tropical storms. These natural phenomena can bring damaging waves several times each decade.

Evidence and history suggest climate change has already led to sea level rise, more intense storms, high waves, coastal flooding, and beach erosion. Erosion studies must not only consider current processes but those that may occur in the future due to expected sea level rise. Erosion rates are very difficult to quantify on Hawai‘i Island, however, a discussion on the shoreline features of the site and historical erosion is necessary to analyze potential impacts.

Environmental Setting: Coastal Erosion Study

A Coastal Erosion Survey and Shoreline Assessment was prepared by Timothy E. Scheffler, Ph.D. in accordance with HRS-343 (Hawai‘i Environmental Policy Act) and HAR Ch. 200-16 (Environmental Impact Statement Rules). The report was based on two site visits conducted in February and March 2021 and completed following the guidelines in the Hawai‘i Coastal Hazard Mitigation Guidebook by Hwang et al. 2005. A copy of the full report can be found in **Appendix 1.**

According to Dr. Scheffler, there are five geologically significant areas on the Property coastline. These include a tide pool shelf (Tp), a pāhoehoe bench or step (Phh), boulder beach berm (BB), terraced soil (Trr) and a sandy alley (S) **(Figure 28).**

Figure 28: Geology of the Frey Property as Outlined in the Coastal Erosion Survey by Dr. Timothy R. Scheffler and Dr. John P. Lockwood

The tide pool marine shelf extends as a spit towards the northwest. This shelf varies in width from a maximum of 20 meters (north) to a minimum of 3.9 meters (center) and contains several tide pools, or low areas where the pāhoehoe layers have eroded **(Figure 29).** The central pool is only 25-45 centimeters deep but has been present since at least 1954. **Original surface features on the lava platform are well preserved in many places, which suggests little erosion has taken place since the lava flows were formed. This is likely due to protection from the**

fringing reef along this section of the coast. According to Dr. Scheffler, the Frey Property is mostly vulnerable to Kona Storms, given its predominantly southwest facing nature. Although the offshore shelf, rising rapidly from deep water, contributes to the potential for large destructive waves during such events, the fringing reefs act as a surf break and buffers the impact of wave action. Behind the shelf is a pāhoehoe bench, which is a half-meter thick lava flow, and has a boulder beach berm on top of it.

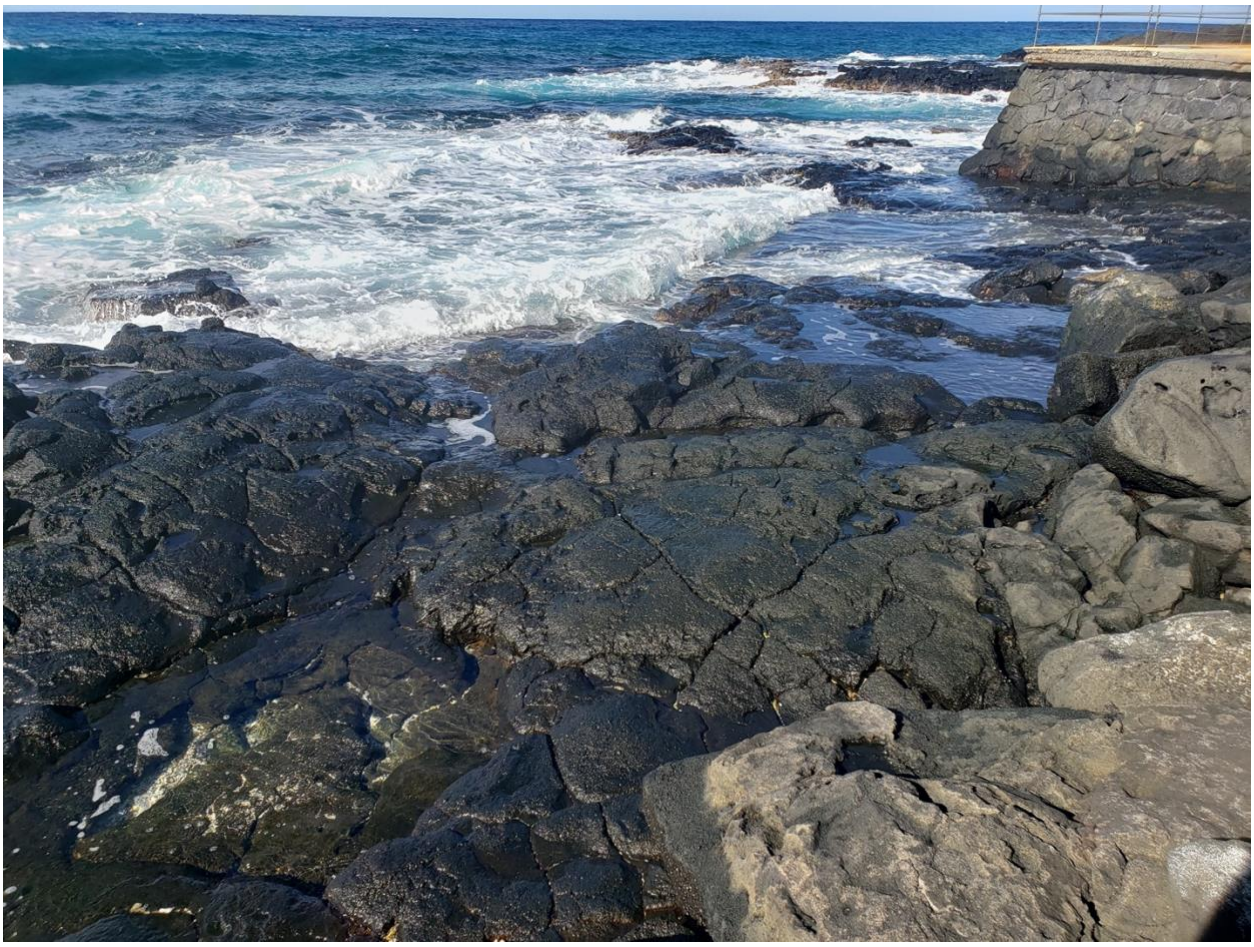


Figure 29: Tide Pool Marine Shelf, View West

According to Dr. Scheffler, "a berm is a physical feature marked by an abrupt change in the slope of the beach formed by wave action." This berm is made up of sub-rounded to rounded boulders that are formed from mechanical erosion of the pāhoehoe shelf **(Figure 30).** Berms vary in grain size and texture based on frequency and magnitude of wave action. The berm maintains a relatively even height of roughly 100 centimeters but varies in width from 3.5 to 8.2 meters and lacks fine grained sediments, which allows it to act as a natural revetment of large, interlocked boulders. There is evidence that this berm protects the Property during high surf events, especially those that coincide with high tides **(Figure 31).** Although the berm itself is a permanent feature of the shoreline, individual rocks may still move around by high energy waves. Dr. Scheffler suggests boulders in this berm may only be subject to movement by the most powerful storm surge waves that impact the coast. It is notable that several modern concrete slab fragments are incorporated in the berm, which demonstrates the continued mobile nature of

the rocks **(Figure 32).** A particular influence of wave action on the berm appears to be the neighboring seawall to the north, which extends into the sea a significant amount **(Figure 29).**

Figure 30: Beach Berm, View to the North

Figure 31: Beach Berm, View to the South

Figure 32: Modern Concrete Pieces in the Boulder Berm

Figure 33: Neighbor Seawall to the North

The certified shoreline runs behind this berm. The north side of the Property is a raised area of terraced soil, which is a mix of terrestrial sediments, marine sand, and debris. The surface of this area is heavily disturbed but is also protected by the beach berm and is higher in elevation than the other geological features on the Property **(Figure 34).**

Figure 34: Terraced Soil on Northeast End of the Property, View East

The terraced soil is roughly 1.5 meters above a lower lying sand alley, which sits along the southern extent of the Property **(Figure 35)**. This feature should not be mistaken for a sandy beach. HRS § 205A-1, defines a "beach" with respect to coastal zone management and the Special Management Area as:

> A coastal landform primarily composed of sand from eroded rock, coral or shell material, or any combination thereof, that is established and shaped by wave action and tidal processes. "Beach" includes sand deposits in nearshore submerged areas, or sand dunes or upland beach deposits landward of the shoreline, that provide benefits for public use and recreation, for coastal ecosystems, and as a natural buffer against coastal hazards.

This sandy alley was formed behind the beach berm from extreme storm surge and/or tsunami events, such as the 2011 Tōhoku tsunami as noted earlier in this section. It provides no current

benefit for public use, recreation, or coastal ecosystems. It is held in place by vegetation and the beach berm located in front of it, which acts as a natural buffer from coastal hazards.

Figure 35: Unconsolidated Sandy Deposits on Southwest Edge of Property, View North

Two vertical profiles were created from measurements taken at or near low tide, one to the north and one to the south **(Figure 36)**. The profiles were taken using a handheld optical level and stadia rod, with elevations taken at a minimum of two meters and at every break in topography. The 0.0 meters elevation represents approximately Mean Lowest Low Water (MLLW). The tides approaching Mean Highest High Water (MHHW) can rise to 2 feet (0.6 meters) above this reference.

The coastal profiles tell us that the topography and shoreline processes are mostly dominated by the boulder berm. The Southern profile shows a vertical slope where the sandy alley is present, whereas the Northern profile identifies the high terrace. These geological features are important in distinguishing an Average Annual Erosion Rate (AAER) for the Property. A discussion on the estimated rate and limitations can be found below.

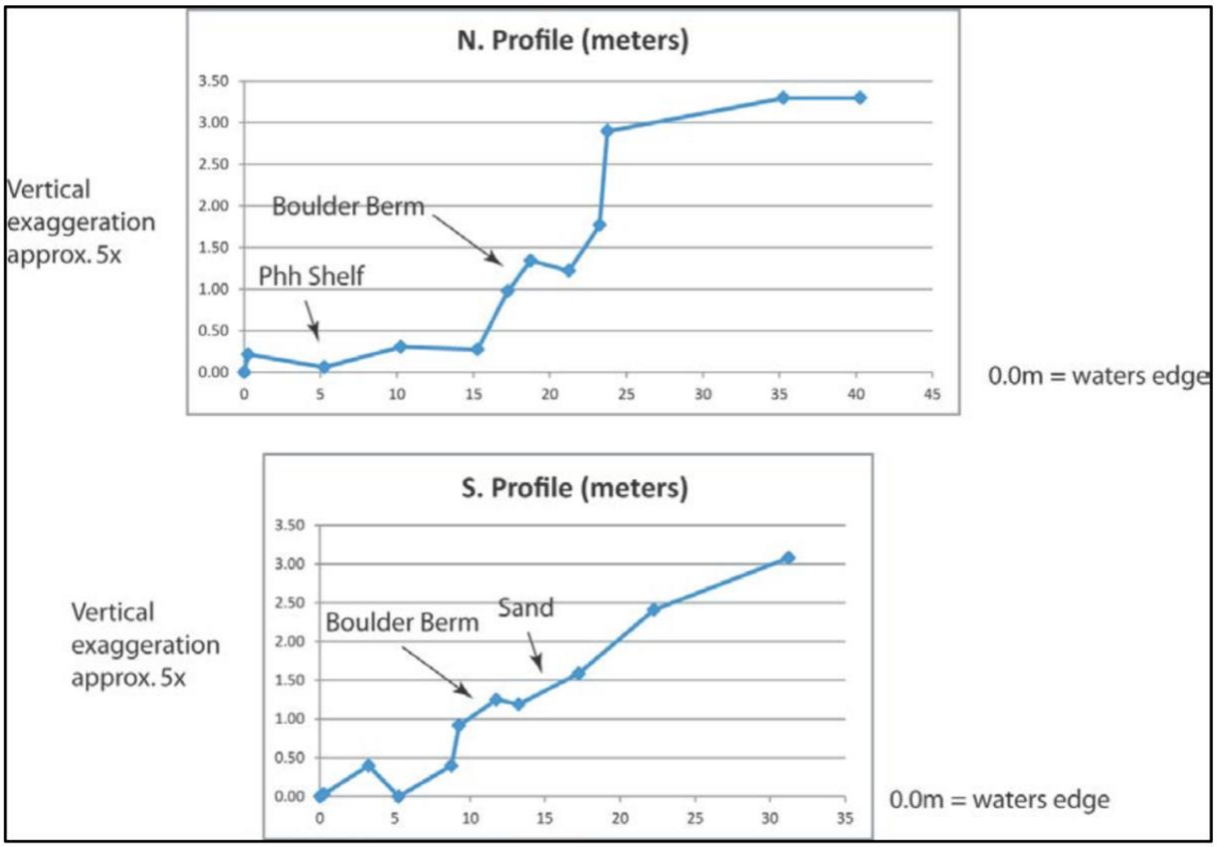


Figure 36: North and South Coastal Profiles of the Frey Property

Environmental Setting: Coastal Erosion Rate

The Coastal Erosion Survey and Shoreline Assessment (Scheffler, 2021) (CES), attached as **Appendix 1**, was prepared following the guidelines in the Hawai‘i Coastal Hazard Mitigation Guidebook (Hwang et al., 2005). Note that the Hawai‘i Administrative Rules, Title 13 (DLNR’s Conservation District Rules), states that Coastal Erosion Studies require the use of the Hawai‘i Coastal Hazard Mitigation Guidebook to provide an Average Annual Erosion Rate (AAER). See HAR §13-5-2. Although the Frey Property is outside of the Conservation District, the CES completed by Dr. Scheffler for this DEA satisfies HAR §13-5-2 requirements.

There are many limitations to determining an AAER for planning purposes of the Island of Hawai‘i (Abbott, 2013). Some of these limitations include irregular shaped properties, erosion occurring in multiple directions, and “hard” coasts versus “soft” linear beaches. Historical trends along coastlines show that hard coasts, which are made up of solid substrate, generally erode at slower rates than soft coasts, which consist of sand or other fine, easily transported material (Abbott, 2013). The Big Island is generally characterized by hard coasts, therefore estimates of AAER are best approached with longer term studies with a scope that extends beyond the geography of a single parcel.

Most erosion research on Hawai‘i Island has focused on sandy beaches, which cannot be applied to the rocky coastline present at the Frey Property. An example is the Bruun Rule, established by Bruun (1962). The Bruun Rule is a mathematical equation that predicts the rate of shoreline retreat, assuming a linear relationship between it and sea level rise. This is appropriate for sandy beaches, but not rocky coasts. Hard coasts respond to external forces more sporadically, with long periods of equilibrium between dramatic changes such as unpredictable rock failures. These stochastic and episodic processes make future predictions very difficult. No simple, linear projections can be made relating to hard coast movement and sea level rise.

During the surveys in February and March 2021, Dr. Scheffler looked for physical evidence of active coastal erosion and observed local shoreline processes to aid in determining the rate of shoreline migration, erosion or change in coastal configuration over time. According to Eversole and Norcross-Nu‘u (2006), signs of active erosion can include raw scarps, debris at the base of cliffs, or exposed roots of established trees or other vegetation. Dr. Scheffler states in the CES that “no evidence of recent erosion in the form of raw scarps or exposed roots was noted” (CES, p. 13). Further, Dr. Scheffler concluded that “conditions on the ground did not indicate that any major active erosion is taking place on the Property.” This is evident in the geological features of the shoreline. “Original surface features on the lava platform are preserved in many places on the platform showing that little surficial erosion has taken place since the lava flows were formed, and that wave erosion has been minimal” (CES, p. 15).

Since there was minimal evidence of any major active erosion observed on the Property, Dr. Scheffler adopted an empirical approach to determine the AAER. Eight aerial photographs were analyzed between 1954 and 2013 using Shoreline Change Reference Features (SCRF) methodology (Table 3). Shoreline Change Reference Features measure relative distances of vegetation lines and beach toe on separate aerial photos to determine the level of erosion that has occurred over time. The CES describes the method employed to estimate the Average Annual Erosion Rate (AAER) on the subject Property beginning on page 17: “<u>In this case, neither vegetation lines nor beach toe referents are appropriate and large-scale rock outcrops and volcanic features were used</u>.”

Table 3: Aerial Photographs Used to Determine AAER of Frey Property

Year	Reference Number	Flight Line	Frame	Agency
1954	017-1225	2	26	NAVY
1954	017-1208	2	9	NAVY
1965	068-5632	7CC	85	USDA EKL
1976	006-186	3	224	USGS VEEC
1976	006-187	3	225	USGS VEEC
1977	006-336	8	58	USGS VEEC
2000	002-6	---	2943	NOAA

Page 17 of the CES also includes side-by-side aerial photos depicting the shoreline in 1954 and 2000 (**Figure 37). Careful study of these images will show there are virtually no differences in the appearance of the shoreline within the limits of the image resolution.** As explained in the CES: “Inspection of these photographs indicates that the general features of the coastline fronting the Property have not changed in that time (59) years. In fact, the configuration of coast

and shoreline features correspond to those found in the field today (67 years). This method yields an *Average* Annual Erosion Rate of 0.93 inches per year (62 inches / 67 years)" (CES, p. 18). The CES further states on Page 18 that: "Conditions on the ground did not indicate that any major active erosion is taking place on the Property. Interpreting this statistical result is somewhat problematic. That is, this study did not measure 62 inches or erosion in the past. Instead, the confounding lack of photo resolution requires us to rely on negative evidence. Geological (qualitative) inspection suggests that while not zero, real erosion rates on the Property are less than the photogrammetric evidence can prove."

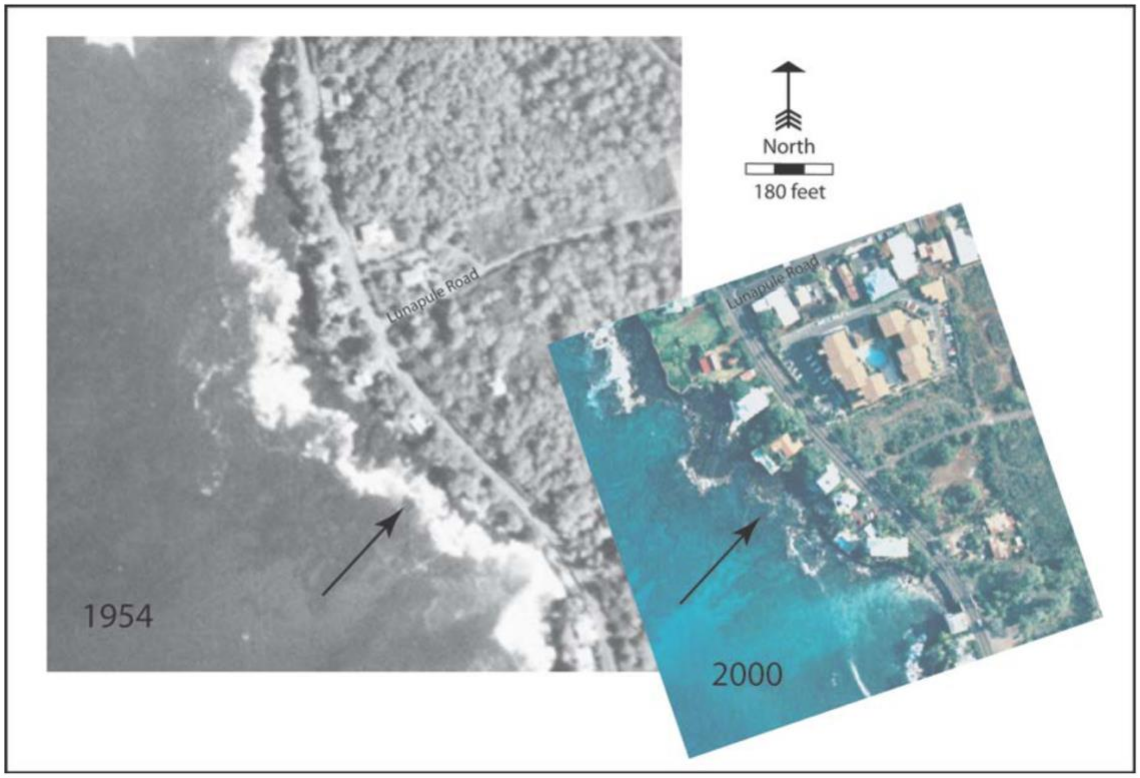
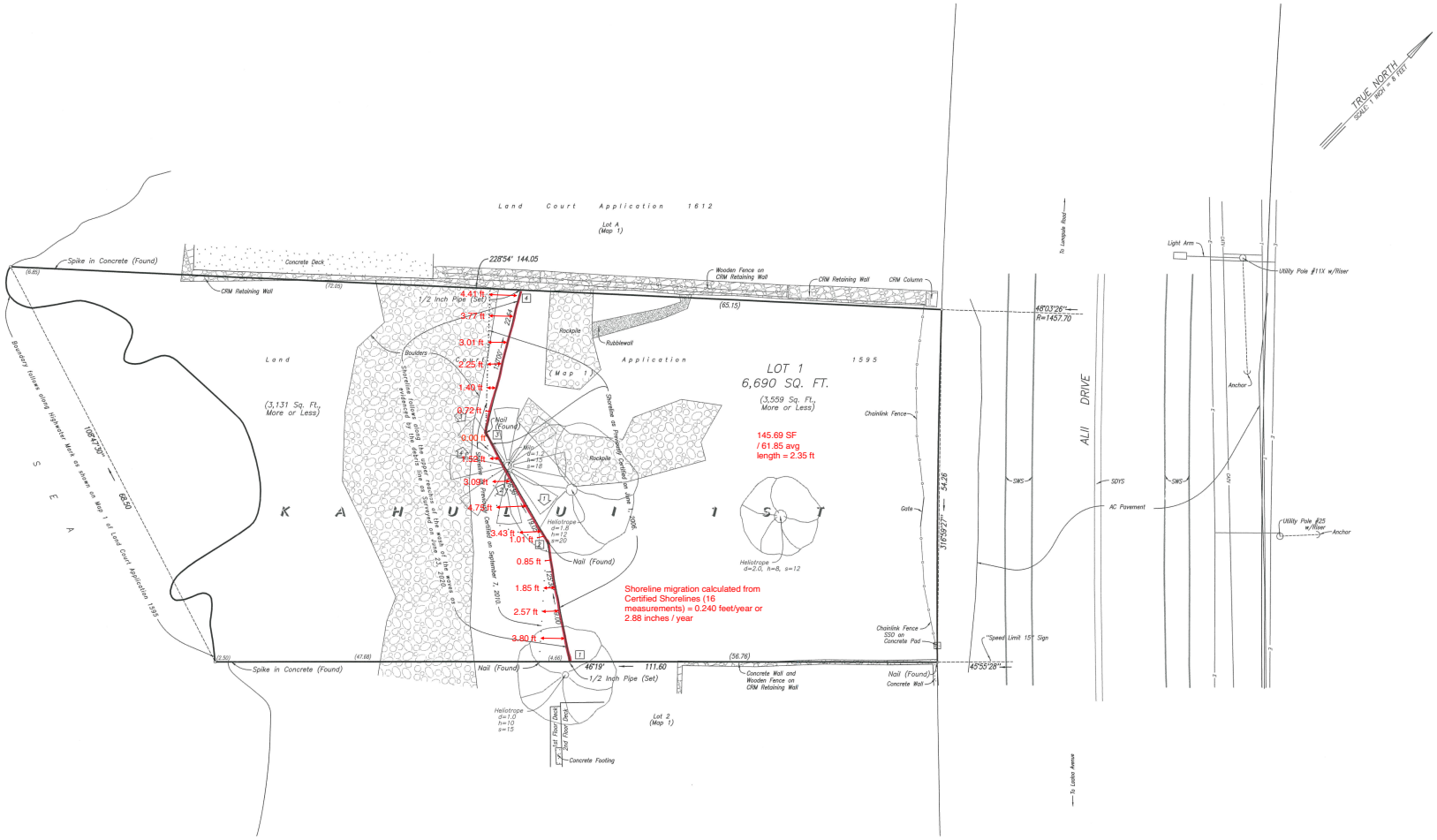


Figure 37: Frey Coastline 1954 and 2000

We are also presented with shoreline positions over the 10-year period of 2010 to 2020 when Certified Shoreline Surveys were completed for the Property. Comparison of 2010 and 2020 Certified Shoreline positions evenly distributed across the shoreline (number of measurements = 16) yields an estimate of shoreline migration of 0.240 feet/year (with a standard deviation of 0.14 feet/year) or 2.88 inches/year (standard deviation of 1.71 inches/year). A similar result of 0.235 feet /year is obtained if the area bounded by the two certified shoreline positions (the amount of erosion area in those 10 years) is divided by the shoreline length. **Figure 38** shows the shoreline migration between the 2010 and 2020 certified shoreline surveys.

It should also be noted that any observed shoreline migration will be the sum of several factors including erosion, sea level rise and island subsidence. As noted earlier, sea level rise, island subsidence and erosion are closely related phenomenon that are increasingly difficult to estimate and predict. According to Dr. Scheffler, the average global estimate of sea level rise is 0.19 inches or 4.8 millimeters per year. As noted earlier, the observed rate of subsidence off the northwest coast of Hawai‘i Island was concluded to be 0.102 inches or 2.6 millimeters per year.



NOTES:

1. Azimuths are referred to Government Survey Triangulation Station "KAHELO".
2. The features, shown hereon, were located by an actual survey on the ground done between January 19, 2006 and June 23, 2020.
3. ABBREVIATIONS:
   AC=Asphalt Concrete
   BW=Bottom Wall
   CRM=Cement Rubble Masonry
   d=Trunk Diameter
   h=Height
   SSO=Sewer Stubout
   SDYS=Solid Double Yellow Striping
   SWS=Solid White Striping
   s=Canopy Spread Diameter
   TW=Top Wall
4. [1] Denotes photograph number and direction of view.
5. [1] Denotes number in photograph.

The shoreline as delineated in red is hereby certified as the shoreline as of

NOV 0 2 2020

Chairperson, Board of Land and Natural Resources

SHORELINE CERTIFICATION MAP SHOWING
LOT 1
OF LAND COURT APPLICATION 1595
AS SHOWN ON MAP 1

At Kahului 1st, North Kona
Island and County of Hawaii, State of Hawaii

Figure 38

NICOLAS K. YAMASAKI
LICENSED PROFESSIONAL LAND SURVEYOR
No.12052
HAWAII, U.S.A.

This work was prepared by me or under my direct supervision.

NICOLAS K. YAMASAKI
Licensed Professional Land Surveyor
State of Hawaii Certificate Number LS-12052
Expiration Date: April 2022

8 4 0 8 16 24 24'-0"
SCALE IN FEET

Prepared For:
GREGG W. FREY
10220 181st Avenue SE
Issaquah, Washington 98027
Property Address: 75-5956 Alii Drive

Prepared By:
WES THOMAS ASSOCIATES
— Land Surveyors —
75-5749 Kalawa Street
Kailua-Kona, Hawaii 96740-1817
TEL (808) 329-2353
FAX (808) 329-5334 EMAIL surveys@wtahawaii.com

PROJECT NO.: 01183.61
DATE: . . . . . AUGUST 7, 2020
FIELD BOOK NO.: . . 1217, 1270, 1382 AND 1386
TAX MAP KEY: . . . . 7-5-019:020 (3RD DIVISION)
REVISED: SEPTEMBER 15, 2020 (MOVE POINT NO. 1)

September 15, 2020 p:\00000-02999\01183.61\dgn\01183611ef1.dgn

If we assume the Frey Property has a similar rate due to locality, then an overall vertical rise in sea-level relative to the Property of 0.292 inches or 7.4 millimeters per year can be expected (0.102 + 0.19 inches or 4.8 + 2.6 millimeters). These vertical changes in relative land and sea level are translated to horizontal migration by dividing by the land slope. For example: horizontal migrations are less on more steeply sloped lands than on more gradually sloped lands. In the case of the subject Property average slopes are between 8% and 12%.

Shoreline Migration = Erosion + (Sea Level Rise + Island Subsidence) / slope (%)

For the subject Property:

Expected migration = 0.93 (in/year) + (1.02 (in/year) + 1.90 (in/year)) / (10%)

The *expected* migration rate is 3.85 inches/year, which is within the standard deviation limits of the *observed* shoreline migration of 2.88 (+/- 1.71 inches/year). This indicates that the expected migration rate may be on the conservative side given the method of arriving at the AAER and the anticipated acceleration of Sea Level Rise in coming decades. Even at this conservative migration rate the proposed home would be in place for 60 to 70 years (20 ft / 3.85 inches/year) before the shoreline would be expected to migrate to the 20-foot shoreline setback line.

Impacts and Mitigation Measures

As discussed in section 3.1, the Overall Hazard Assessment for the Property is high, or 6 out of 7 (Fletcher et al., 2004). However, much of Kailua-Kona is at similar risk of floodplain and coastal hazards including tsunamis, stream flooding, high waves, storms, sea level rise and erosion and remains a thriving desirable place to live. Further, the proposed single-family residence has incorporated specific design elements to mitigate these potential impacts.

Mr. Frey acknowledges that the Property is low-lying and designated as Flood Zone VE, or 1% annual chance of experiencing a 100-year flood event. Based on observations outlined in the Coastal Erosion Study, it is reasonable to acknowledge that this Property will be impacted by sea level rise at some point in the future. However, the best available data including 10 years of observed shoreline migration on the subject Property indicates that there is a reasonable expectation that the Property could be used residentially for many decades before impacts due to coastal erosion, sea level rise and other coastal hazards would become significant.

The proposed home is designed with these potential hazards in mind, providing adequate elevation of occupied floors above flood levels with the required freeboard. Further, this proposed action is not proposing shoreline hardening structures and in all alternatives no structures are proposed within 20 feet of the shoreline.

At best, we can estimate a 14.6-inch sea level rise in the next 50 years, which will have negligible impacts to the proposed action. Further, no past or current erosion was evident on the Property in the last 67 years. Therefore, it is unlikely that any adverse erosion would occur throughout the lifetime of the single-family residence.

The proposed design and placement of the single-family residence aims to mitigate impacts of flooding, sea level rise, erosion, storm, and tsunami events. The proposed house would be sited as far from the shoreline as is practical, and the livable area above the base flood level (and freeboard) of 13 feet. Storm surges or high wave events may impact the proposed at-grade pool, which is not uncommon to neighboring parcels in the area and is fully acknowledged as a potential impact by Mr. Frey. It is possible for tsunami events to occur and impact this Property, as with every other Property in proximity to the shoreline along Ali‘i Drive. Unless a mega-tsunami were to hit this area, the proposed mitigating measures should prevent any adverse impacts. There are no notable streams in the area that could cause stream flooding, thus negligible concern for stream flooding. Mr. Frey has not noticed any drainage issues on the Property and there have been no known issues in the past.

Construction Best Management Practices will mitigate the potential for short term impacts from the proposed action on the flood zone and shoreline setting. The difference between potential impacts attributable to any scenario in terms of flood zones and shoreline resources is negligible. Only the no-action alternative would not entail construction within the flood-zone. In all alternatives proposed construction would be required to comply with Hawaii County Code Chapter 27 relating to Flood Control. Each of the proposed alternatives is not expected to have effects on shoreline processes within the lifespan of the home.

3.1.3 Water Quality

Environmental Setting

The proposed residence will be set back at least 20 feet from the shoreline. No streams, springs or ponds are found on or near the Property. With home construction, the primary activity with potential to affect water quality is grading. The proposed development will require relatively little grading, limited to approximately 2,400 square feet, due to limited space and careful design.

Impacts and Mitigating Measures

A County grading permit will likely be required. A National Pollutant Discharge Elimination System (NPDES) permit is not expected to be required as much less than 1 acre of land will be disturbed. If necessary, the NPDES permit will require the completion of a Storm Water Pollution Prevention Plan (SWPPP). A list of Best Management Practices (BMPs) will be established to properly manage storm water runoff. These BMPs may include, but are not limited to:

- Minimizing soil loss and erosion by revegetating and stabilizing slopes and disturbed areas of soil
- Minimizing sediment loss by placing structural controls including silt fences, gravel bags, sediment ponds, check dams, and other barriers
- Applying sediment waddles and protective covers to soil and material stockpiles

- Gravel check dams in gutters
- Constructing and use of stabilized construction vehicle entrance, with designated vehicle wash area that discharges to a sediment pond
- Washing of all vehicles in the designated wash area before leaving the project site
- Use of drip pans beneath vehicles to trap vehicle fluid
- Performing routine inspection and maintenance of structural BMPs by trained personnel
- Properly cleaning significant leaks or spills and disposing at an approved site

Mr. Frey will ensure all earthwork and grading will be conducted in compliance with:

(a) "Storm Drainage Standards," County of Hawai'i, 1970 and as revised
(b) "Flood Control", Chapter 27 of the Hawai'i County Code
(c) Standards and regulations of the Federal Emergency Agency (FEMA)
(d) "Erosion and Sedimentation Control", Chapter 10 of the Hawai'i County Code
(e) Conditions of an NPDES permit, if required, and any additional Best Management Practices required by the Board of Land and Natural Resources

Any wastewater from the residences will be treated using the County sewer system.

Proposed alternatives including differing height and or building setbacks do not increase (or decrease) the potential impacts due to the project on water quality in the area above the no-project alternative baseline.

3.1.4 Flora and Fauna

Environmental Setting: Flora

Historically, the natural flora of this location reflected halophytic (salt-adapted) strand vegetation, such as grasses and shrubs, and coastal forests (Gagne and Cuddihy, 1990). However, frequent development all around the Property has limited vegetation growth to mainly invasive species and ornamental plants.

Vegetation on the Property is minimal due to previous grubbing and potential loss of flora during the 2011 Tōhoku tsunami. A biotic survey conducted on the Property found no endangered or threatened species. Vegetation on the parcel includes milo (*Thespesia populnea*), naupaka (*Scaevola taccada*), and kao haole (*Leucaena leucocephala*). Papaya (*Carica papaya*), bougainvillea (*Bougainvillea spectabilis*), and various small weed plants are also present. A full list of species found during the biotic survey can be found in **Table 4**.

Table 4: Flora List for the Frey Property

Scientific Name	**Common Name**	**Family**	**Status**	**Type**
Batis maritima	Pickleweed	Bataceae	A	Weed
Bougainvillea sp	Bougainvillea	Nyctaginaceae	A	Tree
Carica papaya	Papaya	Caricaceae	A	Tree
Centrosema molle	Soft butterfly pea	Fabaceae	A	Shrub

Delairea odorata	German ivy	Asteraceae	A	Vine
Hibiscus tiliaceus	Hawaiian Hau	Malvaceae	I	Tree
Ipomoea sp.	Morning glory	Convolvulaceae	A	Vine
Leucaena leucocephala	Kao Haole	Fabaceae	A	Tree
Ricinus communis	Castor bean	Euphorbiaceae	A	Tree
Scaevola taccada	Naupaka	Goodeniaceae	I	Shrub
Thespesia populnea	Milo	Malvaceae	I	Tree
Tournefortia argentea	Beach Heliotrope	Boraginaceae	A	Tree

I = Indigenous A = Alien

Only three indigenous species were found on the Property including Hawaiian Hau (*Hibiscus tiliaceus*), Naupaka (*Scaevola taccada*) and Milo (*Thespesia populnea*). None of these are rate, threatened or endangered, and all are considered common in this area.

Environmental Setting: Fauna

Although no birds were sighted during the survey due to time of day and small size of the survey area, common birds expected to frequent the area include House Sparrow (Passer domesticus), Saffron finch (Sicalis flaveola), Common Waxbill (Estrilda astrild), and Zebra Dove (Geopilia striata).

No land mammals were spotted during the survey, nor would many be expected in the area due to its highly modified nature. An exception is the Mongoose (Herpestidae), which frequents Kailua-Kona residential areas. The Pacific Green Sea Turtle (Chelonia mydas), the Hawksbill Turtle (Eretmochelys imbricate), and the Hawaiian Monk Seal (Neomonachus schauinslandi) are species protected by the Marine Mammal Protection Act. It is possible for these species to be present in the waters near the subject Property, however, not within proximity to the Property itself due to the rocky nature of the shoreline.

Impacts and Mitigating Measures

No rare, threatened, or endangered flora species were detected on the Frey Property, therefore no adverse impacts to those species are expected under the proposed action. Xeriscaping and a green roof over the porte cochere will be incorporated for green design and function.

If the Pacific Green Sea Turtle (Chelonia mydas), the Hawksbill Turtle (Eretmochelys imbricate), or the Hawaiian Monk Seal (Neomonachus schauinslandi) are spotted within proximity to the shoreline Property during construction, work should halt until the animal leaves the area.

Artificial outdoor lighting can cause significant disorientation to seabirds that occasionally pass through the area at night. Collision or grounding of birds are potential adverse impacts if the proper mitigating measures are not taken. The applicant must follow guidance to use seabird-friendly light styles that also uphold the dark skies mandate according to Hawai‘i County Code.

As artificial lighting may adversely affect fauna, no artificial lighting would be used during construction, and construction activities would be limited to daylight hours.

Proposed alternatives including differing height and or building setbacks do not increase (or decrease) the potential impacts due to the project on the flora and fauna of the area above the no-project alternative baseline.

3.1.5 Air Quality, Noise, and Scenic Resources

Environmental Setting

The air quality in the vicinity of the Property is generally very good. The area is rural and has minimal human activity. Heavy vog has been reported in this part of the Kona during past Kilauea eruptions. Vog is created when sulfur dioxide reacts chemically with sunlight, oxygen, dust particles and water in the air. During eruptions, trade winds may carry vog to this area which can result in worse atmospheric quality.

Noise is moderate in the area from traffic on Ali‘i drive. The area is residential and commercial with single-family residences on the *makai* side of Ali‘i Drive and condominiums and hotels on the *mauka* side.

Goals and policies to preserve areas of natural beauty are outlined in the County of Hawai‘i General Plan. These standards are designed to prevent encroachment on scenic features such as black sand beaches and tidal ponds. There are no listed scenic areas within proximity to the Frey Property. A popular white sand beach known as Honl’s Beach is roughly 0.3 miles to the north and is used for swimming, surfing, and fishing. Parking is available for public access.

Existing vegetation on the Property currently prevents views to the ocean from the ground along Ali‘i Drive.

Impacts and Mitigating Measures

The proposed action would have minimal and short-term impacts to air quality and noise levels during construction. All noise regulation guidelines, outlined by the Department of Health, will be followed, and will be kept under the maximum permissible levels. However, due to the close nature of surrounding residences, if construction noise is expected to exceed maximum permissible levels, contractors will be required to consult with the Department of Health as per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction. The Department of Health will determine whether a permit is necessary and what mitigating measures should be put in place.

Dust during construction and standards for keeping air pollutants down will also be rigorously followed. No impacts to air quality or noise levels are expected when the development is operating as a single-family residence, which will operate under normal noise levels associated with the surrounding neighborhood. The proposed action will also have no impact to Honl’s Beach or any recreational activities that occur there.

The proposed fourth floor of the single-family residence would be an open-air concept roof deck, which will naturally reduce visual impacts from certain angles. It is important to note that any development on the *makai* side of Ali‘i Drive is going to produce some level of visual impacts to ocean views. However, the potential visual impacts from the proposed action are very modest and mitigated by the small size of the building footprint.

Potential visual impacts vary slightly with building height and setback alternatives. Existing vegetation on the Property currently prevents views to the ocean from the ground along Ali‘i Drive. Therefore, those views will not change appreciably under any alternative.

In contrast, however, differing building setback alternatives have the potential to increase or decrease visual impacts from the ground. Under the full 40-foot shoreline setback alternative, the proposed dwelling would be sited within 10-feet of Ali‘i Drive (10-foot front-yard setback). A building this close to Ali‘i Drive has the potential to create more pronounced visual impacts to pedestrians and drivers on Ali‘i Drive. Similarly, under the 26-foot shoreline setback alternative, a 14-foot front-yard setback would be required, which may cause some visual impacts but to a lesser extent. The alternative with the least visual impacts from the ground is the proposed action with a 20-foot front-yard setback.

Since this area is mixed with residential and commercial use, there is a wide range of building heights within a short distance of the subject Property. These include a 40 foot and 35-foot single-family residence between 100- and 170-feet northwest of the subject Property. Further, as previously mentioned, there is a condominium complex directly *mauka* of the Property, with several buildings at 45 feet in height. **Figures 39-43** show simulated views of the proposed dwelling at the requested four (4) stories and the two (2) story alternative from various angles and distances and compared to surrounding building heights. The two-story alternative is depicted by the white line at 25-feet in height on the simulated building. The simulated figures below show that the proposed dwelling remains similar in stature to some of the surrounding buildings. In addition, the fourth (uppermost) roof deck will be open and airy to not inhibit viewing past the structure. In all construction alternatives the view impacts are not pronounced and are limited by the small buildable area on the parcel.

As seen in the figures above, the alternative heights would not significantly change impacts to scenic views. As discussed in Section 2.1.1, the roof deck (4th floor) is designed to be open-air concept, which reduces visual impacts from certain angles by design. The condominium complex *mauka* of Ali‘i Drive is the main area where scenic views may be impacted under the proposed height of 45 feet. However, visual impacts from this viewpoint would be localized due to the limited width of the building and would also not be significantly reduced under alternative height scenarios.

Further, no alternative height will increase (or decrease) the visual impacts on the ground from Ali‘i Drive. It is important to note that existing vegetation on the Property blocks ocean views. Therefore, scenic views on the ground would not change under any alternative height.

Figure 39: Simulated View of the Proposed Four-Story Home and Two-Story Alternative Looking North [middle white line indicates two stories height]

Figure 40: Simulated View of the Proposed Four-Story Home and Two-Story Alternative Looking South [middle white line indicates two stories height]

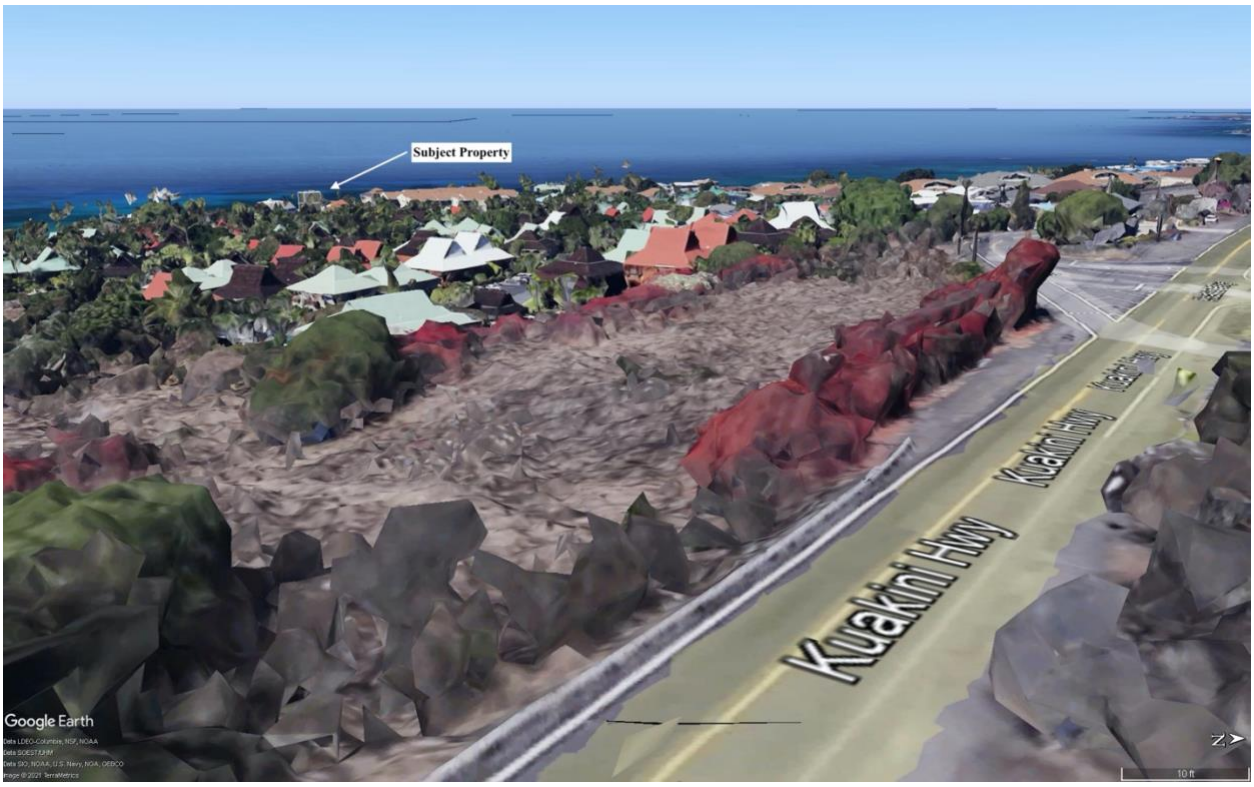


Figure 41: Simulated View of the Proposed Four-Story Home and Two-Story Alternative from Kuakini Highway Looking Northwest [middle white line indicates two stories height]

Figure 42: Simulated View of the Proposed Four-Story Home and Two-Story Alternative from Kuakini Highway Looking Southwest [middle white line indicates two stories height]

Figure 43: Simulated View of the Proposed Four-Story Home and Two-Story Alternative Along Shoreline [middle white line indicates two stories height]

3.1.6 Hazardous Substances, Toxic Waste, and Hazardous Conditions

Environmental Setting

No hazardous substances or toxic waste are expected to be used on the Property when operating as a single-family residence. During construction, the possibility for spills of hazardous materials, which would be limited to fuel and equipment lubricant from construction equipment and vehicles, etc., will be mitigated by following State and County requirements, which are outlined below. The single-family residence will be connected to the County sewer system. The shoreline has hazardous footing but will be able to be accessed laterally by the public. No other hazardous conditions will be associated with the development.

Impacts and Mitigating Measures

Following the guidelines of State and County requirements, to minimize the possibility for spills and hazardous materials, the applicant proposes the following:

- Unused materials and excess fill (if any) will be properly disposed of at an authorized waste disposal site.
- During construction, emergency spill treatment, storage and disposal of all hazardous materials, will be explicitly required to meet all State and County requirements, and the

contractor will adhere to "Good Housekeeping" for all appropriate substances, with the following instructions:

- Onsite storage to minimum practical quantity of hazardous materials necessary to complete the job;
- Fuel storage and use will be conducted to prevent leaks, spills or fires;
- Products will be kept in their original containers unless un-resealable, and original labels and safety data will be retained
- Disposal of surplus will follow manufacturer's recommendation and all regulations;
- Manufacturers' instructions for proper use and disposal will be strictly followed;
- Regular inspection by contractor to ensure proper use and disposal;
- Onsite vehicles and machinery will be monitored for leaks and receive regular maintenance;
- Construction materials, petroleum products, wastes, debris and landscaping substances (herbicides, pesticides and fertilizers) will be prevented from blowing, falling, flowing, washing or leaching into the ocean; and
- All spills will be cleaned up and properly disposed of immediately after discovery.

Proposed alternatives including differing height and or building setbacks do not increase (or decrease) the potential impacts due to the project on hazardous substances, toxic waste or hazardous conditions in the area above the no-project alternative baseline.

3.2 Socioeconomic and Cultural

3.2.1 Land Use, Socioeconomic Characteristics, and Recreation

Environmental Setting

The subject Property is located within the district of North Kona, which is dominated by tourism and recreational activities. According to the 2019 United States Census, the North Kona District had an estimated resident population of 45,882 (United States Census Bureau, 2019). Most residents within proximity to the Frey parcel reside in either condominiums *mauka* of Ali'i Drive, or single-family residences *makai* of Ali'i Drive, which are often also Short-Term Vacation Rentals (STVRs). Resorts in this area are located to the north, east and south of the subject parcel. The popular portions of Ali'i Drive associated with the Kailua-Kona city center are located less than 1 mile north of the subject Property. This strip of Ali'i Drive has extensive restaurants, nightlife and recreational activities. As noted earlier, the closest beach is Honl's Beach located roughly 0.3 miles north of the parcel. This beach park is popular for swimming, surfing, and fishing. Lateral shoreline access will be unchanged under the proposed action.

There are buildings of various heights in the area, ranging from approximately 20 feet tall to 45 feet tall. **Table 5** below is a list of Property heights in the vicinity of the proposed residence and the number of stories they contain. The Wyndham Resort, also known as the Kona Hawaiian Resort, is located to the east of the parcel, across from Ali'i Drive. This resort has an array of buildings, which vary in size. However, the buildings located roughly 130 feet to the east of the subject parcel are by far the highest in the area. They stand at the maximum 45 feet, as allowed

in areas zoned V-1.25 according to the Hawai‘i County Zoning Code. The proposed single-family residence will be roughly the same height as these buildings and shares the same V-1.25 zoning designation. It should also be noted that there are two single-family residences approximately 100 and 170 feet to the northwest of the parcel on the *makai* side of Ali‘i Drive that are similar in stories and height as the proposed residence. The home located 100 feet to the northwest is 4 stories and 40 feet tall, while the home located 170 feet to the northwest is 3 stories and measures 35 feet tall.

Table 5: List of Surrounding Building Heights and Number of Stories

	Property Type	**Location and Distance from Parcel**	**# Of Stories**	**Approximate Height**
North of Parcel, Makai of Ali‘i Drive	SFR	Parcel to the immediate Northwest	3	22 feet
	SFR	100 feet northwest	4	40 feet
	SFR	170 feet northwest	3	35 feet
	SFR	300 feet northwest	2	25 feet
South of Parcel, Makai of Ali‘i Drive	Condominiums	Parcel to the immediate South	3	32 feet
	SFR	130 feet south	2	20 feet
	Kona Tiki Hotel	200 feet south	3	35 feet
Mauka of Ali‘i Drive	Wyndham Resort	130 feet northeast	4	45 feet
	Wyndham Resort Reception Building	200 feet east	2	22 feet
	Condominiums	400 feet east	2	40 feet

The subject parcel is adjacent to the shoreline which is used for fishing and recreation by the public. The applicant has observed the public fishing along the shoreline in the vicinity of the subject Property. Other uses such as surfing, swimming, ocean viewing, hiking, and sunbathing are possible where safe, but their frequency is unknown. Nearby Honl’s Beach is frequently used by the public for typical ocean recreation activities including swimming, surfing, sunbathing, etc. Restroom facilities and public parking are available on the *mauka* side of Ali‘i Drive opposite the beach.

Impacts and Mitigation Measures

Negligible impacts to land use, socioeconomic and recreational resources are expected under the proposed action to build a single-family residence. No recreational activities would be impacted by this request. Honl’s beach is located within a safe distance from any construction activities and will not be impacted in any way. The proposed single-family residence will be consistent with the surrounding area and land uses. As noted earlier, the established pattern of traditional use of the coastline will not be affected in any alternative as no structures are proposed within

20-feet of the shoreline and lateral shoreline access will be maintained free of encroaching vegetation and accessible to the public.

Proposed alternatives including differing height and or building setbacks do not increase (or decrease) the potential impacts due to the project on land use, socioeconomic characteristics or recreation in the area above the no-project alternative baseline.

3.2.2 Cultural and Historic Resources

Historical and Cultural Background

Hawai‘i is believed to be first inhabited by voyagers from the Marquesas around 1,000 A.D, however, recent studies have shown that initial Polynesian colonization of Hawai‘i Island occurred between 1220 and 1261 A.D.

The initial inhabitants are believed to have settled on the windward side, eventually expanding to leeward regions. Early Hawaiian settlements incorporated new strategies and structures to adapt to their new environment. Traditional Polynesian philosophies and ideals were used to form new societal standards and structures including the principle of genealogical seniority, observance of gods such as *Kane, Ku and Lono*, the *kapu* system of law and order, *ahupua‘a* land systems, and various beliefs and values that determined day-to-day protocol and lifestyle such as *mana* and the *‘aumakua*.

The Kona District has been significant to the development of Hawai‘i during both prehistoric and historic times. Located on the western coast of the Island of Hawai‘i, the coast is covered by predominantly barren lava flows, with occasional patches of fertile soil, and a warm and dry climate. This area was favored by Hawai‘i’s chiefs. The high chiefs of Kona lived in Kailua, which made it a dominant settlement of the island. This was likely the most densely populated area in the Hawaiian Islands when foreign visitors first arrived. Ancient traditions and mythological deities are associated with Kona, including the god Lono, who is associated with fertility, agriculture, rain, music, and peace. Lono is believed to have introduced various plant foods such as taro, sweet potato, yams, sugarcane, and bananas to the Hawaiian Islands (NPS, 2011).

The Kona District is comprised of two subdivisions: North and South Kona. North Kona stretches from just north of Kealakekua Bay to ‘Anaeho‘omalu. In 1832, Reverend Ellis described Kona as:

> “The most populous of the six great divisions of Hawai‘i, and being situated on the leeward side, would probably have been the most fertile and beautiful part of the island, had it not been overflowed by floods of lava. It is joined to Kohala, a short distance to the southward of [Kawaihae] bay and extends along the western shore between seventy and eighty miles, including the irregularities of the coast. The northern part, including [Kailua], [Kealakekua], and Honaunau, contains a dense population; and the sides of the mountains are cultivated to a considerable extent; but the south part presents a most inhospitable aspect. The population is thin, consisting principally of fishermen, who cultivate but little land, and that at the distance of from five to seven miles from the shore” (NPS, 2011).

Historical texts also comment on the number of *heiau* along the Kona Coast. Although heiau's were numerous along the coast on all the islands, the region between Kailua-Kona and Kealakekua had a particularly heavy concentration of them. The most notable *heiau's* in the Kona District today are Kikiau, the temple at Kealakekua Bay, where Captain Cook was worshipped as the god Lono, and 'Ahu'ena, adjacent to Kamehameha I's royal residence at Kailua. Hale-o-Keawe, the ancestral *heiau* of the Kamehameha dynasty, is in Pu'uhonua o Honaunau National Historical Park (NPS, 2011).

Ancient occupation of North Kona occurred in three main zones: the coastal strip, the barren/volcanic middle zone and the upland zone used for agricultural purposes. Historical settlement patterns suggest small fishing hamlets were located along the shore, near fishponds and around bays, which involved deep-water and near-shore fishing. Agricultural pursuits in these areas were limited to small coconut groves and banana patches around villages. More extensive agriculture occurred upland where taro, sweet potato, breadfruit, banana, paper mulberry, ti and sugarcane were cultivated. The middle, barren and volcanic zone is thought to have been used by travelers between the coast and upland. Travel between Kailua and Kawaihae appears to have been mainly by canoe, rather than along coastal trails during both prehistoric and historic periods (NPS, 2011).

Chief Kalani'opu'u was the high chief during Cook's arrival in 1779. After the chief's death in 1782, his son Kiwala'o, and his nephew, Kamehameha began to compete for control of the west side of Hawai'i Island. Kamehameha won the battle of Moku'ohai against Kiwala'o in Kona, officially controlling the western half of the island. In 1791, Kamehameha fought and won a battle against his cousin Keoua at Kawaihae for control of the entire Hawai'i Island. In 1795 Kamehameha conquered Maui, Moloka'i, Lana'i and O'ahu. He also received Kaua'i by cession in 1810.

In the years following Cook's arrival, politics and international trade began to change the status of the Kona Coast regarding its political and social role in Hawaiian society. In 1819, the *kapu* system was overthrown, which entered the Hawaiian people and government into a period of deregulation and lack of guidance. However, notably, the Kona Coast remained quite socially and economically stable between 1820 and 1852 despite the rapidly changing political environment. Although King Kamehameha II and his court moved to Honolulu shortly after the abolition of the *kapu* system, many chiefs remained in the Kailua area to provide leadership for North and South Kona Districts. This encouraged people from other districts to immigrate to the area for stability and security during turbulent times. Agriculture was also still an important industry in the region. The influx of trading and whaling ships to the Hawaiian Islands allowed the two harbors along the Kona Coast to continue to be utilized to trade fruit, vegetables, meat, firewood and fresh water. In addition, missionaries arrived at Kailua and spread their teachings to provide steady influence on Kona Coast society. Commodore Charles Wilkes stated in 1840 trade flourished between the southern and northern ends of the district. The northern portions providing fish and salt and southern portions, food and clothing.

In 1839, King Kamehameha III signed the Bill of Rights, which sought to ensure that the people's land would not be taken from them. In 1840, the first Constitution of Hawai'i was enacted. In 1845, the Land Commission was created by Kamehameha III to award land claims, although this could not be done under the current feudal system of land tenure as individuals did

not hold title to the land. In 1848 The Great Māhele (Land Division) established a system of private land ownership, which divided all Hawai‘i’s land into three classifications: Crown Lands, Government Lands and Konohiki Lands. The Keauohana, Kehena Ahupua‘a was deemed Government Lands. Crown, Government and Konohiki lands remained subject to the rights of the *kanaka* who were in possession and cultivating the lands. As land sales between the Crown, Government and Konohiki continued, the rights of the kanaka became an issue. In 1850, the Land Commission moved to award title of land to kanaka who remained in physical possession, cultivated, or improved any portion of Konohiki Lands. These became Kuleana Lands.

During the Māhele and the Kuleana Act of 1850, the northern portion of Kahului 1st and most of Kahului 2nd Ahupua‘a were awarded to Grace Kamaikui Rooke as Land Commission Award (LCA) 8516-B (Award Book 10:394; Indices 119). Grace Kamaikui Rooke was the daughter of John Young and high chiefess Ka‘oana‘eha (niece of King Kamehameha I). The land was given to John Young by King Kamehameha and Grace inherited the land upon her father. Grace left the Property to Queen Emma Kalanikaumaka‘amano Kaleleonālani Na‘ea Rooke, her hānai daughter. Emma was the daughter of Grace’s older sister Fanny and was the wife of King Kamehameha IV.

Four small LCA’s were awarded near the coast of Kahului 1st Ahupua‘a north, and east of the subject Property. In addition, Land Grant 2961 to Kapae is located just north of the subject Property **(Figure 44).**

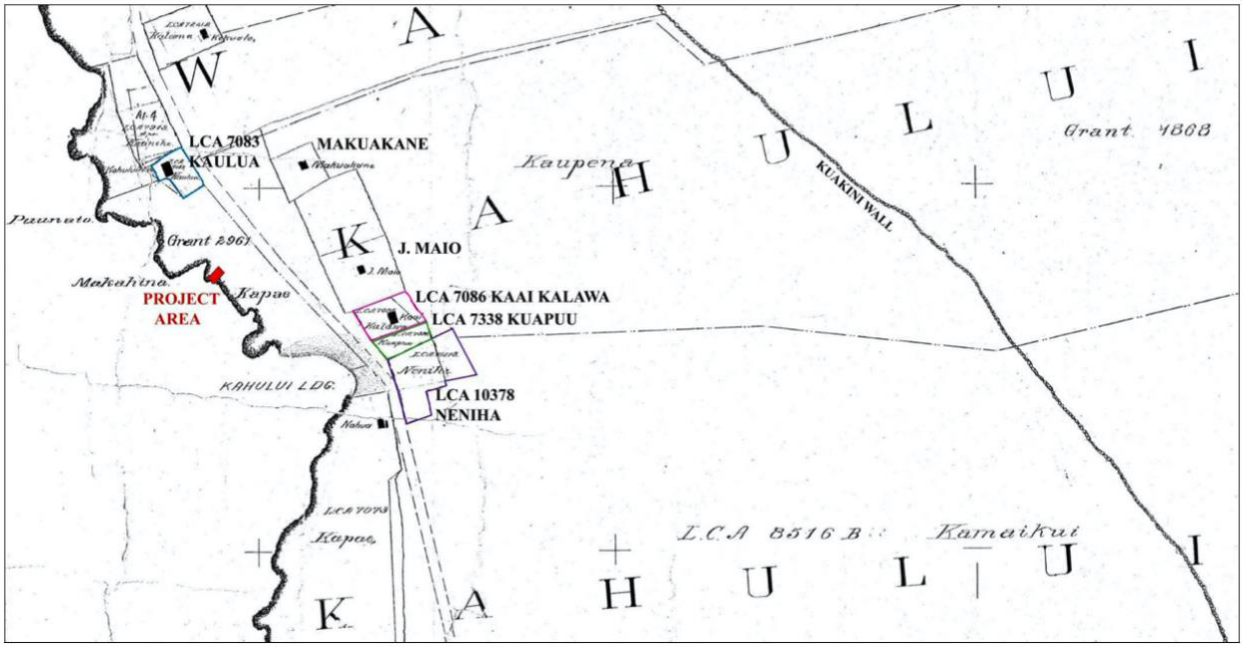


Figure 44: Portion of Registered Map #1676 Showing Project Area and Nearby Land Commission Awards (Emerson and Kanakanui 1892)

In 1893, the Hawaiian Monarchy was over-thrown, and Queen Lili‘uokalani was imprisoned. The remaining Crown Lands were confiscated by the government and made a part of the public domain (NPS, 2011).

Archaeological Field Inspection

An Archeological Field Inspection (AFI) was conducted by Scientific Consultant Services (SCS) Senior Archaeologist, Mr. Glenn Escott, MA on March 1st, and 2nd, 2021. A Pedestrian Survey was conducted to determine if any significant historical or archeological sites were present on the Property. The following section will summarize Mr. Escott's findings. The full report can be found in **Appendix 2.**

As noted earlier, the subject Property is in Kahului 1st Ahupua'a, Kailua, North Kona District **(Figure 45).** According to Mr. Escott, very few archaeological studies have been conducted in both Kahului 1st and 2nd Ahupua'a.

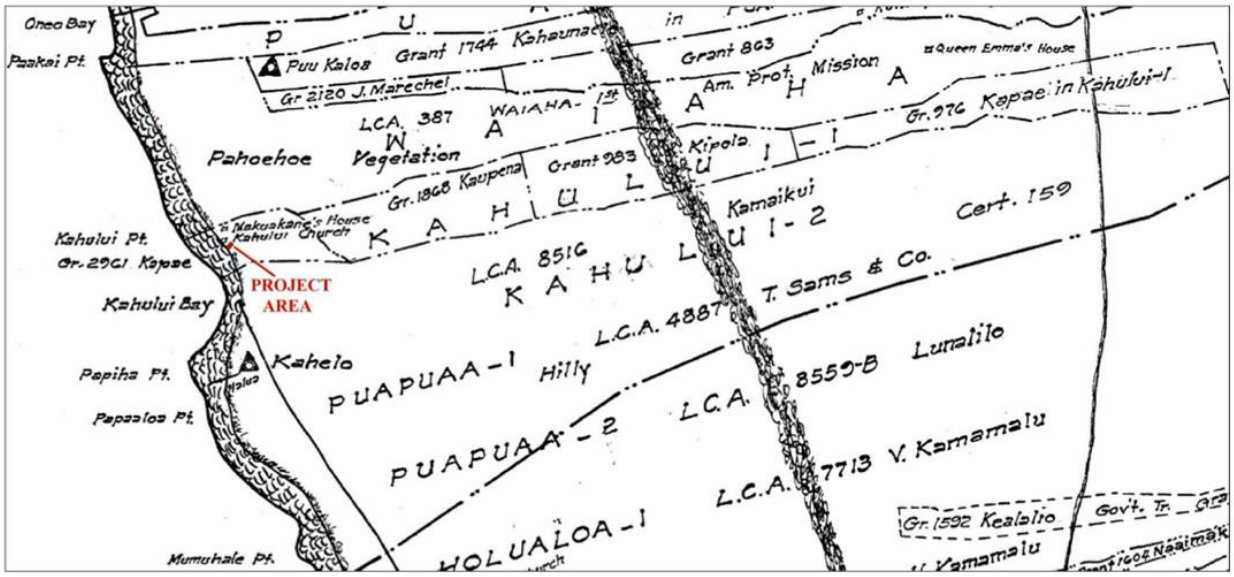


Figure 45: Portion of Registered Map #1280 Showing Project Area, LCAs, Land Grants, and Nearby Structures (Aki 1952).

Four archeological studies (Ching et al. 1973; Dunn and Rosendahl 1991; Haun et al. 1998; and Hommon and Rosendahl 1983) were conducted for the proposed Ali'i Drive Highway and the Kuakini Highway realignment project, all of which occurred southeast of the subject Property **(Figure 46).** Thirty-four archaeological sites were recorded within two corridors at lower elevations (70 to 360 foot above mean sea level) within Kahului 1st and 2nd Ahupua'a. Twenty-seven of these were recorded in Kahului 1st alone including Historic era ranch walls, pre-contact era habitation complexes, agricultural gardens and burial platforms. However, none of these sites were within proximity to the subject Property. The closest recorded sites were over 0.6 miles *mauka* or east of the Frey Property. According to Mr. Escott, modern construction and development along the coastline and Ali'i Drive, and previous grubbing on the subject Property make it possible but unlikely for any archaeological sites to be present. The following section will discuss specific findings from the Pedestrian Survey.

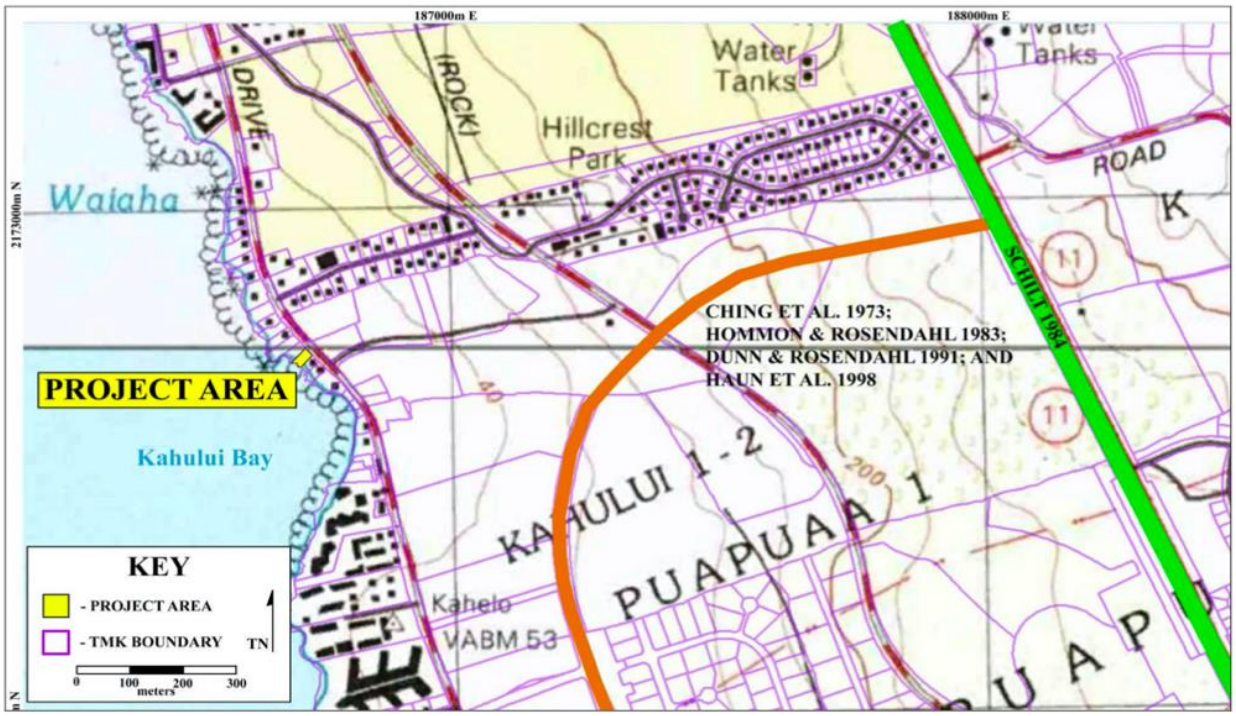


Figure 46: Previous Archaeological Studies in Relation to the Frey Property

AFI Pedestrian Survey

Mr. Escott performed an Archaeological Inspection Pedestrian Survey, which consisted of walking a series of transects, spaced 1.0 meter apart across the entire Property. No archeological sites were identified during the survey. A summary of the Property features will be discussed below and can be seen in **Figure 47**.

As noted earlier, previous grading of the Property has left two large bulldozer push piles located near the center of the parcel and along the north boundary of the parcel **(Figure 48)**. Fragments of modern cement are present within these piles. The graded area along the northern boundary has been covered with red cinder, which was likely to create a driveway **(Figure 49)**.

A chain link fence is present along the east boundary of the parcel, which fronts Ali‘i Drive. Along the boundary there are two piles of cement and rock rubble **(Figure 50)**. Mr. Escott believes the rubble was likely dumped prior to the construction of the fence. The cement in this area is modern and is characteristic of inclusions. The fence was likely built ten to twenty years ago and is noticeably worn.

A rock-lined path is present near the southern boundary of the Property and leads from the east near the chain link fence to the western coastal flats **(Figure 51)**. The path is believed to have been created by the previous lot owner and is not used by the public. Mr. Escott believes this path was constructed within the last 20 years.

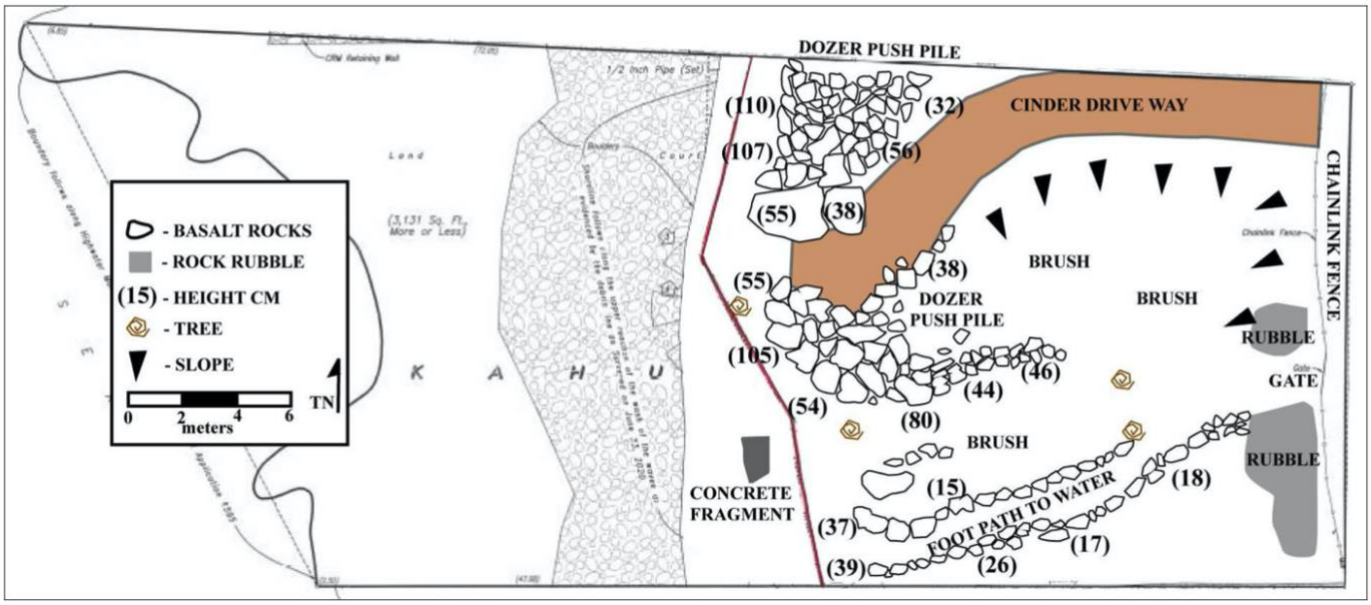


Figure 47: Frey Property Plan View Map Showing Modern Land Alterations

Figure 48: Northern Push Pile Looking Northeast. (110 cm measuring tape scale)

Figure 49: Graded and Cinder Covered “Driveway” Looking Northeast

Figure 50: Rubble Pile Looking North (1 meter measuring tape scale tape)

Figure 51: Northeast End of Footpath Looking South (1 meter measuring tape scale)

Impacts and Mitigation Measures

The Hawai‘i State Supreme Court’s PASH and Ka Pa‘akai O Ka ‘Aina decisions require decision-makers to consider a project’s impact to native Hawaiian practices and resources. Specifically, prior to making a decision, State and County agencies must identify the cultural, historical, and natural resources and associated traditional and customary practices of this site, the impacts of the proposed project to those resources and practices, and the feasible action (i.e., mitigation measures), if any, to protect such resources and practices.

The Pedestrian Survey conducted by Mr. Escott confirmed that no archaeological sites, features, or historical resources are located within the project area. Further, there are no known Native Hawaiian traditional or customary practices taking place or valued resources on the Property. The proposed action is unlikely to discover any unknown resources, however, in the event any potential resource is unearthed during construction, all earth work activities will cease immediately, and the State Historic Preservation Division will be contacted immediately for appropriate action.

Proposed alternatives including differing height and or building setbacks do not increase (or decrease) the potential impacts due to the project on valued cultural or historic resources on the Property above the no-project alternative baseline.

3.3 Public Roads, Services, and Utilities

3.3.1 Roads and Access

Environmental Setting, Impacts and Mitigating Measures

The proposed single-family residence is located at 75-5956 Ali‘i Drive in Kailua-Kona. Access to the Property is off Ali‘i Drive, which is a County owned and maintained road. Construction within the County right-of-way will comply with Hawai‘i County Code, Chapter 22, “County Streets”.

Under the proposed action, ingress and egress would be carefully designed to allow for easy access off Ali‘i Drive. No zoning or density changes are being sought for this proposed action. Traffic will continue to operate at existing levels and will therefore be no different than what exists today or the potential that exists today.

As discussed in Section 2.1.2 Ingress, egress, and parking would become very difficult if the proposed structure was sited with a 10-foot or front-yard setback. The requested 20-foot shoreline setback would also allow a 20-foot front-yard setback, which would provide adequate room to meet minimum requirements for access and parking.

3.3.2 Public Utilities and Services

Environmental Setting, Impacts and Mitigating Measures

All utility usage would follow the County and State Department of Health guidelines. The Hawai‘i County Department of Water Supply has confirmed an existing service lateral, which can accommodate a 5/8-inch meter. One (1) unit of water allows for an average daily usage of 400 gallons served through a 5/8-inch meter, which is suitable for one (1) single family dwelling.

Police services are available roughly 3.5 miles to the north, fire roughly 2 miles to the north and emergency medical services 9 miles to the south. The closest school is roughly 1.6 miles away.

There are no anticipated impacts to any public utilities and services. The proposed action to build one (1) single family residence is consistent with the surrounding area and will not exceed normal services required for a residence. Further, proposed alternatives including differing height and or building setbacks do not increase (or decrease) the potential impacts due to the project on public utilities and services in the area above the no-project alternative baseline.

3.4 Secondary and Cumulative Impacts

The proposed development is to build one (1) single-family residence. The proposed development would not produce any major secondary impacts, such as population changes, or produce any measurable effects to flood zones, shoreline and geologic processes, water quality, flora and fauna, historic and cultural resources, or public facilities. The proposed action is small in scale and will not lead to secondary impacts to any environmental, cultural, or historical resources or scenic views.

Cumulative impacts occur when the implementation of several projects, which have individually limited impacts, combine to produce more severe impacts. The surrounding area of Ali‘i Drive is highly developed and mixed in land use between residential and commercial. However, no substantial government or private projects including roadway improvements, subdivisions, or other commercial projects are known to be planned or occurring in the immediate area of the subject Property. The proposed action to build one (1) single-family residence is small in scale and therefore will have negligible cumulative impacts.

3.5 Required Permits and Approvals

The following permits and approvals are required for the proposed addition of a single-family dwelling in the County of Hawai‘i Special Management Area:

County of Hawai‘i:

Special Management Area Use Permit
Shoreline Setback Variance
Plan Approval and Grubbing, Grading, and Building Permit

State of Hawai‘i:

Possible NPDES Permit for construction related activities
Possible Community Noise Permit for construction related activities

3.6 Consistency with Government Plans and Policies

3.6.1 Hawai‘i County General Plan

The Hawai‘i County General Plan serves as a guiding document for decision-making and the implementation of goals for Hawai‘i Island. The plan was adopted in 1989 by ordinance and most recently revised in 2005. The General Plan uses the Land Use Pattern Allocation Guide (LUPAG) Map to designate land on Hawai‘i Island for future developments in a coordinated and reasonable manner. The LUPAG is a broad, flexible design tool to guide the direction and quality of future developments in a coordinated and manner. It indicates the general location of various land uses in relation to each other. The designation for the subject Property is Open. Due to the importance of the General Plan in determining the suitability of land-use projects and developments, the following goals, policies, and standards that align with the proposed action are discussed below:

ECONOMIC GOALS

a. Provide residents with opportunities to improve their quality of life through economic development that enhances the County’s natural and social environments.
b. Economic development and improvement shall be in balance with the physical, social, and cultural environments of the island of Hawai‘i.
d. Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County’s cultural, natural, and social environment.

Discussion: The proposed development and occupation of the applicant's single-family home is consistent with Hawai'i County's natural, cultural, and social environment. The proposed action would provide temporary employment for local construction workers and would support local economy through the purchase of local construction materials. This would allow for local businesses to thrive and gain income from the proposed action. The proposed action would also contribute to the tax base in the County. Overall, the proposed action would stimulate and support the general economic stability and development of Hawai'i Island.

ENVIRONMENTAL QUALITY GOALS

a. Define the most desirable use of land within the County that achieves an ecological balance providing residents and visitors the quality of life and an environment in which the natural resources of the island are viable and sustainable.
b. Maintain and, if feasible improve the existing environmental quality of the island.
c. Control pollution.

ENVIRONMENTAL QUALITY POLICIES

a. Take positive action to further maintain the quality of the environment.

ENVIRONMENTAL QUALITY STANDARDS

a. Pollution shall be prevented, abated, and controlled at levels that will protect and preserve the public health and well-being, through the enforcement of appropriate Federal, State and County standards.
b. Incorporate environmental quality controls either as standards in appropriate ordinances or as conditions of approval.
c. Federal and State environmental regulations shall be adhered to.

Discussion: No significant adverse impacts would occur to the environment or natural resources in the area under the proposed action to build one (1) single-family residence. The proposed dwelling is consistent with the surrounding residential land use and will not impose any significant impacts to the environment under such use. All environmental regulations and policies pertaining to the project area would be followed, including mitigating factors and Best Management Practices, which will prevent any adverse impacts to water and air quality. No impacts to shoreline processes or practices are anticipated within the expected lifespan of the proposed home.

FLOOD CONTROL AND DRAINAGE GOALS

a. Protect human life.
b. Prevent damage to man-made improvements.
c. Control pollution.
d. Prevent damage from inundation.
e. Reduce surface water and sediment runoff.
f. Maximize soil and water conservation.

FLOOD CONTROL AND DRAINAGE POLICIES

a. Enact restrictive land use and building structure regulations in areas vulnerable to severe damage due to the impact of wave action. Only uses that cannot be located elsewhere due to public necessity and character, such as maritime activities and the necessary public facilities and utilities, shall be allowed in these areas.
g. Development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works and in compliance with all State and Federal laws.

FLOOD CONTROL AND DRAINAGE STANDARDS

a. "Storm Drainage Standards," County of Hawai‘i, October 1970, and as revised.
b. Applicable standards and regulations of Chapter 27, "Flood Control," of the Hawai‘i County Code.
c. Applicable standards and regulations of the Federal Emergency Management Agency (FEMA).
d. Applicable standards and regulations of Chapter 10, "Erosion and Sedimentation Control," of the Hawai‘i County Code.
e. Applicable standards and regulations of the Natural Resources Conservation Service and the Soil and Water Conservation Districts.

Discussion: The proposed action and any alternatives would be required to comply with the standards and regulations relating to flood control, storm drainage, erosion and sedimentation control, etc., which will mitigate the potential for adverse effects from the action. The single-family residence is designed specifically to mitigate impacts of flooding, sea level rise, erosion, storm, and tsunami events. The livable area is above the base flood level (and freeboard) of 13 feet. This can be seen in the building plans in **Figures 3-10** above. These are the best mitigating measures possible for this Property.

There is no viable alternative, outside of deeming the Property unusable, where the risk of coastal hazards would be reduced or avoided. Most of the *makai* side of Ali‘i Drive is developed with single-family residences in this area, some at even a higher risk of impact due to inadequate design features.

HISTORIC SITES GOALS

a. Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawai‘i.
b. Appropriate access to significant historic sites, buildings, and objects of public interest should be made available.

HISTORIC SITES POLICIES

a. Agencies and organizations, either public or private, pursuing knowledge about historic sites should keep the public apprised of projects.
b. Amend appropriate ordinances to incorporate the stewardship and protection of historic sites, buildings, and objects.

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.
d. Public access to significant historic sites and objects shall be acquired, where appropriate.

Discussion: The proposed action is unlikely to have any impact on historic resources. An Archaeological Field Inspection found no archeological sites or historical resources on the subject Property. It is unlikely that any unknown sites would be found on the Property during construction. However, in the event any undiscovered archaeological remains are found, the appropriate authorities and departments will be notified and properly handled per State and County regulations.

NATURAL BEAUTY GOALS

a. Protect, preserve, and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.
b. Protect scenic vistas and view planes from becoming obstructed.
c. Maximize opportunities for present and future generations to appreciate and enjoy natural and scenic beauty.

NATURAL BEAUTY POLICIES

a. Increase public pedestrian access opportunities to scenic places and vistas.
b. Develop and establish view plane regulations to preserve and enhance views of scenic or prominent landscapes from specific locations, and coastal aesthetic values.

Discussion: Impacts to scenic views would be localized and limited in scope. The proposed single-family residence would be aesthetically pleasing with specific design features to blend with the natural area and provide conscious environmental design and function. No views of Hualālai or any scenic resource outlined in the General Plan would be impacted. Access to Honl's beach located roughly 0.3 miles to the north would not be impacted in any way. Lateral access along the shoreline will be kept free of encroaching vegetation under the proposed action for public access along the shoreline.

NATURAL RESOURCES AND SHORELINES GOALS

a. Protect and conserve the natural resources from undue exploitation, encroachment and damage.
b. Provide opportunities for recreation, economic, and educational needs without despoiling or endangering natural resources.
c. Protect and promote the prudent use of Hawai'i's unique, fragile, and significant environmental and natural resources.
d. Protect rare or endangered species and habitats native to Hawai'i.
e. Protect and effectively manage Hawai'i's open space, watersheds, shoreline, and natural areas.

f. Ensure that alterations to existing landforms, vegetation, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of an earthquake.

NATURAL RESOURCES AND SHORELINES POLICIES

a. Require users of natural resources to conduct their activities in a manner that avoids or minimizes adverse effects on the environment.
c. Maintain the shoreline for recreational, cultural, educational, and/or scientific uses in a manner that is protective of resources and is of the maximum benefit to the general public.
d. Protect the shoreline from the encroachment of man-made improvements and structures.
h. Encourage public and private agencies to manage the natural resources in a manner that avoids or minimizes adverse effects on the environment and depletion of energy and natural resources to the fullest extent.
p. Encourage the use of native plants for screening and landscaping.
r. Ensure public access is provided to the shoreline, public trails and hunting areas, including free public parking where appropriate.
u. Ensure that activities authorized or funded by the County do not damage important natural resources.

Discussion: The proposed single-family residence would be at least 20-feet from the shoreline in the proposed action and would pose no adverse risk to natural or coastal resources. Flora and fauna are limited in this area due to the small area of the parcel and highly developed surrounding area. No rare, endangered, or threated species were seen nor expected to be encountered. The applicant has observed the public exploring tidepools along the shoreline fronting the Property and fishing along the shoreline nearby but not directly fronting the subject Property. Other uses such as surfing, gathering, swimming, ocean viewing, hiking, and sunbathing are possible where safe, but their frequency is unknown. Lateral access along the shoreline will be kept free of encroaching vegetation under the proposed action for public access along the shoreline.

KONA COMMUNITY DEVELOPMENT PLAN

The Kona Community Development Plan (KCDP) was developed through the implementation of the 2005 County of Hawai‘i General Plan. CDP’s are designed to translate and implement the goals, policies, and standards of the General Plan as they apply to specific communities and districts. Additionally, they serve as an important framework for a community’s intended outcome and vision and are often used as forum for community input in terms of land-use, availability of public resources, and overall development. The following goals apply to the project area and proposed development:

> *Policy LU-1.2: Urban Area:* Most of the future growth in Kona shall be directed to the Kona Urban Area shown on the Official Kona Land Use Map, which spans from the Kona International Airport to Keauhou subject to the policies set forth under Objective LU-2 Urban Area Growth Management.
>
> *Policy LU-1.4: Consistency with Land Use Pattern Allocation Guide (LUPAG):* The current LUPAG accommodates the vision and needs for the Kona CDP area planning horizon and should be amended only for compelling reasons. Any rezoning application shall be consistent with the LUPAG.
>
> *Objective LU-2: Urban Area Growth Management:* Recognizing that the LUPAG Urban Area is larger than needed to accommodate the projected growth within the planning horizon, future growth within the Urban Area shall be encouraged in a pattern of compact villages at densities that support public transit.

The proposed single-family residence is consistent with the KCDP. The location of the proposed home is in a developed Urban Area, which is consistent with the surrounding land uses. The parcel is small and arguably unusable without a development such as a single-family residence. In its current condition, it is considered an eye sore to the community. The proposed home would be aesthetically pleasing with green design and function and would infill the vacant parcel. The single-family home is within walking distance of amenities provided in the Kailua-Kona city center, which supports urban growth management. The home will be used as a primary residence and is not intended to be rented out as a Short-Term Vacation Rental, which supports long term residences, while supporting healthy urban growth.

3.6.2 Hawai‘i County Zoning and Special Management Area

The State Land Use District for the Property is Urban and is zoned by the County of Hawai‘i as Resort-Hotel V-1.25. All aspects of the requested action are consistent with the County zoning. Alternatives are presented that would require variance from front and or side-yard setback regulations. Those alternatives would be contingent on approval of the necessary variances from Zoning Code.

The Frey Property lies within the Special Management Area (SMA). The proposed action complies with provisions and guidelines outlined in Chapter 205A, HRS, Coastal Zone Management (CZM). The proposed action is also consistent with Act 16, Session Laws of Hawai‘i (SLH) 2020, which amended the HRS Chapter 205A. A Special Management Area Use Permit (SMA Major) Application will be submitted to the County of Hawai‘i Planning Department separate from this report to explicitly address compliance with SMA rules and regulations. A summary of how the requested action is consistent with SMA guidelines is provided below.

> The purpose of [Act 16] is to strengthen coastal zone management policy by amending chapter 205A, Hawai‘i Revised Statutes, to protect State beaches and to reduce residential exposure to coastal hazards Section 205A-2, Hawai‘i Revised Statutes, is amended by amending subsections (c) to read as follows:

(c) Policies

(1) Recreational resources

b. Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

i. Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas

iii. Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value

(2) Historic resources

a. Identify and analyze significant archaeological resources

c. Support State goals for protection, restoration, interpretation, and display of historic resources

(3) Scenic and open space resources

a. Identify valued scenic resources in the coastal zone management area

b. Ensure that new developments are compatible with their visual environment by designing and locating those developments to minimize the alteration of natural landforms and existing public views to and along the shoreline

d. Encourage those developments that are not coastal dependent to locate in inland areas

(4) Coastal ecosystems

a. Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources

c. Preserve valuable coastal ecosystems of significant biological or economic
importance, including reefs, beaches, and dunes

e. Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint sources water pollution control measures

(5) Economic uses

b. Ensure that coastal dependent development and coastal related development are located, designed, and constructed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area

(6) Coastal hazards

a. Develop and communicate adequate information about the risk of coastal hazards
b. Control development, including planning and zoning control in areas subject to coastal hazards
c. Ensure that developments comply with requirements of the National Flood Insurance Program
d. Prevent coastal flooding from inland projects

(7) Managing development

a. Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development
c. Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process

(8) Public participation

a. Promote public involvement in coastal zone management processes

(9) Beach protection

a. Prohibit construction of private shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities
e. Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor
f. Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor

(10) Marine and coastal resources

a. Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial
d. Promote, research, study and understanding of ocean and coastal processes, impacts of climate change and sea level rise, marine life, and other ocean resources to acquire and inventory information necessary to understand how coastal development activities relate to and impact ocean and coastal resources

The appropriateness of the shoreline setback variance request will depend on an evaluation of the facts and circumstances of the proposed action against HRS § 205A-46 (a), which sets the criteria for granting shoreline setback variances and reads, in relevant part:

> A variance may be granted for a structure or activity otherwise prohibited in this part if the authority finds in writing, based on the record presented, that the proposed structure or activity is necessary for or ancillary to:
>
> > (8) Private facilities or improvements that will not adversely affect beach processes, result in flanking shoreline erosion, or artificially fix the shoreline; provided that the authority may consider any hardship that will result to the applicant if the facilities or improvements are not allowed within the shoreline area.

The proposed action will not have any adverse impact to recreational resources. The applicant has observed the public exploring tidepools along the shoreline fronting the parcel and fishing nearby but not directly fronting the Property. Other uses such as surfing, gathering, swimming, ocean viewing, hiking, and sunbathing are possible where safe, but their frequency is unknown. Project actions will not induce vegetation to grow seaward of the shoreline, and there are no structures proposed within 20-feet of the certified shoreline. Therefore, the public will be able to continue to engage in any of these activities along the shoreline under the proposed action, consistent with the findings and goals outlined in Act 16.

Honl's beach is a white sand beach located 0.3 miles to the north of the subject Property and is open to the public for recreational activities such as swimming, surfing, and fishing. Parallel parking is available on the shoulder of the north bound lane on Ali‘i Drive.

The proposed action is unlikely to have any impact on archaeological, cultural or historic resources. An Archaeological Field Inspection found no significant sites or features and does not expect any to be found during construction. However, in the event any undiscovered archaeological, cultural, or historic resources are found, all construction work would cease and would only resume after proper clearances from the State and County have been received.

The proposed action will have limited impact on scenic resources or open space. The parcel is small and visual impacts would be reduced due to the limited building footprint available. Proposed design features and placement mitigate the visual impacts, which would be localized and limited in extent.

No significant adverse impacts to coastal resources are expected due to mitigating measures and Best Management Practices. The proposed single-family residence would be at least 20-feet from the shoreline. Based on the Coastal Erosion Study no adverse effects to erosion or coastal processes are anticipated within the lifespan of the dwelling. Further, potential impacts to coastal resources are mitigated when following the proper rules and regulations, which will be adhered to by the applicant and contractors.

The proposed construction and development would provide temporary employment for local construction workers and would support the local economy through the purchase of construction

materials. Overall, the proposed development project would stimulate and support the general economic stability and development of Hawai‘i Island.

The single-family residence is designed specifically to mitigate impacts of flooding, sea level rise, erosion, storm, and tsunami events. The livable area is above the base flood level of 13 feet. This can be seen in the building plans in **Figures 3-10** above. These are the best mitigating measures possible for this Property to reduce the risk of coastal hazards.

The proposed action would be consistent with Chapter 205A as the proposed use would not affect public access to the shoreline or coastal resources and hazards, scenic and open space resources, economic uses, historical resources, and recreational areas.

3.6.3 Conservation District

The project area does not reside in the State Land Use Conservation District. The designated State Land Use is *Urban*, which will remain unchanged by the proposed action.

PART 4: DETERMINATION, FINDINGS, AND REASONS

4.1 Determination

The applicant expects that the County of Hawai‘i Planning Department will determine that the proposed action will not significantly alter the environment and will accordingly issue a Finding of No Significant Impact (FONSI). This determination will be based on comments to the Draft Environmental Assessment (DEA). The Final Environmental Assessment (FEA) will outline the final determination.

4.2 Findings and Supporting Reasons

Agencies must consider several factors to determine whether an Action has significant effects, as outlined in Chapter 11-200.1 of the Hawai‘i Administrative Rules (HAR). The following factors evaluate the sum of effects of the proposed action on the quality of the environment by considering every phase of a proposed action, the expected impacts, and the proposed mitigating measures:

1. *The proposed project will not involve an irrevocable commitment or loss or destruction of any natural, cultural, or historic resource.*

   The proposed action will not involve an irrevocable commitment or loss or destruction of any natural, cultural, or historic resources. Only common native and alien plants were found on the subject parcel, and native ecosystems are not expected to be adversely affected given the very limited area of disturbance. Earthwork would be limited due to the small size of the parcel and will closely follow all mitigating measures and Best Management Practices to minimize impacts to natural resources. As discussed above, an Archeological Field Inspection found no archaeological or historic resources on the Property. If any such resources are found, construction will cease immediately, and the State Historic Preservation Division would be contacted to determine appropriate action. Cultural resources and practices will not be impacted under the proposed action as no

resources or practices are present on the Property. Lateral shoreline access will be maintained free of encroaching vegetation under the proposed action for public use.

2. *The proposed project will not curtail the range of beneficial uses of the environment.*

   No restriction of beneficial uses would occur under the proposed action. The parcel would be used for residential purposes, which is consistent with the uses of the surrounding area. It is not known whether the Property has ever been used for shoreline activities or cultural practices, however, lateral shoreline access will not be affected by the proposed action. No project activities are proposed within 20-feet of the shoreline and no shoreline hardening structures are proposed. Due to its small size the Property has little utility beyond residential use.

3. *The proposed project will not conflict with the State's environmental policies or long-term environmental goals established by law.*

   The State's long-term environmental policies are set forth in HRS Chapter 344. The broad goals of this policy are to conserve natural resources and enhance quality of life. The requested action will have no impact to environmental processes, nor will it negatively impact quality of life. It is therefore consistent with all elements of the State's long-term environmental policies.

4. *The proposed project will not have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State.*

   The project would not have any substantial effect on economic or social welfare of the Big Island community or the State of Hawai'i. The Property would be used for common residential purposes only and would be consistent with surrounding land use and character. Lateral shoreline access will remain under the proposed action. An archeological field inspection found no significant cultural or historical elements on the Property. However, in the event any such resources were to be found, construction would cease immediately, and the State Historic Preservation Division would be contacted to determine appropriate action.

5. *The proposed project will not have a substantial adverse effect on public health.*

   Building one (1) single-family residence will not have a substantial adverse effect on public health. As discussed, minimal and short-term impacts to air quality may occur during the construction phase, however, mitigating measures and Best Management Practices will be followed to minimize these impacts. The proposed home would connect to the County Sewer System offering the highest level of treatment and protection of public health available. No other aspect of this development is expected to impact public health.

6. *The proposed project will not involve adverse secondary impacts, such as population changes or effects on public facilities.*

   The proposed action consists of building one (1) single-family residence, which will operate under standard residential conditions. Therefore, no changes to population or effects on public facilities outside of normal residential use should occur.

7. *The proposed project will not involve a substantial degradation of environmental quality.*

   The proposed action would not contribute to environmental degradation. Water and air quality would not see adverse impacts due to mitigating measures and Best Management Practices outlined above.

8. *The proposed project is not one which is individually limited and will not have substantial adverse effect upon the environment or involve a commitment for larger actions.*

   The proposed action will not have substantial adverse effect upon the environment or involve a commitment for larger actions. One (1) single-family residence is proposed to be built on a limited amount of space, which has been partially grubbed and graded in the past. The development of the single-family residence is the totality of the proposed action, not a phase of a larger action. Mitigating measures and Best Management Practices (BMPs) will be strictly followed during construction to minimize potential impacts to air and water quality. Further, the circumstances surrounding this request are unique and do not call into question the reasonableness of shoreline setback regulations.

9. *The proposed project will not have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat.*

   A biotic survey of the Property found no rare, threatened, or endangered species. Vegetation is limited due to the small size of the parcel and highly developed surrounding area. It is unlikely any endangered sea animals such as the Pacific Green Sea Turtle (*Chelonia mydas*), the Hawksbill Turtle (*Eretmochelys imbricate*), and the Hawaiian Monk Seal (*Neomonachus schauinslandi*), would use the Property shoreline due to its rocky nature (see discussion of boulder berm fronting the area). However, in that event construction will stop immediately until they have left the area. All guidelines pertaining to artificial lighting will be followed to limit impacts to fauna. Xeriscaping will be utilized to conserve water and the porte cochere will have a living roof for green design and function and aesthetics from Ali‘i Drive.

10. *The proposed project will not have a substantial adverse effect on air or water quality or ambient noise levels.*

    The proposed action would have minimal and short-term effects on air quality and ambient noise levels during construction. Mitigating measures will be strictly followed to reduce impacts to both during this phase. If maximum permissible levels are exceeded,

the contractor will consult with the Department of Health and determine whether a permit is necessary. If approved, the Property will contain one (1) single family residence, which will operate with standard noise levels. Negligible impacts to water quality should occur by following the mitigating measures and Best Management Practices as outlined in Section 3.1.3.

11. *The proposed project will not have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.*

    The single-family residence is designed specifically to mitigate impacts of flooding, sea level rise, erosion, storm, and tsunami events. The livable area is above the base flood level of 13 feet. This can be seen in the site plan in **Figures 3-10** above. Further, the CES concluded that there has been no major active erosion occurring on the Property in roughly 67 years. The AAER of 0.93 +/- 0.21 inches per year is well within the range of deeming the land developable. Based on the background erosion rate, many decades will pass before coastal processes would be affected by the proposed project. Similarly, the home is expected to be in place for many decades before coastal hazards would be expected to regularly impact the dwelling. Most of the *makai* side of Ali‘i Drive is developed with single-family residences and condominiums in this area, most at even a higher risk of impacts from coastal hazards due to inadequate, outdated design features. There is no viable alternative, outside of deeming the Property unusable, where the risk of coastal hazards would be significantly reduced or avoided altogether.

    The proposed project will not adversely impact this environmentally sensitive area. The home is proposed to be sited as far as is feasible from the shoreline and in no alternative are structures proposed within 20 feet of the shoreline. Temporary impacts from construction related to dust, noise and debris will be mitigated by Best Management Practices. The proposed project will also control site generated storm water runoff and will connect to the County sewer system mitigating potential impacts to nearshore water quality. Flood zone regulations will mitigate the potential for adverse impacts to or from the proposed action relating to flooding. Compliance with earthwork regulations will mitigate the potential for adverse impacts due to erosion or sedimentation. The footprint of the foundation columns is minimal, and spaced well apart, therefore reducing not only any potential wave/water interactions but minimizing any visual effect as well, as compared to a solid wall-like foundation structure.

12. *The proposed project will not have a substantial adverse effect on scenic vistas and view planes, during day or night, identified in County or State plans or studies.*

    The proposed four (4) story single-family residence would have limited impacts on scenic resources, mainly due to the extremely limited buildable area. However, the home would be positioned and designed to minimize these impacts as seen in the site plans in **Figures 3-10.** It is important to note that any structure built on the *makai* side of Ali‘i drive will have some visual impacts. Impacts to ocean views and scenic resources identified in

County or State plans will not change appreciably under any alternative. As previously discussed, existing vegetation on the Property currently prevents ocean views from Ali‘i Drive. Therefore, scenic views from the ground would not change appreciably under any building alternative.

13. *The proposed project will not require substantial energy consumption or emit substantial greenhouse gases.*

    The proposed action will not require substantial energy consumption or emit substantial greenhouse gases. Mr. Frey intends to build one (1) single-family residence that will operate within normal residential limits and energy consumption.

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DRAFT ENVIRONMENTAL ASSESSMENT

Frey Single-Family Residence
Special Management Area Major Use Permit
and Shoreline Setback Variance

Appendix 1
Coastal Erosion Study and Shoreline Assessment

tes ARCH services

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FINAL

Coastal Erosion Survey and Shoreline Assessment for the Frey Property on Ali`i Drive.

Kahului 1st Ahupua`a, North Kona District, Hawai`i Island;

TMK (3) 7-5-019:020.

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May 23, 2021

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Executive Summary

This report was prepared at the request of John Pipan, Land Planning Hawaii, LLC; on behalf of Gregg Frey. The report contains the results of a geological survey of the property including field measurements and descriptions. The survey focused on assessing any physical evidence for active coastal erosion and gathered information relevant to the description of local shoreline processes. Historical photographic images dating back to 1954 were reviewed for any indication of horizontal shoreline migration, erosion, or change in coastal configuration. A maximum Average Annual Erosion Rate (AAER) of 0.93 +/- 0.21 inches per year is given, though no physical evidence for erosion, past or present, was found. Additionally, variability in global predictions of future sea level rise were assessed specific to this site, including the significant influence of regional island subsidence. The authors conclude that a vertical change in sea level of +0.292 inches per year is possible. This expected rise will accelerate erosion rates. However, the quantification of future rates remains somewhat speculative.

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Introduction

In considering the long-term sustainability of any coastal development plan, several independent issues are worthy of investigation. These include basic concerns such as the natural elevation of the property above sea level, the condition and behavior of the shoreline, the configuration of the lot with respect to the features as they vary across the property. The development history of a parcel and any past measures taken, either passive, such as irrigation, or active, such as seawall construction or beach nourishment, will contribute to the balance between erosion and accretion. Common signs of active erosive action include the presence of raw scarps, debris at the base of cliffs, or exposed roots of established trees or other vegetation (Eversole and Norcross-Nu`u 2006).

The Hawaii Coastal Erosion Management Plan (COEMAP 2000) set forth by the Hawaii State Department of Land and Natural Resources (DLNR) Coastal Lands Division encourage state and county decision makers to "consider erosional trends and processes, and other coastal hazards, … so the structures can be safely and properly located away from hazard areas. …[and] prevent burdening landowners and regulatory agencies with foreseeable coastal hazard issues at a later date." (COEMAP 2000:6).

The DLNR has established a requirement that the Average Annual Coastal Erosion Rate be determined based on formal "Coastal Erosion Studies" which are to be carried out following the guidelines in the Hawaii Coastal Hazard Mitigation Guidebook (Hwang et al. 2005). This report satisfies these requirements and follows the methods proscribed by Hwang et al.

Changes in the coastline over time are the product of the complex and long-term interplay between powerful geological forces, particularly so in Hawai`i. The combined effects of volcanism, erosion, sedimentation, sea-level change, island subsidence, and even bio-genic (ie. reef-building) production over millennia will influence the nature and durability of the coast and the position of the shoreline as we now see it. These processes of both construction and destruction must be accounted for in any evaluation of coastal dynamics (Ramalho, et al., 2013). Volcanic action, mostly new lava flows, build out the island, and then coastlines retreat as mass wasting, marine and fluvial erosion reshape the landscape. The Hawaiian Islands also are subsiding at variable rates across the archipelago; this can accelerate the processes influencing shoreline mobility or future migration.

The dynamics between volcano, ocean and air are difficult to quantify in some aspects, especially on the younger of the Hawaiian Islands which, in their youth, may not yet have reached a long-term, stable equilibrium.

Thorne Abbott (2013) reviews several problematic aspects in determining the AAER for planning purposes in Hawai`i. The difficulties he discusses in measuring erosion rates on lengths of coastline on Maui, apply directly to the Big Island. The problems enumerated include issues with irregular shaped properties and erosion in multiple directions and the problematic

nature of erosion-resistant hard coasts as opposed to soft linear beaches. “Soft” shorelines are in a constant state of change affected by seasonal movements of sand (Abbott 2013:17). Hard coasts are more difficult to monitor, usually changing over only much longer periods of time.

Any estimates are best approached with longer term (decadal) studies of a scope that extends beyond the geography of a single parcel. Ideally, regional monitoring studies would include highly accurate means of terrain mapping such as is available today with LiDAR technology (Rosser 2005).

Despite these drawbacks, it is possible to derive an empirically based, and quantitative estimate of erosion rates on site. This report also seeks to delineate any erosion-prone or otherwise hazardous areas along this section of coastline. Per State definitions, the “shoreline” denotes the highest wash of waves and is usually defined by a line of permanent vegetation, as is the case at the Frey property The “coastline” is a more general term used in this report for the most seaward edge of land at high tide. We continue below with a description of the property and the ocean conditions for this section of the West Hawai`i coastline.

Coastal erosion is a potentially serious problem anywhere along Hawaii’s coastlines, although the most serious problems reflect the vulnerability of sand beaches to erosion (DLNR, 2000), and are thus mostly of concern on the older islands of the State (Kauai, Oahu, and Maui). Erosion is of less concern on Hawaii Island, where rocky shorelines are the norm, and are for the most part immune to significant erosion.

Tsunamis and storm surges can, however, impact rocky coastlines on Hawaii, causing near-shore erosion. Significant damages along much of the western shoreline of Hawaii were caused by a tsunami associated with the devastating Japan earthquake of March 11, 2011.

This report documents the nature of erosion and shoreline migration at the property, based on quantitative measurements and observations obtained through field inspection, aerial photography, satellite imagery, and review of the geologic literature.

Property Location and Physical Setting

The Kailua shoreline has been a hospitable place to live for centuries. Evidence of this is clear from the many smoothly worn, prehistoric, "bait-cups" left in the rocks on the coast. The Frey property is located just to the north of Kahului Bay, a rocky and heavily developed coastline with a relatively shallow fringing reef (see Figures 1 and 2). There are few beaches along this portion of Ali`i Drive which is protected by numerous seawalls. In fact, apart from those beaches as Keauhou and Kahului, those between Kamoa Pt. and Waiaha "seem to have narrowed in the recent past" (Fletcher, Grossmont, Richmond and Gibbs 2002:172). There is no sandy beach at the property (see Photo 1).

The vegetation on site is composed predominantly of Beach Heliotrope, (*Tournefortia argentea*), Hawaiian Hau (*Hibiscus tiliaceus*) and non-native Bougainvillea (*Bougainvillea* sp.), similar in their tolerance for hot and dry coastal environments. Several large stumps are present from previous trees; review of historical imagery suggests these may be remnants of trees that succumbed to the 2011 tsunami.

Photo 1 Frey Property shoreline, view to east.

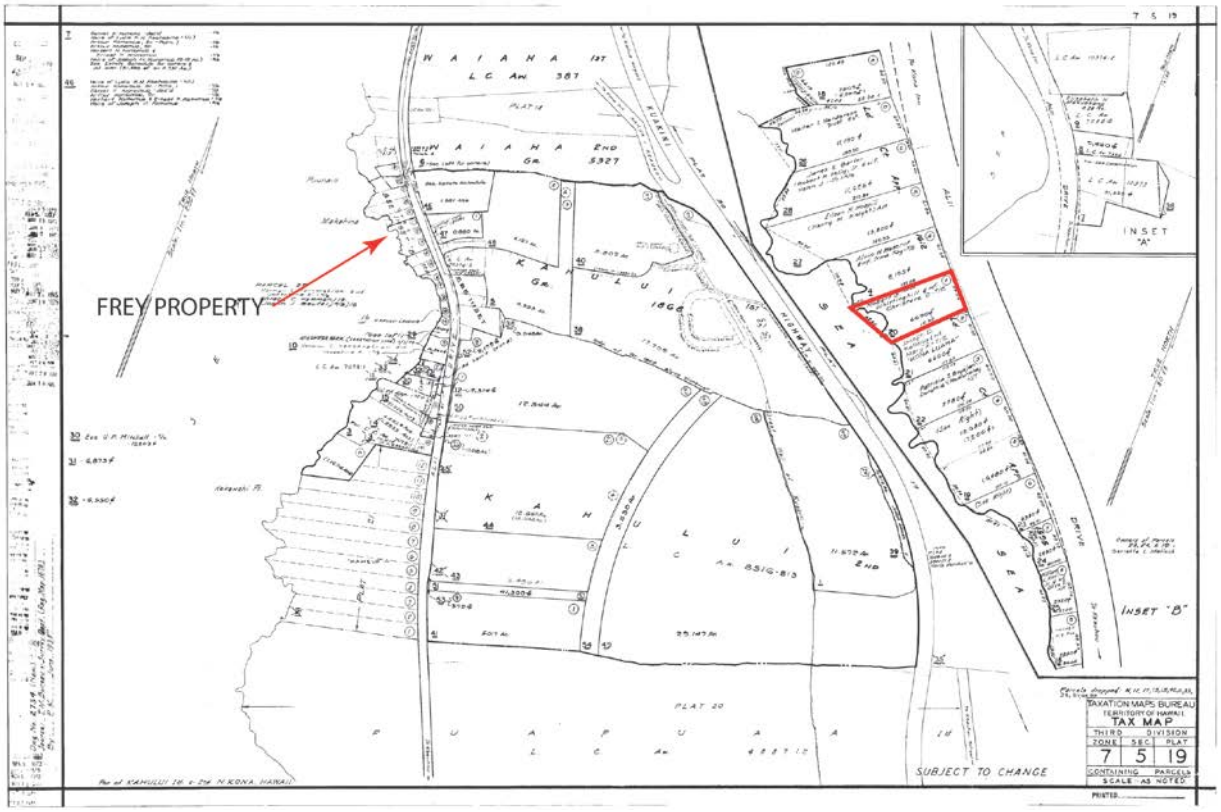

Figure 1 Tax Map Key

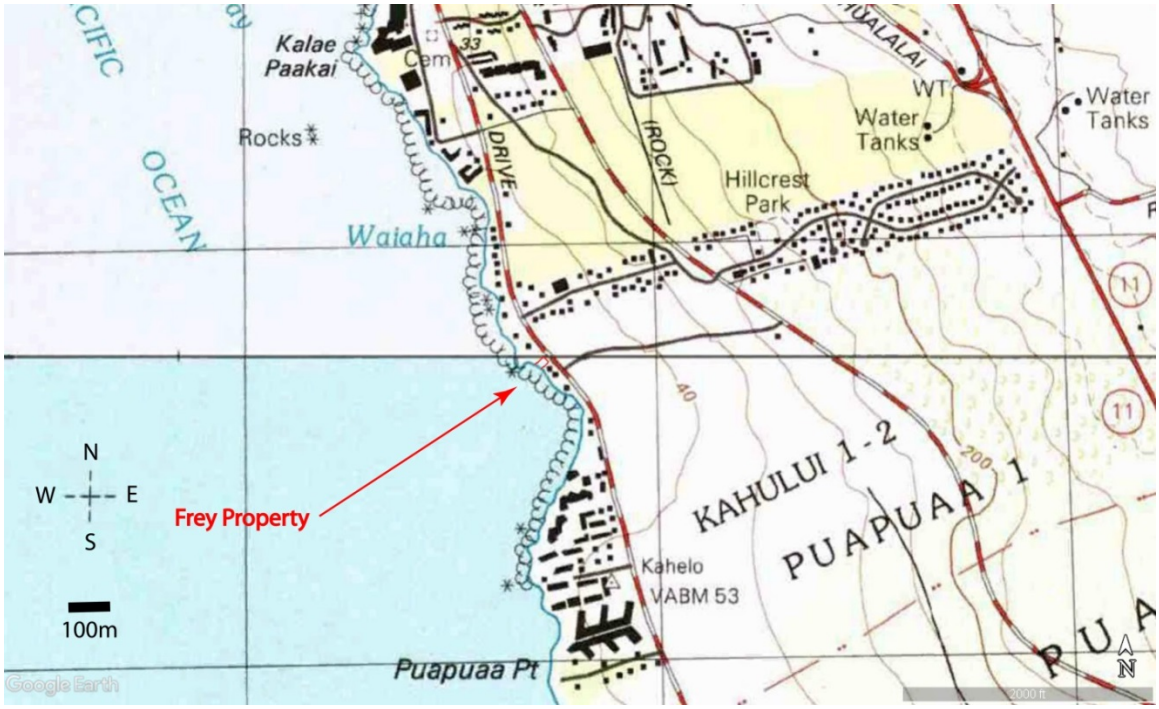

Figure 2 Portion of USGS 1:24k topographic map.

Geological Background

The majority of North Kona District lies at the foot of Hualālai volcano. This volcano last erupted in 1800 and 1801, the Huehue and Ka`upulehu flows (see Figure 3). The subject property, on the other hand, lies on some of the oldest exposed rocks of the volcano. Unit "Qhc" is Pleistocene in age, and likely more than 11,000 years old (Sherrod et al. 2007, Trusdell, Wolfe and Morris 2006, Rubin et al. 1987). This widespread flow of the volcanoes south west flank emanated from summit scoria cones and travelled over nine miles to reach the coast.

Hualālai is thought to be in the post-shield stage of activity, between Mauna Loa and Mauna Kea in terms of her evolution (USGS 2021; MacDonald Abbott and Peterson 1983. There were up to six different vents erupting lava in the last years of the 18th Century until 1801. Two of these lava flows reached the ocean on the west coast of the island. Keahole Airport, located only 11 km (7 mi) north of Kailua-Kona, is built on the larger flow.

Hualālai has not been nearly as active as Mauna Loa or Kīlauea in historic times. However, geologic mapping of the volcano and dating of the flows indicate that 80 percent of Hualālai's surface area has been covered in the past 5,000 years.

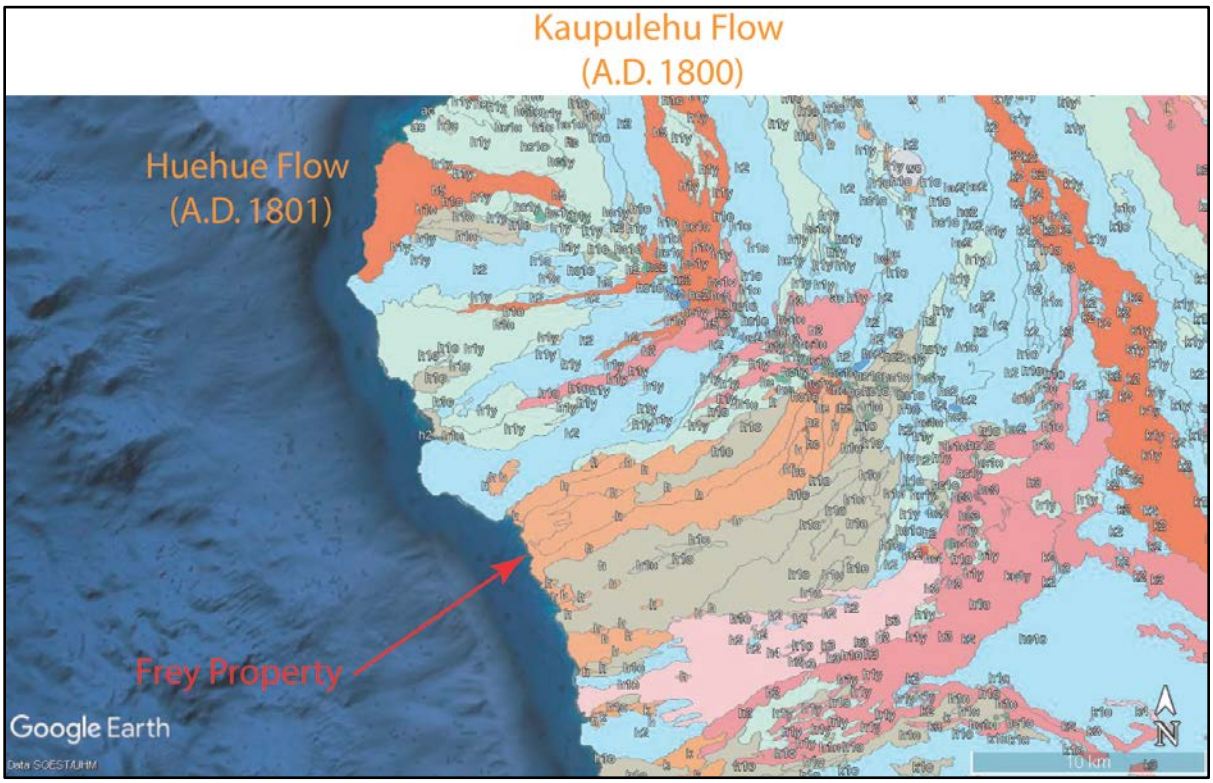

Figure 3 Geological Map

Marine Conditions and Wave Climate

The "wave climate" of Kailua-Kona, HI has been described by Dollar (1982) and Grigg (1998). The wave climate is the combination of conditions including wave energy, frequency, geology and topography of a specific site (see table 1 and Figures 4 and 5). Generally speaking, Kailua-Kona is completely sheltered from the Northwest Trade wind seas that batter the windward side of the islands. Hurricane generated swells can have impacts on the Kailua-Kona coast as can tsunami generated waves. Storm waves associated with regional swells that impact the Kailua-Kona area can be classified into three types:

South Pacific and Indian Ocean storms in the southern hemisphere winter (Hawaii's summer) can generate large south swells that impact the coast.

North Pacific storms in the winter generate some of the largest waves to impact the shoreline, on occasion having wave heights in excess of ten meters. However, these storms must contain a significant westerly element in order to impact Kailua directly, as the islands of Maui, Lanai and Molokai create a sort of wave-shadow shielding west Hawaii.

"Kona storms", locally generated storms and low pressure fronts moving from northwest to southeast, that are extremely unpredictable and variable in strength but can also produce significant waves with periods between 8 – 10 seconds and (deep water) heights from 3 – 5 meters.

North Pacific waves are the largest and most destructive, exceeded only by the potential for large hurricane surf. However, the return interval for very large hurricane events on the island is roughly 40 years, while large winter swells can be expected annually (Grigg 1998).

Major waves were also associated with the March, 2011 Japan tsunami. Major hurricanes in the past 60 years include "Nina" (Dec. 1957), "Dot" (Aug. 1959), "Iwa" (Nov. 1982) and "Iniki" (Sept. 1992). These are discussed in more detail below in General Hazards section.

Any changes in eustatic (relative) sea level rise will have an effect on the wave climate. Basic physics dictates that as sea depth increases the wave height increases proportionately. That is, waves "break" at an average depth of one-half their amplitude, so an increase in in one-foot of sea level rise at a certain spot on the sea floor would correspond to the potential for a six-inch increase in wave height at that spot.

Submarine morphology will have a significant effect on the impact of large waves along a coastline. This has been shown, for example, on Oahu's North Shore. In a study of the movement of large shoreline megaclasts (boulders) between 1905 and 1996, Noormets et al. (2002) demonstrate the effects on emplacement and erosion of major clasts due to differential wave energy. These differences are attributed to the steep slope and ramp-like topography of the North Shore.

Given the dominantly southwest facing coastline at the property, it is vulnerable only to large "Kona Storms". While the (relatively) narrow and shallow off-shore shelf, rising rapidly from

deep water, contributes to the potential for large destructive waves, the fringing reef along this section of coast, making for many popular surf breaks, serve as a buffer to much of their effect.

Wave intensity duration and frequency (IDF) have been mathematically modeled on the basis of historical measurements. For example Sobey and Orloff (1999) present a data for the North-West of Hawaii (bouy NDBC 51001) indicating an average wave height of 2.4 meters with a maximum of 12.3 meters over the period of February 1981 to December 1984.

Table 1. Estimated average unrefracted wave characteristics for three wave types on the west coast of island of Hawaii (bottom slope ≈ 1:8.3)

	Wave period [s]	Deepwater wave height [m]	Deepwater wave length [m]	Breaker height [m]	Breaker depth [m]
South swell	20	1	682	2.4	1.7
North Pacific swell	15	2	384	4.6	3.3
Kona storm	9	6	138	7.7	6.0

Table 1 Characteristics of waves that can impact the west coast of Hawaii Island (Dollar, 1982).

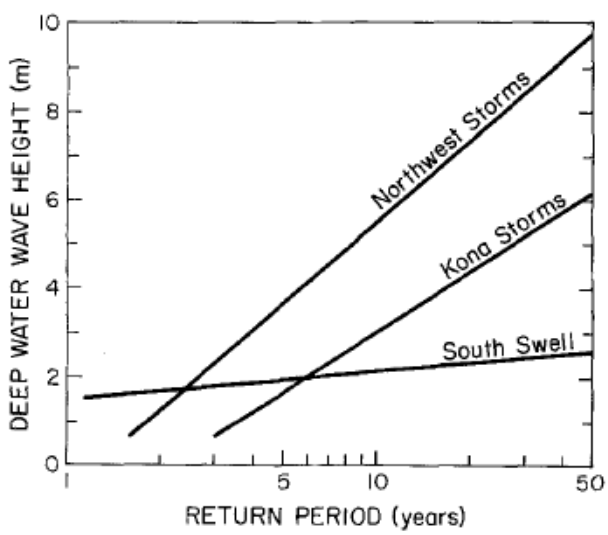

Fig. 3. Plots of deepwater wave heights (upper 10th) as function of average return period of storm events. (From Rochleau and Sullivan, unpublished data, 1981)

Figure 4 Average return period of storm waves on the Kona Coast (Dollar, 1982).

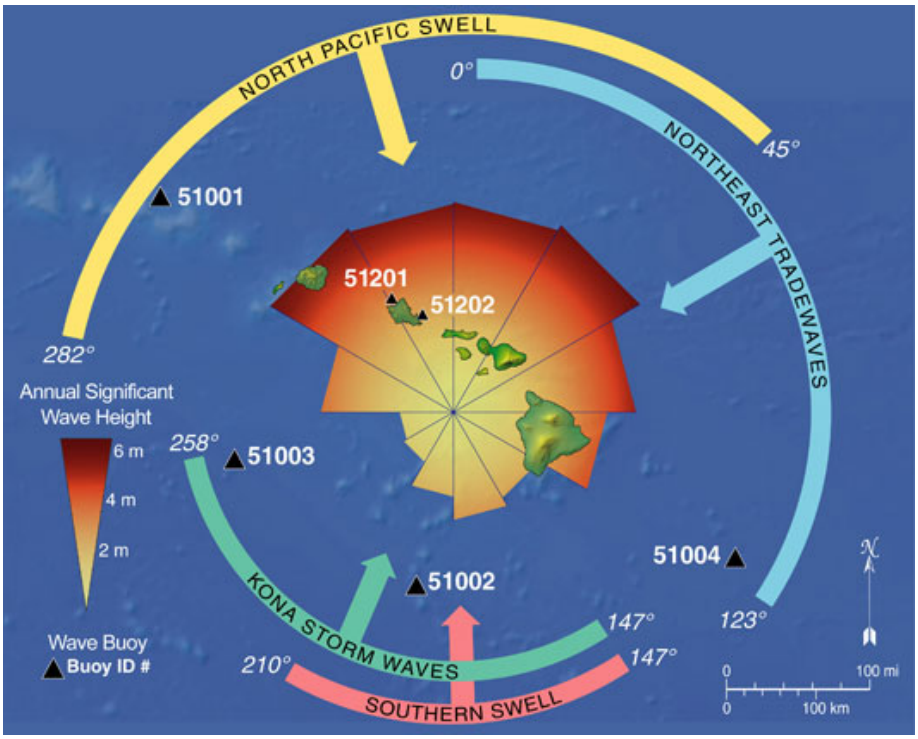

Figure 5 Wave Frequency, Intensity and aspect.

Tidal conditions for this part of the island are summarized in Figure 6. These are based upon data collected at Kawaihae Harbor, the closest, continuously monitored, NOAA tidal station to the property (noaa.gov). The magnitudes of these relative elevations are an important reference for assessing the importance of any measured changes or, in particular their impacts outside the normal range.

The mean range of tidal change (MN) is 1.45 ft. with a Great Diurnal Range (GT) of 2.12 ft. Tidal heights are given as positive and negative values relative to the Mean Lowest Low Water (0.0 feet) and Mean Highest High Water (2.12 feet). Understanding the tidal variation throughout the year is important as any instantaneous "snapshot" of the coastline at a given tide can be misleading on the whole. The effects of tides are dependent on beach slope.

For example, 1 ft. of vertical tidal change will move the tideline 20 ft. horizontally on a 5% slope (a gradient of 1:20 or ~3 degrees). This can have dramatic effects, changing the location and breadth of active weathering. This geometry also applies to changes in sea level. At the study area, the slope is steeper, roughly 1:10, or 10%. Therefore, in theory, an additional 1 foot of water might intrude an additional 10 feet inland. In reality, these relationships are complicated by a myriad of local variables including the nature of the substrate, variations in slope, shoreline aspect, even offshore topography and the supply of sediment to the system, to name a few.

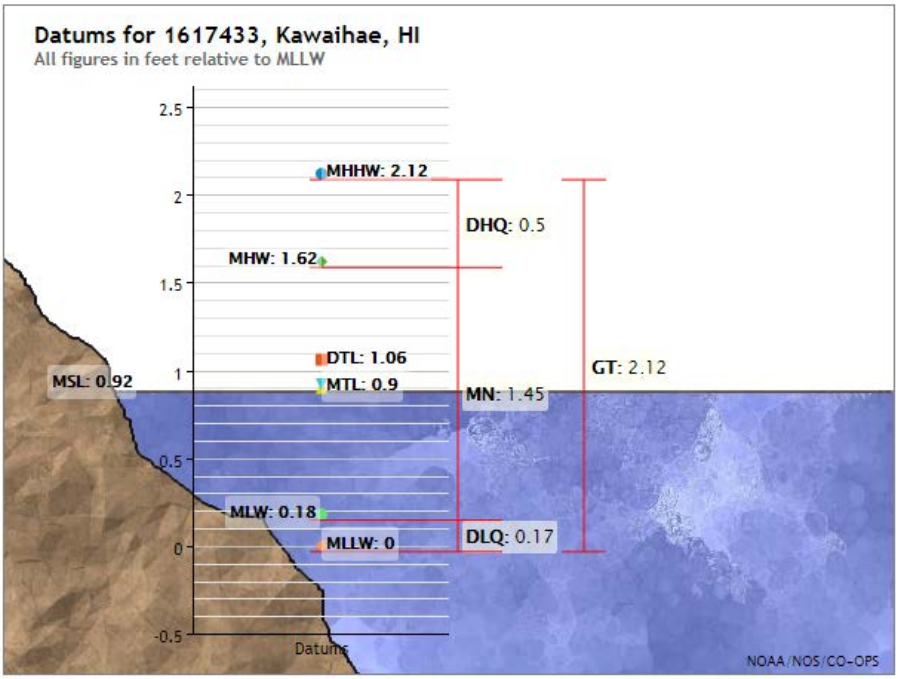

Figure 6 Tidal Variation at Kawaihae Harbor (in feet; NOAA Station #1617433).

Field Observations

The author initially visited the property in February 2021 to make geologic observations and inspect evidence for storm surge erosion. A subsequent visit with a crew of two was made on March 4, 2021. The observations and measurements presented below were collected during a falling tide, which reached a low of -0.2 feet below MLLW during our fieldwork.

Figure 7 Project Area Geology.

The entire property was inspected for evidence of recent erosion. Sedimentary deposits and the underlying geology of the volcanic bedrock was examined with an eye toward understanding the origins of current geomorphology. Five geologically distinctive areas were noted (see Figure 7) these are described and further referenced below. Briefly they include a tide pool (Tp) marine shelf which extends as a spit towards the northwest. Behind this is a low pāhoehoe bench or step (Phh) - an up to half-meter thick layered lava flow on top of which, likely at the line of highest high water (MHHW), is a boulder berm (BB). The shoreline runs roughly along the rear of this berm. Behind these coastline features, the property can be split roughly in half. The north side is a raised area of terraced soil (Trr). It is up to 1.5 meters above the lower lying, sandy (S) alley extending along the southern extent of the property.

Lithology and Structure

Lava substrate

The entire offshore frontage of the project area is underlain by an irregular shelf of dense, near flat-lying pāhoehoe lavas, lavas that form the solid basement

These lavas are part of a single voluminous flow that originated from vents at the summit of Hualālai volcano, 9 miles to the east. The age of this flow, unit "f2f" on the Hualālai geologic map of Moore and Clague (1991) is estimated to be in the range 10-25,000 years. Moore and Clague describe this unit to be an `a`ā flow, with about 8% plagioclase, but along the coast the flow consists entirely of "tube-fed" pāhoehoe, with only about 3% plagioclase and minor olivine. It is thus possible that the flow at the property is not the same flow as labelled by Moore and Clague on their map, but it must be closely related, and is in the same sequence of old Hualālai summit-derived lavas.

This pāhoehoe flow is uniformly dense, even-grained, and is characterized by uniformly distributed, sub-rounded vesicles (gas bubbles), typically .5 - 1mm in size, and commonly stretched parallel to flow surfaces. The vesicles are hematite-lined, and frequently stained yellow-orange near the surface.

These lavas emplaced as multiple relatively thin, complexly inter-fingering flow units, and presently dip seaward about 2 degrees. Because the Island of Hawaii has been subsiding relative to sea level for the past several hundred thousand years (Campbell, 1986, Moore, 1970) this area was far inshore from the coastline that existed when the flows were emplaced.

A fresh sample of freshly fractured rock was examined in the field with a 7x magnifying lupe. The bedrock is composed of a fine-grained, aphanitic pāhoehoe. It is heavily weathered as evident by oxidization, especially in superficial vesicles. These vesicles are abundant and dense, comprising 30 – 40% by volume, they are well rounded and spherical, ranging in size from 0.5 – 1.0 millimeters in diameter. Texturally, the rock has very little "glass" mineralogically, clino-pyroxines are sparse and plagioclase feldspars are evident in fine "sugary" crystals. The rock is devoid of olivine.

A massive pāhoehoe lava flow forms a broad, low coastal shelf fronting the property, with a flat promontory on the north side. The shelf contains several tide pools (Tp); its width varies from a maximum on the north of 20 meters to a minimum of 3.9 meters, centrally. These are low areas where pāhoehoe layers have eroded. The central, circular shaped pool, only 25 – 45 centimeters deep, is characteristic, and visible in Figure 7. This pool is blurry but visible in the 1954 image as well and used as a referent in that analysis (see below). The flow structure does have some horizontal layering from the successive emplacement of relatively thin sheets of lava. The internal layering of the lava flow fronting the property is exposed and mechanically eroded by powerful storm surge waves, and is the source of the rounded boulders found along the shoreline. This contributes to the tabular nature of beach boulders that make up the boulder berm (BB).

Photo 2 Photo Property overview, view to the north.

Unconsolidated Sand and Boulder deposits

Close to the shoreline, the pāhoehoe lava shelf fronting the property is overlain by boulder berm. The sub-rounded to rounded boulders (Photo 3) are derived from mechanical erosion of the pāhoehoe shelf, and are relatively stable in their position – they are only subject to movement by the most powerful storm surge waves that impact the coast. The width of this berm varies from 3.5 – 8.2 meters and is shaped by the focus of wave energy. One influence on its particular contour may be the neighboring seawall which extends far out on to the north side.

A “berm” is any physical feature marked by an abrupt change in the slope of the beach formed by wave action. The make-up of a berm, in terms of variable grain size and texture can tell a geologist a lot about the frequency and magnitude of the waves that formed a berm. In some cases, a berm can form a sort of natural revetment that serves as a wall of large interlocked boulders not cemented together. A lack of fine grained sediments (sand) in the matrix indicates that normal wave energy reaches the toe of the berm. This natural feature provides protection during occasional high surf events, especially when coincident with high tides, for example.

The boulder berm fronting the shoreline is composed of large (.5 – 1.0 meter), sub-rounded clasts with low sphericity. They are well-sorted tabular fragments of the laminated pāhoehoe lava flows, and are between 30 – 75 centimeters thick. Its top elevation is relatively consistent, following the contour on which it lies, it varies between 90 centimeters high on the north end,

135 centimeters in the midsection and 100 centimeters on the south where clast sizes are noticeably larger (to 1.5 meters). While the berm maintains an approximately even vertical height, it varies much more in width. The berm is 3.46 meters wide at the north, 8.2 meters centrally, and 4.16 meters at the south, as a result of wave energy reflecting and refracting in response to local bathymetry, topography, and also influenced by the raised seawall protecting the neighbors pool to the north.

It is notable that several modern concrete slabs of similar size are incorporated in the berm, demonstrating quite effectively the continued mobile nature of the rocks that make up the berm. While the berm itself as a structure is a permanent feature of the shoreline, the individual rocks composing it still move around, are replaced and do move with high energy events. The well sorted clasts lie directly on bedrock and there are no “fines” sand, cobbles or smaller rocks incorporated in to the berm, indicating the high energy nature of waves that piled the rocks there.

At the southern side of the property, marine sands and gravel have been deposited and held behind the berm (S). These are derived from the mechanical and biologic erosion of offshore coral colonies, and are variable as to their quantity and distribution. A review of Google Earth images taken at various times of the year suggest that these sand deposits may be more extensive during summer months, and depleted during winter, when storm surge waves are more common along the Kona coast. Behind the berm these accumulations of poorly sorted sand and gravel-size particles of broken coral and rock form small pockets of sand held in place by the natural revetment (see Photo 4).

HRS 205A defines a “beach” (with respect to coastal zone management and the Special Management Area) as "a coastal landform primarily composed of sand from eroded rock, coral or shell material, or any combination thereof, that is established and shaped by wave action and tidal processes. "Beach" includes sand deposits in nearshore submerged areas, or sand dunes or upland beach deposits landward of the shoreline, that provide benefits for public use and recreation, for coastal ecosystems, and as a natural buffer against coastal hazards."

These backshore deposits provide no current benefits for public use or recreation. They were deposited by the most extreme storm surge, and or tsunami events. Importantly, these sediments are largely stabilized by vegetation established on the substrate, and are buffered from normal wave action and tidal processes by the boulder berm fronting them.

On the northern higher side, terrestrial sediments are mixed into this accumulation of marine sand, debris and flotsam. The surface is heavily disturbed and capped with red-cinder fill. No attempts to profile or expose any stratigraphic sections were made, which could be helpful in determining the geologic history of this shoreline. In addition to the buffering of the berm, the elevation on the north has provided for the preservation of these more consolidated and older deposits. No evidence of recent erosion in the form of raw scarps or exposed roots was noted.

Photo 3 Beach Berm, view to north.

Photo 4 Unconsolidated, sandy "beach" deposits at property southwest, view north.

Erosion Processes

Site-specific erosion setback policies of the new millennium recognize the importance to the island economy of its natural assets, especially those related to beaches and unique coastal resources (Abbott 2013).

Much of the coastal erosion research in Hawaii is focused on sandy beaches, in particular, those of Kauai, Oahu, and Maui. These studies distinguish between long-term (early 1900's to present) and short term (1940s to present) shoreline change. For example, in the most comprehensive study of the kind, Romine and Fletcher (2012) demonstrate that 70% of beaches are erosional over the long term and are retreating at an average rate of -0.11 +/- 0.01 meters per year. However, they also conclude that spatially, change is highly variable (*ibid.*) reinforcing the need for site specific assessments.

The Waikiki, Oahu shoreline has actually migrated seaward, reflecting the high level of human intervention in the way of hardening structures, such as artificial revetments and seawalls, have impacted sediment budgets (Miller and Fletcher 2003). A similar level of intervention has taken place along the rocky shores of Kailua-Kona. However, unlike Oahu (Tavares, Fletcher and Anderson 2020) little research has been done to assess hardening's effect on erosion in West Hawaii.

A distinction needs be made between coastal erosion and beach erosion. There are fewer sandy beaches on the geologically young island of Hawaii, but they do exist, especially as small pockets along volcanic rock coastlines. Nevertheless, it is worth noting the different processes that operate in each case. They are related, but they require different methods to describe. Beaches buffer the coast from the wind and wave energy. An eroding coastline may be in retreat but persist with a fine wide beach fronting it. The fluidity of fine grained sands and their movement across and long-shore, adapt to seasonal conditions. However, if the beach disappears, it's likely the coast will suffer unprecedented losses – not only in material erosion but in ecological function, too. Beach narrowing occurs where sand supplies are restricted or diminished.

Erosion mechanics are controlled by the combined physical forces of wind and water against rock. The lava platform that fronts the entire property serves as a wave buffer. Incoming waves break on the margin of this platform where most of their energy is dissipated so that only wave surges travel over the platform and reach the shoreline.

Interfaces between individual flow units form zones of weakness can allow breaking waves at the platform margin and storm surges that move over the platform to break off rock fragments and move them shoreward.

Original surface features on the lava platform are preserved in many places on the platform showing that little surficial erosion has taken place since the lava flows were formed, and that wave erosion has been minimal.

Coastal Profile

Two vertical profiles were created from measurements taken at or near low tide (see Figure 8). Both profiles are dominated by the boulder berm. The vertical exaggeration of the slope also distinguishes the sandy alley behind the berm on the south with the high terrace on the north. These profiles were taken along the north and south property boundaries and extended to the waters' edge using a hand held optical level and stadia rod, with elevations taken at a minimum of two meters and at every break in topography. The 0.0 meter elevation in Figure 8 represents the sea level at approximately MLLW. Note that tides approaching the mean highest high-water mark (MHHW) can rise up to 2 feet (0.6 meters) above this reference.

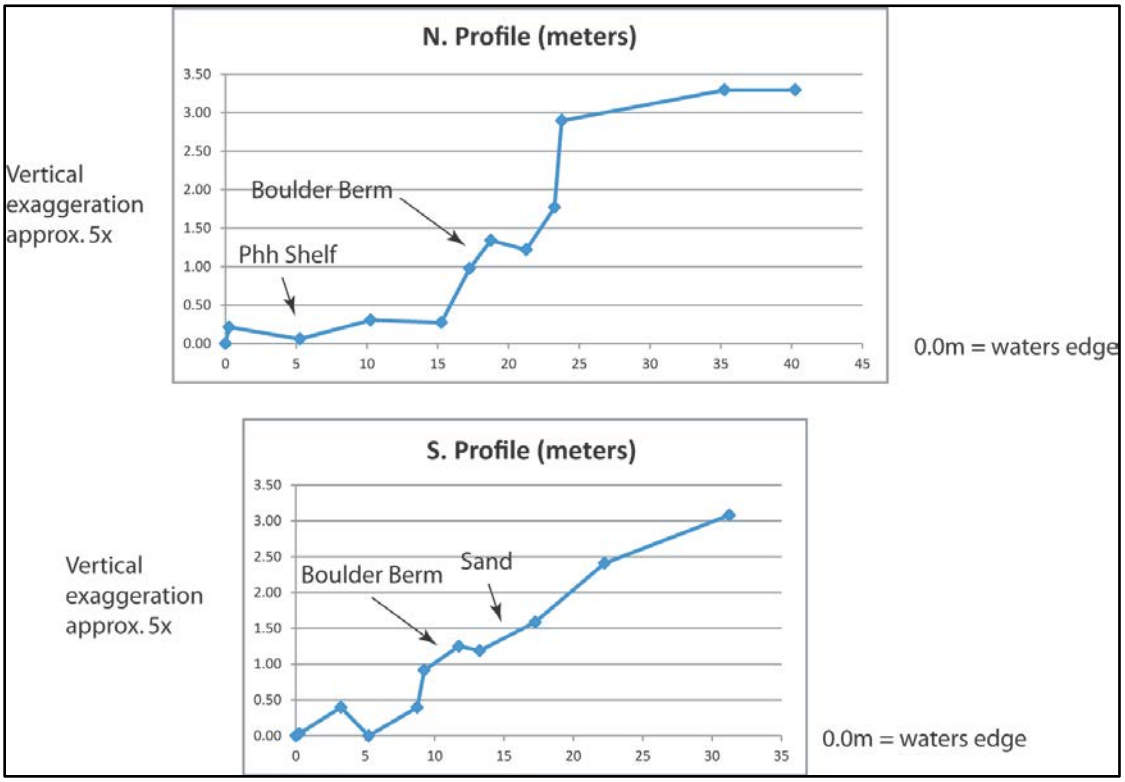

Figure 8 Coastal Profiles

Quantification of Average Annual Erosion Rate

The standard analysis recommended by Hwang et al (2005:60) was employed in this study to estimate the Annual Average Erosion Rate (AAER). Shoreline Change Reference Features (SCRF) were established to measure relative distances on separate aerial photos taken over time. In this case, neither vegetation lines nor beach toe referents are appropriate and large scale rock outcrops and volcanic features were used.

There are two major sources of error associated with these methods. The first is error associated with measurement which might include variation in measurement of SCRF's. No corrections were attempted for warp/distortion inherent in uncorrected photos, for example. For this reason FEMA recommends increasing the rate to account for these errors, or to bracket the estimate by one standard deviation of the mean.

The second possible source of error is due to sheer uncertainty that past conditions reliably predict future ones. This unknown is especially relevant when future sea level rise is taken in to consideration. No similar statistical adjustment can be made for basic uncertainty.

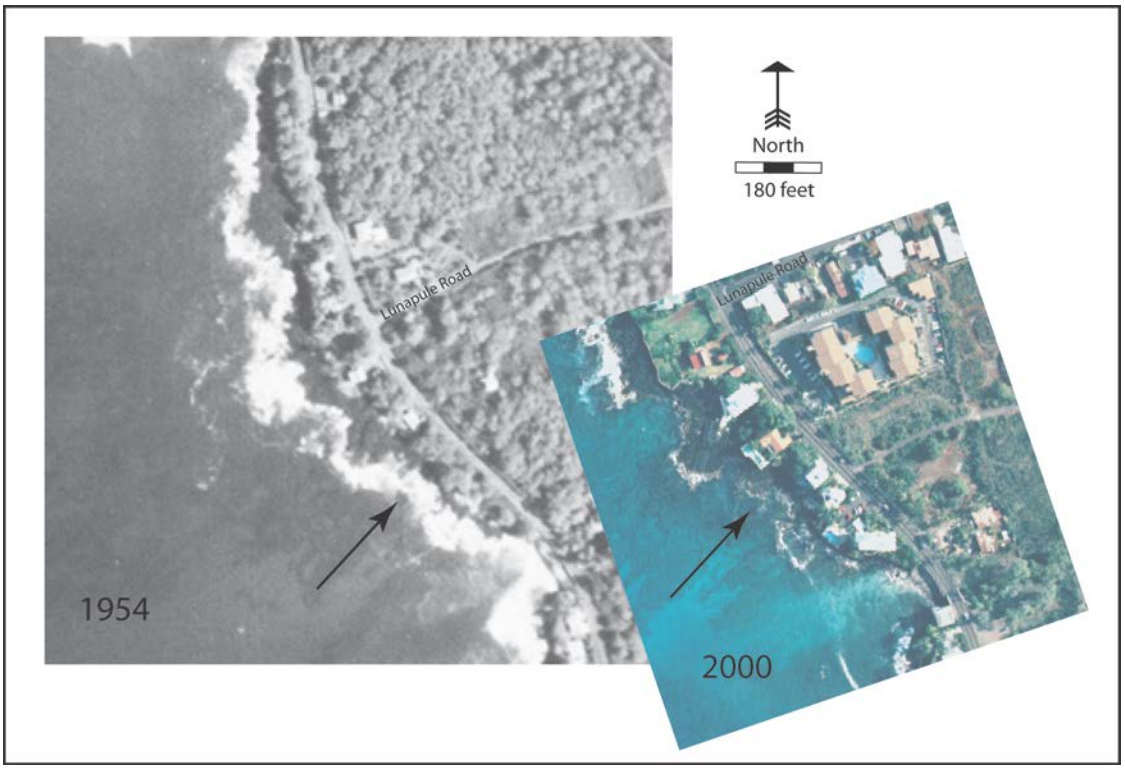

Figure 9 Comparison of coastlines, 1954 and 2000.

Available aerial photographs of the area date between 1954 and 2000 and are listed in Table 2. In addition, a current Google image (from 2013) was referenced.

Year	Ref No.	Flight Line	Frame	Agency
1954	017-1225	2	26	NAVY
1954	017-1208	2	9	NAVY
1965	068-5632	7CC	85	USDA EKL
1976	006-186	3	224	USGS VEEC
1976	006-187	3	225	USGS VEEC
1977	006-336	8	58	USGS VEEC
2000	002-6		2943	NOAA

Table 2 Aerial Photographs.

The scale of the available photos provides an excellent extent of view from a high altitude (see Figure 9). However, they lack somewhat in resolution for small areas such as the study site. Digital images are made up of individual pixels; these are the smallest units in the matrix of raster data that compose the image. The spatial resolution of the image determines the smallest possible feature/unit that can be detected.

The spatial resolution of the photos referenced would not reveal changes of less than about 5 feet, as calculated from the 1954 photo - in which the average pixel is 5.17 feet wide. This was determined with use of SCARF's (n=3) in which pixels were counted over a known referenced distance.

Inspection of these photographs indicates that the general features of the coastline fronting the property have not changed in that time (59 years). In fact the configuration of coast and shoreline features correspond to those found in the field today (67 years).

This method, yields an *average* AAER of 0.93 inches per year (62 inches / 67 years).

As mentioned above, Hwang et al. (2005) suggest including one standard deviation of the mean to account for methodological error. The standard deviation of the SCARF measurements was 1.2 feet (or, 14.4 inches over the same time) giving an error estimate of +/- 0.215 inches per year.

Conditions on the ground did not indicate that any major active erosion is taking place on the property. Interpreting this statistical result is somewhat problematic. That is, this study did not measure 62 inches of erosion in the past. Instead, the confounding lack of photo resolution requires us to rely on negative evidence. Geological (qualitative) inspection suggests that while not zero, real erosion rates on the property are less than the photogrammetric evidence can prove.

Potential Effects of Future Sea Level Rise and Island Subsistence on Shoreline Migration.

There is general consensus that the sea is rising, though estimates of the rate vary widely. The University of Hawaii Sea Level Center maintains a network of tide gauges across the island chain. Analyses of these historical records show, interestingly, that sea level is rising at different rates on different islands. Because of the Big Island's youth it has not achieved an equilibrium balance with the earth's mantle on top of which it is built. As such the lithosphere flexes underneath and responds to this weight by sinking. Sea level Rise at the Hilo tide station has been measured to occur quite rapidly at a rate of 1.5 inches per decade (0.15 inches per year) (COEMAP 2000).

An overall global rise in sea level of 3.3 feet by the end of the 21st century has been proposed by Fletcher et al (2010), although locally these figures vary greatly in the short term because of climatic factors. The U. S. Army Corps of Engineers maintains a website with a "Sea level Change Calculator" based on historical tide station data that provides low, medium and high probability outcomes for sea-level rise over the next century. Their estimates for sea level rise over the next 80 years at Hilo, Hawaii (Figure 10) vary from 1 to 5 feet.

Hwang et al (2007) use a figure of 0.16 inches per year for global sea level rise in their assessments, but these figures do not account for the apparent sea level rise relative to shorelines on the Island of Hawaii. Relative sea-level rise on a sinking island is a result of the combined global sea level rise and land subsidence. Because of isostatic settling into the underlying mantle, the entire island of Hawaii has been subsiding since volcanoes began growing in this area over a million years ago, at rates that have been estimated at between 1.8 and 2.4 mm/yr. for the past several thousand years (Campbell, 1986). A drowned reef terrace west of Kealakekua Bay, 10 miles south of the property, formed about 13,000 years ago, but is now at 150 m water depth, showing that this area has subsided at an absolute rate of 1.8 - 3 millimeters per year (Moore and Fornari. 1984).

The Intergovernmental Panel on Climate change report from 2014 (IPCC 2014) placed the rate of global sea level rise at 3.2 millimeters per year (0.126 inches). Studies based on historical tide records have shown a rise of 20 centimeters since 1900 (7.87 inches). An estimate from 2006 based on records extending back to 1870 found a 20th C. rate of 1.7 +/- 0.3 millimeters per year (0.067 +/- 0.012 inches) accelerating at 0.13 +/- 0.006 millimeters per year (Church and White 2006). Recently, new methods based on satellite data have definitively measured the acceleration of this rate over time. The implications of this accelerating rate are alarming, implying that "100-year" floods may occur annually by the mid-21st Century. (Voosen 2020).

New technologies have been applied and new theories proposed by scientists in the effort to better understand the dynamics of climate change and in order to better interpret a global average for local circumstances. For example, it's been observed that coastal locations are far more variable than the open ocean. Many factors above and beyond the melting of glaciers and

polar ice sheets are involved in sea-level rise that make predicting this variation at specific locations difficult. These include the inputs of fresh water, the motion of the land itself, and even large-scale weather patterns such as ENSO (El Nino) events. The significance for sea level rise of the thermal expansion of bodies of sea water under warming conditions has only recently been appreciated or studied with precision (Voosen 2020).

As a general law of physics, heated water expands in volume. In fact, this expansion is gradual at first but then exponential with increasing temperature. This dynamic adds another layer of variability that must be accounted for in assessments of local sea level rise (Widlansky, Long and Schlosser 2020). In fact, the thermal expansion of sea water has been argued in Hawaii to account for some of the difference in sea level change that others attribute to subsistence. Based on tidal records taken in Hilo and Honolulu since 1946, sea level on the Big Island has risen 1.8 +/- 0.4 millimeters per year faster than on Oahu (or, 0.71 +/- 0.016 inches per year faster). GPS estimates taken over a period of 5 - 10 years may indicate a much smaller relative change between the two islands (Caccamise et al. 2005). However, it is more likely that rates of subsistence are subject to variability at a scale that would not be accounted for over such a short time frame. Subsidence (discussed below) continues to be a more accepted and parsimonious explanation for the differences.

The March 11, 2011 Tohoku earthquake and subsequent tsunami served as a valuable lesson. Centered in Honshu, Japan, the tsunami inundated many stretches of North and South Kona Districts. Pu`u Honua o Honaunau (City of Refuge), for example, was inundated by 1.06 meters (3.48 feet) of water. However, this unfortunate disaster did allow for more precise estimates of losses under both more and less severe conditions related to high water events including sea level rise (Johnson, Marrack and Dolan 2015). At the National Historic Park, GIS models were constructed which show that historic resources and archaeological sites, once secure from flood, will be seriously threatened even by sea level rise of less than 0.5 meter (1.64 feet). The situation is exacerbated at PHNHP by saltwater intrusion into an area with an abundance of brackish tidal pools and anchialine (brackish) ponds. This groundwater, being less dense than sea water, “floats” on top of it. During extreme tides these ponds can overflow and flood - a situation that is magnified by sea level rise and increasing intrusion into the water table. The current project area is not subject to such groundwater factors that might cause concern.

Island Subsidence

Perhaps even more influential in the unique volcanic context of the Hawaiian Islands is the rate of land sinking (subsidence due to lithospheric flexure) as it contributes to relative sea-level rise. This has long been recognized in Hawaii and on the Kona coast in particular. At Pu`u Honua o Honaunau (City of Refuge) in south Kona, archaeologists and geologists working together estimated a rate subsidence of about 1 foot per century (0.12 inches or, approximately 3 millimeters per year). This rate was based on the drowning of dated archaeological features such as petroglyphs. These scientists recognized that this part of the island was vulnerable to sea-level rise greater than global averages might suggest (Apple and Macdonald 1966).

More recent and precise geological estimates of the subsidence of the Big Island are instructive and confirm these early estimates. Drowned reefs, which form at species specific depths on dated underwater lava flows in the northwest of Hawaii Island have been used to calculate a regional rate of subsistence of 1.8 – 3.0 millimeters per year (Moore and Fornari 1984) over the past 255,000 years. This estimate was refined by the dating of the coral reefs themselves, extended back over a period of 475,000 years and concluded to be 2.6 millimeters per year (Szabo, Moore and Simmons 1991). Using a 25.8 meter thick rock core from a drill site near Hilo, geologists (Moore et al. 1996, Lipman and Moore 1996) confirm the estimate and conclude that lower rates of lava accumulation in the last 100,000 years has limited lava delta deposition. This marks a trend in which Mauna Loa's capacity for vigorous growth has been diminished and is no longer able to maintain her size above sea level.

Erosion is clearly related to sea level rise. However the relationship is not straightforward, it is common sense to predict that erosion increases with rising water, but by how much is highly dependent on local factors. As already mentioned, most research in this area in Hawaii has focused on sandy beaches, where the outlook is not good. After accounting for sediment supply and anthropogenic changes, Romine, Fletcher, Barbee, Anderson, and Frazer (2013) established that differing rates of erosion between sites on Maui and Oahu, is best explained by differing rates of subsidence (directly positively correlated with rates of sea level rise). The effects of rising sea levels are predicted to double the erosion rates of Hawaiian beaches by the mid-century (Anderson, Fletcher, Barbee, Frazer and Romine 2015). Whether rocky coasts in Hawaii might also double their rates of retreat is an open question.

The Bruun Rule, (Bruun 1962) is a relatively simple, mathematical equation that predicts the distance of shoreline retreat, assuming a linear relationship between it and sea level rise. It was developed for sandy beaches. Unconsolidated sandy sediments respond quickly (even seasonally) and homogenously (across great lateral distances) to water level variability. Therefore, such simple models are not appropriate for rigid, rocky shorelines such as those found in the project area. Hard coasts respond to external forces in a more stepwise (not linear) manner, with long periods of equilibrium interrupted by dramatic punctuated changes. They are characterized by sudden unpredictable rock failures, not gradual shifting of sands. These stochastic processes make predictions into the future very difficult.

Unlike situations typical of sandy shores, rocky coasts do not respond, Bruun-like, over the short term, simple geometric models relating vertical rise and horizontal movement based on average slope, for example, are prone to over simplification. Statistically, variation around the mean will be much higher for rocky shores, and the probability for these outliers means that no simple, linear, projections can be made relating shoreline movement and sea-level rise. Despite the inability to calculate a precise future quantity, it is logical to assume a positively reinforcing relationship. For this reason, Hwang et al. (2005:65) argue that AAER used for setback determinations be increased by an arbitrary factor of 10%.

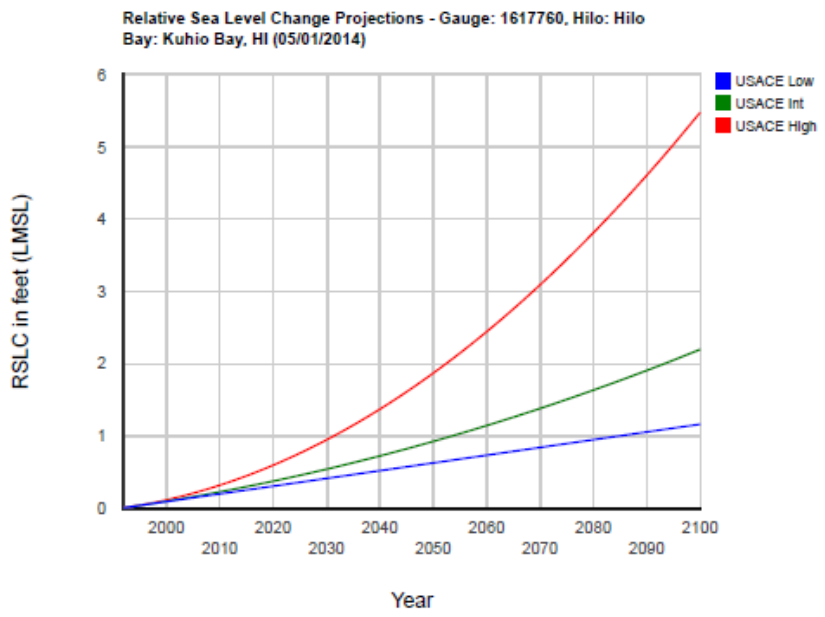

Figure 10 Projected sea level change at Hilo (http://www.corpsclimate.us/ccaceslcurves.cfm).

The uncertainty of the impacts of climate change on local conditions including the frequency and magnitude of severe weather events is illustrated in some global climate models. For example, Cox and Swail (2001) ran a 40-year global wave simulation in an attempt to predict the effects of climate change. Globally, they conclude, we see areas of both increasing and decreasing wind and waves with a pronounced difference between equatorial and higher latitudes. In the last half of the 20th Century, mean annual wind speed has *decreased* for the area around Hawaii on the order of -2.0 knots and mean annual wave height has similarly declined by 0.4 - 0.6 meters (see Figure 11, blue areas), whereas in the some regions (yellow areas) winds *increase* by the same order of magnitude and waves have similarly grown by up to 0.6 – 0.8 meters.

The estimates of global sea level rise vary by as much as a factor of six (see Figure 10 for the U.S. Army Corps' range of estimates). The average global estimate, of those summarized above (n=5, see Table 3) is a rate of 0.19 inches per year (4.8 millimeters per year). If we take only the local conditions associated with subsidence which is known to contribute 0.102 inches per year (2.6 millimeters per year) then an overall vertical rise in sea-level relative to the study property of 0.292 inches per year can be expected (7.4 millimeters per year).

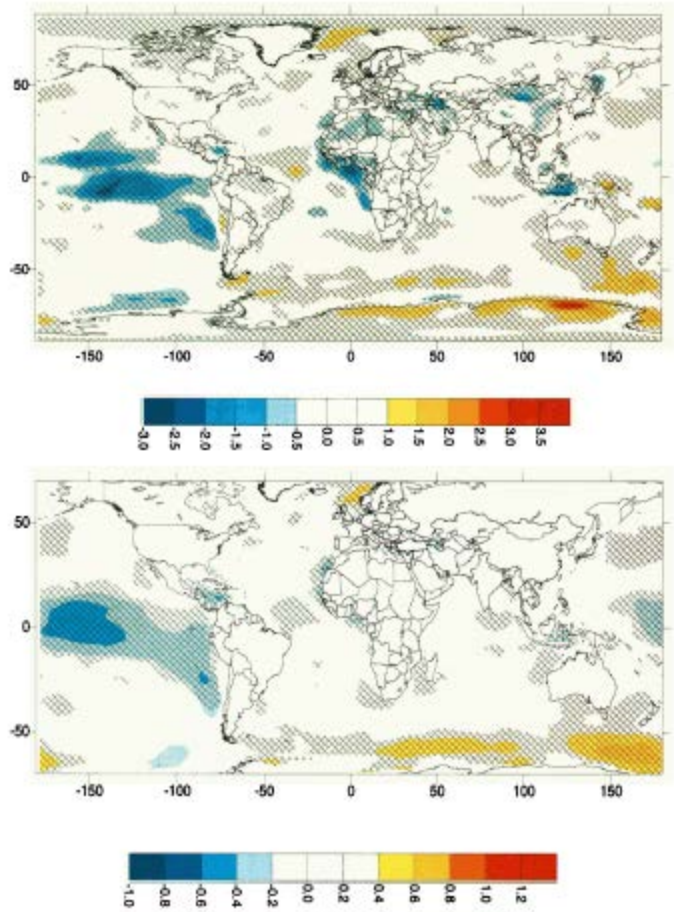

Plate 5. (top) Inferred change in mean annual wind speed and (bottom) wave height 1958–1997 with 99% statistical significance.

Figure 11 Historical changes in wind speed and wave height (Cox and Swail 2001:2322).

Reference	in/yr	mm/yr
COEMAP 2000	0.15	3.81
IPCC 2014	0.126	3.20
Church and White 2006	0.067	1.70
Fletcher et al 2010	0.44	11.18
Hwang et al 2007	0.16	4.06

Table 3 Summary of global sea level rise estimates.

General Coastal Zone Hazards.

Hwang (2005) recommends that all hazards facing coastal areas, not just erosion, be considered when planning for land-use and coastal construction in Hawaii. Fletcher et al. (2002) portray generalized hazards assessments for long areas of Hawaii's coastlines; they rate the specific hazards for the area of South Kona fronting the property as follows (Table 4).

Hazard Type	Relative Threat	Scale (1-4)
Tsunami	High	4
Stream Flooding	High	4
High Waves	Medium-low	2
Storms	Medium-high	3
Erosion	Medium-low	2
Sea Level Change	High	4
Volcanic/Seismic	High	4
Overall Hazard Assessment	High	6 (on scale of 1-7)

Table 4 Natural hazards impacting the coastline fronting the KR Property (from Fletcher et al. 2002:173).

Changes in sea-level and the potential effects on wave climate have been discussed at length above. The most significant contributors to the overall high rating of 6 on a scale of 7 is the high levels of development at very low elevations relative to sea level. In addition, volcanic and seismic hazards and the impacts of strong Kona storms on areas below the steep slopes of Hualālai contribute to this relatively high overall hazard assessment. These are discussed further below.

Volcanic/Seismic Hazards

The Property is located in Lava Flow Hazard Zone 4 of Wright and others (1992), but is in an area not impacted by lava flows in over 10,000 years. Nevertheless, the steepest projected descent paths from the summit of Hualālai Volcano are coincident with the Honuaula and Waiaha watersheds (Kauahikaua *et al.* 2016) the latter of which trends directly towards Kailua Town.

Earthquake activity beneath the volcano has also been low in current memory. In 1929 though, a month's long series of worrisome tremors, including two 6.5 magnitude earthquakes,

indicated that magma continues to be intruded into the mountain. Hualālai is likely to erupt again (USGS 2021; MacDonald, Abbott and Peterson 1983).

Stream Flooding Hazards

The younger character of these recently emplaced lavas affects island hydrology. Risks for severe stream run-off are higher on older less porous and weathered rock, where saturation is more likely.

According to data compiled by Fletcher et al. (2002), there have been 21 major storm events causing stream flooding and significant damage in the vicinity of Kailua Kona over the past 80 years. This is an average of about one event every four years. However, these storms have occurred as frequently as twice a year. On the other hand between 1968 and 1974 there were no notable flooding disasters.

This type of risk increases to the south, especially south of Keahuolu, as the steep slopes of the volcano end their descent closer to the oceans' edge.

Tsunami

Hawaii's geographic location in the middle of the Pacific leaves her particularly vulnerable to tsunami from any number of directions. Between 1896 and 1960 there were at least seven significant events that affected Hawaii. Two were generated by earthquakes centered in the Aleutian Islands, two from tremors in Japan, and one each from seismic events that happened in Tonga, Chile and Kamchatka. These tsunami created local run-up heights recorded between 2 and 11 feet.

Figure 12 Google images pre- (left, Sept., 2006) and post- (right, July, 2011) Tohoku Tsunami.

More recently, the effects of the 9.0 magnitude, March 11, 2011 “Tohoku earthquake” and the tsunami it generated – that same that destroyed the Fukushima nuclear power plant and devastated Japan –were felt here. The Tohoku tsunami overtopped Ali`i Drive and caused significant damage in West Hawaii. Note in Figure 12 the notable change in vegetation and the extent of the sandy (S) deposits across the property between 2006 and after the Tohoku Tsunami in 2011.

Hurricane and Storm Surge

Perhaps the largest hurricane to strike Hawaii in recent memory was “Iniki”. She came ashore on Kauai on September 11, 1992. This category 4 system had sustained winds measured up to 143 miles per hour and created a storm surge and waves that pushed water as much as 30 feet above it’s normal level (Juvik and Juvik 1998).

“Storm surge” is properly defined as a temporary rise in sea level, not just over-wash from high seas. On the contrary, storm surge involves the actual raising of the ocean associated with extremely low barometric pressures and onshore winds that can “stack” the ocean to unanticipated heights.

Conclusion.

The Average Annual Erosion Rate for the property was calculated to be less than 0.92 +/- 0.21 inches per year and a rise in relative sea level of up to 0.292 inches per year is a reasonable value to assume for the near-term future in this area.

At this rate, effects on the shoreline fronting the property should be anticipated in its expected lifetime. The near shore reef and pāhoehoe coastal shelf do offer protection with waves breaking at their margins. However, seasonal extreme tides and ill-timed storm surges may become increasingly problematic if the boulder berm is increasingly subject to overtopping.

"Shorelines" are defined in Hawaii as "The upper reaches of the wash of the waves, other than storm and seismic waves, at high tide during the season of the year in which the highest wash of the waves occurs, usually evidenced by the edge of vegetation growth, or the upper limit of debris left by the wash of the waves" (HAR §13-5-2). The "Certified Shoreline" as staked out on the Property is above the highest tide and normal wave level, although sandy marine deposits indicate wave energy and floodwaters do occasionally impact the lower-lying, southern part of the property.

Mean sea level is not the only consideration as flooding does not often occur under average conditions. In fact, it is the level of high water influenced by tides and meteorological forces that matters. It is critical that adaptation measures accommodate these extremes (Marbaix and Nicholls 2007). Depending on the region these water levels can be significantly above mean sea level. As reviewed above, the mean highest high water (MHHW) in the project area is 2.12 feet (or, 0.65 meters) above mean lowest low water (MLLW), a 0.0 foot tide. Storm surges at high tide will add more depending on their severity (see General Hazards).

Geological *hazards* are simply particular phenomenon; these are quite a different thing than the *risk* that various hazards present to people. Risk must account for the human dimension (Lockwood and Hazlett 2021). In a systematic and holistic assessment of risk four factors must be taken into consideration. This report outlines the hazards (H) to the property as well as the vulnerability or, fragility (F) of this particular spot to the itemized hazards.

Significantly, this report does not evaluate either the value ($) or preparation (P) of the proposed project, which is beyond its' purview. This report does provide reasonable and empirically based estimates for the variable shoreline hazards present at the project area and how vulnerable (F) the environment is to specific threats from nature.

Perhaps more important are the remaining two variables that affect risk. The value ($) of the property is a major consideration - the lower the value the lower the risk. This trade-off, on the other hand can be tempered by thoughtful, long-term planning and mitigation in the form of preparedness (P). So, in the terms above:

$$R = H * \$ * (F - P)$$

The structure design can have a major impact on the calculation of tradeoffs between cost and risk. For example, elevating a building to mitigate storm surges and flood damage exposes it to other hazards such as hurricane winds, or seismic shocks. However, these considerations are beyond the purview of this report.

The two primary goals of this study were met. These included the estimation of a maximum local Average Annual Erosion Rate (0.93 +/- 0.21 inches per year) and an assessment of potential sea-level rise at the property (+0.292 inches per year). Aside from the logical, positively reinforcing effect that rising seas may have on historic shoreline migration, any precise quantification of future rates of migration along these rocky shores remains speculative. Impacts of future climate change are very difficult to predict, Hwang et al (2005:65) suggest that an arbitrary factor of 1.1x (10%) be added to the AAER to adjust for sea level rise, which would seem prudent in this case.

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DRAFT ENVIRONMENTAL ASSESSMENT

Frey Single-Family Residence
Special Management Area Major Use Permit
and Shoreline Setback Variance

Appendix 2
Archaeological Field Inspection

SCIENTIFIC CONSULTANT SERVICES Inc.
Hawai'i Island Office: PO Box 155 Kea'au, HI 96749

June 7, 2021

Gregg Frey
10220 181st Ave SE
Issaquah, WA 98027-5496
gwfrey57@gmail.com

Re: Archaeological Field Inspection Letter Report for a 0.153-acre (6,690 square foot) Property [TMK: (3) 7-5-019:020 Located in Kahului 1st Ahupua'a, Kailua, North Kona District, Hawai'i Island, Hawai'i.

Aloha e Mr. Frey:

At your request, Scientific Consultant Services, Inc. (SCS) conducted an archaeological field inspection (AFI) to determine the presence or absence of archaeological sites on a your 6,690 square foot (0.153-acre) property referenced in the subject heading above (Figure 1 through Figure 3]. The AFI was conducted as part of supporting documentation for a County of Hawai'i Planning Department permit application to build a single family dwelling on the property (Figure 4). The 0.153-acre parcel is located at 75-5956 Ali'i Drive and is bounded to the north and south by vacation rental buildings, to the east by Ali'i Drive, and to the west by Kahului Bay. The entire parcel was surveyed for the AFI study.

Project Area Environmental Background

Parcel 020 is located along the coastline between 0 to 10 feet (0 to 3 meters) above mean sea level. The ground surface substrate is Hualālai pāhoehoe dated to more than 10,000 years before present (Wolfe and Morris 1996). Sato et al. (1973:52) lists a single soil type, Waiaha series (WHC) extremely stony silt loam, in the region of the project area. A visual inspection of the sediment present in the project area identified primarily sand (coral and marine shell based), waterworn gravels, cobbles and small boulders, and waterworn coral fragments. Mean annual rainfall is 30-40 inches. There are no major drainages or gulches on Parcel 020.

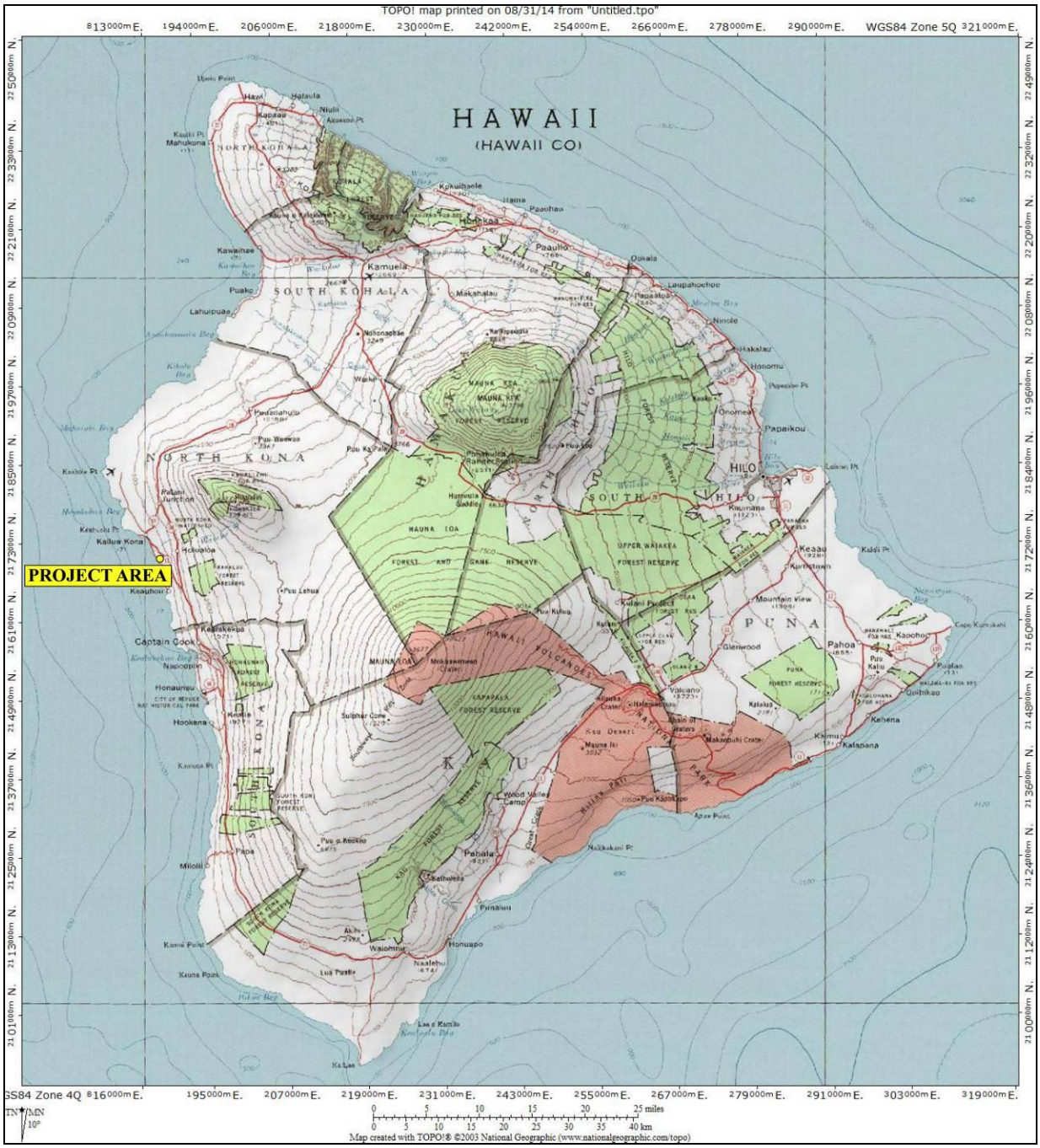


Figure 1: 5,500 K-Series Map of Hawai‘i Showing Location of Project Area (National Geographic Topo!, 2003. Sources: National Geographic Society, USGS).

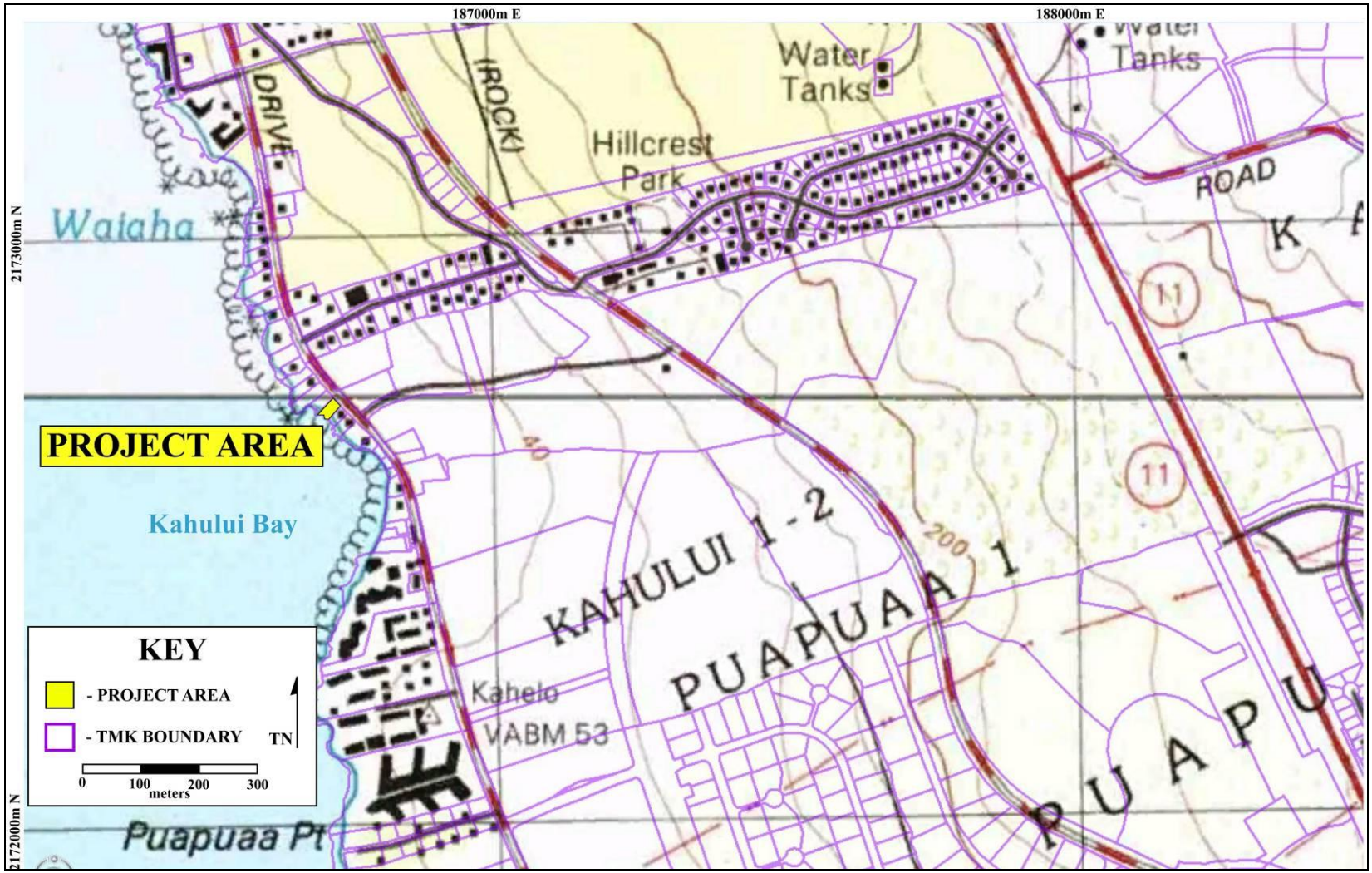


Figure 2: 7.5-Minute Series USGS Topographic Map Showing Location of Project Area Shaded Yellow (ESRI, 2011. Sources: National Geographic Society, USGS Kailua and Kealakekua Quadrangles).

Figure 3: Aerial Photograph Showing Parcel 020 Project Area Boundaries in Yellow (Google Earth, 2013 Image. Kailua, HI, 5Q 186722m E 2172715m N).

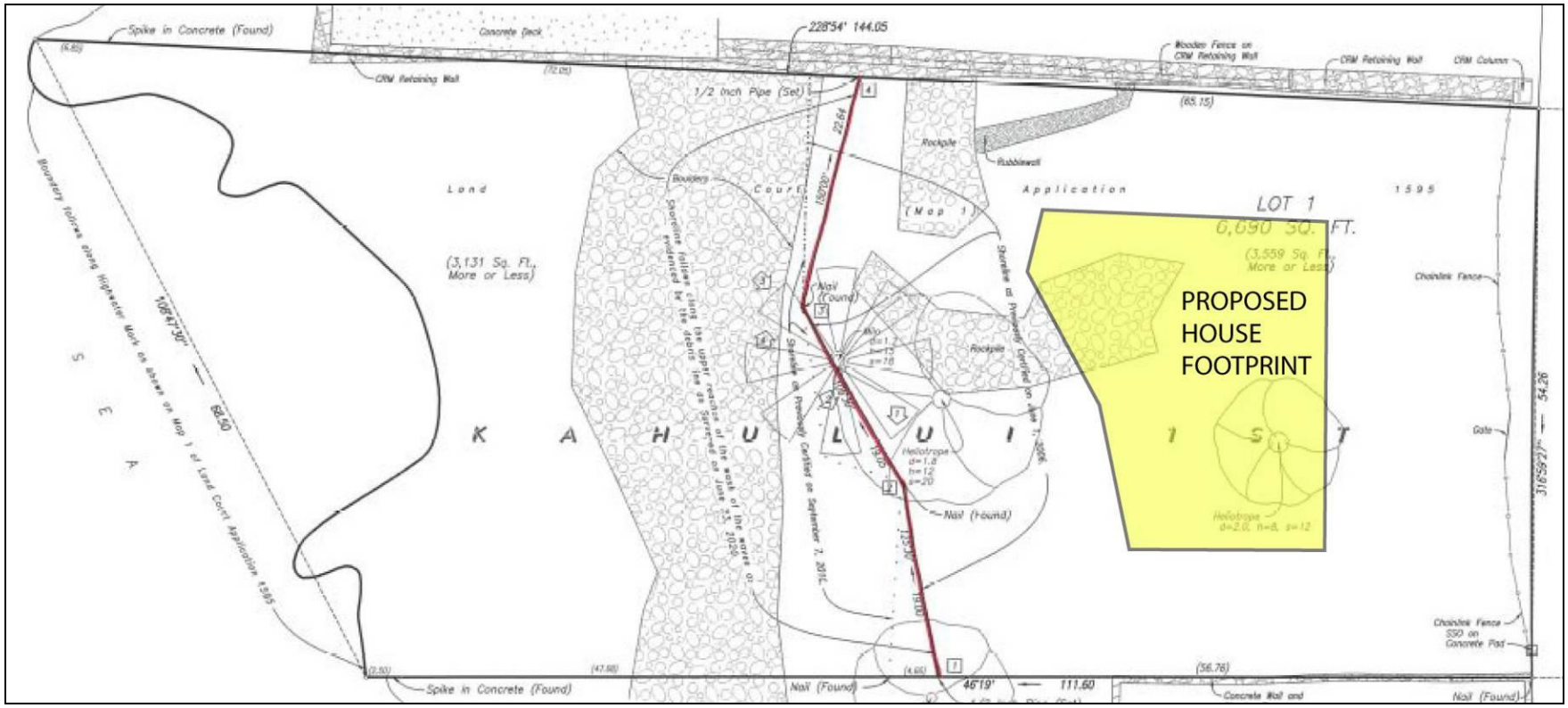


Figure 4: Parcel 020 Survey Plat Map Showing Location of Proposed Single Family Dwelling.

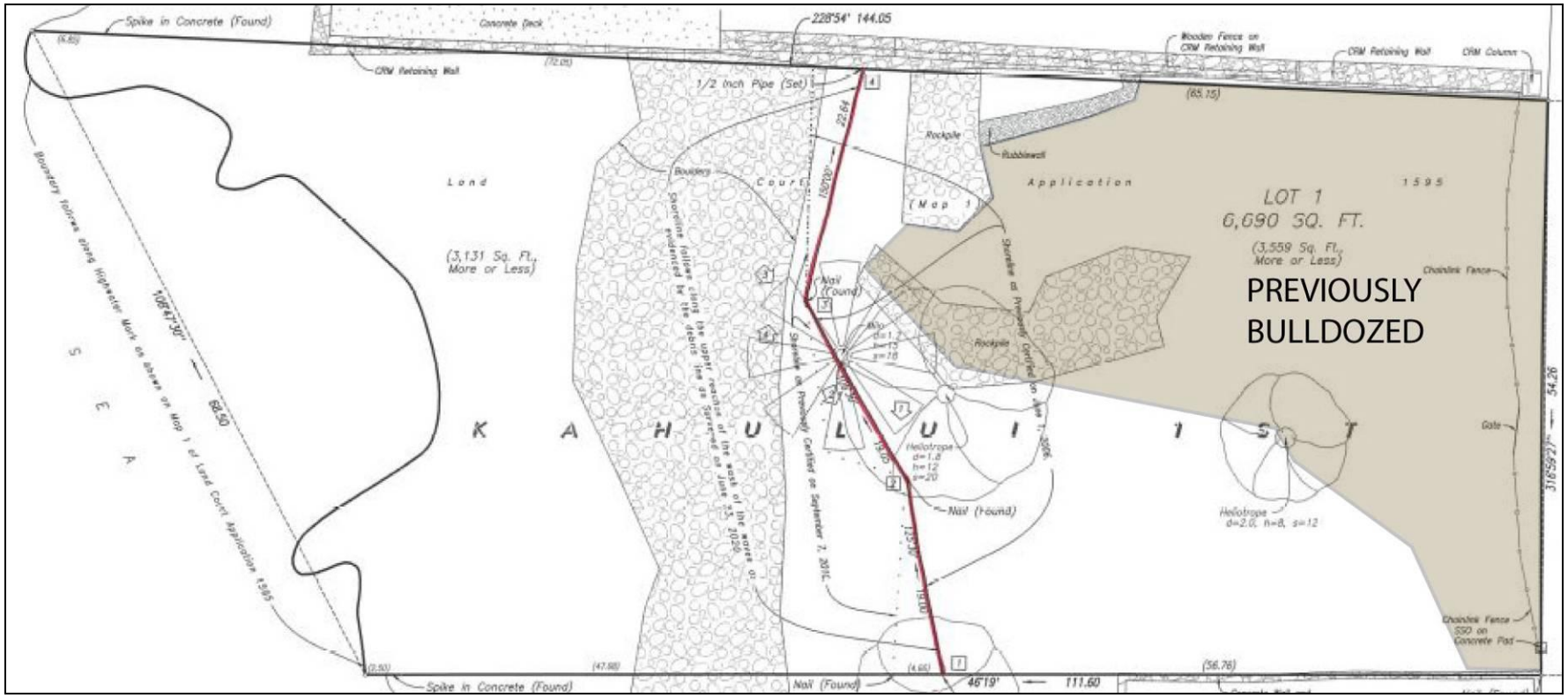


Figure 5: Parcel 020 Survey Plat Map Showing Location of Previous Bulldozed Areas.

The *makai* (west) portion of Parcel 020 is fairly level pāhoehoe tidal flats covered with boulders thrown up by storm surge. The *mauka* (east) portion of Parcel 020 has been previously grubbed. There is a bulldozer push pile at the center of Parcel 020 and a second push pile extending from the north property boundary modern rock wall (see Figure 4 and Figure 5).

Small trees in the project include *milo* (*Thespesia populnea*), *naupaka* (*Scaevola taccada*), and *kao haole* (*Leucaena leucocephala*). There are a few small papaya (*Carica papaya*) trees, some bougainvillea (*Bougainvillea spectabilis*) bushes, and various small weed plants.

Historic Era Land Use

Parcel 020 is located along the coastline in Kahului 1st Ahupuaʻa. The name Kahului translates literally as "the winning" (Pukui et al. 1974:67). There is very little information about pre-Contact era Kahului Ahupuaʻa in written documents.

During the Māhele of 1847-48 and the Kuleana Act of 1850, the northern portion of Kahului 1st and most of Kahului 2nd Ahupuaʻa were awarded to Grace Kamaikui Rooke as Land Commission ward (LCA) 8516-B (Award Book 10:394; Indices 119) (Figure 6). Grace Kamaikui Rooke was the daughter of John Young and high chiefess Kaʻoanaʻeha (niece of King Kamehameha I). The land was given to John Young by King Kamehameha and Grace inherited the land upon her father. Grace left the property to Queen Emma Kalanikaumakaʻamano Kaleleonālani Naʻea Rooke, her *hānai* daughter. Emma was the daughter of Grace's older sister Fanny and was the wife of King Kamehameha IV.

Four small LCAs were awarded near the coast of Kahului 1st Ahupuaʻa east of the project (Figure 7). Map Figure 7 shows three additional surveyed properties near the coastal LCAs. Two of the properties belong to Makuakane and J. Maio. Remaining portions of Kahauloa 1st Ahupuaʻa were sold as Land Grants. (see Figure 6 and Figure 7). The project area is a small portion coastal Land Grant 2961 to Kapae. Map Figure 6 and Figure 7, both Historic era survey maps, do not depict any structures, walls, trails, or roads associated with the project area property.

The properties along both sides of Aliʻi Drive near the current project area have been developed as vacation rental properties and private single family residential properties.

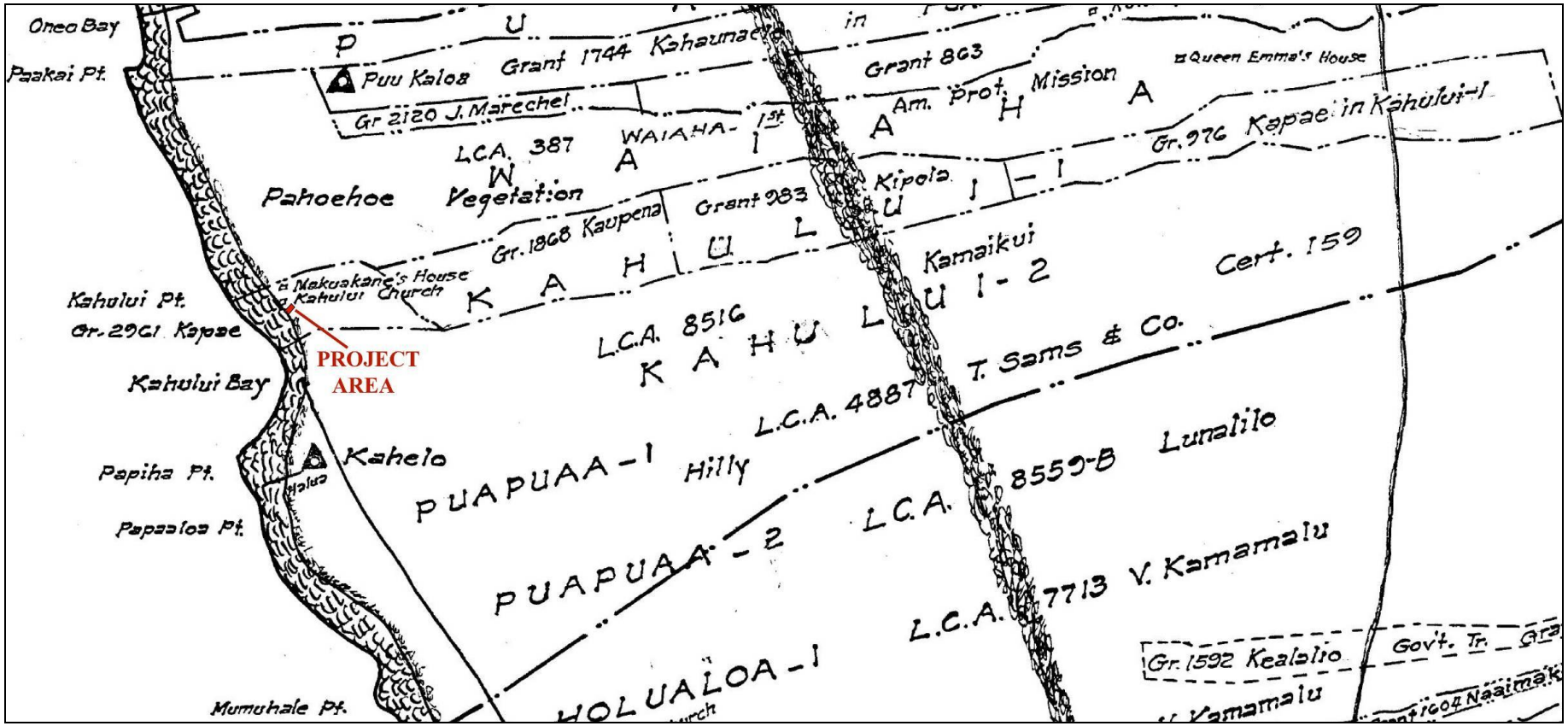


Figure 6: Portion of Registered Map #1280 Showing Project Area, LCAs, Land Grants, and Nearby Structures (Aki 1952).

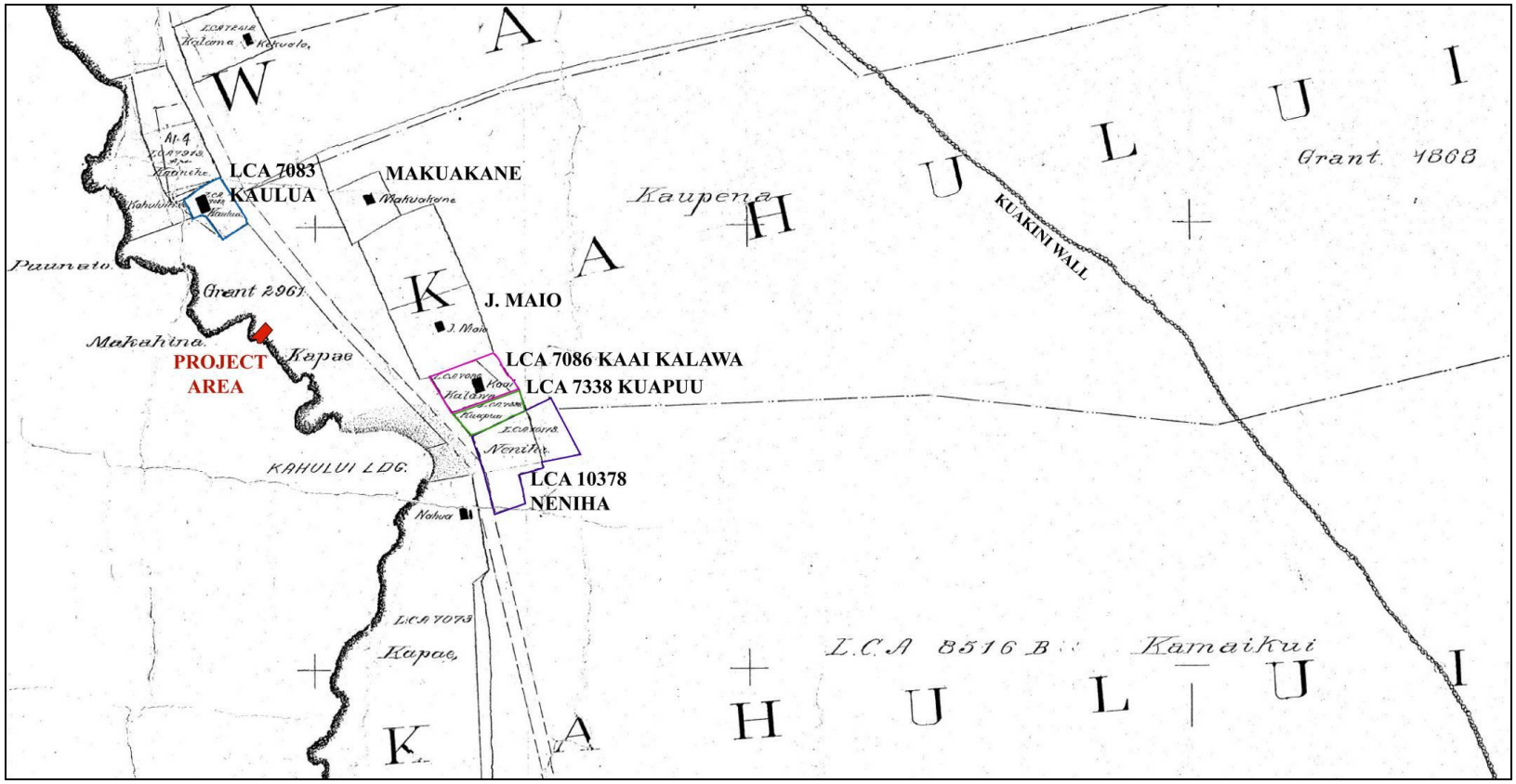


Figure 7: Portion of Registered Map #1676 Showing Project Area and Nearby Land Commission Awards (Emerson and Kanakanui 1892).

Previous Archaeological Studies

Very few archaeological studies have been conducted in Kahului Ahupuaʻa. Four previous archaeological studies were conducted for the proposed Aliʻi Drive Highway and one study was conducted for the Kuakini Highway realignment project (Table 1 and Figure 8). All five previous archaeological studies recorded archaeological sites within two corridors at lower elevations (70 to 360 ft amsl) within Kahului 1st and 2nd Ahupuaʻa.

Table 1: Inventory of Previous Archaeological Studies.

REFERENCE	STUDY TYPE	PROJECT
Ching et al. 1973	Surface Survey	Ali`i Drive Realignment Corridor
Hommon & Rosendahl 1983	Evaluation and Update	Ali`i Drive Realignment Corridor
Schilt 1984	Survey & Salvage Excavations	Kuakini Realignment Corridor
Dunn & Rosendahl 1991	Inventory/Assessment	Ali`i Highway Phase I
Haun et al. 1998	Mitigation/Intensive Survey	Ali`i Highway Phase I

Schilt (1984) conducted surface survey and salvage excavation study 1.3 km east of the current project area. The project area corridor crosses Kahului Ahupuaʻa at an elevation of 340-360 ft amsl along the Kuakini Highway. There were no archaeological sites recorded in Kahului 1st Ahupuaʻa. Ten sites were recorded in Kahului 2nd Ahupuaʻa including ranch walls, a Historic era house platform, and rectangular enclosure, and numerous agricultural features (Schilt 1984:32).

The remaining four studies (Ching et al. 1973; Dunn and Rosendahl 1991; Haun et al. 1998; and Hommon and Rosendahl 1983) were conducted for the proposed Aliʻi Highway closer to the current project area, at elevations ranging from 70 to 360 ft amsl. Thirty four archaeological sites were recorded in Kahului 1st and 2nd Ahupuaʻa (Haun et al. 1998: 72-76). Twenty seven of the sites were recorded in Kahului 1st Ahupuaʻa. Sites included Historic era ranch walls, pre-Contact era habitation complexes, agricultural gardens, and burial platforms. The closest recorded sites were approximately 0.64 km *mauka* (east) of the current project area.

None of the previously documented sites are near to the current project area. All of the sites are located at mid-elevations away from the coastline. Based on historic maps (see Figure 6 and Figure 7), based on modern construction and development along the coastline and Aliʻi Dive, and based on previous grubbing conducted within Parcel 020, it is possible but unlikely that archaeological sites will be present within Parcel 020.

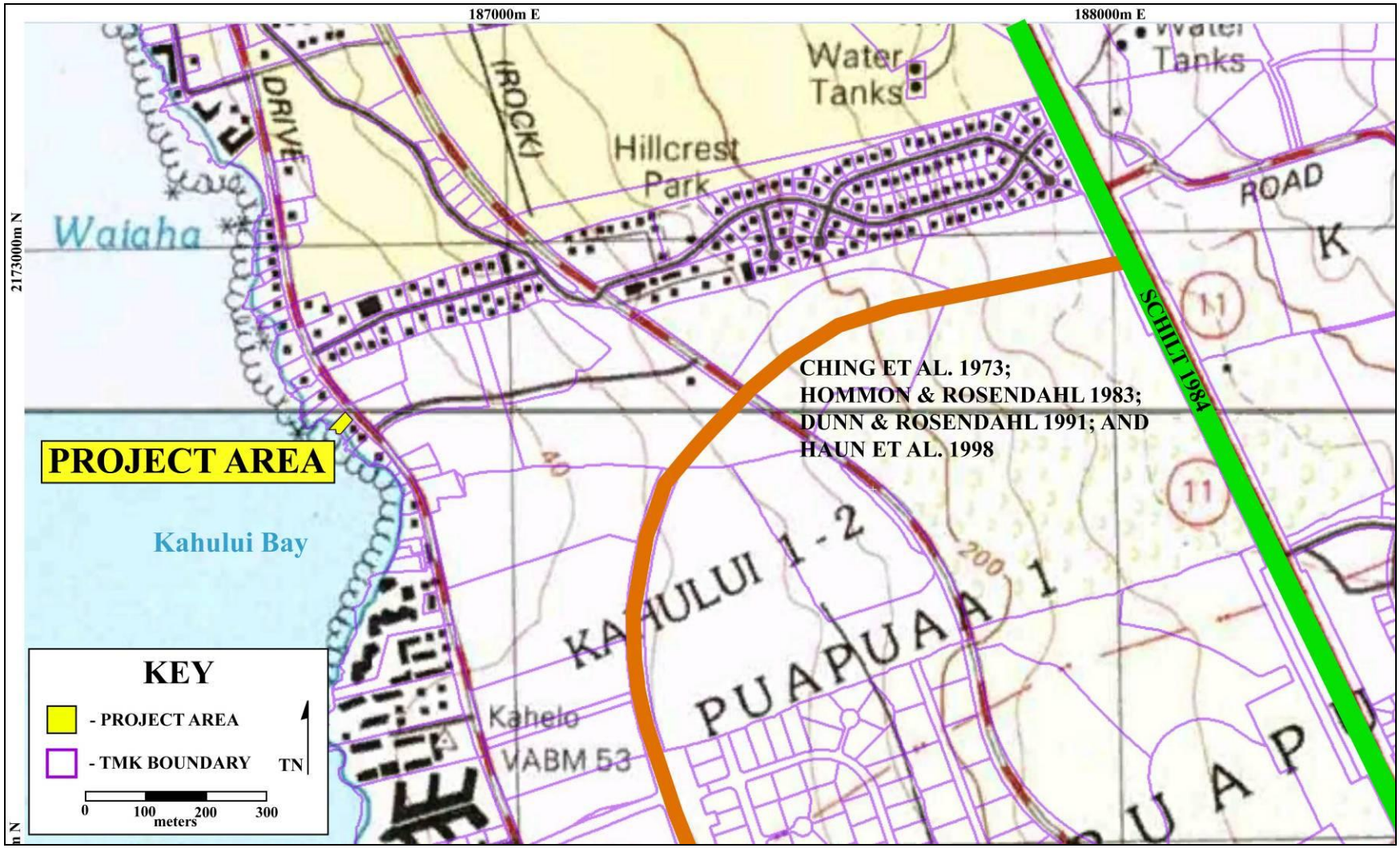


Figure 8: 7.5-Minute Series USGS Topographic Map (Kailua and Kealakekua Quadrangles) Showing Location of the Project Area and Previous Archaeological Studies (National Geographic Topo!, 2003. Sources: National Geographic Society, USGS).

AFI Pedestrian Survey

A 100% pedestrian resurvey of the entire project area was conducted on March 1st and 2nd, 2021 by SCS Senior Archaeologist Glenn Escott, M.A. A series of transects, spaced 1.0 meter apart, was walked across the entire property parcel. The field work totaled 16 person-hours.

Pedestrian Survey Results

There were no archaeological sites identified within Parcel 020. The northeast quadrant of the parcel has been previously grubbed (see Figure 5). There are two large bulldozer push piles located near the center of the parcel and along the north boundary of the parcel (Figure 9). There are fragments of modern concrete slab in the push piles (Figure 10 and Figure 11). The push piles are the result of grading along the northern portion of Parcel 020. The graded ground surface along the northern boundary has been covered with red cinder, possibly to create a driveway (Figure 12).

There are two piles of cement and rock rubble inside the chain link fence along the east boundary of Parcel 020 (Figure 13). The cement is modern and has sand and mechanically-crushed basalt inclusions. The rubble might have been dumped prior to the construction of the chain link fence. The fence is weather worn and looks to have been installed in the last ten to twenty years.

Other modern debris includes a fragment of concrete slab located near the coastal flat near the south boundary of the project area (Figure 14). The cement is modern and has sand and mechanically-crushed basalt inclusions. There are several smaller fragments mixed in with the loose boulders just east of the larger fragment (Figure 15). The fragments of concrete slab were likely thrown up on the coastal flat by storm surge.

There is a rock-lined path that leads from the chain link gate to the coastal flat (see Figure 9). The path is located along the south boundary of the property. The center of the path is sand, pebbles and cobbles, and small coral fragments (Figures 16 through 18). Based on the paths location between the chain-link gate and the water, and based on its construction, the path is modern and was likely constructed with in the last twenty years.

There are no other modern features and there are no archaeological sites located within Parcel 020.

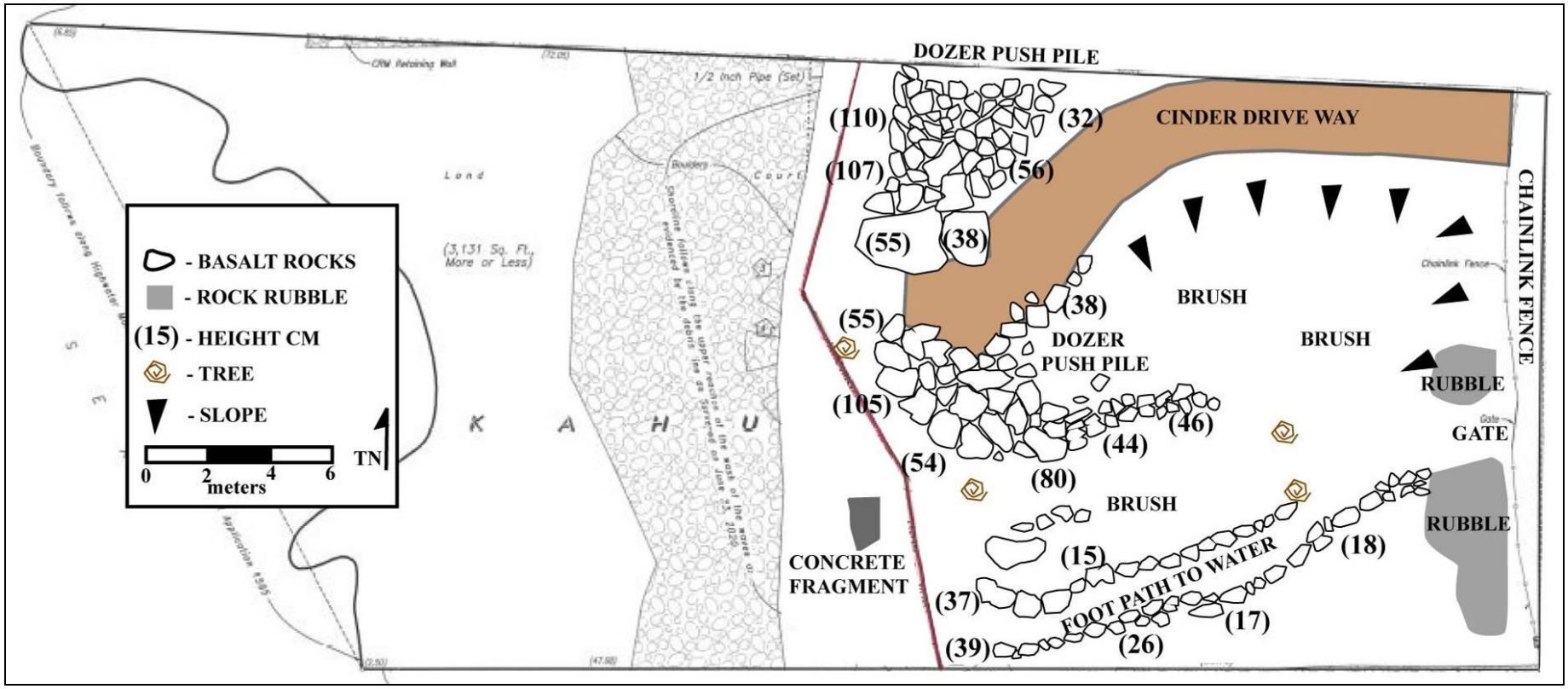


Figure 9: Parcel 020 Plan View Map Showing Modern Land Alterations.

Figure 10: Photograph of Northern Push Pile Looking Northeast. (110 cm measuring tape scale).

Figure 11: Photograph of Northern Push Pile Showing Cement, Looking Northeast. (110 cm measuring tape scale).

Figure 12: Photograph Graded and Cinder Covered "Drive Way" Looking Northeast.

Figure 13: Photograph of Rubble Pile Looking North (1 meter measuring tape scale).

Figure 14: Photograph of Large Concrete Slab Looking Southwest.

Figure 15: Photograph of Small Fragments of Concrete Slab Looking West.

Figure 16: Photograph of Northeast End of Footpath Looking South (1 meter measuring tape scale).

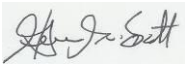
Figure 17: Photograph of Center of Footpath Looking Southwest (1 meter measuring tape scale).

Figure 18: Photograph of West End of Footpath Looking Southwest (1 meter measuring tape scale).

Project Determination

The field inspection pedestrian survey conducted within Parcel 020 confirmed that there are no archaeological sites or features within the project area and that there will be no effect to historic properties posed by the construction a single-family dwelling.

Sincerely,



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DRAFT ENVIRONMENTAL ASSESSMENT

Frey Single-Family Residence
Special Management Area Major Use Permit
and Shoreline Setback Variance

Appendix 3
Comments in Response to Early Consultation

Mitchell D. Roth
Mayor

Lee E. Lord
Managing Director

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County of Hawai'i
PLANNING DEPARTMENT

Zendo Kern
Director

Jeffrey W. Darrow
Deputy Director

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August 27, 2021

Leigh Varela
c/o Land Planning Hawai'i, LLC
194 Wiwoole St.
Hilo, HI 96720

Dear Ms. Varela,

Subject: **Planning Department Comments on the Draft Environmental Assessment (DEA) for the Frey Shoreline Setback Variance and Special Management Area Use Permit Applications**
Location: **Kailua-Kona, North Kona District, Island of Hawai'i**
TMK: **(3) 7-5-019:020**

The County of Hawai'i Planning Department has reviewed the subject Draft Environmental Assessment (DEA) for the Frey Single-Family Residence Shoreline Setback Variance (SSV) and Special Management Area (SMA) Use Permit Application. According to our information, the entire parcel is located within the State Land Use (SLU) Urban District and is zoned Resort-Hotel (V-1.25) by the County of Hawai'i. According to the General Plan LUPAG map, the site is designated as "open" (ope).

The applicant is proposing to construct a four (4) story single-family residence with 2,024 square feet of interior living area and 757 square feet of lānai, rooftop deck and pool. The applicant is requesting the shoreline setback variance due to the parcels limited size which would restrict the buildable area on this parcel.

At this time, the Planning Department has several concerns related to this proposal which are listed below:

1. The Planning Department does not agree with the use of Shoreline Change Reference Features to estimate an erosion rate as the use of "vegetation lines" has been shown to be inadequate and inaccurate when determining the location of the "shoreline." Even a cursory review of the original property boundaries and the current property boundaries reveals extensive erosion has occurred since the creation of the parcel. The statement that "no past or current erosion was evident" is false; it is quite evident that erosion has

occurred and is still occurring. An estimated erosion rate for this parcel is approximately 0.8 ft/year based on comparison between 1950 Land Commission Award (LCA) survey and the Certified Shoreline survey conducted in 2020. The property has lost almost half of the land area that was provided in the 1950 survey. Additionally, when comparing the 2010 certified shoreline survey and the 2020 certified shoreline survey it becomes clear that erosion is ongoing. In the DEA, it is stated that: "*our client bought the subject property just prior to the new rules that did away with provisions for 20-foot shoreline setbacks and is seeking relief from the 40-foot shoreline setback by way of the variance.*" The Planning Department believes the applicant should have done proper due diligence with regards to the developable area since it was evident that almost half of the property had eroded away since it was created. Please provide a discussion on the applicant's due diligence and discuss the expectation that the land could be developed even with a constantly eroding shoreline.

2. Please list the heights and number of stories for all similar structures in the vicinity of the proposed project. The list should include more than adjacent parcels.

3. Has the public ever accessed the area at, along, or adjacent to the shoreline to conduct activities such as, fishing, surfing, gathering, swimming, ocean viewing, hiking, sunbathing, etc.? If so, please list the activities and frequency of use.

4. According to an opinion written by the Hawai'i Office of the Attorney General (OP. No. 17-1) dated December 11, 2017, "*The state owns all lands makai of the upper reaches of the wash of waves, usually evidenced by the edge of vegetation or by the line of debris left by the wash of waves.*" Based on this opinion, all land area makai of the certified shoreline is not owned by the applicant and may confuse reviewers not privy to the OAG opinion. Please remove all references to the original parcel boundaries and provide a clear map of the current land area owned by the applicant that ends at the 2020 certified shoreline.

5. Pursuant to Act 016, S.B. 2060 which was approved by the Governor of Hawai'i on September 15, 2020, Section 205A-43, Hawai'i Revised Statutes (HRS) was amended to say: "*Setbacks along shorelines are established of not less than forty feet inland from the shoreline.*" While the applicant states they proposed development prior to the passage of Act 16 and therefore are entitled to the 20-foot shoreline setback boundary, it should be noted that an application was not received by this department prior to the passage of Act 16 and this project goes directly against State laws designed to protect and preserve the coastal areas of Hawai'i by way of increased setbacks.

6. The Planning Department does not agree that any hardship exists by way of limited developable area as the applicant was aware of the limitations (prior to purchase) related to developing such a small parcel directly adjacent to an eroding shoreline. We believe that the applicant has not made a significant effort to discuss all viable alternatives,

including keeping with the 40-foot setback and applying for Zoning Code setback variances to either side-yard or front-yard setbacks which would provide more developable area without sacrificing coastal resources. Also, the applicant needs to discuss how building a pool within the setback area is a clear part of the hardship request.

If you have any questions, please contact Alex J. Roy of our Planning staff at 808-961-8140, or via email at Alex.Roy@hawaiicounty.gov.

Sincerely,

JEFFREY W. DARROW
Deputy Planning Director

AJR:jaa
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cc: DLNR-OCCL

LAND PLANNING HAWAII LLC

194 Wiwoole St. Hilo, HI 96720
(808) 333-3393
info@landplanninghawaii.com

December 8, 2021

Mr. Jeffery Darrow, Deputy Director
Planning Department
County of Hawai‘i
101 Pauahi Street
Hilo, HI 96720

Dear Mr. Darrow:

Subject: Response to Comments on Draft Environmental Assessment, Frey-Single-Family Residence Special Management Area Major Use Permit and Shoreline Setback Variance
Kailua-Kona, North Kona, Hawai‘i Tax Map Key: (3) 7-5-019:020

Thank you for your comments dated August 27, 2021, regarding the Draft Environmental Assessment Frey Single-Family Residence Special Management Area Major Use Permit and for Shoreline Setback Variance (DEA). We acknowledge your comments and concerns, which have been considered and addressed in preparation of the revised DEA.

The following responses are provided to your comments:

Comment: *1. The Planning Department does not agree with the use of Shoreline Change Reference Features to estimate an erosion rate as the use of "vegetation lines" has been shown to be inadequate and inaccurate when determining the location of the "shoreline." Even a cursory review of the original property boundaries and the current property boundaries reveals extensive erosion has occurred since the creation of the parcel. The statement that "no past or current erosion was evident" is false; it is quite evident that erosion has occurred and is still occurring. An estimated erosion rate for this parcel is approximately 0.8 feet/year based on comparison between 1950 Land Commission Award (LCA) survey and the Certified Shoreline survey conducted in 2020. The property has lost almost half of the land area that was provided in the 1950 survey. Additionally, when comparing the 2010 certified shoreline survey and the 2020 certified shoreline survey it becomes clear that erosion is ongoing.*

> Response: More than a cursory review of original property boundaries and current property boundaries is necessary to understand and quantify the character of the coastline fronting the subject property, its geology, wave action and erosion rate.
>
> The Coastal Erosion Survey and Shoreline Assessment (Scheffler, 2021) (CES), attached as Appendix 1 to the DEA, was prepared following the guidelines in the Hawai‘i Coastal Hazard Mitigation Guidebook (Hwang et al., 2005)[1]. The CES states: "No evidence of recent erosion in the form of raw scarps or exposed roots was noted" (CES, p. 13).

[1] Note that the Hawai‘i Administrative Rules (HAR), Title 13, which contain the DLNR's Conservation District Rules, also provides that Coastal Erosion Studies require the following of the Hawai‘i Coastal Hazard Mitigation Guidebook and provides that the average annual coastal erosion rate is to be determined by the coastal erosion study. See HAR § 13-5-2.

The CES also notes that: "Original surface features on the lava platform are preserved in many places on the platform showing that little surficial erosion has taken place since the lava flows were formed, and that wave erosion has been minimal" (CES, p. 15).
The CES describes the method employed to estimate the Average Annual Erosion Rate (AAER) on the subject property beginning on page 17: "In this case, neither vegetation lines nor beach toe referents are appropriate and large-scale rock outcrops and volcanic features were used." Page 17 of the CES includes side-by-side aerial photos depicting the shoreline in 1954 and 2000. Careful study of these images will show there are virtually no differences in the appearance of the shoreline within the limits of the image resolution. As explained in the CES: "Inspection of these photographs indicates that the general features of the coastline fronting the property have not changed in that time (59) years. In fact, the configuration of coast and shoreline features correspond to those found in the field today (67 years). This method yields an *Average* Annual Erosion Rate of 0.93 inches per year (62 inches / 67 years)" (CES, p. 18). The CES further states on Page 18 that: "Conditions on the ground did not indicate that any major active erosion is taking place on the property. Interpreting this statistical result is somewhat problematic. That is, this study did not measure 62 inches or erosion in the past. Instead, the confounding lack of photo resolution requires us to rely on negative evidence. Geological (qualitative) inspection suggests that while not zero, real erosion rates on the property are less than the photogrammetric evidence can prove."

The Planning Department's proposed erosion rate of "0.8 feet/year based on comparison between 1950 Land Commission Award (LCA) survey and the Certified Shoreline Survey conducted in 2020" leads to an absurd result when applied to the 10-year period of 2010 to 2020 when Certified Shoreline Surveys were completed for the property. A rate of 0.8 feet/year would lead to 8 feet of erosion over that 10-year period. Comparison of certified shoreline positions evenly distributed across the shoreline (number of measurements, n=16) yields an estimate of 0.24 feet/year (standard deviation of 0.14 feet/year) or 2.88 inches/year (standard deviation of 1.71 inches/year). It should also be noted that any observed shoreline migration will be the sum of several factors including erosion, sea level rise and island subsidence. A contribution to this potential shoreline migration from an AAER of 0.93 inches per year (as concluded by the CES) is more logical and substantiated than the 0.8 feet per year erosion rate proposed by the Planning Department.

It should also be noted that the 2011 tsunami occurred in the period between the two Certified Shoreline Surveys and may have contributed to shoreline erosion beyond normal background rates.

Comment: *In the DEA, it is stated that: "our client bought the subject property just prior to the new rules that did away with provisions for the 20-foot shoreline setbacks and is seeking relief from the 40-foot shoreline setback by way of the variance." The Planning Department believes the applicant should have done proper due diligence with regards to the developable area since it was evident that almost half of the property had eroded away since it was created. Please provide a discussion on the applicant's due diligence and discuss the expectation that the land could be developed even with a constantly eroding shoreline.*

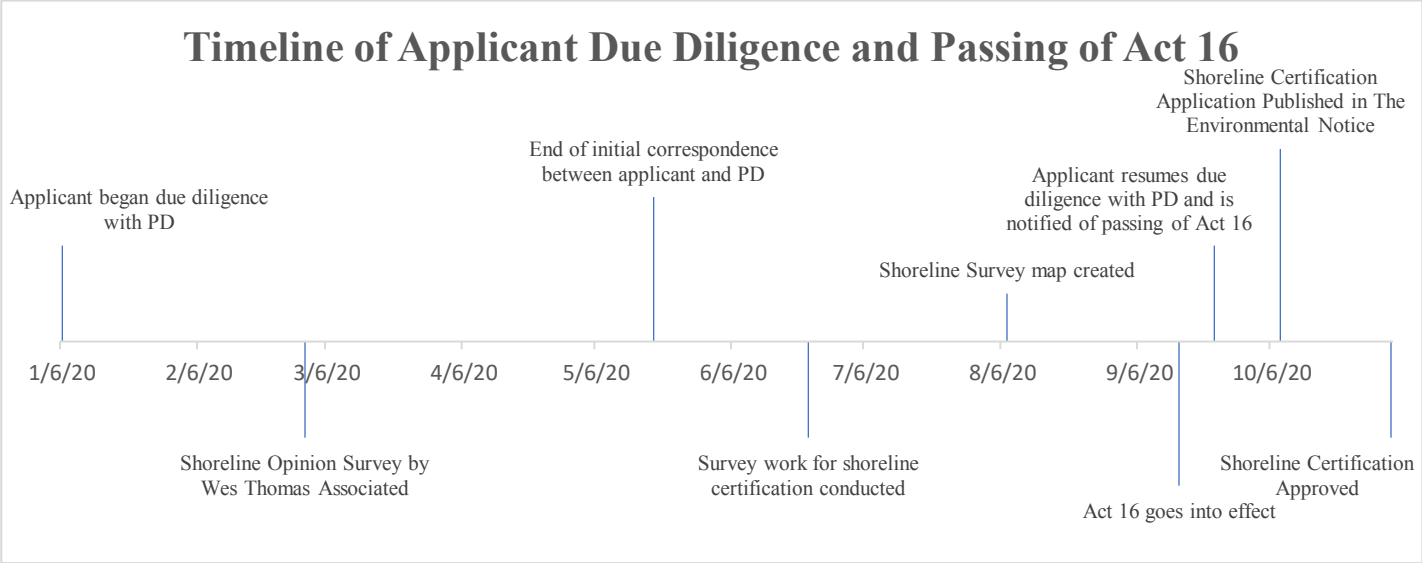
Response: For the reasons discussed above, as supported by the CES, the applicant respectfully disagrees that "it was [or is] evident that almost half of the property had [or has] eroded away since it was created."

Between January and May 2020, the applicant engaged in a lengthy (20+ emails) and detailed correspondence with the now Deputy Planning Director regarding the potential buildability of the parcel and the permitting process. A copy of that correspondence is attached as **Exhibit "A".** At no time was the possible passing of Act 16 (and resulting amendment of Chapter 205A, Hawai'i Revised Statutes (HRS)) raised prior to the applicant purchasing the subject property. It was represented by Planning Department Staff that the potential 20-foot shoreline setback was an option:

"The normal shoreline setback for the entire island is 40 feet, but if your property is a legal lot of record created prior to the date of the adoption of the rule (PD Rule 11, which was January 19, 1997) and your lot is reduced by 50% by the 40-foot setback, then you can qualify for the 20-foot shoreline setback. Your lot was created on August 8, 1949, and therefore can qualify for the reduced 20-foot shoreline setback as the 40-foot setback reduces your building envelope below 50%." **Exhibit "A"** page 10 (Email of February 10, 2020).

- In March 2020, the applicant commissioned a Shoreline Opinion Survey by Wes Thomas Associates (**Exhibit "B"**). This survey depicts the likely position of the shoreline and reasonable expectation of the buildable area with a 20-foot shoreline setback.
- The applicant was then in the process of having the Certified Shoreline Survey completed to prepare a Special Management Area Assessment for the project. The Certified Shoreline Survey work on site was performed June 23, 2020, with the survey map completed on August 7, 2020.
- Act 16 was passed September 15, 2020.
- On September 23, 2020, when the applicant sought to update the Planning Department on the progress of the Certified Shoreline Survey, he was notified of the passage of Act 16.
- The Shoreline was then certified on November 2, 2020.

As previously discussed, proper due diligence was undertaken by the applicant prior to purchasing the property, which led to his reasonable expectation that the land could be developed by following the then-existing guidelines. The graphic below sets forth the timeline of the described events.



This timeline demonstrates the thorough due diligence undertaken by the applicant leading to his reasonable expectation that the land could be developed by following the then-existing guidelines. This speaks to the uniqueness of this situation, which is a criterion for a hardship determination.

Comment: *2. Please list the heights and number of stories for all similar structures in the vicinity of the proposed project. The list should include more than adjacent parcels.*

Response: Please refer to the table below for a list of surrounding building heights. A discussion has been added to section 3.2.1 of the DEA.

	Property Type	**Location and Distance from Parcel**	**# Of Stories**	**Approximate Height from Ali‘i Drive**
North of Parcel, Makai of Ali‘i Drive	SFR	Parcel to the immediate Northwest	3	22 feet
	SFR	100 feet northwest	4	40 feet
	SFR	170 feet northwest	3	35 feet
	SFR	300 feet northwest	2	25 feet
South of Parcel, Makai of Ali‘i Drive	Condominiums	Parcel to the immediate South	3	32 feet
	SFR	130 feet south	2	20 feet
	Kona Tiki Hotel	200 feet south	3	35 feet
Mauka of Ali‘i Drive	World Mark Kona	130 feet northeast	4	45 feet
	World Mark Kona Reception Building	200 feet east	2	22 feet
	Condominiums	400 feet east	2	40 feet

Comment: *3. Has the public ever accessed the area at, along, or adjacent to the shoreline to conduct activities such as fishing, surfing, gathering, swimming, ocean viewing, hiking, sunbathing, etc.? If so, please list the activities and frequency of use.*

> Response: The applicant has observed the public fishing along the shoreline in the vicinity of the subject property. Other uses such as surfing, gathering, swimming, ocean viewing, hiking, and sunbathing are possible where safe, but their frequency is unknown. Lateral public access along the shoreline will be maintained under the proposed action, and there are no structures proposed within 20-feet of the certified shoreline. Therefore, the public will be able to continue to engage in any of these activities along the shoreline under the proposed action, consistent with the findings and goals outlined in Act 16. Please also see Section 3.2.1 of the DEA, which addresses the *Ka Pa'akai O Ka'Aina v. Hawai'i State Land Use Commission* (94 Hawai'i 31 (2000)) criteria for identifying valued natural cultural and historic resources, assessing impacts to them, and devising feasible action to reasonably protect native Hawaiian rights.

Comment: *4. According to an opinion written by the Hawai'i Office of the Attorney General (OP. No. 17-1) dated December 11, 2017, "The state owns all lands makai of the upper reaches of the wash of waves, usually evidenced by the edge of vegetation or by the line of debris left by the wash of the waves." Based on this opinion, all land area makai of the certified shoreline is not owned by the applicant and may confuse reviewers not privy to the OAG opinion. Please remove all references to the original parcel boundaries and provide a clear map of the current land area owned by the applicant that ends at the 2020 certified shoreline.*

> Response: It is standard practice for surveyors to include historic boundaries on survey maps for completeness and reference. In the DEA Map 1 of Land Court Application 1595 was utilized as the reference. The County Tax Maps also appear to utilize Map 1 of Land Court Application 1595 as a base, so it would likely be more confusing to viewers to use another reference point. Furthermore, according to the AG Op. No. 17-1, "the upper reaches of the wash of the waves, usually evidenced by the edge of vegetation or by the line of debris left by the wash of the waves" is closely related to but not exactly the same as the "certified shoreline" described in Chapter 205A, Hawai'i Revised Statutes. We therefore believe that using the historic boundaries and depicting the present and past certified shoreline surveys is the appropriate way to depict the environmental effects of the Proposed Action, which is what the DEA is required to document. With the above being said, a reference has been added to the Summary section of the DEA to acknowledge AG OP No. 17-1.

Comment: *5. Pursuant to Act 16, S.B. 2060, which was approved by the Governor of Hawai'i on September 15, 2020, Section 205A-43, Hawai'i Revised Statutes (HRS) was amended to say: "Setbacks along shorelines are established of not less than forty feet inland from the shoreline." While the applicant states they proposed development prior to the passage of Act 16 and therefore are entitled to the 20-foot shoreline setback boundary, it should be noted than an application was not received by this department prior to the passage of Act 16 and this project goes directly against State laws designed to protect and preserve the coastal areas of Hawai'i by way of increased setbacks.*

Response: The statement "the applicant states they proposed development prior to the passage of Act 16 and therefore are entitled to the 20-foot shoreline setback boundary" is not accurate. This is a misrepresentation of key components in this DEA. The purpose of the Chapter 343, HRS environmental review process is to review a proposed action for potential impacts to the environment and resources.

The appropriateness of the shoreline setback variance will depend on an evaluation of the facts and circumstances of this case against HRS § 205A-46 (a), which sets the criteria for granting shoreline setback variances and reads:

> A variance may be granted for a structure or activity otherwise prohibited in this part if the authority finds in writing, based on the record presented, that the proposed structure or activity is necessary for or ancillary to:
>
> > (8) Private facilities or improvements that will not adversely affect beach processes, result in flanking shoreline erosion, or artificially fix the shoreline; provided that the authority may consider any hardship that will result to the applicant if the facilities or improvements are not allowed within the shoreline area.

The request for shoreline setback variance will be evaluated thoroughly under the Special Management Area and Shoreline Setback Variance criteria established by Chapter 205A, HRS.

Comment: *6. The Planning Department does not agree that any hardship exists by way of limited developable area as the applicant was aware of the limitations (prior to purchase) related to developing such a small parcel directly adjacent to an eroding shoreline. We believe that the applicant has not made a significant effort to discuss all viable alternatives, including keeping with the 40-foot setback and applying for Zoning Code setback variances to either side-yard or front-yard setbacks which would provide more developable area without sacrificing coastal resources. Also, the applicant needs to discuss how building a pool within the setback area is a clear part of the hardship request.*

Response: The purpose of the Chapter 343, HRS environmental review process is to review a proposed action for potential impacts to the environment and resources. The proper time for evaluating the hardship criteria, and how specific project elements are factored into that evaluation, will be during the Shoreline Setback Variance application process. Additional discussion relating to front-yard and side-yard setback alternatives has been included in Section 2.1.2 in the revised DEA.

Your comments related to the proposed project are encouraged and appreciated. Please feel free to direct any questions or comments directly to me.

Sincerely,

JOHN PIPAN
Planning Administrator
Land Planning Hawai‘i LLC

Exhibit A

From: **Gregg Frey** <gwfrey57@gmail.com>
Date: Wed, Sep 23, 2020 at 12:19 PM
Subject: Re: Lot 75-5956 Alii
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>

Well I certainly hope this doesn't mean my 20ft setback is history, as there is ample prior proof that the 20ft setback was allowed due to the parcel age of creation and the loss of buildable area being greater than 50%. I don't see how moving the goalposts on landowners would hold up in court, especially for a SFR.

As for the SMA permit, I understand that it is needed, but until the shoreline cert. is done, as you know the SMA cannot start....so are you telling me stay off until the SMA is done?

Thanks,

-Gregg

On Wed, Sep 23, 2020 at 11:55 AM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

You will need to submit a SMA Assessment for any activity on a parcel along the shoreline. I am attaching the application for your review.

I am not sure if you have been following the Legislature, but there has been recent bill approved that will affect shoreline parcels in the State of Hawaii. Please refer the attached bill, which is now Act 16, effective 9/15/20.

https://www.capitol.hawaii.gov/measure_indiv.aspx?billtype=SB&billnumber=2060&year=2020

RELATING TO COASTAL ZONE MANAGEMENT. Amends coastal zone management laws to further protect against impacts of sea level rise and coastal erosion. (HD2)

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720
808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Wednesday, September 23, 2020 8:43 AM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Lot 75-5956 Alii

Hi Jeff- hope you're doing well, I am currently awaiting the Shoreline cert. process to complete, but I had a question regarding what is allowable on the lot while this is in play.....is there any clearing of vegetation allowed for a soils test access, or is it forbidden to touch anything before the SMA app. is filed, etc.....?

Thanks,
-Gregg

From: **Darrow, Jeff** <Jeff.Darrow@hawaiicounty.gov>
Date: Tue, Jul 21, 2020 at 9:58 AM
Subject: RE: Lot 75-5956 Alii- G Frey
To: Gregg Frey <gwfrey57@gmail.com>

Aloha Mr. Frey,

We will not accept a SMA Assessment for a shoreline parcel without a certified shoreline survey.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Tuesday, July 21, 2020 6:51 AM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Re: Lot 75-5956 Alii- G Frey

Hello Jeff, hope you had a great vacation! I am in the process of getting the shoreline cert. started. but first am waiting to close escrow by next week. So the application asks for the shoreline cert.

So I guess my question is then, do I wait the weeks (or likely months) for the shoreline cert. to happen, or start the paperwork you've attached w/o it?

Thanks,

-Gregg

On Mon, Jul 20, 2020 at 10:24 AM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

Prior to any activity on the property, you will need to submit SMA Assessment (attached), at which time we determine what permits you will need for your proposed project.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Tuesday, June 23, 2020 11:39 AM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Lot 75-5956 Alii- G Frey

Aloha Jeff- hope things are going well!

I was wondering now that I purchased the "tiny lot" about what I need to do, if anything, regarding the 20ft Shoreline setback, due to the lot age and useable area.

Is there some form or something?

Thanks,

-Gregg

From: **Darrow, Jeff** <Jeff.Darrow@hawaiicounty.gov>
Date: Tue, May 19, 2020 at 3:39 PM
Subject: RE: GFrey ZOning for 75-5956 Alii
To: Gregg Frey <gwfrey57@gmail.com>

Aloha Mr. Frey,

In speaking with a Land Use Plan Checker who process building permits, she said that they are allowing in-ground pools in the side yard setback but it has to be at grade. The pool equipment needs to remain out of the setback open area, which is the area that does not allow projections.

You may want to run it past the Kona Planning office before submitting permits as you will be working with them for approval of your plans.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Tuesday, May 19, 2020 11:58 AM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Re: GFrey ZOning for 75-5956 Alii

Hi Jeff- hope you are doing well!

I was wondering if there is allowance for an in-ground small pool in the side setback area? I know nothing goes in the shoreline setback, but what about the side area. Of course all the pumps, filters etc ....would be above BFE....

Thanks,

-Gregg

On Wed, Apr 8, 2020 at 6:31 PM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

There are no projections allowed in the shoreline setback except as approved through a shoreline setback variance, including a pool.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Wednesday, April 8, 2020 1:35 PM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Re: GFrey ZOning for 75-5956 Alii

Aloha Jeff- just one more clarification....

Section 25-4-46. Projection of pools. A pool constructed at-grade may extend any distance into a required yard or open space. (1996, ord 96-160, sec 2; ratified April 6, 1999.)2

Does this allow an inground pool to extend into the shoreline cert line or only side or front yard lines? It's a bit confusing as written....

-Gregg

On Wed, Apr 8, 2020 at 3:35 PM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

Even though it is most likely the case, your current lot size will be determined by certified shoreline survey at which time we can determine the shoreline setback distance. Anything makai of the shoreline is the State's property based on their AG's opinion.

If you receive your building permit while the certification is still valid, you should be ok with construction of the house.

Keep in mind, visual impacts is one of the areas that can be an issue going through the SMA Assessment process. The higher you go, the greater the possibility of a challenge to the Director's decision of a SMA exemption as surrounding property owners may file an appeal.

As mentioned previously, a variance request would be difficult to receive approval for, especially since you are building a new structure. There are unique circumstances that can allow a variance. Needing more room because your lot is too small is not a unique circumstance. I would plan on not relying on a variance.

There are permitted projections allowed in the side yard and front setbacks, which are described in Section 25-4-44 in the Zoning Code. This does not apply to a shoreline setback. Nothing can project into a shoreline setback without a shoreline setback variance, which was referred to earlier in the chain.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Wednesday, April 8, 2020 11:16 AM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Re: GFrey ZOning for 75-5956 Alii

Aloha Jeff, appreciate your speedy reply!

Yes, I would be 20' from the shoreline cert line due to the issue that the setbacks reduced the useable area below 50% of the lot size, per Rule 11 section 11-5 subsection (b).

So in applying for the State Certification, once it is determined, it's only valid for 1 year, but I assume that means as long as I have the permits started for the house and things are kept current, I don't have to complete the structure within a year, correct? (that would seem a bit unreasonable).

Right now looking at a single house, 1 kitchen, probably 14ft piers, 3 living stories so close to 45ft tall....

I may ask for a small 4 or 5 ft variance from Alii dr. side (16ft maybe instead of the 20ft) but not counting on it as a "must have" but it'd be better for a front entry point design.

In reviewing some earlier correspondence.....see below.....could you clarify something regarding a cantilever comment? Is it permitted to have perhaps the second, third stories overhang(2 or 3ft) in a sideyard or frontyard setback zone?

Thanks,

-Gregg

From: **Darrow, Jeff** <Jeff.Darrow@hawaiicounty.gov>
Date: Wed, Apr 8, 2020 at 11:16 AM
Subject: RE: GFrey ZOning for 75-5956 Alii
To: Gregg Frey <gwfrey57@gmail.com>

Aloha Mr. Frey,

The lot in question is “non-conforming” in reference to Sections 25-5-94 and 95, as the lot was created in 1949 prior to the Zoning Code. Height limit is 45 feet max.

The setbacks in 25-5-96 apply for any development in Resort zoning, including single-family dwellings. Your rear setback is the shoreline setback, which could be 40 feet or possibly 20 feet. This will be determined after the submittal of a certified shoreline survey. Please keep in mind all the information below regarding your lot.

If you are building a single-family dwelling (only one kitchen), then you do not need to submit for a Plan Approval application as stated in 25-5-98, which is an administrative process done mainly for commercial, resort, and industrial development.

You will need to submit a Special Management Area (SMA) Assessment application prior to submitting plans for any development. This is when you submit the certified shoreline survey. A single family dwelling will not require a SMA Major Use Permit but if you do more than one unit, this will require a SMA Major Use Permit, which will need to go to public hearing and requires approval from the Planning Commission.

Short term vacation rentals are permitted in Resort zoning, but you will need to follow Section 25-4-16.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: **Gregg Frey** <gwfrey57@gmail.com>
Date: Wed, Apr 8, 2020 at 10:52 AM
Subject: Re: GFrey ZOning for 75-5956 Alii
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>

Hi Jeff, I hope all is well with you guys over there! I wanted to have confirmation on a lot I've been considering....address is 75-5956....zoned V1.25.

According to Hawaii County Code,

-height is 45ft max, per section 25-5-93
-the lot is at 6690 sq ft, I assume section 25-5-94, 95 do not apply to SFR for minimum lot size and building widths?
-minimum yards, section 25-5-96....do these setbacks apply to residential?
-plan approval for a SFR per section 25-5-98 part "c" I don't understand what it means....it reads like no approval is necessary...

Also, since it is zoned V, I assume STR are approved if we wanted to do short term rentals.....(i believe we have to send in a short form, but do no need to ask for a variance or anything)

Thanks in advance,

-Gregg

On Wed, Feb 12, 2020 at 2:36 PM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

The expiration of building permits is with the Department of Public Works-Building Division. I am not sure if or what their deadline for building permit is. Our SMA permit or SMA exemption with conditions usually has a 2-year time to build with an allowance of an administrative time extension available. You need to get the shoreline certification to determine if you can build, if you would qualify for the reduction of the shoreline setback from 40 to 20 feet, and as a requirement for submitting the SMA and/or SS variance. It is assumed that you will most likely not be able to get through all the permitting processes in one year so the certification will lapse. We may require another certification if a lot of time has passed between approval and the building permit process or it may be a requirement to do another certification prior to submittal of a building permit as a condition of approval if you were to receive approval of a shoreline setback variance.

The rules and/or law just say what the overall process is and what is required to submit certain applications. The question if a resubmittal of a shoreline survey is answered during the permitting process by the authority issuing the permit.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Wednesday, February 12, 2020 9:30 AM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Re: GFrey Structure question on Alii

Aloha Jeff, I was wondering if you knew the time limit for building permits expiration, or renewal options, in the SMA, ...it wouldn't make sense to get a shoreline cert, get a bldg. permit, apply for variances, etc...then have the 1yr window expire on the shoreline cert....

Or is there some provision that once the permit is granted based upon the up to date shoreline cert., at the time of the permit application, then it rides along with the permit (assuming there are permit renewal options) until the construction is started?

Is this laid out somewhere online?

I just don't see how this'd work since the cert. process is so lengthy, it's almost a given something would expire along the way, and you'd be stuck keeping up to renew things?

BTW, I am planning on getting a "shoreline opinion" to try to help me decide about the lot,

Thanks,

-Gregg

On Tue, Feb 11, 2020 at 8:52 AM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

You have every right to submit a request for a shoreline setback variance. You can explain in the application why this is a hardship and how you meet this criteria. As mentioned previously, before you submit you will need to do a certified shoreline survey and an environmental assessment. Once these steps are completed, you can submit your application for the shoreline setback variance to the Planning Commission.

You may want to consider an agreement of sale with the seller based on the approval of the variance. If the variance is approved, you will purchase. If denied, you are not obligated to purchase.

With everything happening around the world with climate change and sea level rise, these have had major impacts to development along the shoreline.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Monday, February 10, 2020 7:54 PM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Re: GFrey Structure question on Alii

Jeff, I should say, Aloha!

Thanks again for your time and consideration. I really want to go ahead with that particular lot! We'll see I guess!

So from what you are saying even if the 20ft setback is in play, and if the building can only be for example, 10ft deep, because of the shoreline (new certification) line being closer to Alii for example, I'd then need the variance to try and get to a more reasonable dimension, say 10ft back towards the water.....and per your previous comments, this is not very common.

However, that said, the "Shoreline Setback Variance Application" rule #8, section 8-10:

3) Hardship Standard. A) A structure or activity ***may*** be granted a variance upon grounds of hardship only if i) The applicant **would be deprived of reasonable use of the land** if required to comply fully with this rule; and ii) The request is due to unique circumstances and does not draw into question the reasonableness of this rule; and iii) The request is the practicable alternative which best conforms to the purpose of this rule.

B) Before granting a hardship variance, the Commission must determine that the request is a reasonable use of the land. The determination of the reasonableness of the use of land shall consider factors such as shoreline conditions, erosion, surf and flood condition, and the geography of the lot as it relates to health and safety.

So, is being able to build an actual useable house, such as 30' by 20', as opposed to say 30' by 10', defined as reasonable? I think a small 2-story, SFR in a V1.25 zoning would be preferable to say a condo complex?

Thanks,

-Gregg

On Mon, Feb 10, 2020 at 5:29 PM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey.

The normal shoreline setback for the entire island is 40 feet, but if your property is a legal lot of record created prior to the date of the adoption of the rule (PD Rule 11, which was January 19, 1997) and your lot is reduced by 50% by the 40-foot setback, then you can qualify for the 20-foot shoreline setback. Your lot was created on August 8, 1949 and therefore can qualify for the reduced 20-foot shoreline setback as the 40-foot setback reduces your building envelope below 50%.

There is nothing in the rule that says if the useable building area falls below 50% then a variance must be granted. It only allows the reduction from 40 feet to 20 feet.

As mentioned, you can apply for a shoreline setback variance but you will need a certified shoreline survey, you will need to do an environmental assessment and you will need to submit a shoreline setback variance and get approval from the Planning Commission at a public hearing.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Monday, February 10, 2020 1:05 PM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Re: GFrey Structure question on Alii

Hi Jeff- my understanding is that if due to setbacks, the useable building envelope falls below 50% of the lot area, a variance must be granted.....see subsection "b"...this is from the County website...

11-5 Establishment of Shoreline Setback Lines. (a) Except as otherwise provided in this section, all lots which abut the shoreline shall have a minimum shoreline setback line of forty feet (SEE EXAMPLE B). (b) ***Exceptions:*** (1) A lot which was created (final subdivision approval or a legal lot of record as determined by the Planning Department) prior to the date of adoption of this rule shall have a minimum shoreline setback line of twenty feet when one of the following exists: (a) When the average lot depth of a parcel is one hundred feet or less (SEE EXAMPLE C); or ***(b) When the buildable area of the parcel is reduced to less than fifty percent of the***

parcel after applying the forty-foot shoreline setback line and all state and county requirements of the parcel (SEE EXAMPLED)

On Mon, Feb 10, 2020 at 2:48 PM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

Not sure I can help you from here as this will be a call you have to make. I would not rely on the approval of a shoreline setback variance to allow you additional space to build. As I mentioned, the Commission has a history of not approving shoreline setback variances.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Monday, February 10, 2020 12:30 PM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: Re: GFrey Structure question on Alii

Hello Jeff, I thought I'd try another email before I call....

Regarding being able to build a "reasonably" sized house on 75-956 Alii, I am wanting to make an offer on the property, but I am a bit perplexed on how to get some type of assurance that it's not deemed "unbuildable" because of the shoreline setback? By reasonable,I understand that the width of the house could be roughly 30ft, as we'd 3 stories (piers +2 floors) so 12ft setbacks on the sides.54ft-24' =30ft.....OK for width.

Front being 20ft from Alii, and with a 20ft from current shoreline line, (from 2010) that would leave about a 20ft depth.....600sq ft per floor is not great but OK....

****my question is, can the County based on a new shoreline survey, and setbacks required, dictate that the lot is basically "unbuildable"?*****i.e. if the shoreline is moved towards Alii, and even with a 20ft setback variance, what if only say a 10ft. slice is left on the property to build on?

I am willing to risk the house being only 1200 sq ft or so, as long as there are ways to work out the regulations, but not if "unbuildable" obviously.

Any insights would be appreciated.....I can't really make it contingent on shoreline certification as it takes 4-6 months as I understand it.....

Thanks,

-Gregg

On Sun, Feb 9, 2020 at 12:10 PM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

You are correct on your first statement, even with piers. The piers would have to meet overall setbacks if you go higher than one story, two story, etc.

I am not familiar with the cost for sewer connection. May need to speak with a contractor.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Sunday, February 9, 2020 9:57 AM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Subject: GFrey Structure question on Alii

Jeff- thanks for answering my questions, especially on a Sunday!

So I think I was incorrectly interpreting the setback rules, I was thinking it was "floor by floor", in other words, the first floor is 8ft, then the second is 10ft, then the third is 12ft.....but from what you are explaining, it's the number of stories collectively that determines the overall, single setback number, correct.....?

So if we built the first of two floors on say 12ft tall piers, to meet FEMA rules, BFE, would our side setbacks be 10ft, or 12ft overall? It doesn't seem right to count piers as a "floor", since it's not actually a structure?

Also, do you happen to know the cost about for a sewer connection?

Thanks again!

-Gregg

On Sun, Feb 9, 2020 at 8:42 AM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

The height setbacks are for height regardless of the use of the structure. If the structure is two stories, the setback with be 10 feet, three stories will be 12 feet, etc. If you build a one-story structure and use the 8-foot setback, you may not be able to apply for the second story without a

sideyard/frontyard setback variance or making the first story meet the minimum 10-foot setback. The likelihood of receiving approval for a sy/fy setback variance is unlikely, especially along the shoreline.

The shoreline setback is extremely strict. The process to get approval for a shoreline setback variance is that you have to do the certified shoreline survey, an environmental assessment and submit a shoreline setback variance application to the Planning Commission. These types of variance requests do not come in often and they normally do not get approved as they do not want to be approving structures and uses closer to the shoreline than they already are.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Saturday, February 8, 2020 6:19 PM
To: Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov>
Cc: Imamura, Esther <Esther.Imamura@hawaiicounty.gov>
Subject: Re: SMA permit category

Hello Jeff, I appreciate your reply and information regarding 75-5956 Alii Dr. I understand I'd be looking at a long process of getting a new shoreline certification as one o the first orders of business.

Regarding the actual lot itself and the setbacks:

1) assuming the first structure is an open concrete "box", no inhabitable space.....does this count as a "story" regarding the setbacks? Or is only the first actual living space (built on top of the concrete box) would the first story living space, is this at 10ft setbacks, or the 8ft setbacks? Or could both be at 8 feet until the actual 2nd story (of living space) be subject to the next 10ft. of setback?

2) if a new shoreline point is established, further up the property, are there less than 20ft. setback variances.....otherwise, the lot could be basically unbuildable?

Thanks,

-Gregg

On Sat, Jan 18, 2020 at 11:35 AM Darrow, Jeff <Jeff.Darrow@hawaiicounty.gov> wrote:

Aloha Mr. Frey,

We apologize for the delay in responding. Your property is located on the shoreline and will need a current certified shoreline survey to process the SMA Assessment application. The survey may decrease the size of the lot if there has been a change along the shoreline. Single-Family dwellings are usually exempt but there is a stricter process when you abut the shoreline. Even an exemption determination will have conditions attached.

There are no projections allowed in the shoreline setback. You cannot project walls in any setback, only the cantilever of 4 feet max on side and the road setbacks but not shoreline.

Please feel free to call if you have further questions.

Thanx,

Jeff

Jeffrey W. Darrow, Planning Program Manager
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

808-961-8158

From: Gregg Frey <gwfrey57@gmail.com>
Sent: Wednesday, January 8, 2020 9:43 AM
To: Planning Internet Mail <planning@co.hawaii.hi.us>
Subject: Re: SMA permit category

Hello- I was just following up on this earlier email.

I also wanted to know if "overhangs" such as house walls can cantilever out over a foundation of piers in a tight building site due to shoreline and other setbacks?

In other words, are house walls allowed a certain amount of encroachment at say 11 or 12' above sea level? This is due to again a very small footprint house on a beach lot, where the house foundation may only be allowed to

be 20' x 15' (open garage use only) for flooding, yet to allow a reasonable sized SFR to be built on top of the open foundation. Zoning is V1.25 on particular lot of interest.

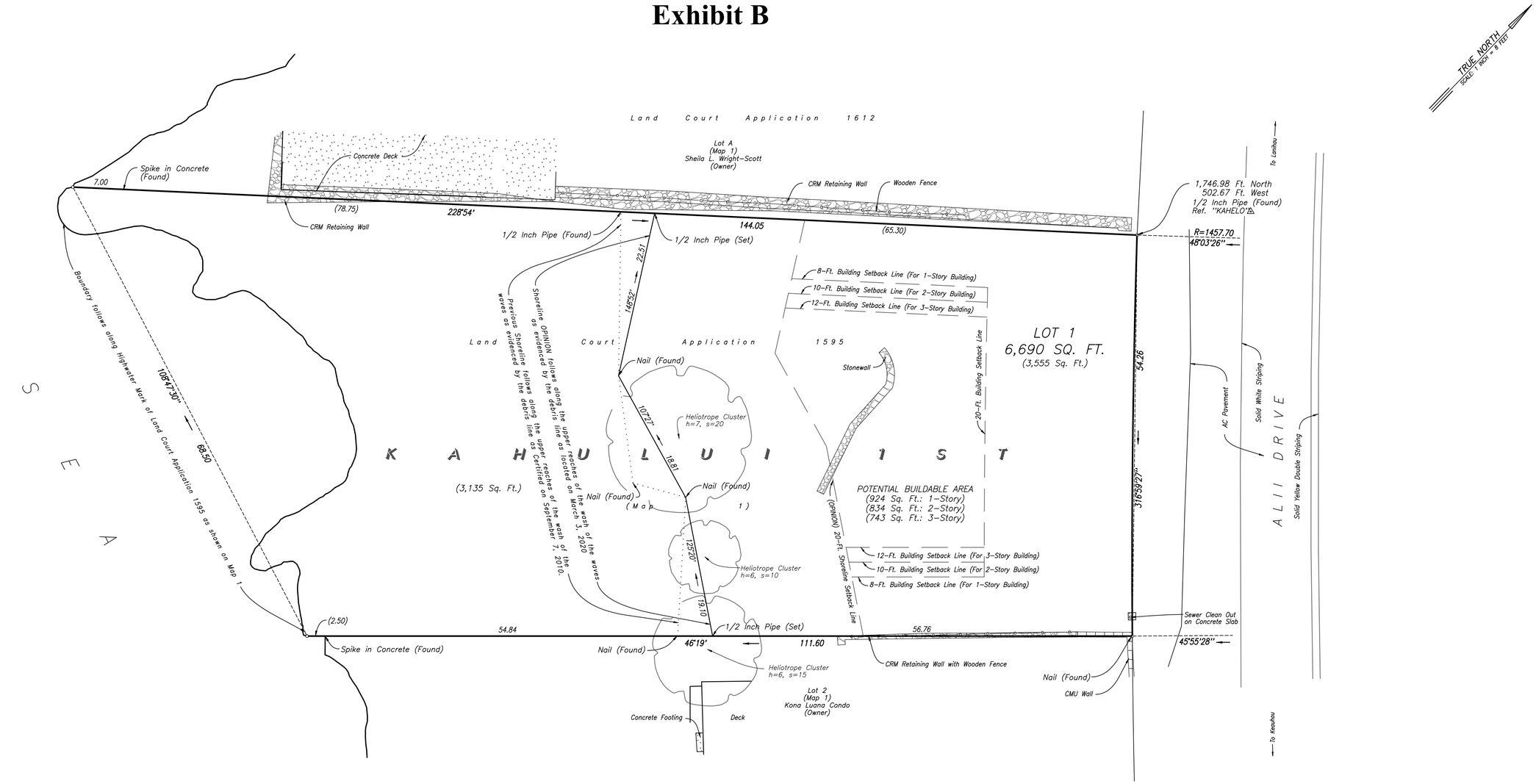
On Mon, Jan 6, 2020 at 9:24 PM Gregg Frey <gwfrey57@gmail.com> wrote:

Hello, I was wondering if a SFR built on an oceanfront lot (75-5956 Alii dr) is typically in the "minor" permit status, as per below? Even though the cost may be greater then $500K?

Thanks,
-Gregg Frey
425 941 3241 Seattle area

(i) SMA Short Form Assessment The Department may create a SMA short form assessment to be used by the Department to assess uses that may result in a determination that the proposed use is exempt, **i.e., single family residence,** minor grubbing, or accessory structures. The short form assessment may include, but not be limited to the following information: (1) The tax map number for the property; (2) A plot plan of the property, drawn to scale, with all proposed and existing structures shown thereon; (3) Description of the proposed action, including the extent ofland clearing, if any; (4) Description of any known historical sites, anchialine ponds, wetland, or sandy beach, and any other pertinent information. In case of a single family dwelling, a Building Pennit application may suffice as the plot plan required under (2). The Director may require a full SMAA ifit is determined through the short form assessment review that further information is needed from the applicant. The Director may impose certain conditions with the exemption determination to assure that the proposed use, activity, or operation does not have a significant adverse effect on the SMA.

Exhibit B



SHORELINE OPINION

MAP SHOWING
LOT 1 OF LAND COURT APPLICATION 1595
AS SHOWN ON MAP 1

At Kahului 1st, North Kona
Island and County of Hawaii, State of Hawaii

NOTES:

1. Denotes photograph number and direction of view.
2. Denotes number in photograph.
3. The features, shown hereon, represent ground conditions existing between January 19, 2006 and March 3, 2020.

8 4 0 8 16 24
SCALE IN FEET

Prepared For:
GREGG FREY
10220 181st Ave SE
Issaquah, Washington 98027
Property Address: 75-5956 Alii Drive

NICOLAS K. YAMASAKI
LICENSED PROFESSIONAL LAND SURVEYOR
No.12052
HAWAII, U.S.A.

This work was prepared by me or under my direct supervision.

NICOLAS K. YAMASAKI
Licensed Professional Land Surveyor
State of Hawaii Certificate Number LS-12052
Expiration Date: April 2020

Prepared By:
WES THOMAS ASSOCIATES
-- Land Surveyors --
75-5749 Kalawa Street
Kailua-Kona, Hawaii 96740-1817
TEL. (808) 329-2353
FAX (808) 329-5334 EMAIL surveys@wtahawaii.com

PROJECT NO.: 01183.6
DATE: . . . . . MARCH 25, 2020
FIELD BOOK NO.: . . 1217, 1270 AND 1382
TAX MAP KEY: . . . . 7-5-019:020 (3RD DIVISION)

March 25, 2020 p:\00000-02999\01183.6\dgn\011836sl.dgn

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 18, 2021

Land Planning Hawaii
Attention: Mr. John Pipan
Planning Administrator
194 Wiwoole Street
Hilo, Hawaii 96720

via email: info@landplanninghawaii.com

Dear Mr. Pipan:

SUBJECT: Early Request for Comment for Environmental Assessment for Shoreline Setback Variance Application located at 75-5956 Alii Drive, Kailua-Kona, Island of Hawaii; TMK: (3) 7-5-019:020 on behalf of Gregg **Frey**

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, (b) Office of Conservation & Coastal Lands, and (c) 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. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Enclosures
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 28, 2021

MEMORANDUM

FROM:

~~TO:~~ **DLNR Agencies:**

X Div. of Aquatic Resources (kendall.l.tucker@hawaii.gov)
__Div. of Boating & Ocean Recreation
X Engineering Division (DLNR.ENGR@hawaii.gov)
X Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
__Div. of State Parks
X Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
X Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
X Land Division – Hawaii District (gordon.c.heit@hawaii.gov)

TO: ~~FROM:~~ Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Early Request for Comment for Environmental Assessment for Shoreline Setback Variance Application
LOCATION: 75-5956 Alii Drive, Kailua-Kona, Island of Hawaii; TMK: (3) 7-5-019:020
APPLICANT: Land Planning Hawaii LLC on behalf of Gregg **Frey**

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments by **February 18, 2021.**

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. Thank you.

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: _____

Print Name: Carty S. Chang, Chief Engineer

Date: Feb 11, 2021

Attachments
cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji
Ref: Early Request for Comment for Environmental Assessment for Shoreline Setback Variance Application
Location: 75-5956 Alii Drive, Kailua-Kona, Island of Hawaii
TMK(s): (3) 7-5-019:020
Applicant: Land Planning Hawaii LLC on behalf of Gregg Frey

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 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), which can be viewed on our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT).

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) 270-7253.
- Kauai: County of Kauai, Department of Public Works (808) 241-4896.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: Feb 11, 2021

2/10/21

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 28, 2021

MEMORANDUM

TO: **DLNR Agencies:**
X Div. of Aquatic Resources (kendall.l.tucker@hawaii.gov)
__Div. of Boating & Ocean Recreation
X Engineering Division (DLNR.ENGR@hawaii.gov)
X Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
__Div. of State Parks
X Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
X Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
X Land Division – Hawaii District (gordon.c.heit@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Early Request for Comment for Environmental Assessment for Shoreline Setback Variance Application
LOCATION: 75-5956 Alii Drive, Kailua-Kona, Island of Hawaii; TMK: (3) 7-5-019:020
APPLICANT: Land Planning Hawaii LLC on behalf of Gregg **Frey**

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments by **February 18, 2021.**

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. Thank you.

( ) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: _____

Print Name: GORDON C. HEIT

Date: 2/9/21

Attachments
cc: Central Files

HA-21-86

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

2021 JAN 28 P 3:31

DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 28, 2021

MEMORANDUM

TO: **DLNR Agencies:**
X Div. of Aquatic Resources (kendall.l.tucker@hawaii.gov)
__Div. of Boating & Ocean Recreation
X Engineering Division (DLNR.ENGR@hawaii.gov)
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X Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
X Land Division – Hawaii District (gordon.c.heit@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Early Request for Comment for Environmental Assessment for Shoreline Setback Variance Application
LOCATION: 75-5956 Alii Drive, Kailua-Kona, Island of Hawaii; TMK: (3) 7-5-019:020
APPLICANT: Land Planning Hawaii LLC on behalf of Gregg **Frey**

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments by **February 18, 2021.**

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. Thank you.

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: _____

Print Name: Trevor Fitzpatrick

Date: 2/11/2021

Attachments
cc: Central Files

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF: OCCL: TF

COR: HA 21-86

John Pipan, Planning Administrator
Land Planning Hawaii LLC
194 Wiwoole St,
Hilo, HI 96720

FEB 11 2021

SUBJECT: Early Request for Comment for Environmental Assessment for Shoreline Setback Variance Application.
Located at 75-5956 Alii Drive, Kailua-Kona, HI 96740
Kahului 1st, North Kona, Island of Hawaii
TMK: (3) 7-5-019:020

Dear Mr. Pipan:

The Office of Conservation and Coastal Lands (OCCL) thanks you for your letter and its attachments regarding the subject matter. According to the information in the letter, your client is the owner of the parcel with the TMK: (3) 7-5-019:020 and is seeking relief from the 40-foot shoreline setback by way of a Shoreline Setback Variance application with the County of Hawaii. A recent Certified Shoreline Survey (approved November 2020) has revealed that approximately 3,000 sq. ft (45%) of the parcel is seaward of the shoreline. The Shoreline Setback Variance would establish a 20-foot shoreline setback and allow the owner of the parcel to move forward with their proposed plans for building a three (3) story structure containing 2,024 sq. ft of interior floor space, 757 sq. ft of lanai including a rooftop deck, and would consist of 3 bedrooms and 2 ½ bathrooms.

The letter further notes that lateral access along the shoreline will be maintained under the proposed project and no shoreline hardening is proposed. Land Planning Hawaii LLC is preparing an Environmental Assessment for the proposed project in support of the requested Shoreline Setback Variance.

The OCCL regulates land uses in the State Land Use Conservation District through the issuance of Conservation District Use Permits and Site Plan Approvals to help conserve, protect, and preserve important natural and cultural resources. We thank you for the opportunity to provide comments in advance of preparing an Environmental Assessment regarding the subject matter. Based on the information you have provided; it appears that the portion of the parcel with the TMK: (3) 7-5-019:020 that lies makai of the Certified Shoreline is in the Resource Subzone of

the State Land Use Conservation District. Additionally, it appears that a portion of the parcel with the TMK: (3) 7-5-019:020 lies within the sea level rise exposure area (SLR-XA). In preparing the Environmental Assessment, we encourage the landowner and their agent to review Senate Bill (SB) 2060 (Act 16). A copy of SB 2060 Act 16 can be obtained at https://www.capitol.hawaii.gov/session2020/bills/SB2060_.HTM . The OCCL also suggests that the landowner and their agent review the Hawaii Sea Level Rise Vulnerability and Adaptation Report (2017). A copy of the report can be obtained at https://climateadaptation.hawaii.gov/wp-content/uploads/2017/12/SLR-Report_Dec2017.pdf .

Should you have any questions, please feel free to contact Trevor Fitzpatrick of the Office of Conservation and Coastal Lands at 798-6660 or trevor.j.fitzpatrick@hawaii.gov .

Sincerely,

Sam Lemmo

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

CC: Chairperson
Hawaii Land Division Office
County of Hawaii, Planning Department

DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE

LOG # 2988

DATE: 1/19/2021

FROM: **David Smith**

DUE: _____

TO	INITIAL	
___	___	Smith, David
___	___	Arnott, Chelsea
___	___	Atwood, Joshua
___	___	Bartlett, Randall
___	___	Berry, Lainie
___	___	Chee, Marissa
___	___	Chee, Patrick
___	___	Cullison, James (Andy)
___	___	Del Rosario, Michelle
___	___	Ersbak, Katie
___	___	Haines, William
___	___	Hauff, Robert
___	___	Heimuli, Pua
___	___	Keir, Matthew
___	___	Khim, Celia
___	___	King, Cynthia
___	___	Laramee, Leah
___	___	Lau, Rick
___	___	Lee, Amy
___	___	Lee, Sharleen
✓	___	Matsuoka, Koa
___	___	Matsuwaki, Dwight
___	___	McMillen, Heather
___	___	Millay, Mike
___	___	Oda, Ray
___	___	Omick, Jason
___	___	Pali, Jan
___	___	Penn, David
___	___	Renshaw, Lindsay
___	___	Rowland, Moana
___	___	Rubenstein, Tanya
___	___	Scheiner, Katrina
___	___	Scheiner, Katrina

TO	INITIAL	
___	___	Siddiqi, Afsheen
___	___	Sischo, David
___	___	Sprecher, Irene
___	___	Stanaway, Kathryn
___	___	Stiefel, Sidney
___	___	Terrago, Rubyrosa
___	___	Walker, Michael
___	___	Yuen, Emma

FOR:

___	*See Me*
___	*Approval*
___	*Signature*
___	*Information*
___	*Return to:*
✓	*Approp. Action*
✓	*Comments/Recom*
___	*Draft Reply*
___	*Reply to Chair*

Hawaii *Attn:* _____
Kamuela *Attn:* _____
Kauai *Attn:* _____
Maui *Attn:* _____

OCCL

DLNR

Mitchell D. Roth
Mayor

Lee E. Lord
Managing Director

Steven Ikaika Rodenhurst, P.E.
Director

Merrick H. Nishimoto
Deputy Director

County of Hawai'i
DEPARTMENT OF PUBLIC WORKS
Aupuni Center
101 Pauahi Street, Suite 7 · Hilo, Hawai'i 96720-4224
(808) 961-8321 · Fax (808) 961-8630
public_works@hawaiicounty.gov

FEBRUARY 10, 2021

ATTN: JOHN PIPAN
LAND PLANNING HAWAII LLC
194 WIWOOLE STREET
HILO, HAWAII 96720
(via email to info@landplanninghawaii.com)

SUBJECT: EARLY REQUEST FOR COMMENT FOR ENVIRONMENTAL ASSESSMENT FOR SHORELINE SETBACK VARIANCE APPPLICATION
KAILUA-KONA, NORTH KONA DISTRICT, ISLAND OF HAWAII
TMK: (3) 7-5-019:020

We received the subject dated January 14, 2021 and have the following comments:

The subject parcel is in an area designated as Flood Zone X and VE on the Flood Insurance Rate Map (FIRM) by the Federal Emergency Management Agency (FEMA). Flood Zone VE is the Special Flood Hazard Area inundated by the 100-year coastal flood (1% chance of occurring in any given year) with velocity hazard (wave action). All construction within Flood Zone VE shall comply with the requirements of Hawaii County Code, Chapter 27, Floodplain Management.

All activities shall comply with the requirements of Hawaii County Code, Chapter 10, Erosion and Sedimentary Control. Agricultural operations may qualify for a conservation program with the applicable soil and water conservation district. An approved conservation program would be an exclusion to Chapter 10.

Construction within the County right-of-way shall comply with HCC, Chapter 22, County Streets.

Should there be any questions concerning this matter, please contact Ms. Robyn Matsumoto in our Engineering Division at (808) 961-8924.

ALAN K. THOMPSON, Acting Division Chief
Engineering Division

RM

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAI'I
345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAI'I 96720
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

January 28, 2021

Mr. John Pipan
Land Planning Hawai'i LLC
194 Wiwoole Street
Hilo, HI 96720

Dear Mr. Pipan:

Subject: Early Request for Comment for Environmental Assessment for Shoreline Setback Variance Application
Tax Map Key 7-5-019:020

This is in response to your letter dated January 14, 2021.

Please be informed that the Department can confirm that an existing service lateral, which can accommodate a 5/8-inch meter, is assigned to the subject parcel.

For your information, one (1) unit of water allows for an average daily usage of 400 gallons served through a 5/8-inch meter and is suitable for one (1) single-family dwelling.

The Department has no comments regarding the subject variance.

Should there be any questions, please contact Mr. Troy Samura of our Water Resources and Planning Branch at 961-8070, extension 255.

Sincerely yours,

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

TS:dfg

copy – Planning Department

Mitchell D. Roth
Mayor

Lee E. Lord
Managing Director

Robert R.K. Perreira
Acting Fire Chief

County of Hawai'i
HAWAI'I FIRE DEPARTMENT
25 Aupuni Street • Suite 2501 • Hilo, Hawai'i 96720
(808) 932-2900 • Fax (808) 932-2928

January 26, 2021

John Pipan
Planning Administrator
Land Planning Hawaii LLC
194 Wiwoole Street
Hilo, HI 96720

Dear Mr. Pipan:

SUBJECT: **Early Request for Comment for Environmental Assessment for Shoreline Setback Variance Application**
Kailua-Kona, North Kona, Hawai'i; TMK No.: (3) 7-5-019:020

In regard to your request for comments on the Shoreline Setback Variance for the above-entitled property, the Hawai'i Fire Department has no comments.

If there are any further questions, please contact the Fire Prevention Bureau at 932-2911.

Sincerely,

Robert R. K. Perreira
Acting Fire Chief

RP:cf

Harry Kim
Mayor

Paul K. Ferreira
Police Chief

Kenneth Bugado, Jr.
Deputy Police Chief

County of Hawai'i

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

February 2, 2021

Mr. John Pipan
Planning Administrator
Land Planning Hawaii, LLC
194 Wiwoole Street
Hilo, HI 96720

Dear Mr. Pipan:

SUBJECT: EARLY REQUEST FOR COMMENT FOR ENVIRONMENTAL ASSESSMENT FOR SHORELINE SETBACK VARIANCE APPLICATION
KAILUA-KONA, NORTH KONA, HAWAI'I TMK: (3) 7-5-019: 020

The above-referenced Early Request for Comment for Environmental Assessment for Shoreline Setback Variance Application has been reviewed and we offer no comments at this time.

Should you have any questions or concerns, please contact Captain Gilbert Gaspar Jr., Commander of the Kona District, at 326-4646, extension 299.

Sincerely,

PAUL K. FERREIRA
POLICE CHIEF

#4

CHAD BASQUE
ASSISTANT POLICE CHIEF
AREA II OPERATIONS

GG/jaj
21HQ0064

Feb 12 2021

Dear Mr. Dipan,

I enjoyed our chat a few days ago. I own a unit in Kona Sunset directly next to the empty lot referred to as

TMK: (3) 7-5-019:020.

A huge chain link fence has been erected on this property which encroaches onto our Kona Sunset property. If we have lost access to that side of our unit. The overgrowth on the lot is an eye soar to the community. Please work it out so we have access to our side of our property so we can clean it up, do pruning etc. Also please see that the overgrowth is inappropriate to all Drs and our community — hazardous for wild animals and mosquitos. Thank you for your attention to this matter

Sincerely, Rosemary Miller

PAINTINGS BY ROSEMARY MILLER

SEASIDE ART GALLERY
& ARTIST'S STUDIO
75-5958 ALII DR., UNIT 1
(808) 326-7769 STUDIO
(808) 326-7307 HOME
WWW.SEASIDEARTGALLERY.COM
ROSEMARY@SEASIDEARTGALLERY.COM

"THE WHOLE EARTH IS FULL OF HIS GLORY."
ISAIAH 6:3

HAWAIIAN TROPICALS, ASIAN,
AND GREEN DESIGN