

Appendix A

December 2013 Preliminary Engineering Report (PER)

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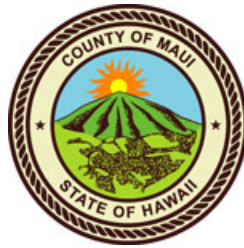
Preliminary Engineering Report

WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM

Wahikuli, Lahaina, Maui, Hawaii

TMK (2) 4-5-14, 4-5-27, 4-5-28, 4-5-30, 4-5-36

Prepared For:



Wastewater Reclamation Division
Department of Environmental
Management
County of Maui
Wailuku, Maui, Hawaii



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I. INTRODUCTION

A. Objective

The major objective of this project is to evaluate the feasibility of designing a gravity sewer system for the Wahikuli Subdivision at Wahikuli in Lahaina, Maui, Hawaii. Wahikuli Subdivision consists of 231 single-family house lots, each which is currently serviced by either a cesspool or individual waste water system (septic tanks).

As this subdivision is located immediately above Honoapiilani Highway, which abuts the existing Wahikuli Wayside Park on the Pacific Ocean, the EPA has mandated that house lots with more than one residence needs to replace their cesspools (also known as “large capacity cesspools”) with septic tanks, unless the County of Maui WWRD Division provides a gravity sewer system for the Wahikuli Subdivision to minimize the seepage of pollutants from the cesspools from entering the clear Class A waters along Wahikuli Wayside Park. According to the EPA, there appears to be thirty-five (35) non-compliant large capacity cesspools located within the subdivision. The County of Maui is therefore evaluating the feasibility of providing a gravity sewer system into which the individual house lots can tie into and abandon their current cesspool or septic tank system.

B. Site Location

The Wahikuli Subdivision is located in Lahaina, north of Lahaina Town. It is bordered by the Villages of Leiali'i Phase IA to the north, fallow former sugar cane fields to the east, a single-family residential Wahikuli Terrace subdivision to the south, and Honoapiilani Highway/Wahikuli Wayside Park to the west (see Figure 1).

The Wahikuli Subdivision generally slopes at natural grades between approximately 5 to 10% in the east to west direction, from an elevation of 130(±) feet at its northeastern property line to 10(±) feet at Honoapiilani Highway.

C. Project Description

The project involves providing a gravity sewer system for the 231 single-family house lots which will flow to the existing wet well of the Lahaina No. 3 Pump Station located approximately 975 feet south of Fleming Road. The gravity sewer system has to avoid existing drainage culverts and waterlines servicing the Wahikuli Subdivision. An extensive topographic survey within the road right-of-ways of visible utilities, roadway elevations and driveways leading to the property lines of each house lot was undertaken as part of this project. However, the topographic survey of the parcels's yard and structures were not commissioned as part of the

scope of work for this project.

This created the basis for determining the layout of the gravity sewer system to avoid existing utilities, drainlines, waterlines, driveways, power poles and other miscellaneous obstacles within the roadways of the residential subdivision.

II. EXISTING CONDITIONS

A. Design Constraints

The earliest portions of the Wahikuli Subdivision along Malo Road and a portion of Wahikuli Road (TMK (2) 4-5-14) were built in the 1920's. The portion of Wahikuli Subdivision along Fleming Road and a portion of Wahikuli Road were subdivided in the 1940's. Development of the remaining portion of the Wahikuli Subdivision serviced by Kaniau Road and Malanai Street were completed in the mid 1960s and early 1970s. This was before the Lahaina Sewer System was constructed in the mid-to-late-1970s. As a result, each house lot is currently serviced by individual cesspool or septic tank systems.

Of the 231 house lots, we have identified 38 house lots for which connection to the gravity sewer system within the roadways by gravity will be difficult. "Exhibit CC - Aerial Photo showing Existing Sewer Easements and Contours (Screened)" identifies these 38 house lots with red triangles in their upper left corners.

The determination on which lots can be connected by gravity connection was made based on a visual analysis based on reviews of existing aerial photographs, general knowledge of the area and a review of old aerial topographic survey maps from the Villages of Leiali'i project. It is by no means accurate due to the lack of current topographical survey information within the existing lots (such as building location and elevations, sewer line invert elevations at the cesspools, etc.). The majority of the homes identified as probable parcels which would not be able to connect by gravity connections are split level type homes, many of which have cottages, swimming pools or other limiting factors which may make it difficult to connect by gravity due to differences in elevation within the parcel.

During our initial project scope meeting, we noted that there were grade differences which may make the connection of all existing dwellings to the proposed sewer mains within the roadways very difficult unless the sewerlines are very deep, possibly 20 ft or deeper.

We also noted that there were known obstructions in the rear yards which would need to be surveyed in order to analyze the possibility of installing sewerlines in private property. The extent of the survey work for the project was limited to the roadways and did not include surveying in the individual properties. Therefore, we

do not have current survey information on the location and elevation of the existing obstructions in the parcels on the makai (west) side of Lokia, Aa, Kuuipo and Ainakea Streets and can only be determined by visual analysis at this time.

We had aerial topographic information that was obtained in the 1990s when our office was the primary consultant for the State HFDC Villages of Leiali'i housing project, but this information was from a high altitude flight which produced the 5 ft contour intervals (shown in Exhibit CC) and only reflects improvements that were on the parcels at the time the aerial photography was taken.

Although there are existing sewer easements in the Wahikuli 5th Series lots (Lokia and a portion of Aa Streets), the construction plans do not indicate that the sewerlines were installed within these easements and based on a visual check, there appear to be possible cottages and/or swimming pools close to or within portions of the designated easements. These sewer easements are in favor of the State of Hawaii and would need to be conveyed to the County of Maui.

A geotechnical subsurface investigation by Hawaii Geotechnical Consulting, Inc., was commissioned by WWRD to take 3 borings along Malanai Street to assess the typical depth to bedrock, and 5 additional borings along Malo Street to assess the typical depth to bedrock as well as the groundwater elevation. The findings for the geotechnical subsurface investigation are presented in more detail in Section IV of this Preliminary Engineering Report.

B. Assumptions Made

The following assumptions were made with regard to the feasibility of constructing the gravity sewer main for the Wahikuli Subdivision:

- (1) Except for Malo Street, all trenches made during the construction of the gravity sewer system in each of the other roadways would not encounter groundwater.
- (2) Except for Malo Street, the cost of the gravity sewer line construction for all other streets above Malo Street would be identical independent of the Alternatives considered for subsequent tie-in to the existing operational Lahaina No. 3 Pump Station.
- (3) The As-built records show the inverts of SMH #10 (inv = -4.70 ft) fronting the wet well at the operational Lahaina No. 3 Pump Station mauka of Honoapiilani Highway and SMH #1A (inv = -0.06 ft) immediately south of the abandoned (original) Lahaina No. 3 Pump Station makai of Honoapiilani Highway. Assuming the inverts shown on the As-built records are accurate, the gravity sewer system servicing the Wahikuli Subdivision would therefore

need to slope down to an elevation above each of these two inverts to be feasible.

III. DESIGN ALTERNATIVES EXPLORED

A. Connections to Existing Sewer System leading to the Operational Lahaina No. 3 Pump Station - Mauka and Makai Alternatives

There are two possible main tie-ins to the existing operational Lahaina No. 3 Pump Station:

- (a) Tie-in to the existing SMH #10 directly in front of the wet well for the operational Lahaina No. 3 Pump Station on the mauka (eastern) side of Honoapiilani Highway.
- (b) Tie-in to the existing SMH #1A immediately south of the abandoned original Lahaina No. 3 Pump Station on the makai (western) side of Honoapiilani Highway. SMH #1A connects to an existing 18" PVC gravity sewer line which flows southward to Lahaina Town, then crosses Honoapiilani Highway eastward to SMH #10 directly in front of the wet well for the operational Lahaina No. 3 Pump Station.

There is an additional secondary tie-in, if needed, to a sewer manhole immediately to the north of the Wahikuli Subdivision which services the Villages of Leiali'i Subdivision. This sewer manhole is connected to a 12" sewer line that crosses Honoapiilani Highway and travels southward to tie into the existing SMH #1A.

Given the two main tie-in points on the mauka and makai sides of Honoapiilani Highway, the Plan & Profiles for the 8" PVC sewer lines and sewer manholes for each of the following streets were first developed, avoiding conflicts with existing drainlines and waterlines while maintaining minimum slope criteria:

- (1) Lokia Street
- (2) AA Street
- (3) Kuuipo Street
- (4) Ainakea Street
- (5) Kaniau Road
- (6) Kalani Road

- (7) Kekai Road
- (8) Malanai Street
- (9) Wahikuli Road
- (10) Fleming Road
- (11) Malo Street

The profile of Alternative 1 (the mauka tie-in to the operational Lahaina No. 3 Pump Station) dictated that a 12" PVC gravity sewer line be used along Malo Street in order to enable a minimum slope of 0.29% (vs. 0.50% for the 8" PVC gravity sewer line). This minimum slope was required in order to enable the tie into the existing SMH #10 fronting the wet well of the Lahaina No. 3 Pump Station at invert -3.26 ft (see "Exhibit BB - Plan View of Proposed Tie-in to Existing SMH #10").

The profile of Alternative 2 (the makai tie-in to existing SMH #1A) dictated that the low point for the 12" PVC sewer line be close to that of the existing SMH #1A across from Honoapiilani Highway. A sewer manhole was therefore created at Sta 12+31 on Malo Street, and connected to the existing SMH #1A at invert 0.85 ft (see "Exhibit AA - Plan View of Proposed Tie-in to Existing SMH #1A (LA03XA0900)").

Note also that at the northern end of Malo Street, at Sta 1+70, there is a high point in the roadway. This dictated that the flow that moves in a northerly direction be tied into the existing SMH that serves the Villages of Leiali'i Subdivision (see "Exhibit M - Profile - Malo Street (1 of 3) - Alternative 1 (Mauka Tie-in to SMH #10)" and "Exhibit H - Profiles - Kalani Road, Baseline A and Lokia Street - Alternative 1 & 2").

"Table A - Wahikuli Subdivision Gravity Sewer System Alternatives - Pros & Cons" provides the advantages and disadvantages of Alternatives 1 and 2. By mutual agreement between WWRD and interested parties, Construction Cost Estimates aside, Alternative 1 was the preferred route, primarily for the following reasons listed in Table A:

- (1) Alternative 1 avoids the need to cross beneath the existing Sugar Cane Train tracks.
- (2) Alternative 1 avoids the need to cross the 4-lane Honoapiilani Highway (which was just resurfaced in March, 2013, from Kaanapali Parkway to Lahainaluna Road). HDOT regulations preclude any work on newly paved State Highways for a period of 1 year from the date of resurfacing.

- (3) Alternative 1 avoids triggering a need for a Major SMA Use Permit which involves substantial time and expense and requires a Planning Commission Hearing and approval which can take up to one year to schedule.
- (4) Alternative 1 avoids triggering a need for a possible Environmental Assessment Report and publication in the OEQC's "The Environmental Notice" which can take up to 6 months.
- (5) Alternative 1 avoids triggering a need for a possible Shoreline Certification which can take up to 6 months.
- (6) Alternative 1 utilizes a corridor between Fleming Road and the existing SMH #10 which is already owned by the County of Maui, TMK (2) 4-5-30:137.
- (7) The feasibility of making a tie-in to SMH #10 was confirmed.

B. House Lots with No Direct Gravity Tie-ins - Preliminary Aerial Photo Based Study

Assuming that the County of Maui WWRD Division does go through with constructing a gravity sewer system, in Section II.A. of this Report we identified 38 house lots for which connection to the gravity sewer system within the existing subdivision roadways will be difficult (see "Exhibit CC - Aerial Photo showing Existing Sewer Easements and Contours").

This Engineering Study considered three possible alternatives for these houses with no direct access to the proposed gravity sewer system within the subdivision roadways as follows:

- (1) Use of the existing sewer Easement "A" between Lokia Street and Aa Street, and sewer Easement "B" between Aa Street and Kaniau Road (see Exhibit CC - Aerial Photo Showing Existing Sewer Easements and Contours)."

Based on the 5-foot contours shown on Exhibit CC, which seem to indicate that the houses on the makai side of Lokia Street might possibly be serviced by a gravity sewer line running within the sewer easement "A", a detailed topographic survey would need to be done along this easement to explore the feasibility of this option. If this option turns out to be feasible, an additional seven (7) houselots would be able to tie into the gravity sewer system.

The same Exhibit CC indicates that the ground surface at the "bend" (south westerly corner) in sewer Easement "B" is approximately at elevation 75 feet. In order to tie into the nearest SMH in Aa Street the depth of that invert and all downstream SMHs would have to be increased by at least another 6

feet. Again, a detailed topographic survey would need to be done along this easement to explore the feasibility of this option. If this option turns out to be feasible, an additional nine (9) houselots would be able to tie into the gravity sewer system.

- (2) Possible use of existing drainage easements between Lokia Street and Aa Street, between Aa Street and Kuuipo Street, between Kuuipo Street and Ainakea Road, and between Ainakea Road and Malo Street.

If it is possible to utilize the previously mentioned existing drainage easements houselots on Lokia Street, Aa Street and Kuuipo Street could be connected to the proposed gravity sewer system.

However, this matter needs to be explored by WWRD with Corporation Counsel as the drainage easement is also apparently in favor of the State of Hawaii.

- (3) Installation/retrofit sump/grinder pumps with outflow pipe to the proposed gravity sewer system.

The use of sump/grinder pumps is not in the scope of work for the WWRD. Its cost to design and construct one on each lot is to be borne by the individual lot owner (refer to Section V.B. for the Estimated Installation Cost of a sump/grinder pump).

C. House Lots with No Direct Gravity Tie-ins - Supplementary Ground Photo Based Study

At the request of WWRD, a ground-based photographic analysis of the interior corridors between Lokia and Aa Streets, Aa and Kuuipo Streets, and Kuuipo and Ainakea Streets was performed. The locations at which the photos were taken from and the direction of the view are shown in Exhibits EE and FF. The photos corresponding to Exhibits EE and FF are shown in Appendix C.

Exhibit GG presents the result of our Ground Photo Based Study.

- (1) Use of Existing Sewer Easement “A” and Existing Drainline Easement within TMK 4-5-28:49

If the Existing Drainline Easement within TMK 4-5-28:49 can be converted to a Sewer and Drainage Easement, then all seven (7) “landlocked” houselots along Lokia Street that have been identified as not being able to connect to the proposed Lokia Street gravity sewerline can be linked to the gravity sewer system (see Exhibit GG).

- (2) Use of Existing Sewer Easement “B” and Existing Drainline Easement within TMK 4-5-28:05 and TMK 4-5-28:25

If the Existing Drainline Easement within TMK 4-5-28:05 and TMK 4-5-28:25 can be converted to a Drainage and Sewer Easement, then the nine (9) northernmost “landlocked” house lots fronting Aa Street that have been identified as not being able to connect to the proposed Aa Street gravity sewerline can be linked to the gravity sewer system (see Exhibit GG).

- (3) Creation of Future Sewer Easements in TMK 4-5-28:25, TMK 4-5-28:26 and TMK 4-5-28:29

If future Sewer Easements can be created in the Parcels listed above, another three (3) “landlocked” house lots fronting Aa Street can be linked to the gravity sewer system (see Exhibit GG).

- (4) Creation of Future Sewer Easements in TMK 4-5-27:46 and TMK 4-5-27:47

If future Sewer Easements can be created in the Parcels listed above, another “landlocked” house lot fronting Kuuipo Street can be linked to the gravity sewer system (see Exhibit GG).

- (5) Use of Existing Drainline Easement within TMK 4-5-27:26 and Creation of Future Sewer Easements in TMK 4-5-27:34 through TMK 4-5-27:40

If the Existing Drainline Easement within TMK 4-5-27:26 can be converted to a Drainage and Sewer Easement and future Sewer Easements can be created in the Parcels listed above, another eight (8) “landlocked” house lots fronting Kuuipo Street can be linked to the gravity sewer system (see Exhibit GG).

- (6) Creation of Future Sewer Easement in TMK 4-5-14:17

If a future Sewer Easement can be created in the Parcel listed above, then one “landlocked” house lot fronting Ainakea Road can be linked to the gravity sewer system (see Exhibit GG).

- (7) Creation of Future Sewer Easement in TMK 4-5-14:14, TMK 4-5-14:15, TMK 4-5-14:83 and TMK 4-5-14:94

If a future Sewer Easement can be created in the Parcels listed above, then an additional five (5) “landlocked” house lots fronting Ainakea Road can be linked to the gravity sewer system (see Exhibit GG).

If each of these seven (7) Action Items can be completed, only four (4) remaining house lots (out of the original 38 “landlocked” houselots) will remain “landlocked” and need to install sump/grinder pumps with outflow pipe to the proposed gravity sewer system (see Exhibit GG).

D. “No Action” Alternative

This Engineering Study also considered one other possible alternative for the houses in the Wahikuli Subdivision if WWRD decides NOT TO CONSTRUCT the gravity sewer system: Replacing cesspools with septic tanks

The EPA only mandates that cesspools that service two or more dwellings on a single lot needs to abandon their existing cesspool and convert to a septic tank (or other treatment system). There are thirty-five (35) parcels identified by the EPA as being non-compliant. These lot owner will be subject to fines soon to be assessed by the EPA. Conversion of cesspools to septic tanks is not in the scope of work for WWRD, and the cost of the septic tank replacement is to be borne by the individual lot owner (refer to Section V.B. for the Estimated Installation Cost to convert a cesspool to a Septic Tank system).

IV. SUMMARY OF GEOTECHNICAL SUBSURFACE INVESTIGATION

A. Depth to Bedrock

Per the Hawaii Geotechnical Consulting Geotechnical Investigation Report dated October 6, 2013, along Malanai Street fresh formational gray basalt was encountered from depths of 4 to 6 feet. The basalt was generally hard and occasionally broken over its upper 3 to 5 foot depths and massive below. Appendix A provides the entire Geotechnical Investigation Report.

B. Groundwater Elevations along Malo Street

Groundwater was encountered on each of the 5 Malo Street borings, ranging from elevations of 0.7 feet to 2.6 feet above MSL. Appendix A provides the entire Geotechnical Investigation Report.

V. COST ESTIMATES

A. Tie-In Alternatives

Table B provides a Quantity Takeoff Worksheet for Alternative 1. The following quantities were calculated:

- (1) 12,203 l.f. of 8" PVC Sewer sdr 26 pipe

- (2) 3,441 l.f. of 12" PVC Sewer sdr 26 pipe
- (3) 5,713 l.f. of 6" PVC Sewer laterals
- (4) 56 Concrete SMH (Standard)
- (5) 1 Concrete SMH (Shallow Drop)
- (6) 3 Concrete SMH (Deep Drop)

Table C provides a Cost Estimate Comparison for Alternatives 1 and 2. The unit prices and lump sum estimates were obtained from a respected local General Contractor on Maui. Traffic Control for Alternative 2 was assumed to be 15% higher than for Alternative 1 since Alternative 2 requires crossing beneath the Sugar Cane Train tracks and 4 lanes of Honoapiilani Highway.

The total cost estimate for Alternative 1 is \$7,683,387. The total cost estimate for Alternative 2 is \$7,321,497.

Therefore, Alternative 1 will cost approximately $\$7,683,387 - \$7,321,497 = \$361,890$ more than Alternative 2. Put in perspective, this is only $\$361,890/\$7,683,387 = 4.71\%$ more than Alternative 2.

B. Sewer lines for Interior House Lots

If additional sewer lines for interior house lots are provided by the County for either Alternative 1 or Alternative 2, Table D shows that an additional \$1,354,800 will be required, exclusive of the costs to

- (1) Converting existing sewer easements in favor of the State of Hawaii to in favor of the County of Maui
- (2) Converting existing drainage easements in favor of the State of Hawaii to drainage and sewer easement in favor of the County of Maui
- (3) Creating/acquiring new sewer easements in existing house lots

The costs associated with the work described in this Section B is not included in the scope of work for WWRD. The costs associated with this work is to be borne by the individual lot owners. Otherwise, the lot owner will be subject to fines soon to be assessed by the EPA.

Engineering Dynamics Corporation prepared the following cost estimate for Individual Package Sewage Lift Station for Lots below Gravity Sewer System

(reported here for convenience - see Appendix B - Sump Pump and Septic Tank Cost Estimates by Engineering Dynamics Corporation for details):

Description:

“The package sewage lift station would consist of a single grinder sewage pump with within a 2 ft diameter by 5 ft deep fiberglass reinforced basin with polypropylene plastic cover. The pump would be rated for 20-30 gpm at a total dynamic head of 60-70 ft. (Grinder pump utilize a higher rpm to insure shredding of solids which result in higher discharge pressures). The pump would have a 2 Hp motor suitable for 240 volts 1 phase. A simplex control panel with float switches is used to control the pump. Pump discharge will be 2-inch diameter PVC force main.”

Estimated Installation Cost:

<i>Package Sewage Lift station delivered to site</i>	<i>\$5,000</i>
<i>Excavation for sump</i>	<i>\$1,500</i>
<i>Installation of lift station and Connection to house</i>	<i>\$2,000</i>
<i>100 ft of 2-inch PVC force main including trench excavation & backfill</i>	<i>\$6,000</i>
<i>Electrical Connection of control panel to house</i>	<i>\$2,500</i>
<i>Subtotal</i>	<i>\$17,000</i>
<i>10% Contingency</i>	<i>\$1,700</i>
<i>25% General Contractor Mark Up</i>	<i>\$4,675</i>
<i>Total</i>	<i>\$22,375</i>

In the event that the County of Maui Wastewater Reclamation Division decides that the proposed Wahikuli Subdivision Gravity Sewer System is not feasible, the existing cesspools will need to be converted to Septic Tanks.

Description:

“Installation of a Septic Tank and convert the existing cesspool into a seepage pit.”

Estimated Installation Cost:

<i>1250 gallon plastic septic tank delivered to site</i>	<i>\$1,500</i>
<i>Excavation for septic tank</i>	<i>\$2,000</i>
<i>Installation of septic tank (filter fabric & crushed rock)</i>	<i>\$1,500</i>
<i>30 ft of 4" PVC gravity sewer</i>	<i>\$1,500</i>
<i>Pump out existing cesspool</i>	<i>\$ 600</i>
<i>Subtotal</i>	<i>\$7,100</i>
<i>10% Contingency</i>	<i>\$ 710</i>

25% General Contractor Mark Up **\$1,952**
Total **\$9,762**

Based on the Cost Estimate provided for the Installation of a Septic Tank immediately above, we can estimate the cost of a 60 ft long gravity sewer lateral as follows:

60 ft of 4" PVC gravity sewer		<u>\$3,000</u>
	Subtotal	<u>\$3,000</u>
	10% Contingency	<u>\$300</u>
	25% General Contractor Mark Up	<u>\$825</u>
	Total	<u>\$4,125</u>

C. Cost Summary

Alternative 1 only

(1)	Cost to County for Gravity Sewer System Alternative 1	\$7,683,387
(2)	Additional Cost to Owners for Grinder Pumps (38 lots x \$22,375)	\$850,250
(3)	Additional Cost to Owners for 4" Sewer Lateral (231 - 38 = 193 x \$4,125)	<u>\$796,125</u>
	Subtotal	\$9,329,762

Alternative 1 plus 34 Interior Lots

(1)	Cost to County for Gravity Sewer System Alternative 1	\$7,683,387
(2)	Additional Cost to County for Interior Lots (34 lots)	\$1,354,800
(3)	Additional Cost to Owners for Four (4) Grinder Pumps (4 x \$22,375)	\$89,500
(4)	Additional Cost to Owners for 4" Sewer Lateral (231 - 4 = 227 x \$4,125)	<u>\$936,375</u>
	Subtotal	\$10,064,062

“No Action” Alternative

(1)	Conversion of Cesspools to Septic Tanks (35 Lots x \$9,762)	<u>\$341,670</u>
	Subtotal	\$341,,670

VI. FINAL RECOMMENDATION

Given the comparison of Pros and Cons for Alternative 1 and 2 listed in Table A, and the 4.71% marginally higher cost estimate for Alternative 1 in Table C, ***Alternative 1 is the preferred gravity sewer system.***

It is highly recommended that WWRD commissions a detail topographic survey of sewer Easements “A” and “B” and the drainage easements apparently straddling the existing drain lines. It is also highly recommended that the detail topographic survey be expanded to include those house lots described in Section III.C. regarding creation of future sewer easements. WWRD also needs to consult with Corporation Counsel on the issue of being able to convert existing sewer easements in favor of the State of Hawaii to in favor of the County of Maui and drainage easements in favor of the State of Hawaii to combined drainage and sewer easements in favor of the County of Maui to maximize the number of house lots which can tie directly into the proposed gravity sewer system.

FIGURE 1: Project Location Map

v:\Projdata\12proj\12028 - CoM Wahikuli Gravity System\dwg\exhibits\EXH-LOCMAP-00.dwg

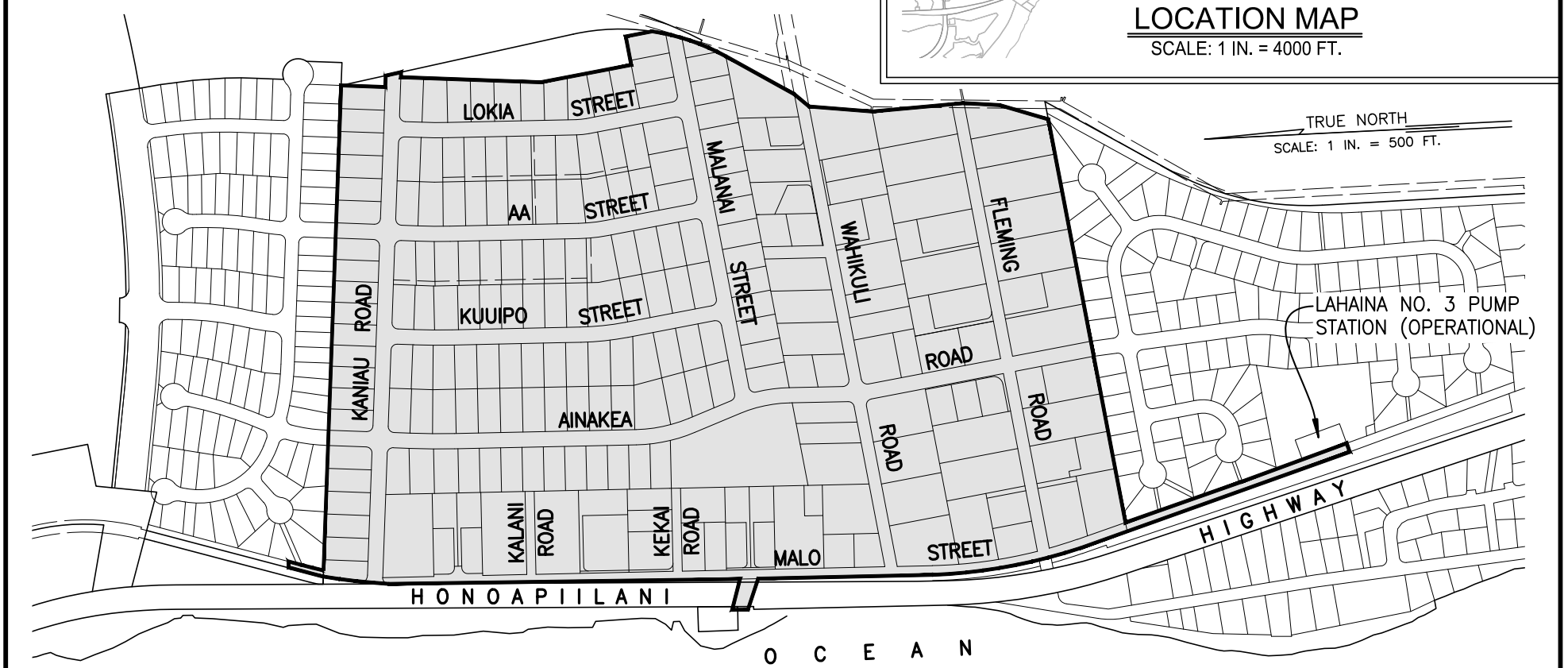
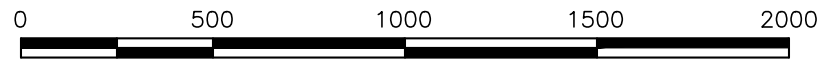
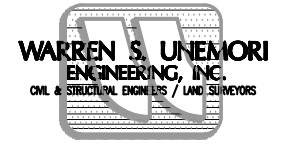


FIGURE 1 - PROJECT LOCATION MAP



SCALE: 1 IN. = 500 FT.



June 3, 2013

TABLES:

- A. Wahikuli Subdivision Gravity Sewer System Alternatives - Pros and Cons
- B. Wahikuli Subdivision Gravity Sewer System - Quantity Takeoff Worksheet
- C. Wahikuli Subdivision Gravity Sewer System - Cost Comparison for Alternatives 1 and 2
- D. Wahikuli Subdivision Gravity Sewer System - Additional Interior Sewer cost Worksheet

TABLE A - WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM ALTERNATIVES - PROS AND CONS

Alternative 1 - Mauka Route to Lahaina No. 3 Pump Station SMH #10 above Honoapiilani Highway		Alternative 2 - Makai Route to Lahaina No. 3 Pump Station SMH #10 below Honoapiilani Highway	
Pros		Pros	
1	Provides service laterals to up to 231 residential lots	1	Provides service laterals to up to 231 residential lots
2	Sewer system works exclusively by gravity	2	Sewer system works exclusively by gravity
3	Avoids need to cross beneath Sugar Cane Train tracks	3	Allows use of the existing 18" sewer main on the makai side of the Honoapiilani Highway
4	Avoids need to cross 4-lane Honoapiilani Highway	4	Confirmed that tie-in to SMH #1A is feasible
5	Avoids triggering a need for a Major SMA Use Permit which involves substantial time and expense and requires a Planning Commission Hearing	5	Saves approximately 860+ feet of 12-inch PVC pipe
6	Avoids triggering a possible Shoreline Certification		
7	Utilizes a corridor between Fleming Road and SMH #10 already owned by the County of Maui, TMK 4-5-30:137		
8	Confirmed that tie-in to SMH #10 is feasible		
Cons		Cons	
1	Dewatering probably needed from Sta 10+00 on Malo Road to existing SMH #10 - approximately 2,170 l.f.	1	Dewatering probably needed from Sta 10+00 on Malo Road/Kekai Road intersection to existing SMH across Honoapiilani Highway - approximately 346+ l.f.
2	Needs to obtain easement along Baseline "A" in TMK 4-5-27:48 owned by the State of Hawaii	2	Needs to obtain easement along Baseline "A" in TMK 4-5-27:48 owned by the State of Hawaii
		3	Needs to cross beneath Sugar Cane Train tracks
		4	Needs to cross 4-lane Honoapiilani Highway; involves elaborate Traffic Control Plans, HDOT approval, Maui Police Department Traffic Control participation, public inconvenience

TABLE A - WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM ALTERNATIVES - PROS AND CONS

Alternative 1 - Mauka Route to Lahaina No. 3 Pump Station SMH #10 above Honoapiilani Highway		Alternative 2 - Makai Route to Lahaina No. 3 Pump Station SMH #10 below Honoapiilani Highway	
		5	Most likely triggers a need for a Major SMA Use Permit which involves substantial time and expense and requires a Planning Commission Hearing, possibly preceded by an Environmental Assessment Study and Report and publication in The Environmental Notice
		6	May trigger need for a Shoreline Certification

TABLE B - WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM - QUANTITY TAKEOFF WORKSHEET

Street/Road Name	Start Sta	End Sta	Length of 8" PVC Pipe (ft)	Length of 12" PVC Pipe (ft)	Number of SMHs	Number of Laterals	Width of Roadway	Length of 6" PVC Sewer Laterals (ft)
Lokia Street	(-)0+05	9+82	987	0	5	21	50	567
AA Street	(-)0+05	10+59	1,064	0	5	24	50	648
Kuuiipo Street	(-)0+05	11+35	1,140	0	6	27	50	729
Ainakea Road	(-)0+05	23+67	2,372	0	12	38	50	1026
Malo Street	(-)0+05	21+95	0	2,200	10	25	30	425
Easement to Lahaina No. 3 Pump Station (SMH #10)	21+95	31+70	0	975	3	0	N/A	0
Baseline "A"	0+50	3+16	0	266	1	0	N/A	0
Kaniau Road	0+15	16+63	1,648	0	2	25	50	675
Kalani Road	0+05	2+80	275	0	2	0	30	0
Kekai Road	0+05	2+80	275	0	2	3	30	51
Kekai Road SMH at Sta 2+80 to Ainakea Road SMH at Sta 9+10	2+80	4+62	182	0	1	0	N/A	1
Malanai Street	0+05	12+15	1,210	0	1	19	50	513
Wahikuli Road	0+05	15+60	1,555	0	5	26	40	572
Fleming Road	0+55	15+50	1,495	0	5	23	40	506
Totals			12,203	3,441	60	231		5,713

Notes:

(1) Length of 6" Sewer Lateral calculated as (No. of Laterals) x [(Width of Roadway)/2 +2]

(2) Number of SMHs includes 1 shallow drop SMH and 3 deep drop SMHs

TABLE C - WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM - COST ESTIMATE COMPARISON FOR ALTERNATIVES 1 AND 2

Item No.	Description	Unit of Measure	Unit Price	Alternative 1 (Mauka Tie-in)		Alternative 2 (Makai Tie-in)	
				Quantity	Total Price	Quantity	Total Price
1	Mobilization	LS	\$25,000.00	1	\$25,000.00	1	\$25,000.00
2	BMP's (Bio-socks)	LS	\$28,000.00	1	\$28,000.00	1	\$28,000.00
3	8" PVC Sewer sdr 26	LF	\$242.00	12,203	\$2,953,126.00	12,203	\$2,953,126.00
4	12" PVC Sewer sdr 26	LF	\$458.00	3,441	\$1,575,978.00	2,586	\$1,184,388.00
5	6" PVC Lateral	LF	\$191.00	5,713	\$1,091,183.00	5,713	\$1,091,183.00
6	Concrete SMH (Standard)	EA	\$6,600.00	56	\$369,600.00	53	\$349,800.00
7	Concrete SMH (Sh Drop)	EA	\$9,500.00	1	\$9,500.00	1	\$9,500.00
8	Concrete SMH (Deep Drop)	EA	\$14,000.00	3	\$42,000.00	3	\$42,000.00
9	Pressure Test & Video	LS	\$75,000.00	1	\$75,000.00	1	\$75,000.00
10	Tie-In to Existing SMH	EA	\$12,000.00	1	\$12,000.00	1	\$12,000.00
11	Traffic Control	LS	\$330,000.00	1	\$330,000.00	1.15	\$379,500.00
12	Trench Patch (2" AC/6" UTB)	LS	\$1,172,000.00	1	\$1,172,000.00	1	\$1,172,000.00
Total					\$7,683,387.00		\$7,321,497.00
Note: (1) Traffic Control for Alternative 2 assumed to be 15% higher due to need to cross Sugar Cane Train tracks and 4-lane Honoapiilani Hwy							
(2) Unit rates obtained from Local General Contractor on Maui							

TABLE D - WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM - ADDITIONAL INTERIOR SEWER COST WORKSHEET

Additional Gravity Sewerlines to Access "Landlocked" House Lots	Unit of Measure	Quantity	Unit Price	Total Price
Proposed 8" PVC sdr 26 Sewerline within Existing Sewer Easements ⁽¹⁾	LF	1,102	\$350.00	\$385,700.00
Proposed Additional SMHs within Existing Sewer Easements	EA	7	\$6,600.00	\$46,200.00
Proposed 8" PVC sdr 26 Sewerline within Existing Drainage Easements ⁽²⁾	LF	512	\$350.00	\$179,200.00
Proposed Additional SMHs within Existing Drainage Easements	EA	3	\$6,600.00	\$19,800.00
Proposed 8" PVC sdr 26 Sewerline Requiring New Sewer Easements ⁽³⁾	LF	1,394	\$350.00	\$487,900.00
Proposed Additional SMHs within New Sewer Easements	EA	10	\$6,600.00	\$66,000.00
Additional Dust Control and BMPs (allowance)	Lots	34	\$1,000.00	\$34,000.00
Removal/Replacement of Walls and Fences (allowance)	Lots	34	\$2,000.00	\$68,000.00
Removal/Replacement of Trees and Landscaping (allowance)	Lots	34	\$1,500.00	\$51,000.00
Grading, Grubbing and Disposal of vegetation and rocks (allowance)	Lots	34	\$500.00	\$17,000.00
Total				\$1,354,800.00
Note: (1) Does not include cost of converting existing sewer easements in favor of State of Hawaii to in favor of County of Maui				
(2) Does not include cost of converting existing drainage easements in favor of State of Hawaii to combined drainage and sewer easements in favor of the County of Maui				
(3) Does not include cost of creating new sewer easements in existing house lots in favor of the County of Maui				

EXHIBITS:

- A. Overall Site Plan
- B. Overall Site Plan (1 of 4) - Alternative 1 & 2
- C. Overall Site Plan (2 of 4) - Alternative 1 & 2
- D. Overall Site Plan (3 of 4) - Alternative 1 (Mauka Tie-in to SMH #10)
- E. Overall Site Plan (4 of 4) - Alternative 1 (Mauka Tie-in to SMH #10)
- F. Overall Site Plan (3 of 4) - Alternative 2 (Makai Tie-in to SMH #1A)
- G. Overall Site Plan (4 of 4) - Alternative 2 (Makai Tie-in to SMH #1A)
- H. Profiles - Kalani Road, Baseline A and Lokia Street -
Alternative 1 & 2
- I. Profile - AA Street - Alternative 1 & 2
- J. Profile - Kuuipo Street and Kekai Road - Alternative 1 & 2
- K. Profile - Ainakea Road (1 of 2) - Alternative 1 & 2
- L. Profile - Ainakea Road (1 of 2) - Alternative 1 & 2
- M. Profile - Malo Street (1 of 3) - Alternative 1
(Mauka Tie-in to SMH #10)
- N. Profile - Malo Street (2 of 3) - Alternative 1
(Mauka Tie-in to SMH #10)
- O. Profile - Malo Street (3 of 3) - Alternative 1
(Mauka Tie-in to SMH #10)
- P. Profile - Malo Street (1 of 2) - Alternative 2
(Makai Tie-in to SMH #1A)

- Q. Profile - Malo Street (2 of 2) - Alternative 2
(Makai Tie-in to SMH #1A)
- R. Profile - Kaniau Road (1 of 2) - Alternative 1 & 2
- S. Profile - Kaniau Road (2 of 2) - Alternative 1 & 2
- T. Profile - Malanai Street - Alternative 1 & 2
- U. Profile - Wahikuli Road (1 of 2) - Alternative 1
(Mauka Tie-in to SMH #10)
- V. Profile - Wahikuli Road (1 of 2) - Alternative 2
(Makai Tie-in to SMH #1A)
- W. Profile - Wahikuli Road (2 of 2) - Alternative 1 & 2
- X. Profile - Fleming Road (1 of 2) - Alternative 1
(Mauka Tie-in to SMH #10)
- Y. Profile - Fleming Road (1 of 2) - Alternative 2
(Makai Tie-in to SMH #1A)
- Z. Profile - Fleming Road (2 of 2) - Alternative 1 & 2
- AA. Plan View of Proposed Tie-in to Existing SMH #1A (LA03XA0900)
- BB. Plan View of Proposed Tie-in to Existing SMH #10
- CC. Aerial Photo showing Existing Sewer Easements and Contours
(Screened)
- DD. Aerial Photo showing Existing Sewer Easements only

- EE. Site Photographic Location/View Direction Map (Map 1 of 2)
- FF. Site Photographic Location/View Direction Map (Map 2 of 2)
- GG. Alternative Gravity Sewer System to Service Parcels that Cannot be Connected to Proposed System in Roadways

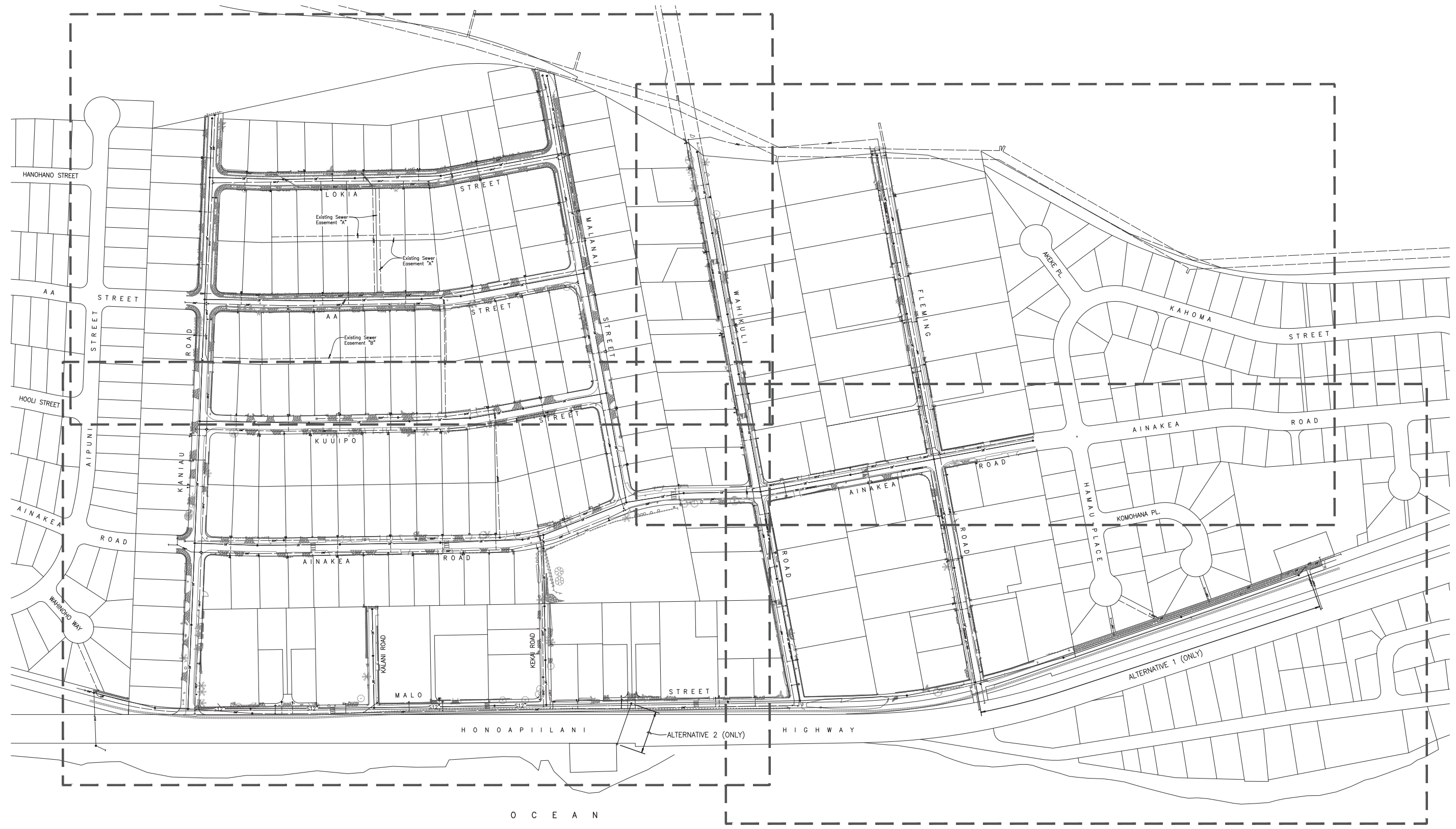
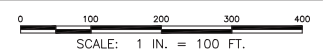


EXHIBIT A - OVERALL SITE PLAN



February 27, 2013

TRUE NORTH
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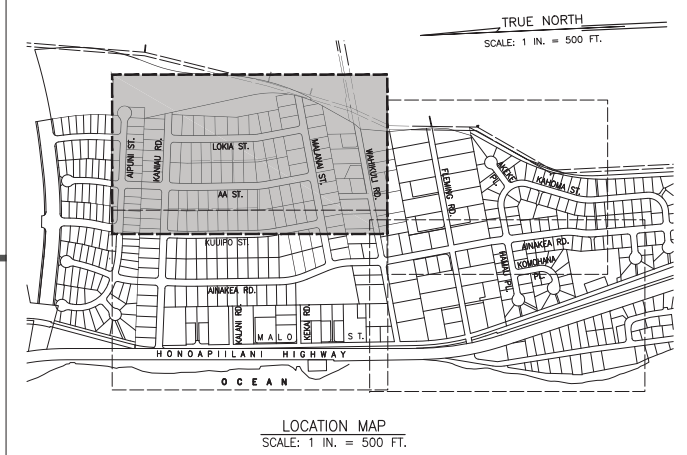


EXHIBIT B - OVERALL SITE PLAN (1 OF 4)
ALTERNATIVE 1 & 2

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February 27, 2013

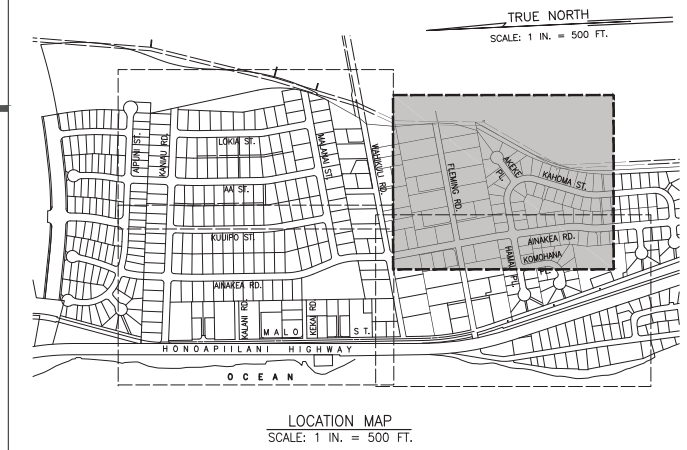
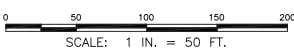
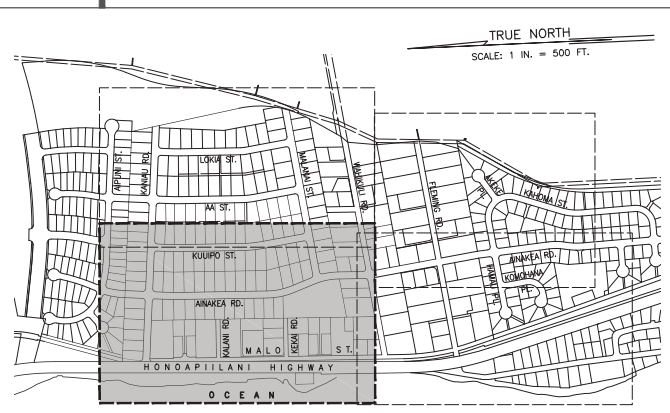
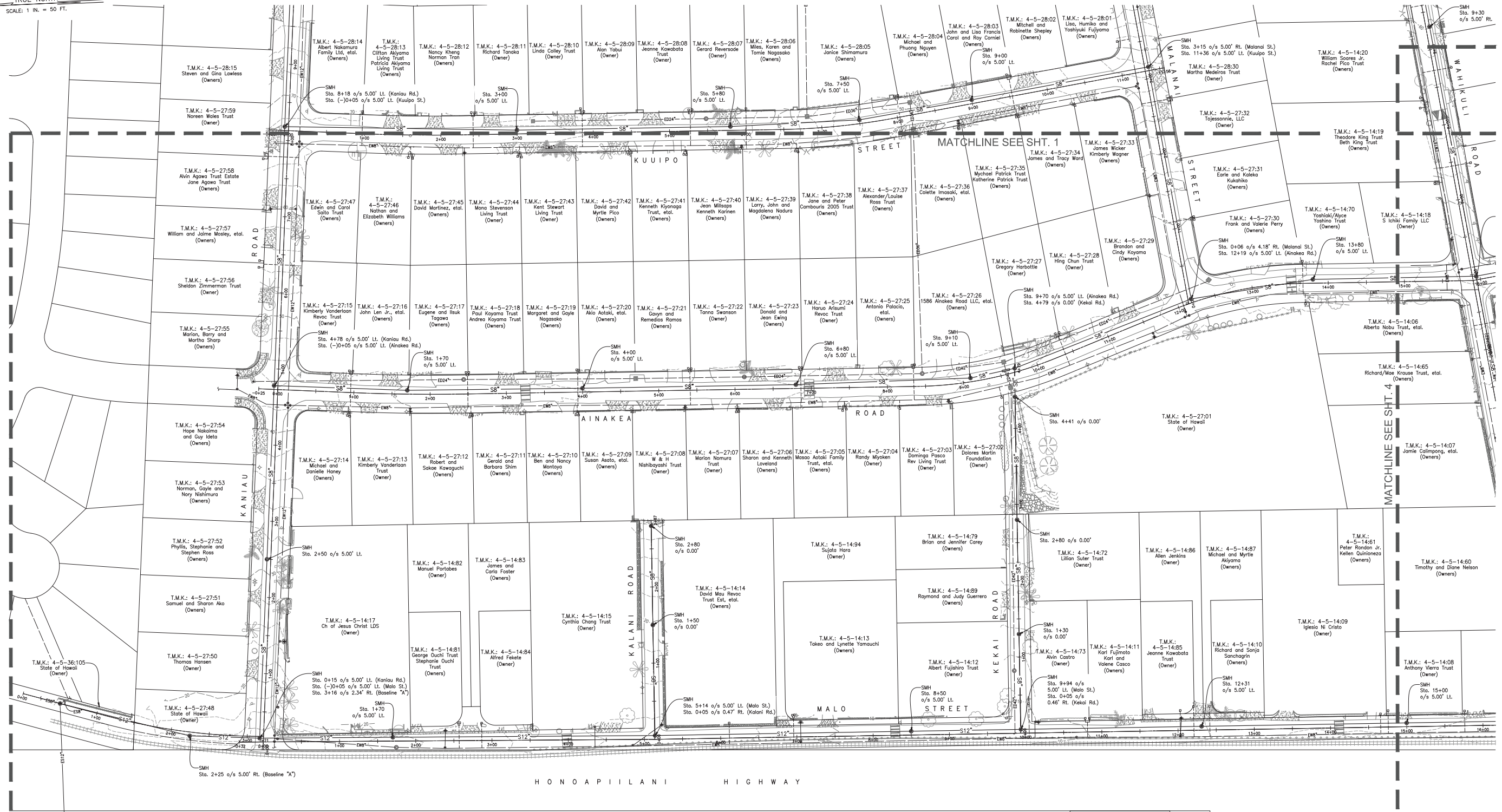


EXHIBIT C - OVERALL SITE PLAN (2 OF 4)
ALTERNATIVE 1 & 2



February 27, 2013

TRUE NORTH
SCALE: 1 IN. = 50 FT.



LOCATION MAP
SCALE: 1 IN. = 500 FT.

EXHIBIT D - OVERALL SITE PLAN (3 OF 4)
ALTERNATIVE 1 (MAUKA TIE-IN TO SMH #10)

SCALE: 1 IN. = 50 FT.



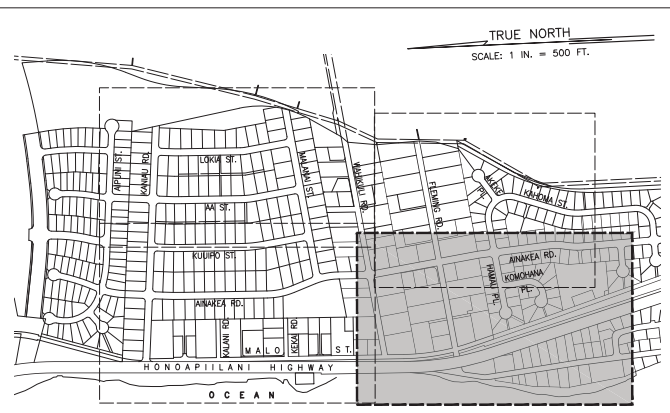
February 27, 2013

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MATCHLINE SEE SHT. 2

MATCHLINE SEE SHT. 3



LOCATION MAP
SCALE: 1 IN. = 500 FT.

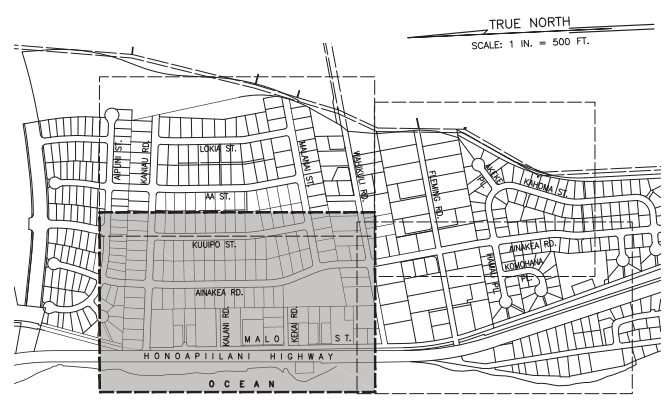
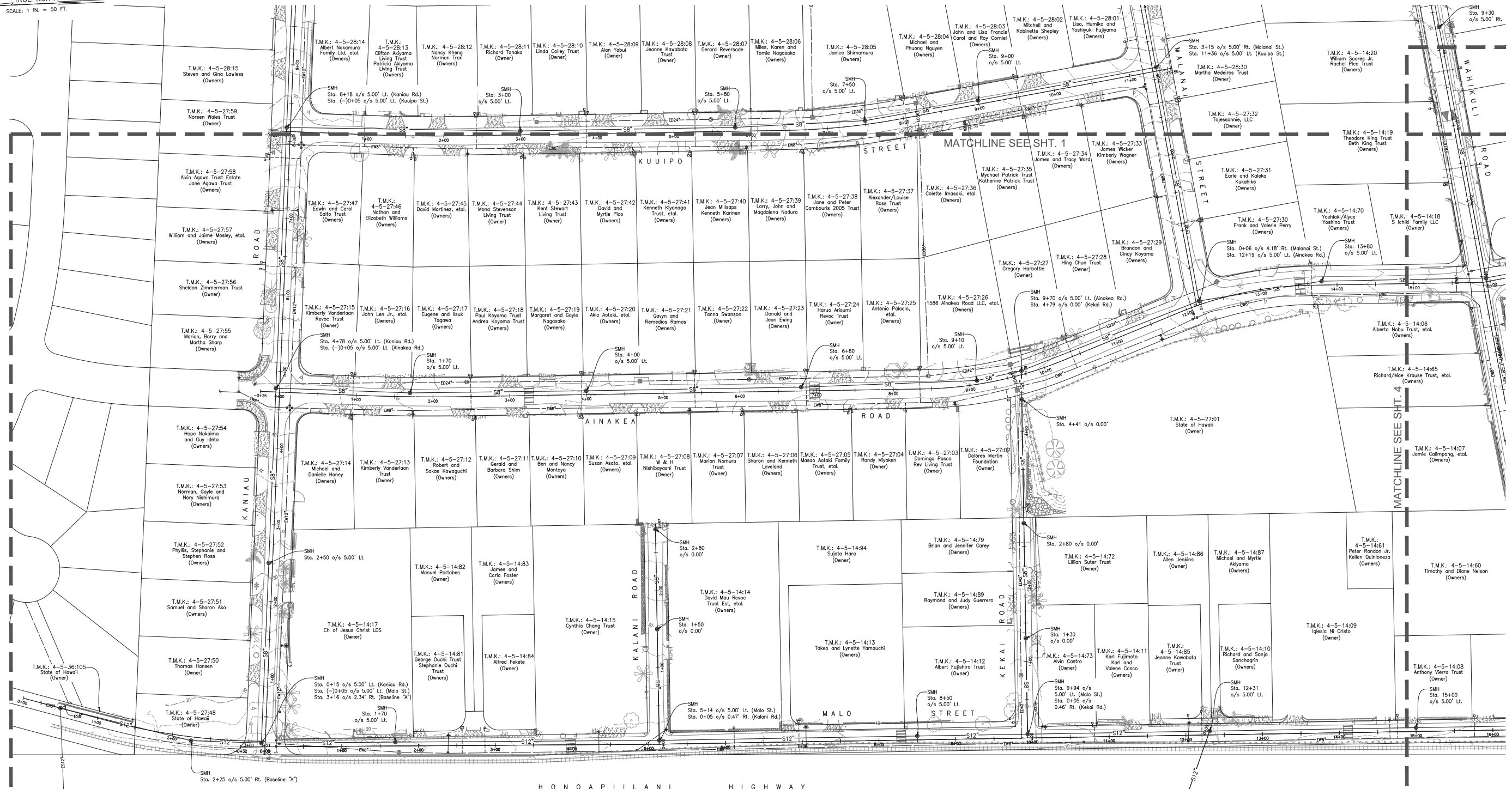
EXHIBIT E - OVERALL SITE PLAN (4 OF 4)
ALTERNATIVE 1 (MAUKA TIE-IN TO SMH #10)

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SCALE: 1 IN. = 50 FT.



February 27, 2013

TRUE NORTH
SCALE: 1 IN. = 50 FT.



LOCATION MAP
SCALE: 1 IN. = 500 FT.

**EXHIBIT F - OVERALL SITE PLAN (3 OF 4)
ALTERNATIVE 2 (MAKAI TIE-IN TO SMH #1A)**

SCALE: 1 IN. = 50 FT.

T.M.K.: 4-5-2125
State of Hawaii
Lahaina Sewer Pump Station No. 3
Ex't's SMH #1A (LA03KA0900)
Top-8.3
Inv.(-)0.1



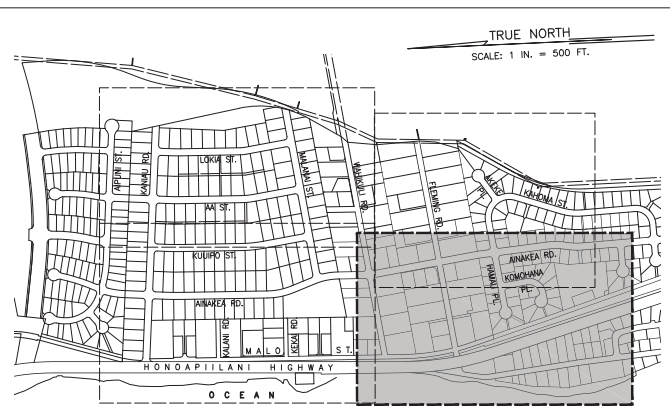
February 27, 2013

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SCALE: 1 IN. = 50 FT.



MATCHLINE SEE SHT. 2

MATCHLINE SEE SHT. 3



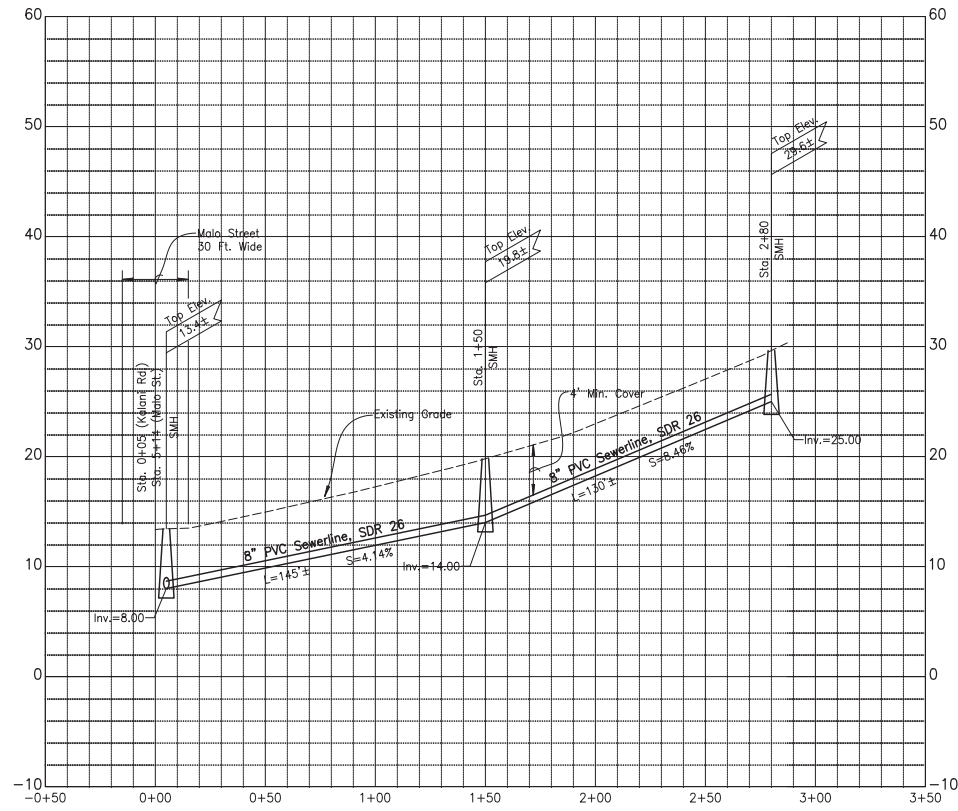
LOCATION MAP
SCALE: 1 IN. = 500 FT.

EXHIBIT G - OVERALL SITE PLAN (4 OF 4)
ALTERNATIVE 2 (MAKAI TIE-IN TO SMH #1A)

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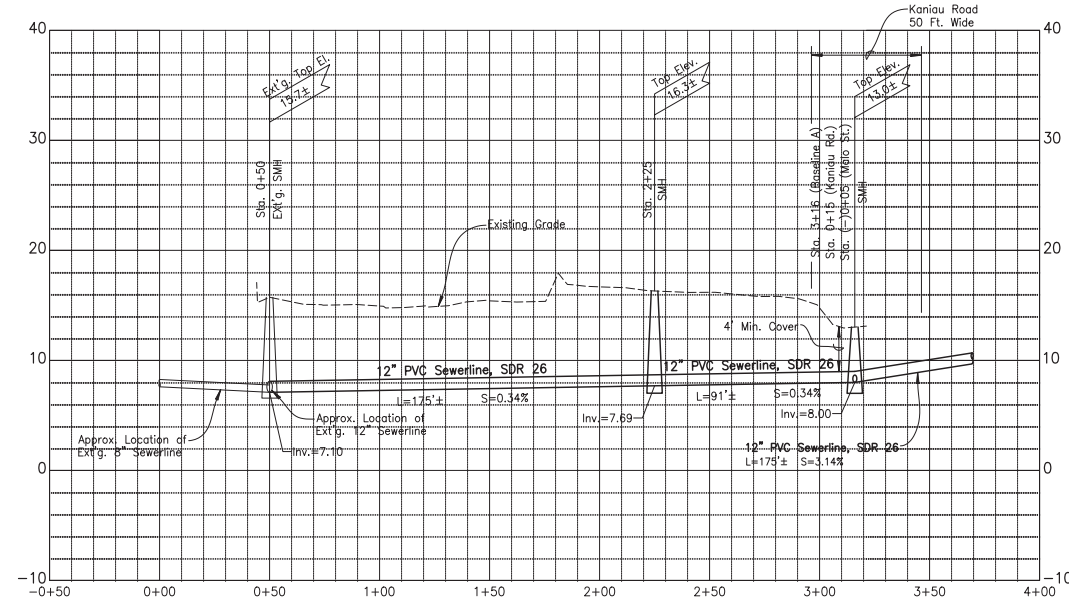


February 27, 2013



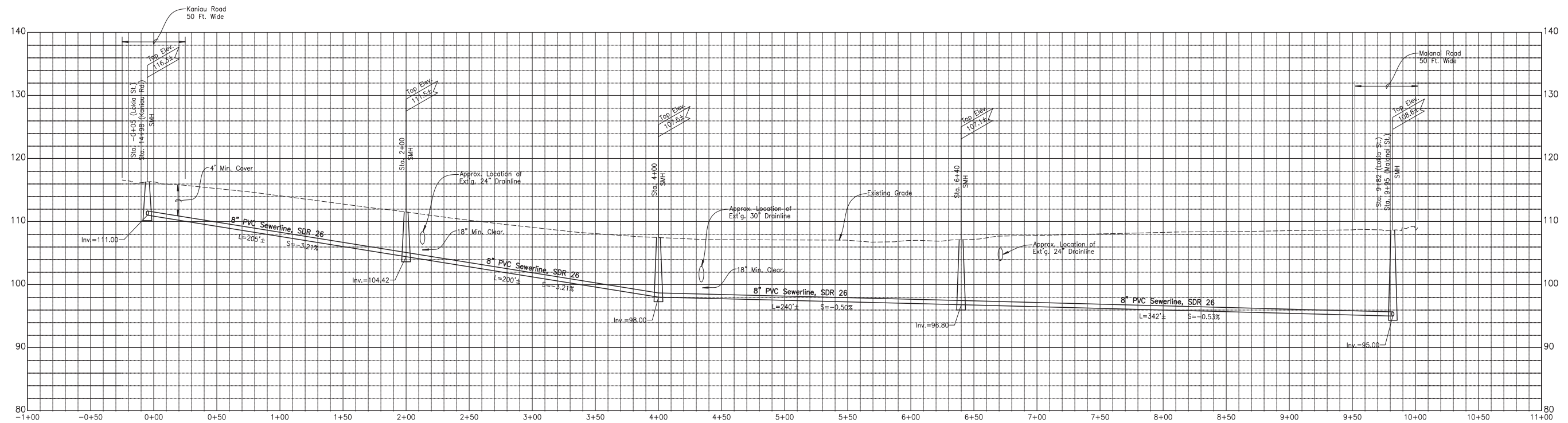
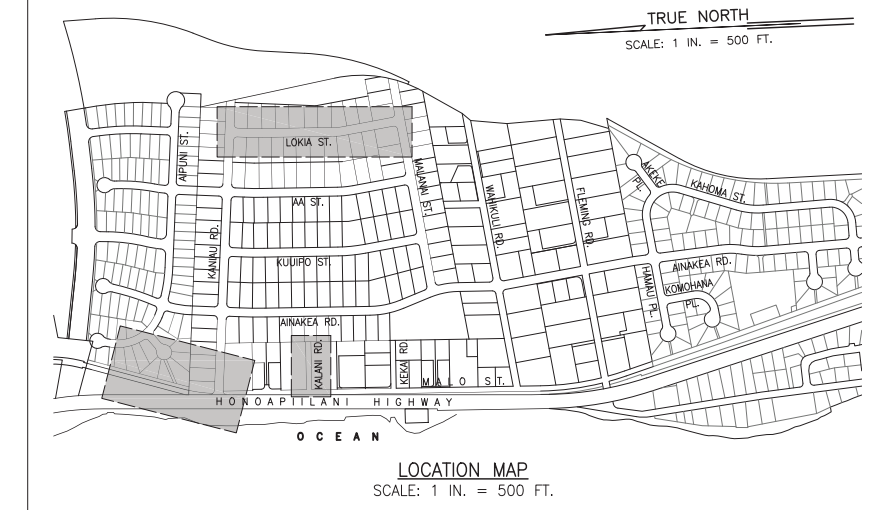
**PROFILE - KALANI ROAD
ALTERNATIVE 1 & 2**

Scale: Horiz. 1" = 40'
Vert. 1" = 8'



**PROFILE - BASELINE "A"
ALTERNATIVE 1 & 2**

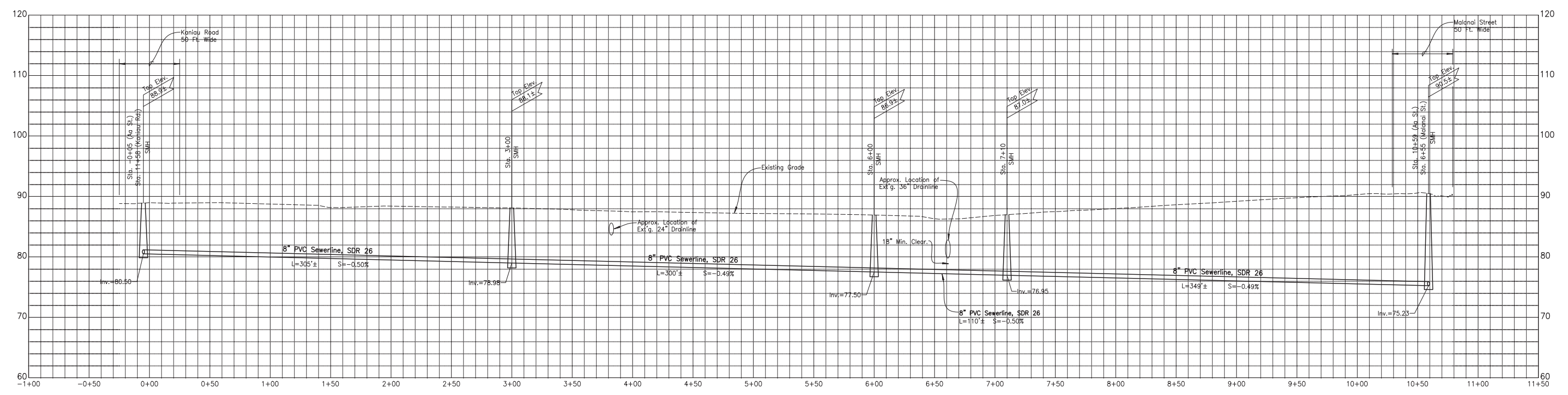
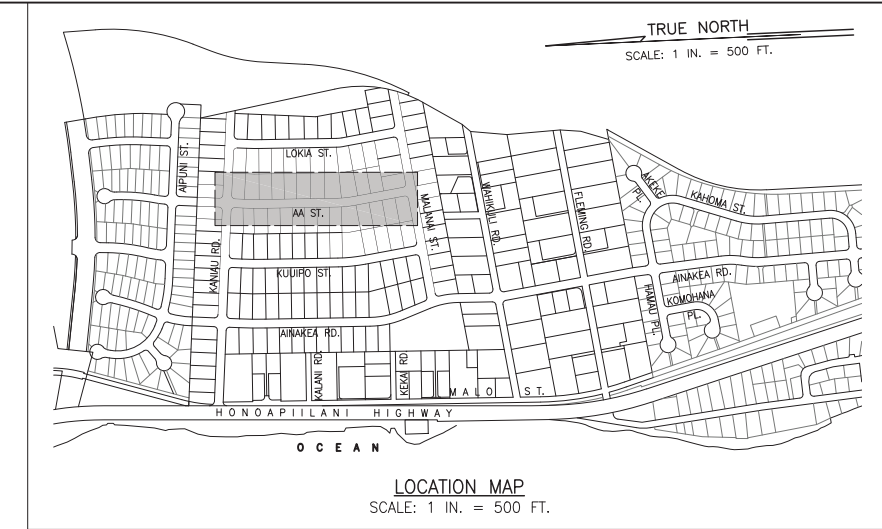
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Vert. 1" = 8'



**PROFILE - LOKIA STREET
ALTERNATIVE 1 & 2**

Scale: Horiz. 1" = 40'
Vert. 1" = 8'

**EXHIBIT H - PROFILES OF KALANI ROAD, BASELINE "A" AND LOKIA STREET
ALTERNATIVE 1 & 2**

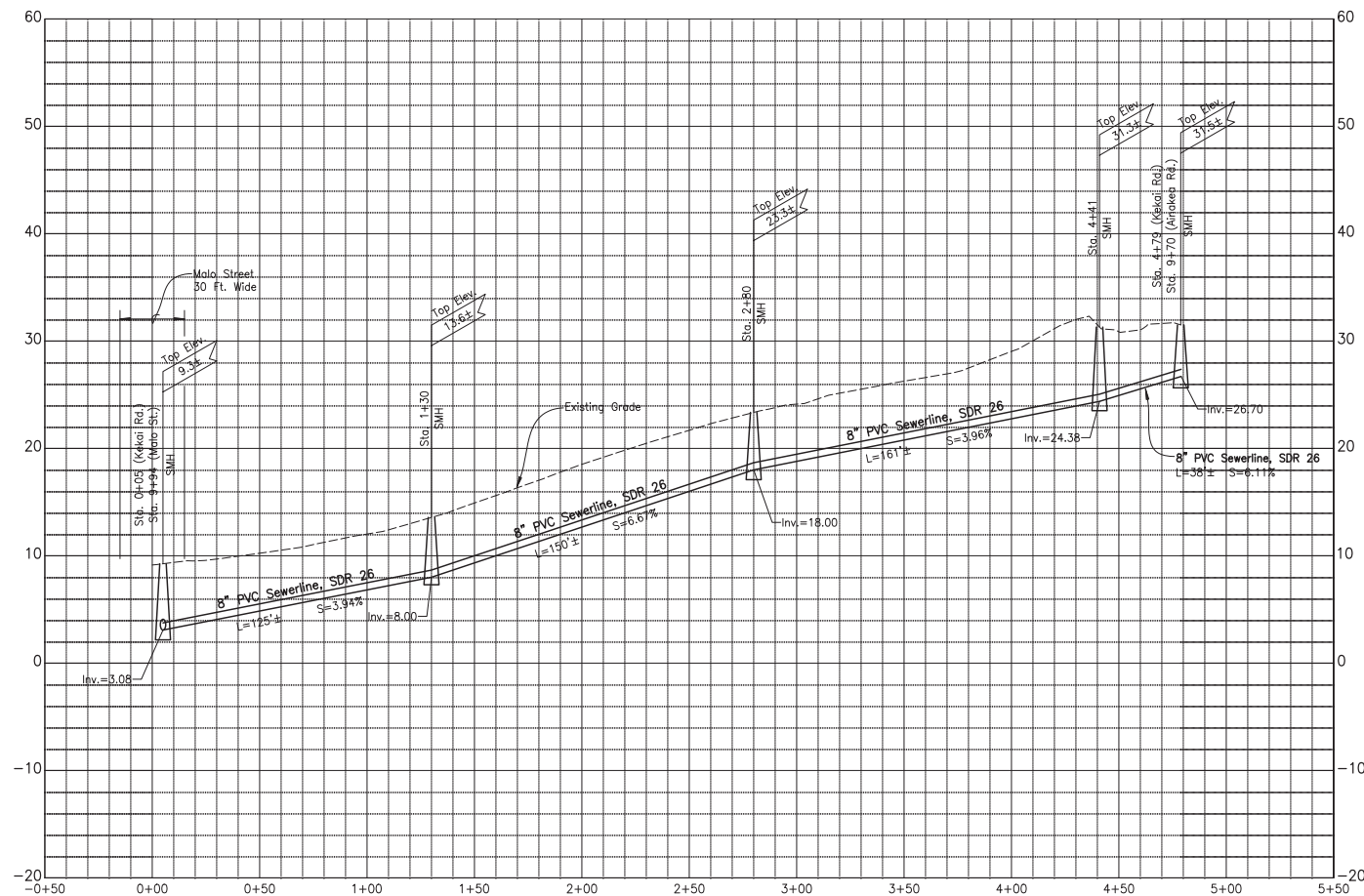


**PROFILE - AA STREET
ALTERNATIVE 1 & 2**
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Vert. 1" = 8'

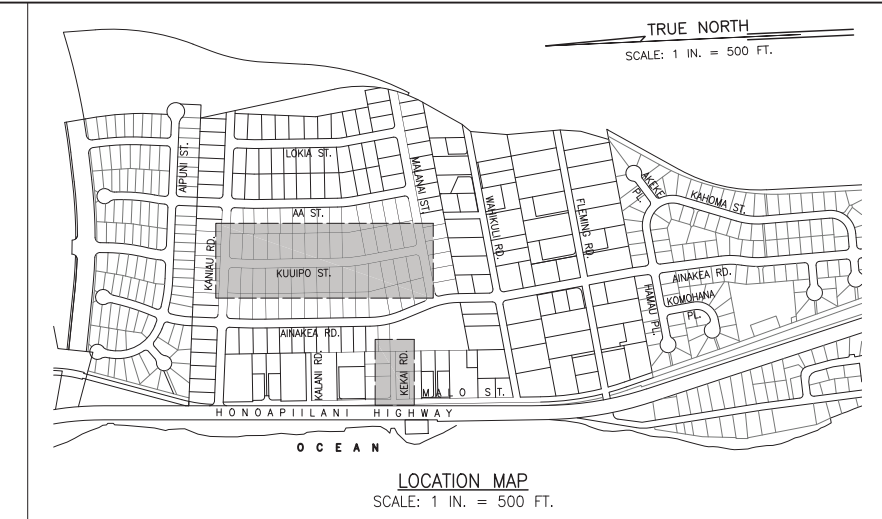
**EXHIBIT I - PROFILE OF AA STREET
ALTERNATIVE 1 & 2**



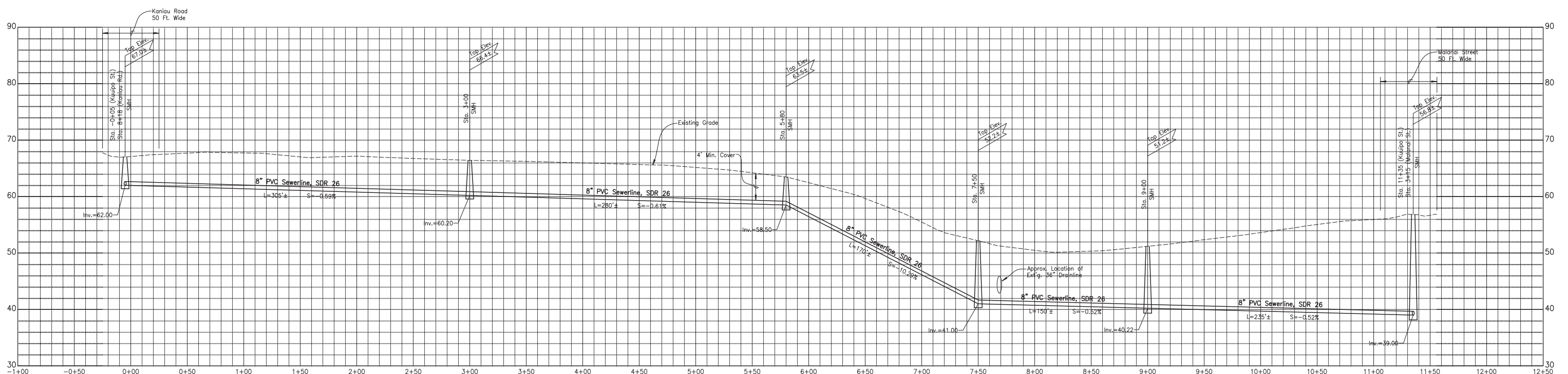
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**PROFILE - KEKAI ROAD
ALTERNATIVE 1 & 2**
Scale: Horiz. 1" = 40'
Vert. 1" = 8'



LOCATION MAP
SCALE: 1 IN. = 500 FT.

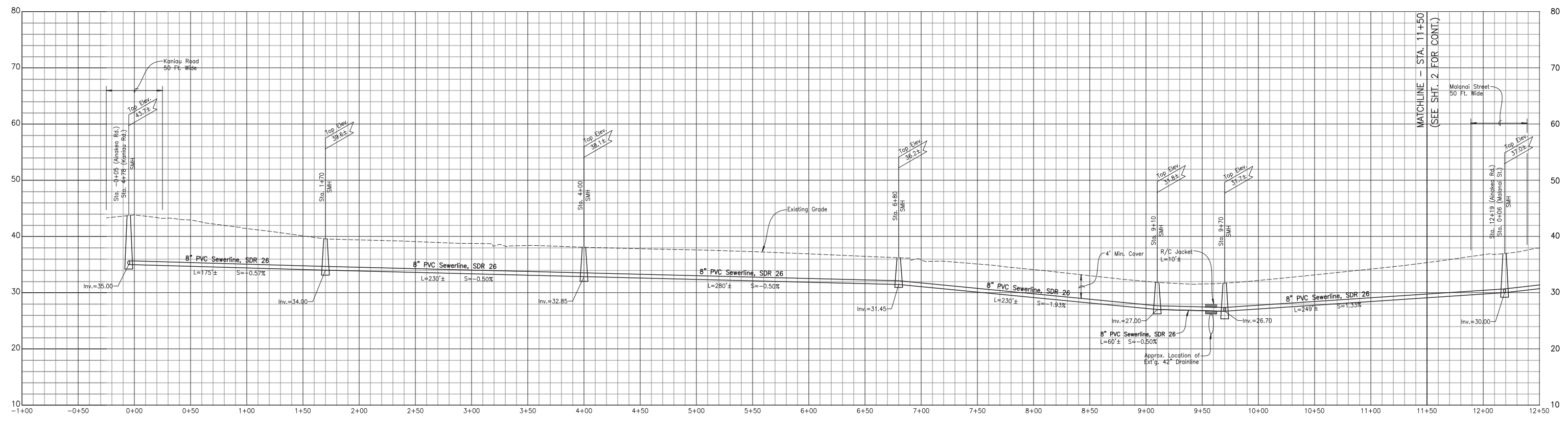
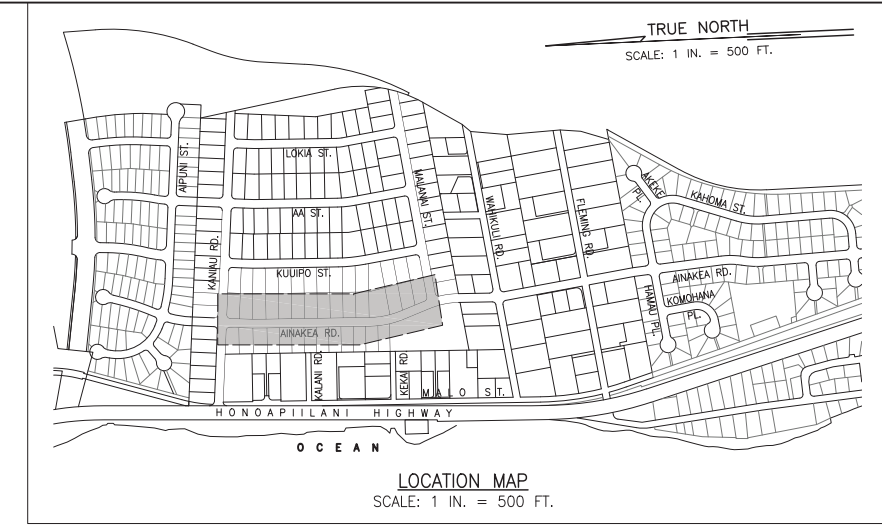


**PROFILE - KUIUPO STREET
ALTERNATIVE 1 & 2**
Scale: Horiz. 1" = 40'
Vert. 1" = 8'

**EXHIBIT J - PROFILE OF KEKAI ROAD AND KUIUPO STREET
ALTERNATIVE 1 & 2**

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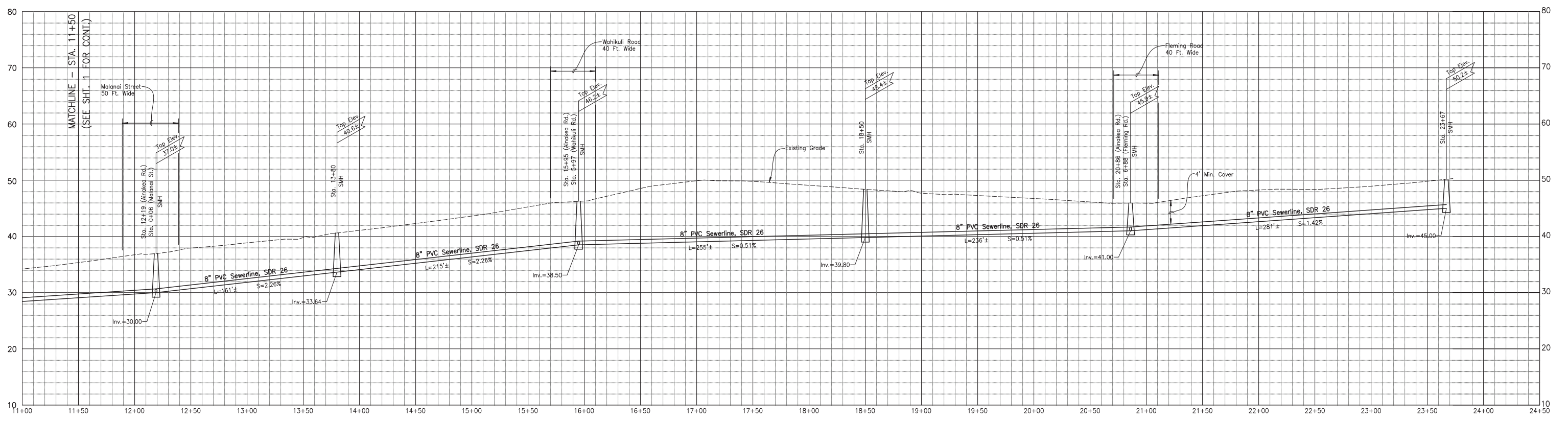
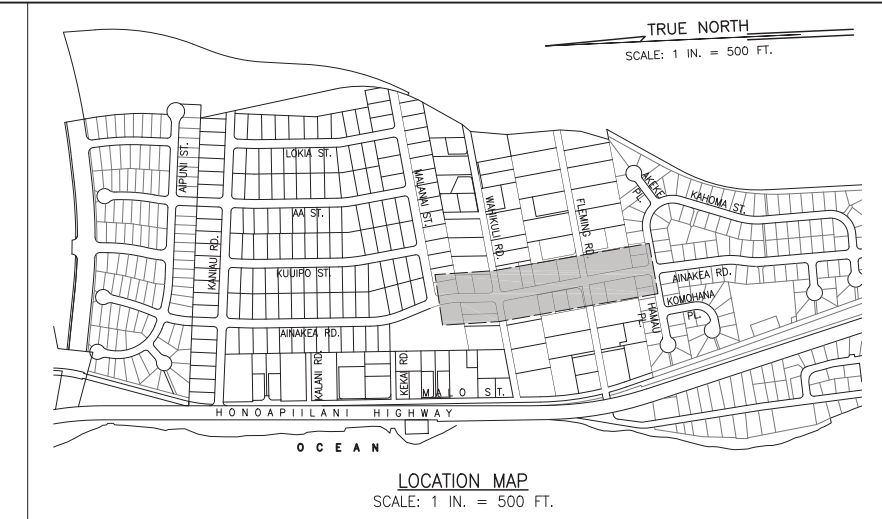


PROFILE - AINAKEA ROAD (1 OF 2)
ALTERNATIVE 1 & 2
 Scale: Horiz. 1" = 40'
 Vert. 1" = 8'

EXHIBIT K - PROFILE OF AINAKEA ROAD (1 OF 2)
ALTERNATIVE 1 & 2

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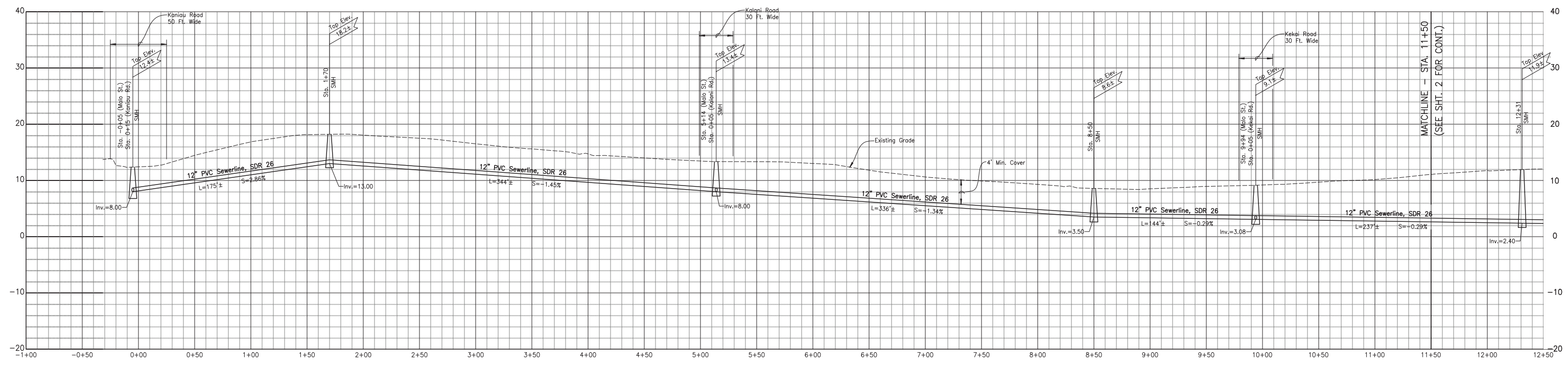
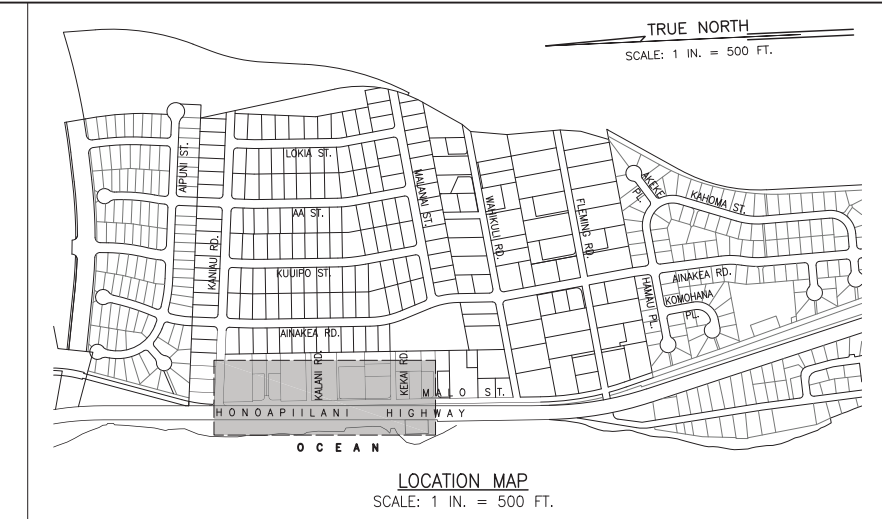


PROFILE - AINAKEA ROAD (2 OF 2)
ALTERNATIVE 1 & 2
 Scale: Horiz. 1" = 40'
 Vert. 1" = 8'

EXHIBIT L - PROFILE OF AINAKEA ROAD (2 OF 2)
ALTERNATIVE 1 & 2



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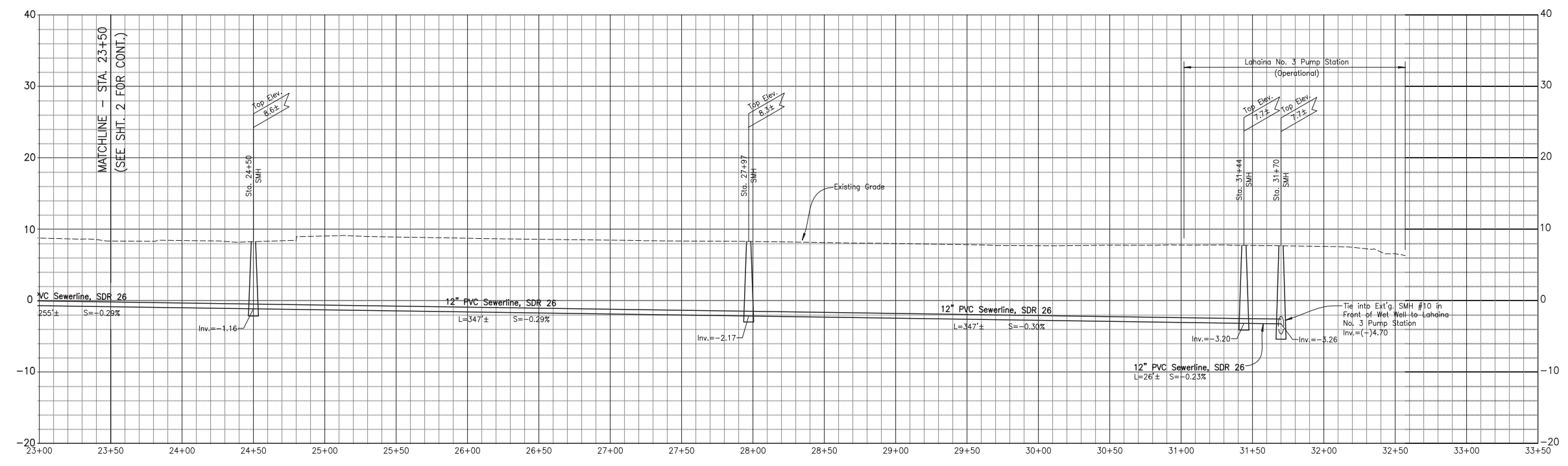
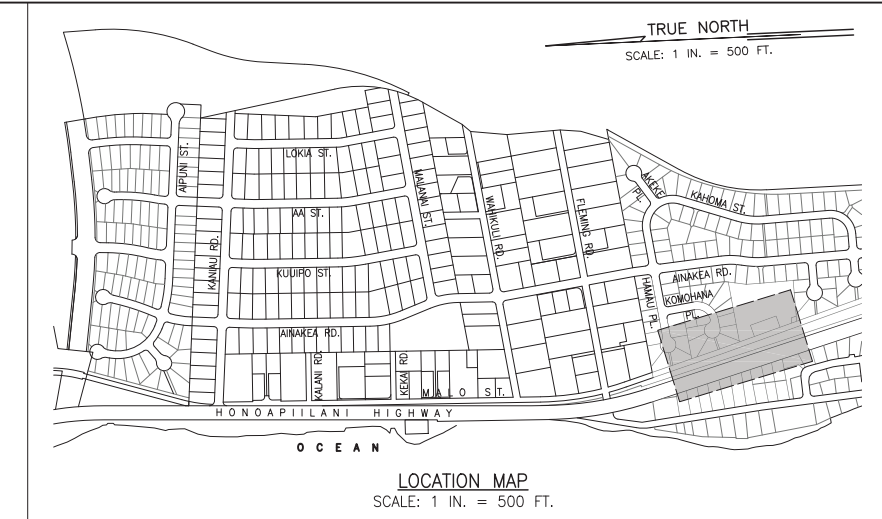
PROFILE - MALO STREET (1 OF 3)
ALTERNATIVE 1 (MAUKA TIE-IN TO SMH #10)

Scale: Horiz. 1" = 40'
 Vert. 1" = 8'

EXHIBIT M - PROFILE OF MALO STREET (1 OF 3)
ALTERNATIVE 1

W:\Projects\12303\12303 - Com. Waikiki - Gravity System.dwg\exhibits\PROF-MALO-00.dwg





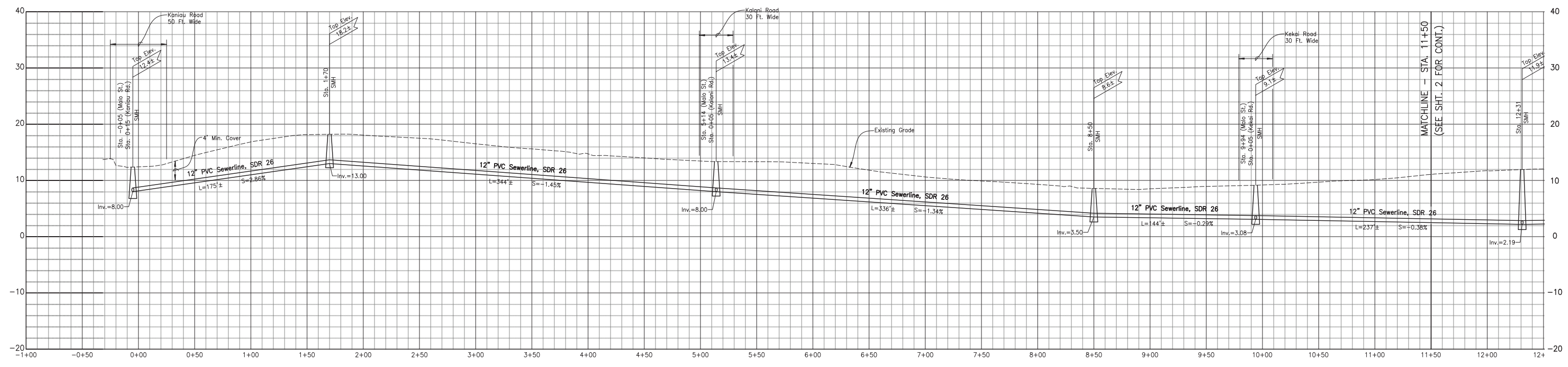
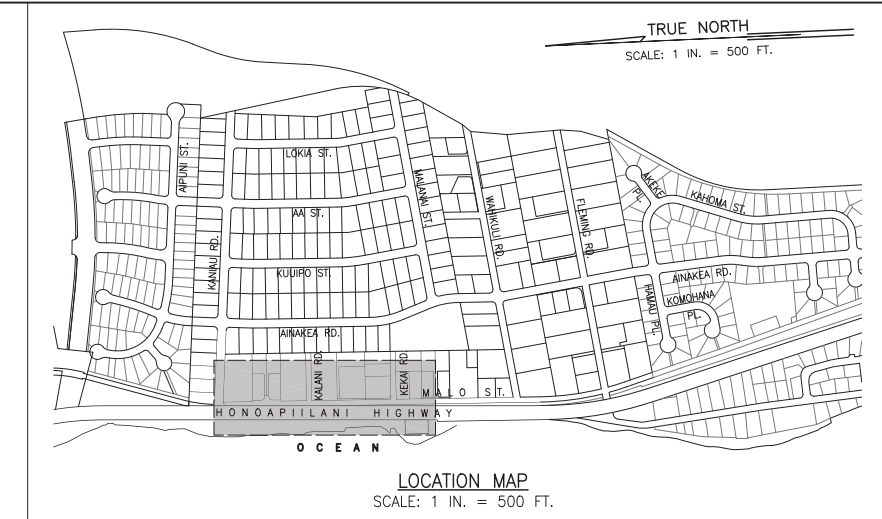
PROFILE - MALO STREET (3 OF 3)
ALTERNATIVE 1 (MAUKA TIE-IN TO SMH #10)

Scale: Horiz. 1" = 40'
 Vert. 1" = 8'

EXHIBIT O - PROFILE OF MALO STREET (3 OF 3)
ALTERNATIVE 1



X:\Projects\12303\12303 - Com. Waterfall Gravity System\dwg\exhibits\PROF-MALO-00.dwg



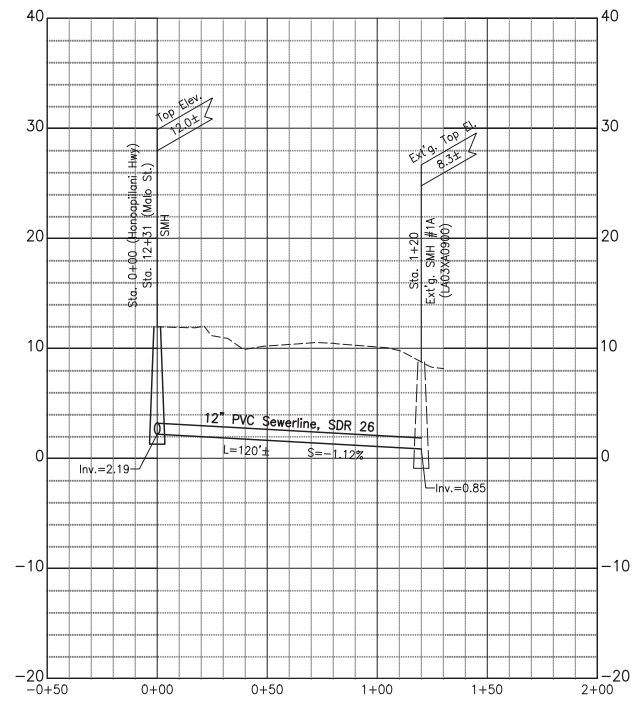
PROFILE - MALO STREET (1 OF 2)
ALTERNATIVE 2 (MAKAI TIE-IN TO SMH #1A)

Scale: Horiz. 1" = 40'
Vert. 1" = 8'

EXHIBIT P - PROFILE OF MALO STREET (1 OF 2)
ALTERNATIVE 2

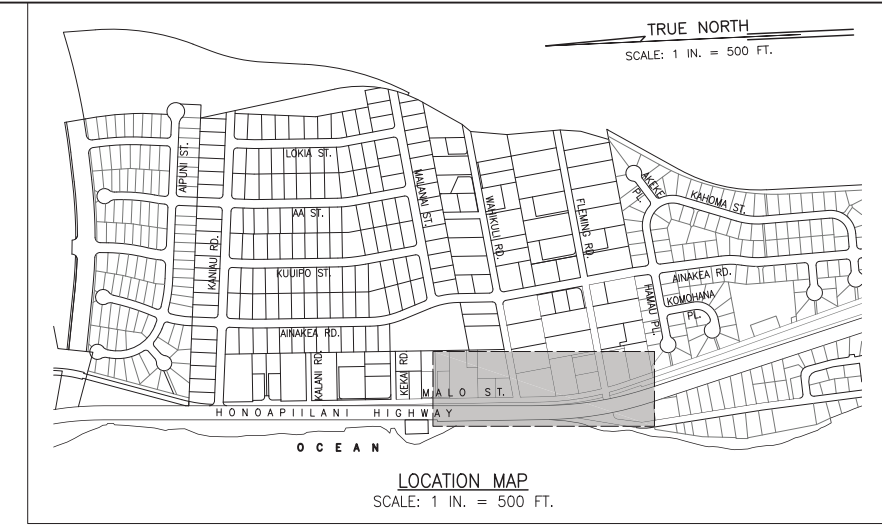


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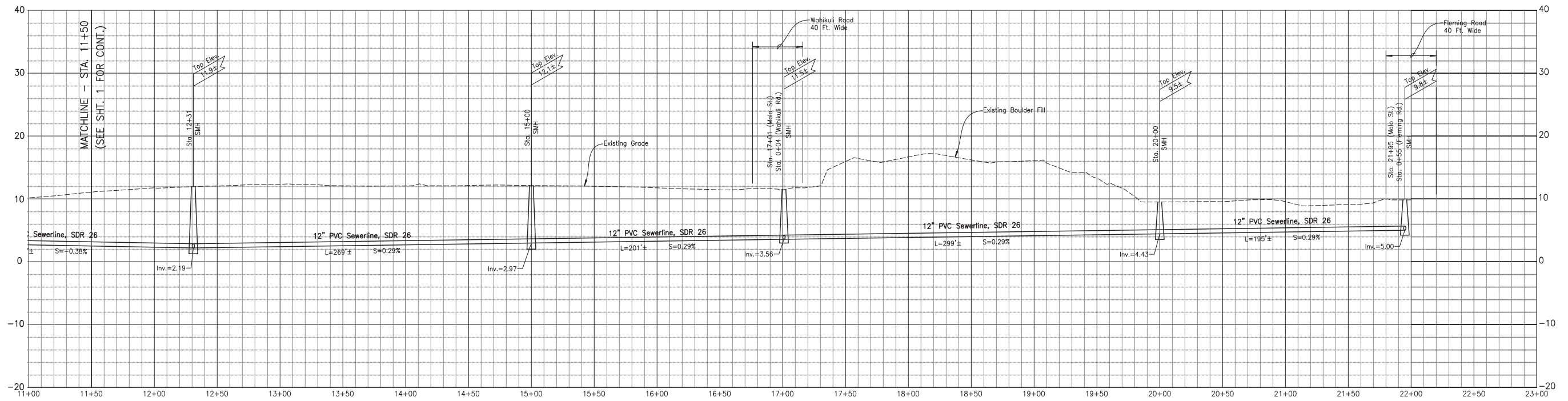


**PROFILE - HONOAPIILANI HIGHWAY
ALTERNATIVE 2 (MAKAI TIE-IN TO SMH #1A)**

Scale: Horiz. 1" = 40'
Vert. 1" = 8'



LOCATION MAP
SCALE: 1 IN. = 500 FT.



**PROFILE - MALO STREET (2 OF 2)
ALTERNATIVE 2 (MAKAI TIE-IN TO SMH #1A)**

Scale: Horiz. 1" = 40'
Vert. 1" = 8'

**EXHIBIT Q - PROFILE OF MALO STREET (2 OF 2) AND HONOAPIILANI HIGHWAY
ALTERNATIVE 2**

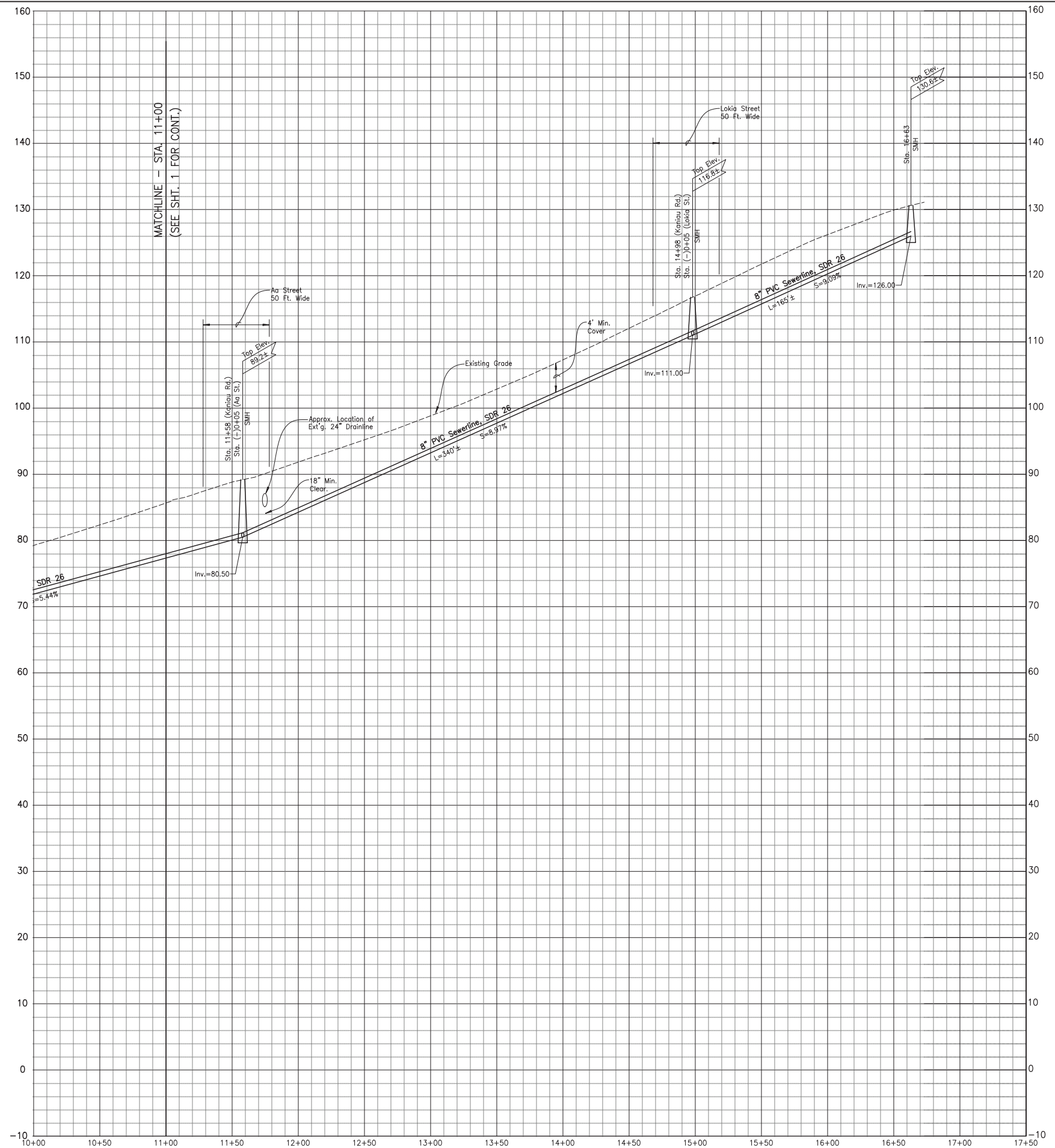
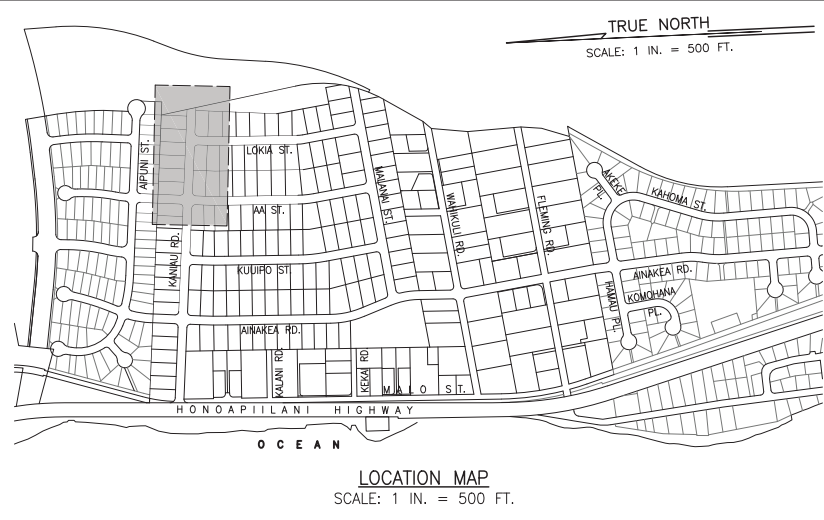
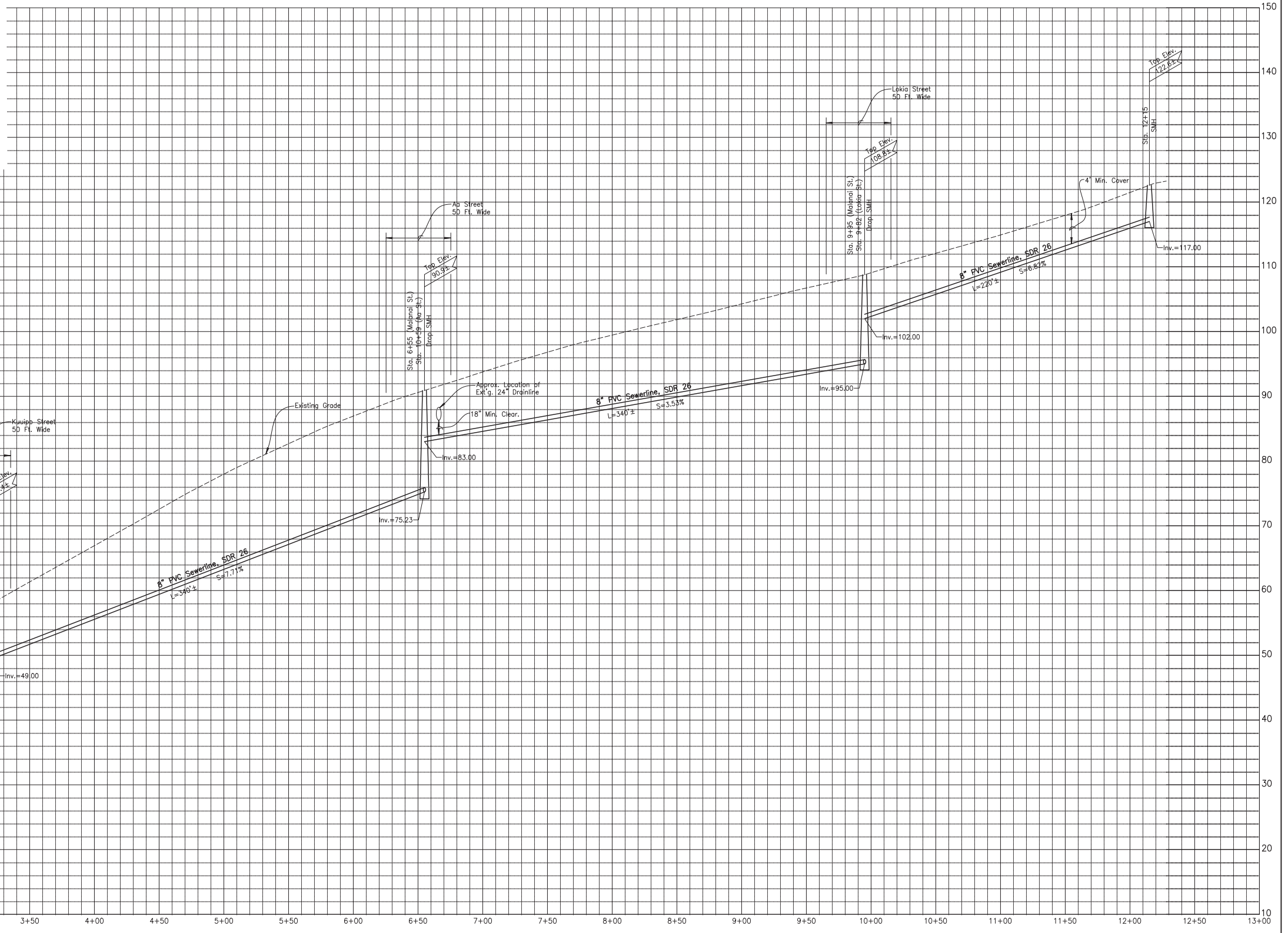
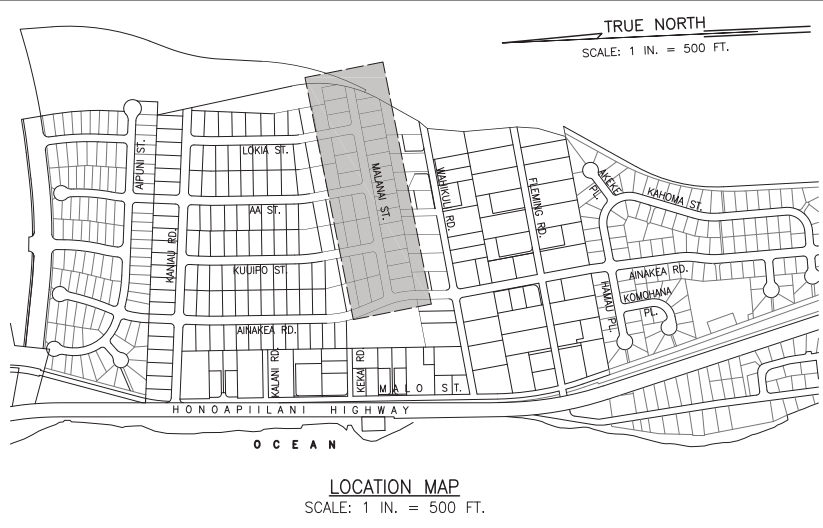


EXHIBIT S - PROFILE OF KANIAU ROAD (2 OF 2)
ALTERNATIVE 1 & 2

Scale: Horiz. 1" = 40'
Vert. 1" = 8'



**EXHIBIT T - PROFILE OF MALANAI STREET
ALTERNATIVE 1 & 2**

Scale: Horiz. 1" = 40'
Vert. 1" = 8'



March 12, 2013 24"x36"

V:\Projects\12303\12303 - Com. Waikehu Gravity System.dwg\exhibits\PROF-00.dwg

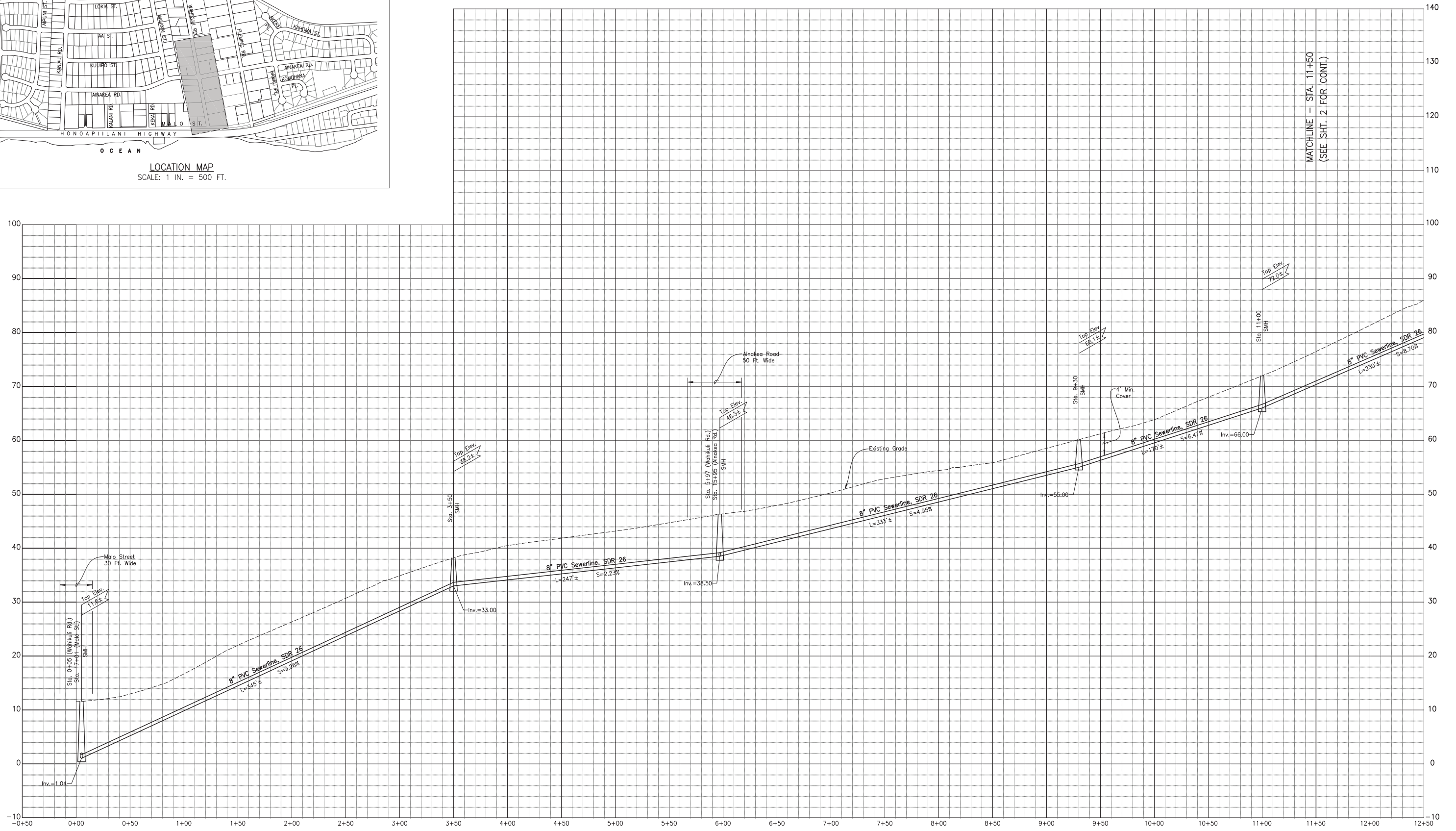
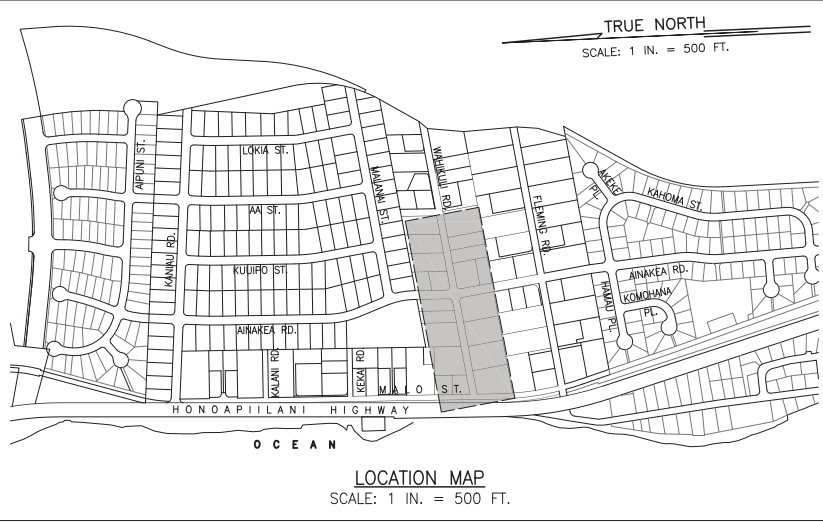


EXHIBIT U - PROFILE OF WAHIKULI ROAD (1 OF 2)
ALTERNATIVE 1 (MAUKA TIE-IN TO SMH #10)

Scale: Horiz. 1" = 40'
Vert. 1" = 8'



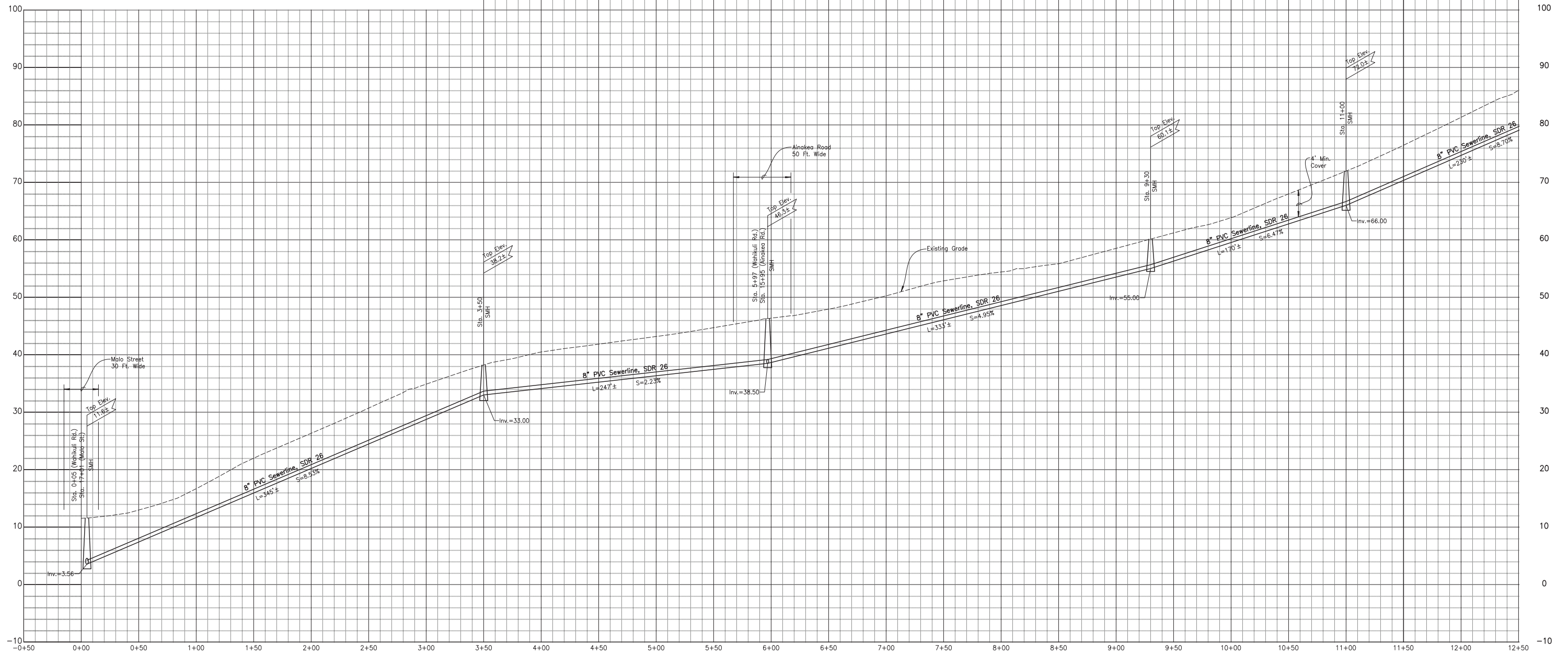
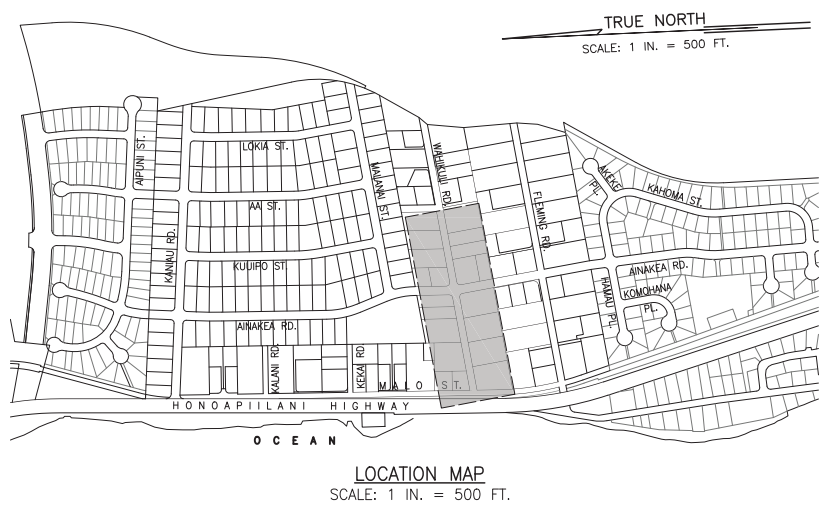


EXHIBIT V - PROFILE OF WAHIKULI ROAD (1 OF 2)
ALTERNATIVE 2 (MAKAI TIE-IN TO SMH #1A)

Scale: Horiz. 1" = 40'
Vert. 1" = 8'

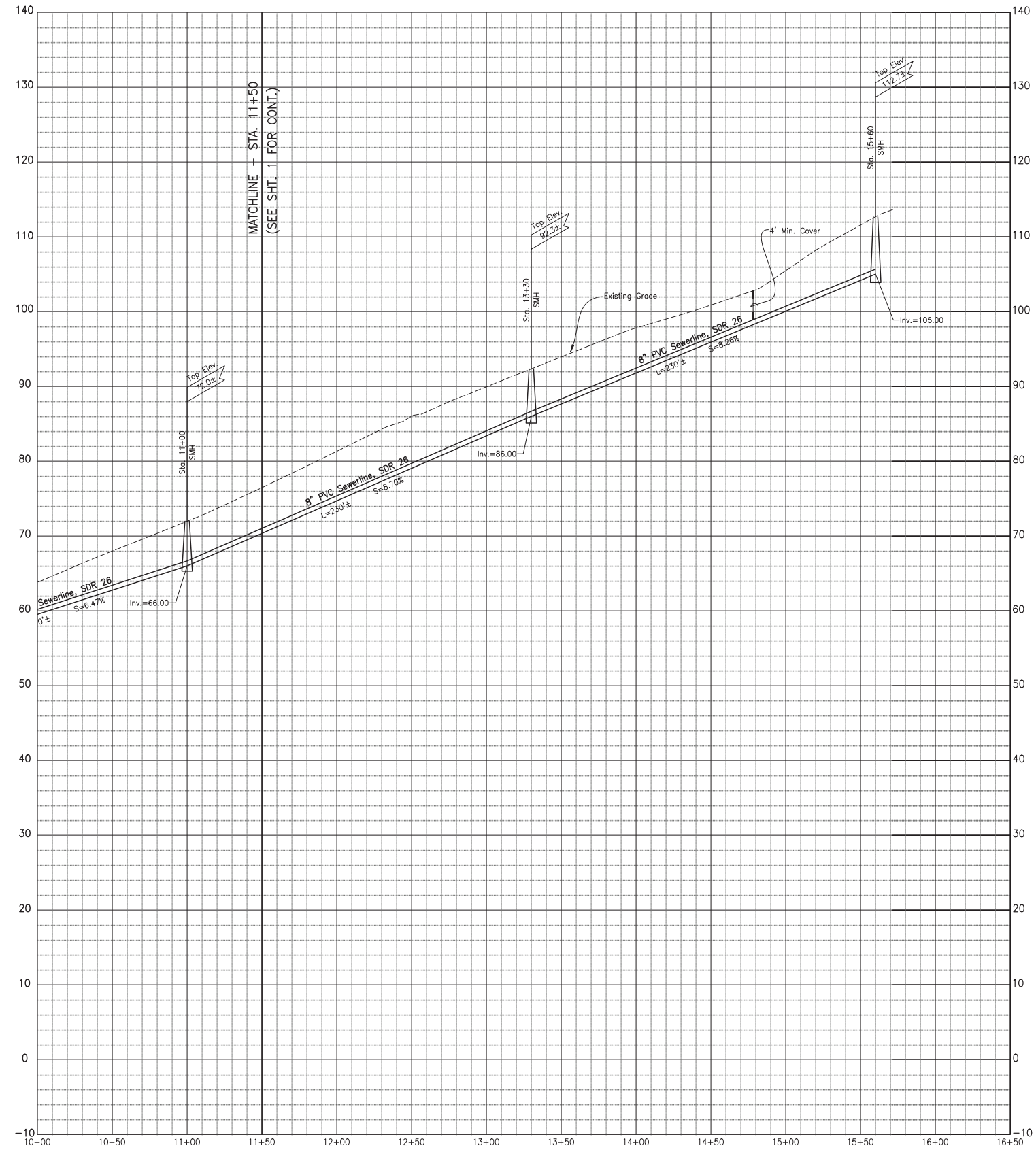
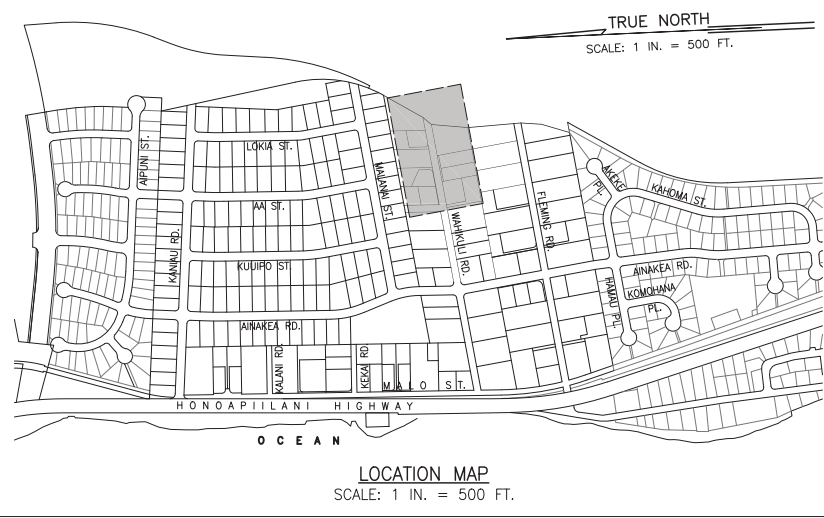


EXHIBIT W - PROFILE OF WAHIKULI ROAD (2 OF 2)

ALTERNATIVE 1 & 2

Scale: Horiz. 1" = 40'
Vert. 1" = 8'

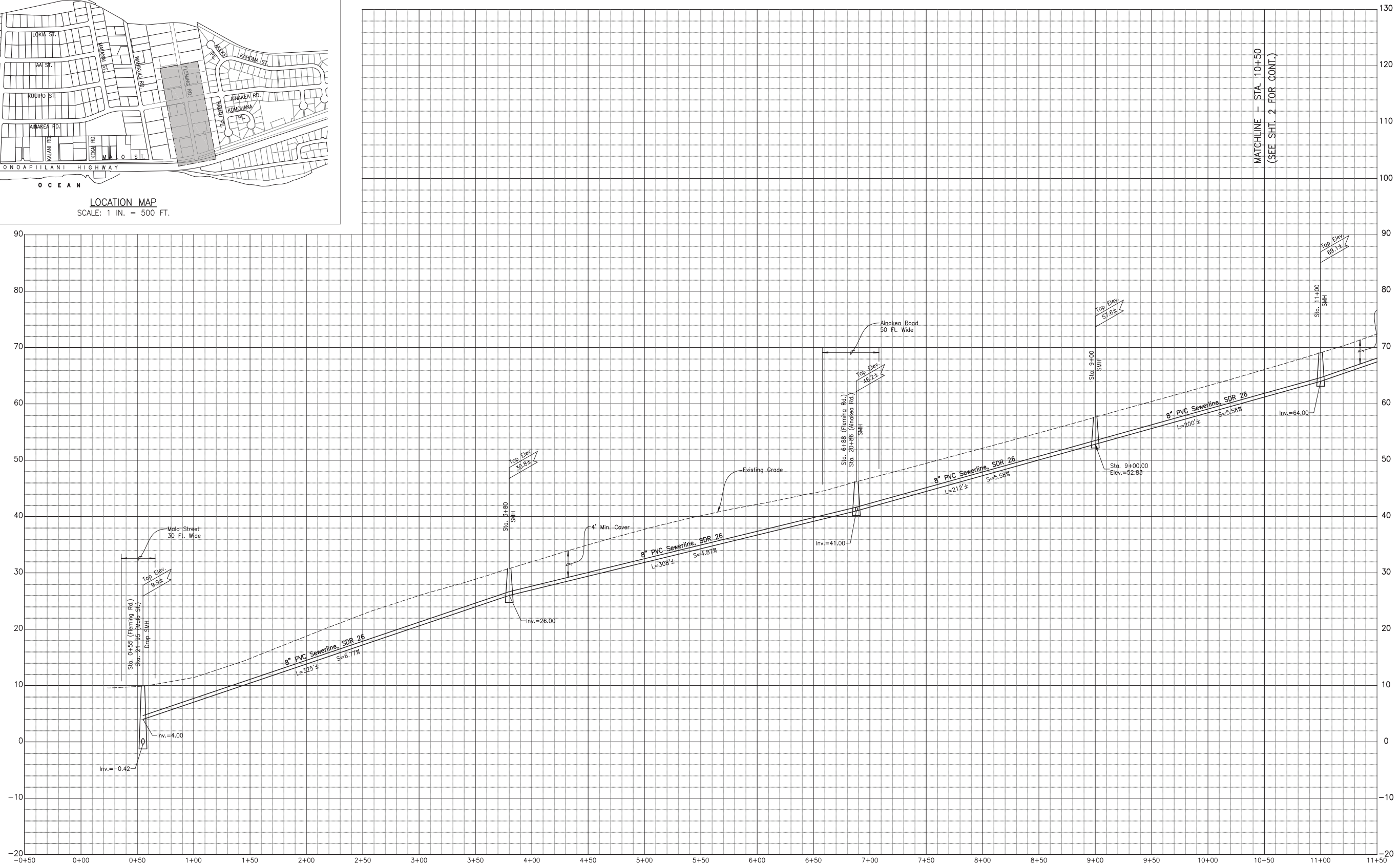
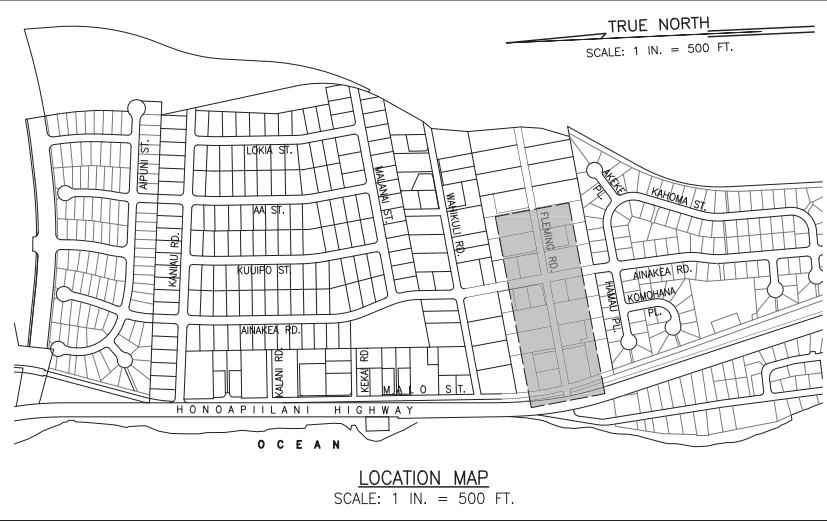


EXHIBIT X - PROFILE OF FLEMING ROAD (1 OF 2)
ALTERNATIVE 1 (MAUKA TIE-IN TO SMH #10)

Scale: Horiz. 1" = 40'
Vert. 1" = 8'



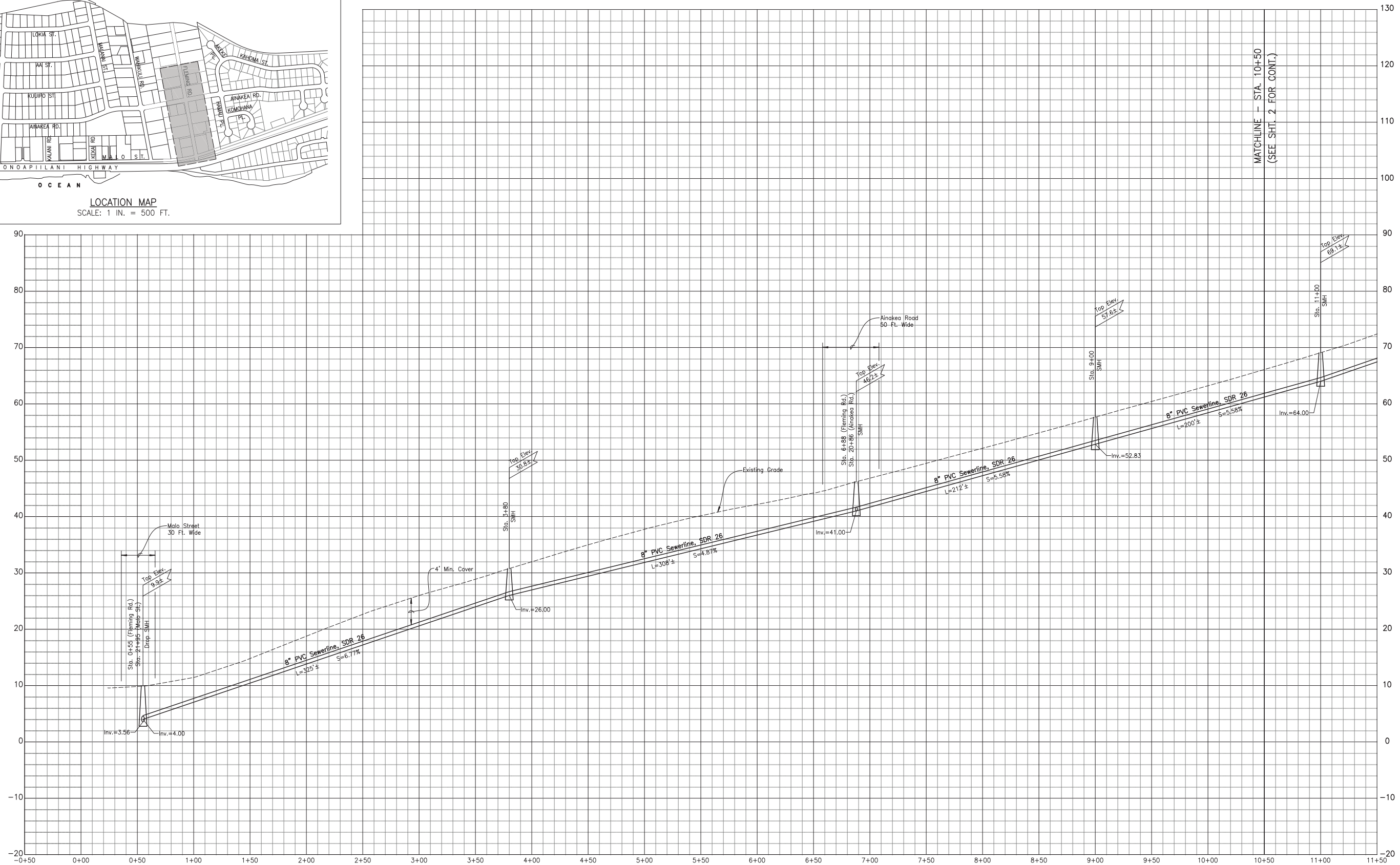
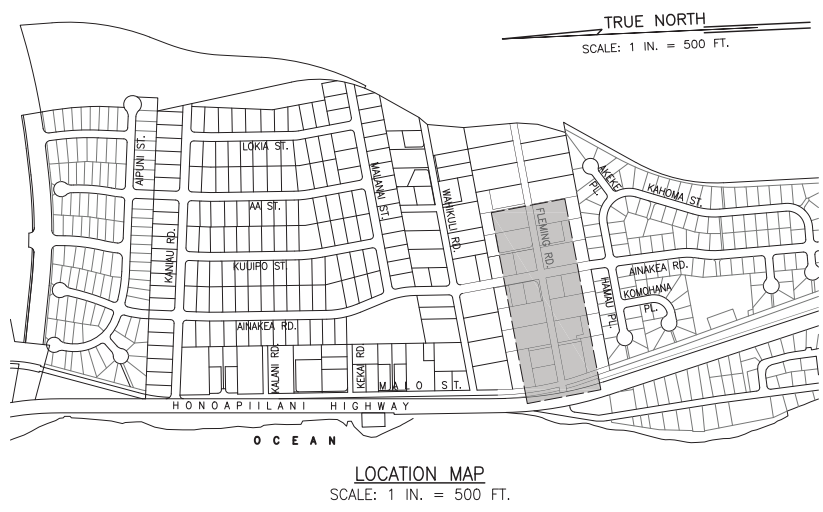


EXHIBIT Y - PROFILE OF FLEMING ROAD (1 OF 2)
ALTERNATIVE 2 (MAKAI TIE-IN TO SMH #1A)

Scale: Horiz. 1" = 40'
Vert. 1" = 8'



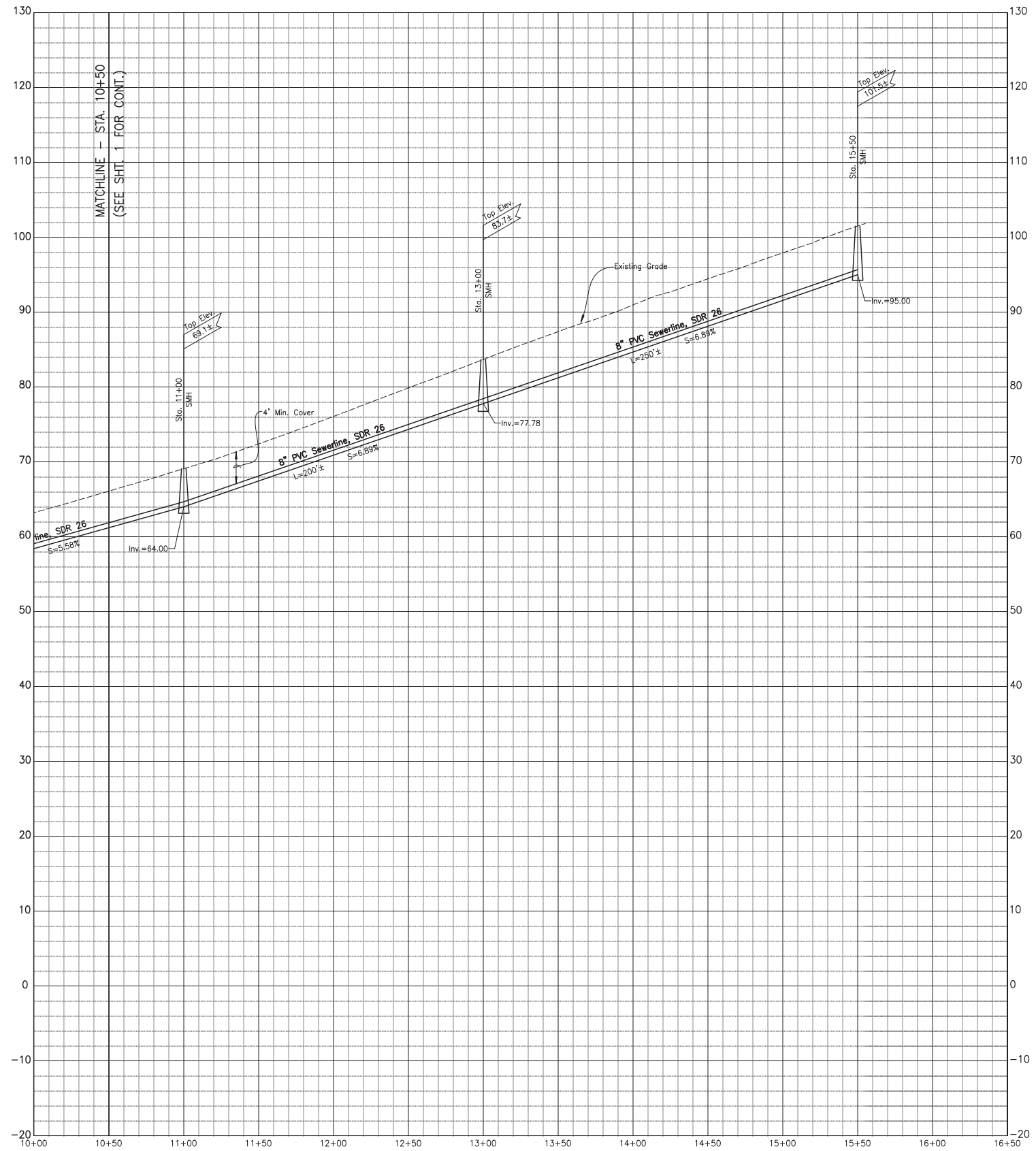
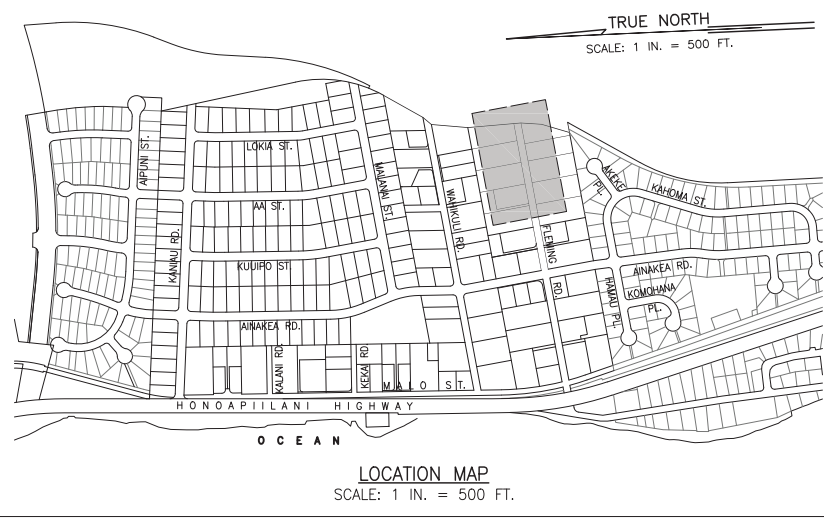
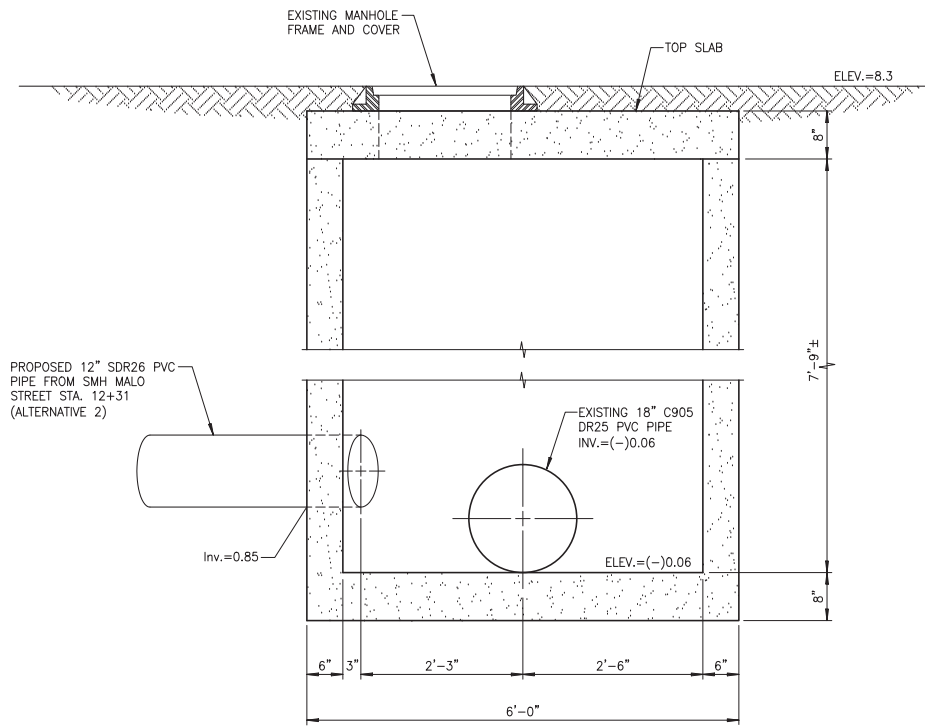


EXHIBIT Z - PROFILE OF FLEMING ROAD (2 OF 2)

ALTERNATIVE 1 & 2

Scale: Horiz. 1" = 40'
Vert. 1" = 8'



SECTION "A"-"A"
ELEVATION VIEW OF TIE-IN OF 12" PVC GRAVITY
SEWER MAIN INTO SMH #1A (LA03XA0900)
 SCALE: 3/4" = 1'-0"

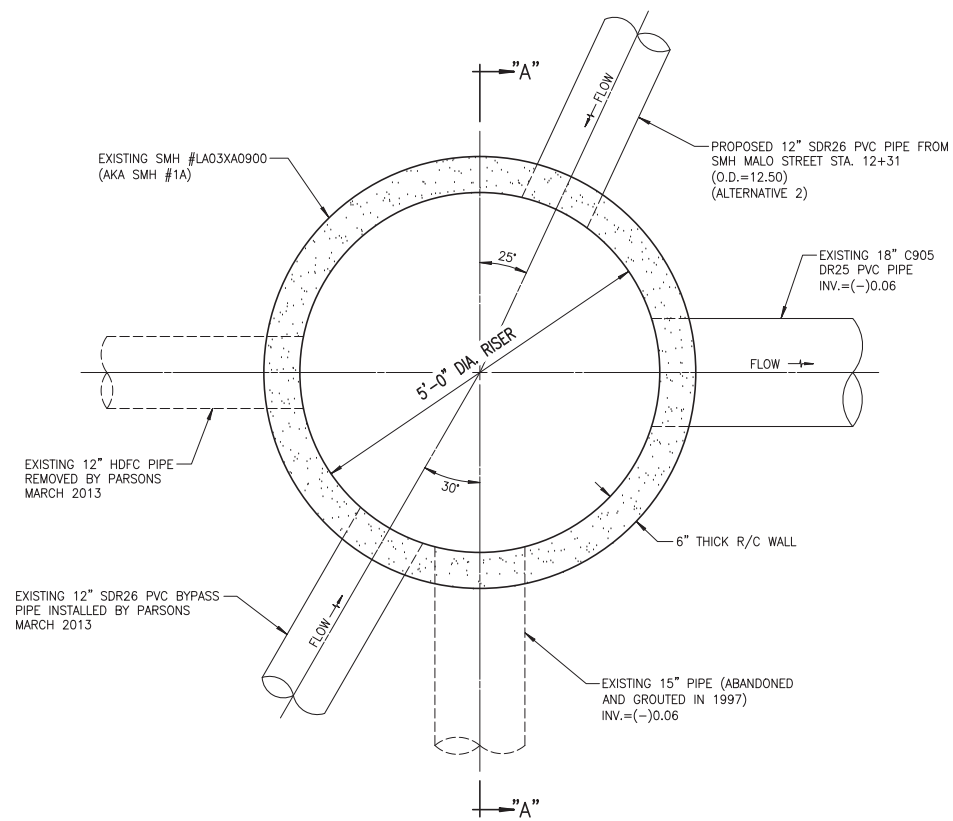
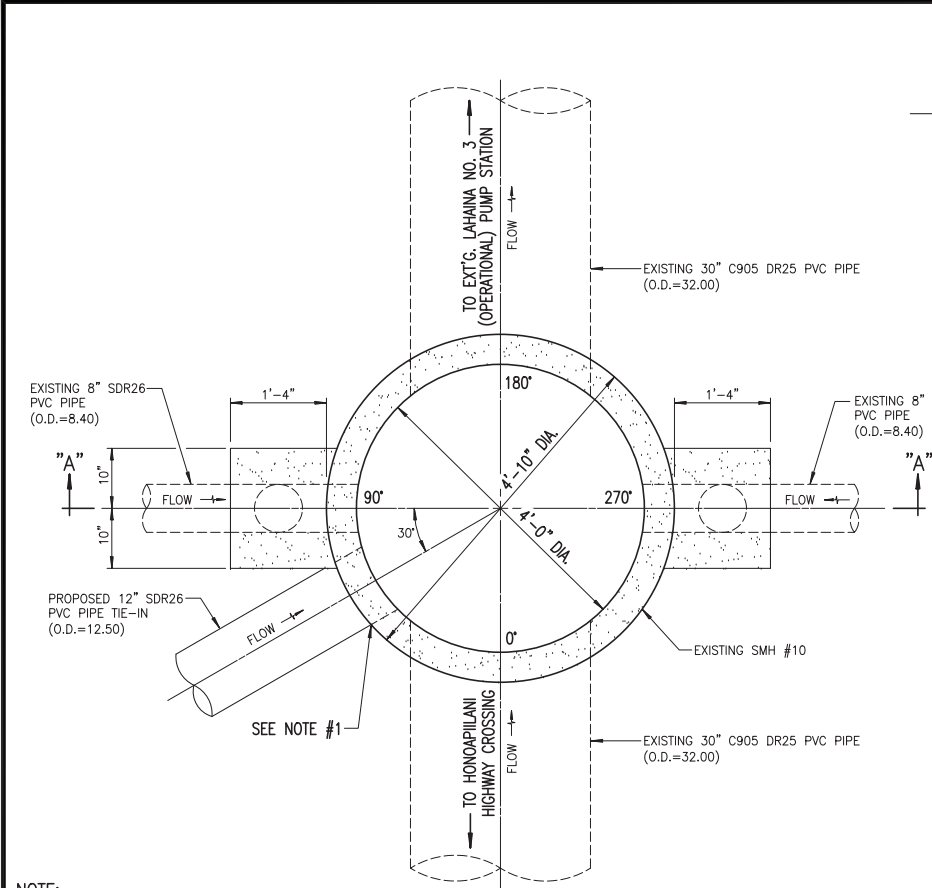


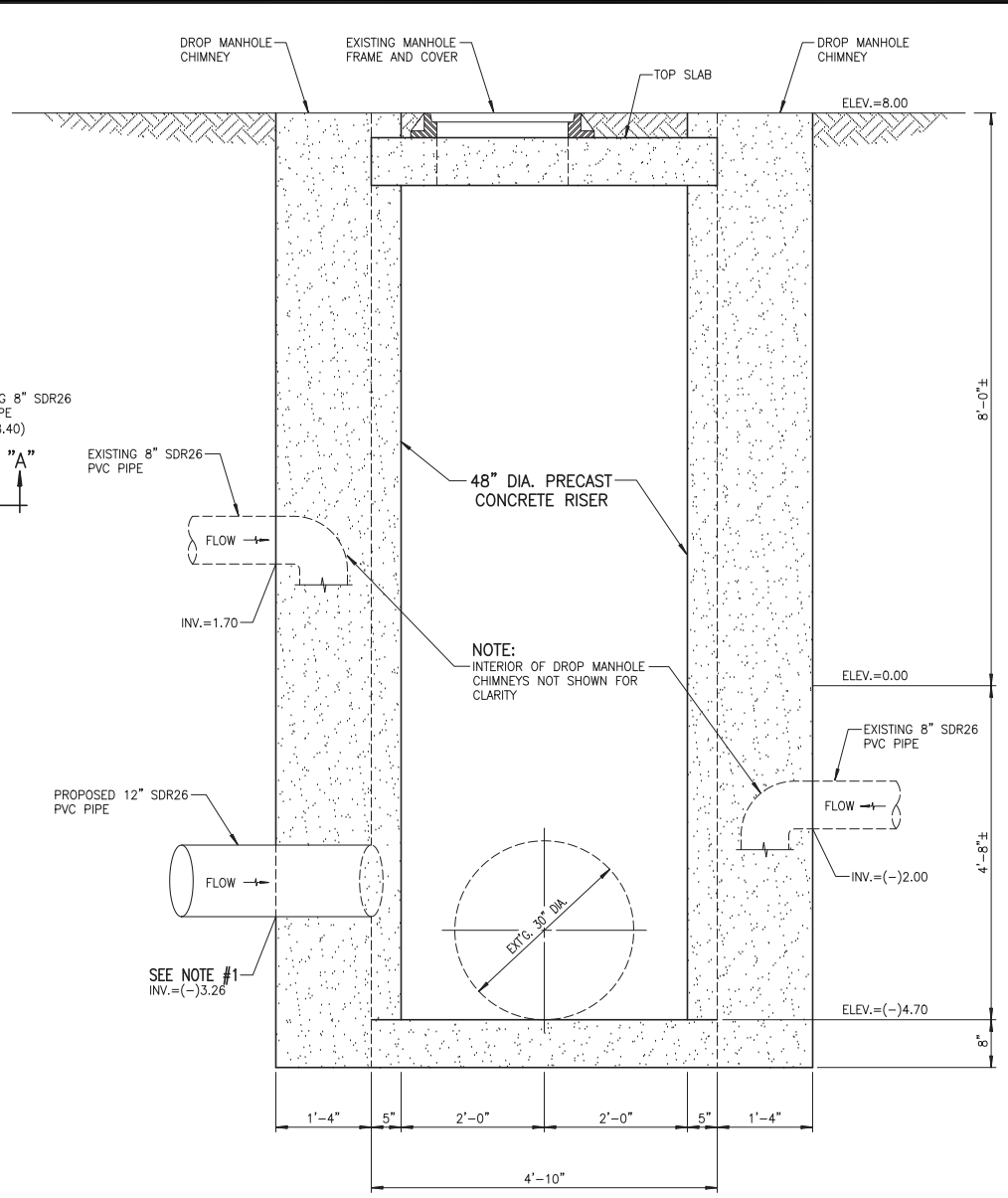
EXHIBIT AA - PLAN VIEW OF PROPOSED TIE-IN
TO EXISTING SMH #1A (LA03XA0900)
 SCALE: 3/4" = 1'-0"

	WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS WELLS STREET PROFESSIONAL CENTER, SUITE 403 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793		
	WAHIKULI GRAVITY SEWER SYSTEM WAHIKULI, LAHAINA, MAUI, HAWAII		
SIGNATURE THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS	DATE RMA DESIGNED BY KAO RMA CHECKED BY RMA RMA APPROVED BY AS NOTED	JOB NUMBER 12028 DATE 02-05-13	SHEET ?? OF SHEETS

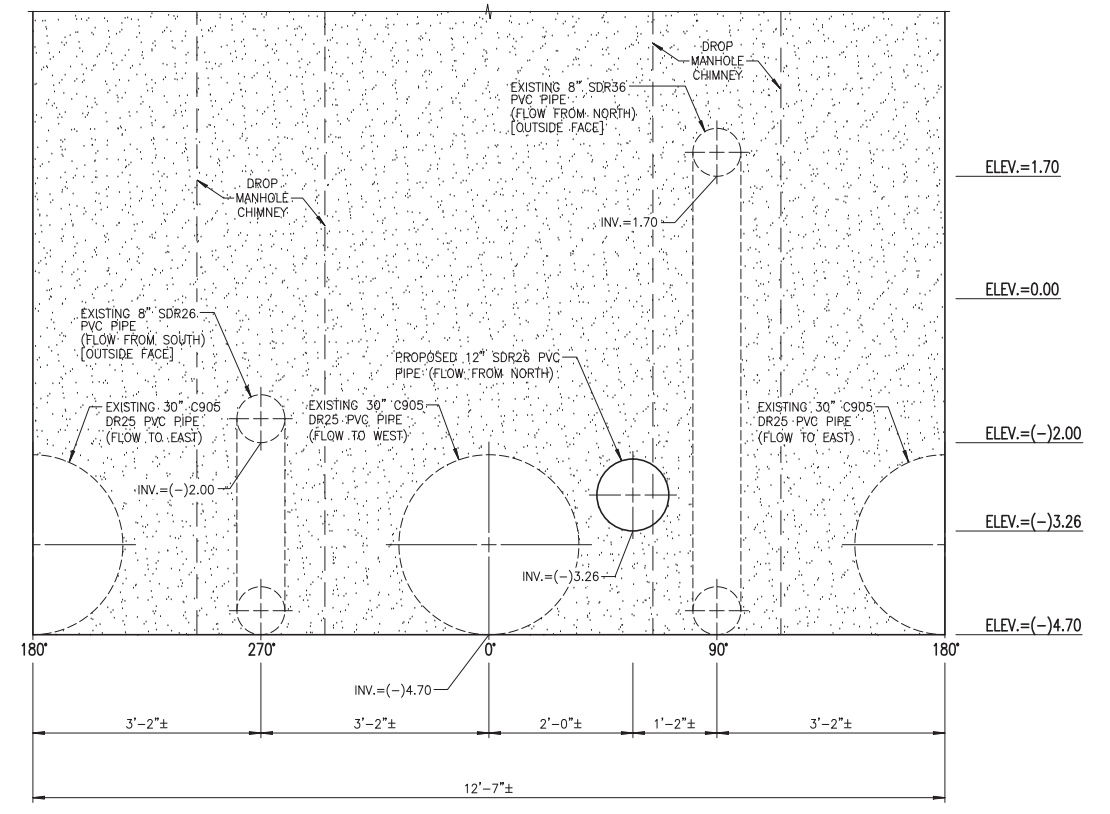


NOTE:
 1. CONTRACTOR SHALL VERIFY PROPOSED LOCATION & INVERT OF 12" SEWERLINE CONNECTION TO EXT'G. SMH IN THE FIELD TO ENSURE NO CONFLICTS WITH EXT'G. SEWERLINE CONNECTIONS OR CHIMNEYS. IF A POTENTIAL CONFLICT EXISTS, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED FITTINGS AND COORDINATION REQUIRED TO MAKE PROPOSED CONNECTION AND FOR ANY MITIGATION REQUIRED, INCLUDING BUT NOT LIMITED TO, DROP MANHOLE, REPAIRS TO EXT'G. CHIMNEYS, ETC., TO MAKE THE REQUIRED CONNECTION.

PLAN VIEW OF TIE-IN OF 12" PVC GRAVITY SEWER MAIN INTO SMH #10
 SCALE: 3/4" = 1'-0"



SECTION "A"-A"
ELEVATION VIEW OF TIE-IN OF 12" PVC GRAVITY SEWER MAIN INTO SMH #10
 SCALE: 3/4" = 1'-0"



SMH #10 - CIRCUMFERENTIAL VIEW OF PENETRATIONS AT INSIDE LINER
 SCALE: 3/4" = 1'-0"

NOTE:
 1. CONTRACTOR SHALL VERIFY PROPOSED LOCATION & INVERT OF 12" SEWERLINE CONNECTION TO EXT'G. SMH IN THE FIELD TO ENSURE NO CONFLICTS WITH EXT'G. SEWERLINE CONNECTIONS OR CHIMNEYS. IF A POTENTIAL CONFLICT EXISTS, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED FITTINGS AND COORDINATION REQUIRED TO MAKE PROPOSED CONNECTION AND FOR ANY MITIGATION REQUIRED, INCLUDING BUT NOT LIMITED TO, DROP MANHOLE, REPAIRS TO EXT'G. CHIMNEYS, ETC., TO MAKE THE REQUIRED CONNECTION.

EXHIBIT BB - PLAN VIEW OF PROPOSED TIE-IN TO EXISTING SMH #10

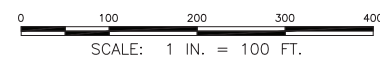
I:\Projects\12pro\12pro\12028 - Com. Waihiki - Gravity System.dwg (complaints)\det-sewer-00.dwg

		WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS WELLS STREET PROFESSIONAL CENTER, SUITE 403 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793			
		WAIHIKULI GRAVITY SEWER SYSTEM WAIHIKULI, LAHAINA, MAUI, HAWAII			
TITLE:		RMA DESIGNED BY: KAO	RMA CHECKED BY: RMA	12028	??
SIGNATURE: _____ DATE: _____ <small>THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS.</small>		DRAWN BY: _____	APPROVED BY: _____	JOB NUMBER: 02-05-13	SHEET: _____
LETTER DESCRIPTION DATE		SCALE: AS NOTED		DATE: _____	OF SHEETS: _____



WAHIKULI SUBDIVISION

EXHIBIT CC - AERIAL PHOTO SHOWING EXISTING SEWER EASEMENTS AND CONTOURS (SCREENED)



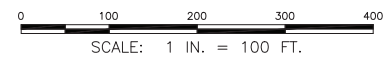
LEGEND:

- ▲ CANNOT BE CONNECTED TO GRAVITY SYSTEM

TRUE NORTH
SCALE: 1 IN. = 100 FT.



WAHIKULI SUBDIVISION
EXHIBIT DD - AERIAL PHOTO SHOWING EXISTING SEWER EASEMENTS ONLY



LEGEND:
▲ CANNOT BE CONNECTED TO GRAVITY SYSTEM

V:\Projects\12300\12300 - Com Wahikuli Gravity System.dwg\exhibit\ExH-DD-ESW100.dwg



May 14, 2013 24"x36"

TRUE NORTH
SCALE: 1 IN. = 50 FT.

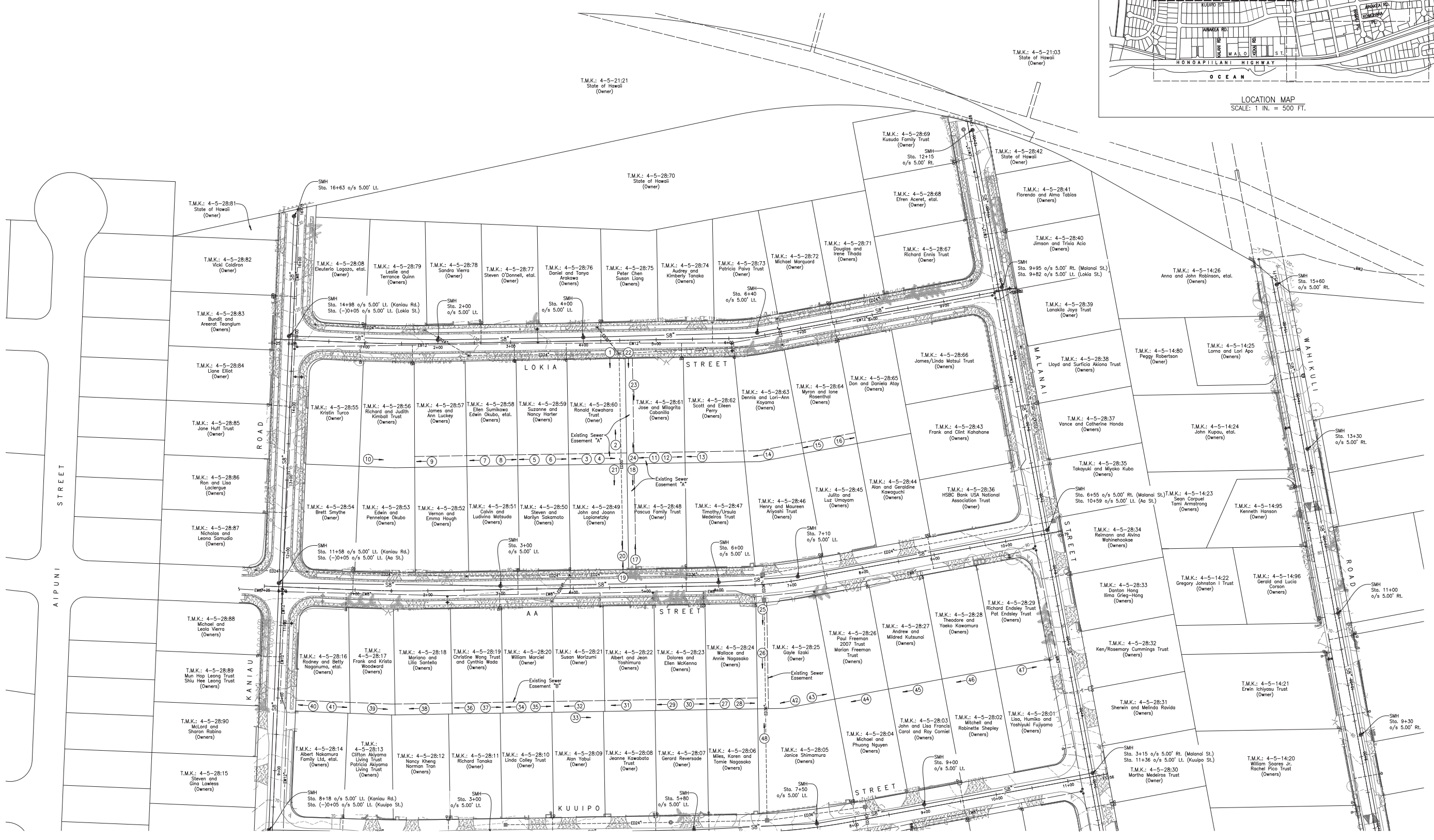
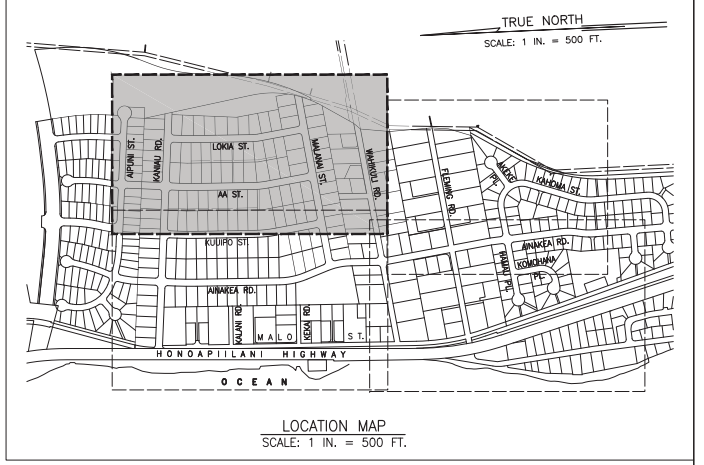
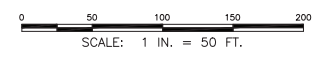
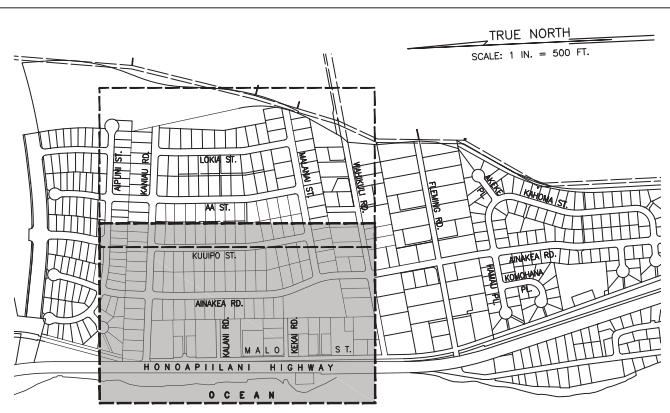
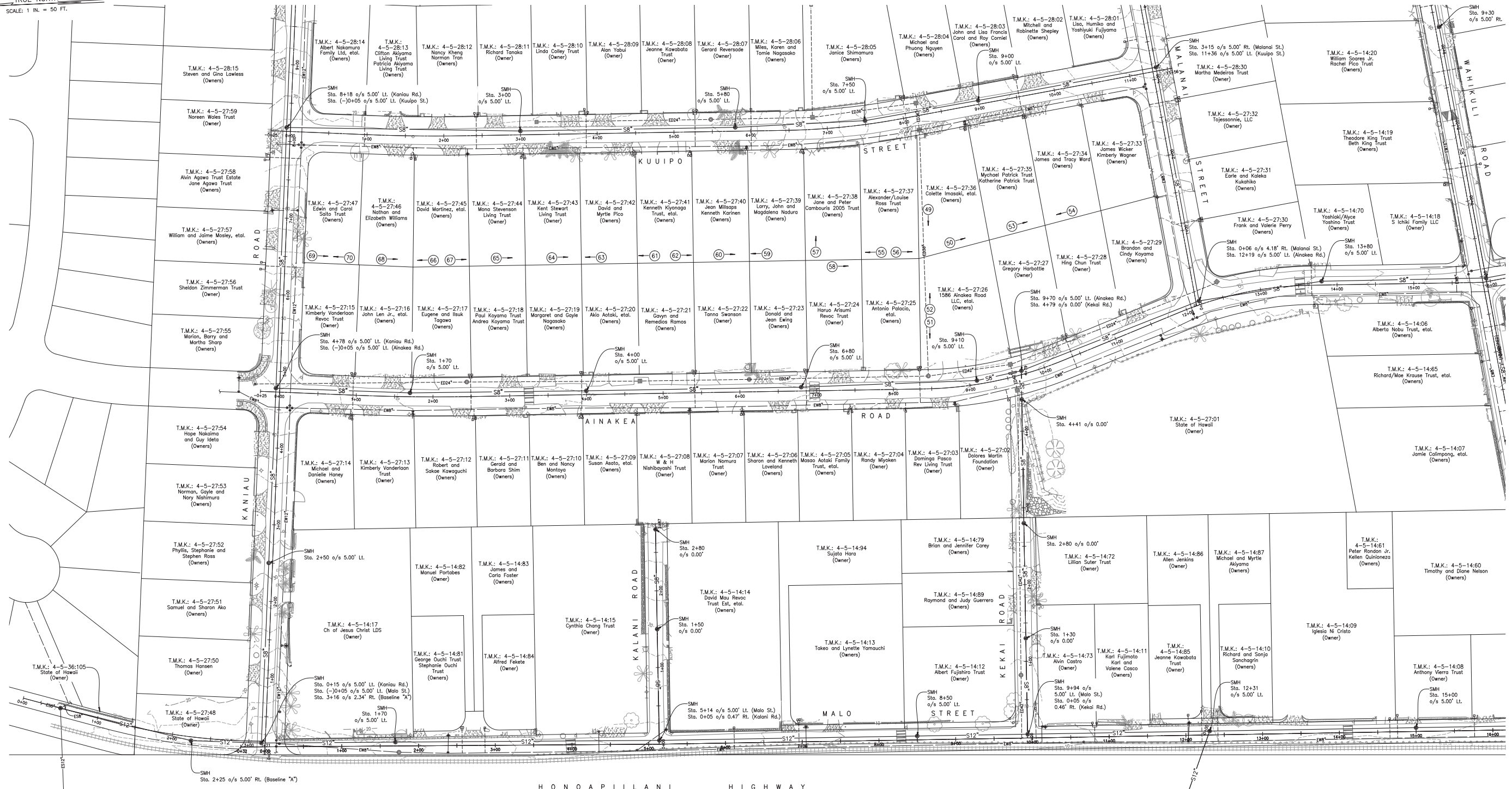


EXHIBIT EE - SITE PHOTOGRAPHIC LOCATION / VIEW DIRECTION MAP
(MAP 1 OF 2)



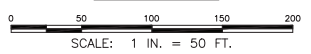
September 26, 2013

TRUE NORTH
SCALE: 1 IN. = 50 FT.



LOCATION MAP
SCALE: 1 IN. = 500 FT.

EXHIBIT FF - SITE PHOTOGRAPHIC LOCATION / VIEW DIRECTION MAP
(MAP 2 OF 2)

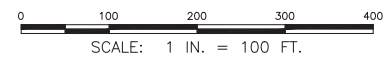


September 26, 2013



- LEGEND:**
- ▲ CANNOT BE CONNECTED TO GRAVITY SYSTEM IN ROADWAYS
 - ▲▲ CANNOT BE CONNECTED TO GRAVITY SYSTEM IN ROADWAYS AND PROPOSED ALTERNATIVE GRAVITY SEWER SYSTEM
 - PROPOSED SEWERLINE WITHIN EXISTING SEWER EASEMENT
 - PROPOSED SEWERLINE WITHIN EXISTING DRAINAGE EASEMENT
 - PROPOSED SEWERLINE REQUIRING SEWER EASEMENT

WAHIKULI SUBDIVISION
EXHIBIT GG - ALTERNATIVE GRAVITY SEWER SYSTEM TO SERVICE PARCELS THAT CANNOT BE CONNECTED TO PROPOSED SYSTEM IN ROADWAYS



September 25, 2013

**APPENDIX A: Geotechnical Subsurface Investigation Report by
Hawaii Geotechnical Consulting, Ltd.**

**GEOTECHNICAL INVESTIGATION REPORT
WAHIKULI GRAVITY SEWER SYSTEM
LAHAINA, MAUI, HAWAII**

A report by:
HAWAII GEOTECHNICAL CONSULTING, INC.

October 6, 2013



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

A handwritten signature in black ink, appearing to be "R. M. Gibbens", written over a horizontal line.

SIGNATURE

04/30/2014

EXPIRATION DATE
OF LICENSE

Hawaii Geotechnical Consulting

- Incorporated -

P.O. Box 331223 • Lahaina, Hawaii 96733 • Phone (808) 205-1727

October 6, 2013
File No. 13003.01

Mr. Alan Unemori, P.E.
Warren S. Unemori Engineering, Inc.
2145 Wells Street
Wailuku, Maui, Hawaii 96793

Subject: **GEOTECHNICAL INVESTIGATION REPORT FOR
PROPOSED WAHIKULI GRAVITY SEWER SYSTEM
LAHAINA, MAUI, HAWAII**

Dear Mr. Unemori:

We are pleased to submit our Geotechnical Investigation Report for the proposed Wahikuli Gravity Sewer System project in Lahaina, Maui, Hawaii. The enclosed report describes our investigation and presents the results of our subsurface borings as they relate to the excavation characteristics of the subsurface soil and rock along Malanai Street as well as the groundwater conditions along Malo Street.

We appreciate the opportunity to work with you on this project. If you should have any questions or require additional information, please contact us.

Sincerely,

HAWAII GEOTECHNICAL CONSULTING, INC.



Robert M. Gibbens, P.E.
Senior Geotechnical Engineer

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1. INTRODUCTION

1.1 Authorization

Hawaii Geotechnical Consulting, Inc. (HGC) was retained by Mr. Alan Unemori, P.E. of Warren S. Unemori Engineering, Inc. to conduct a geotechnical investigation for the proposed Wahikuli Gravity Sewer System project in Lahaina, Maui, Hawaii. The scope of our services was outlined in our May 5, 2013 proposal No. P-211. Authorization to proceed was received via a signed proposal on April 4, 2013.

1.2 Purpose and Scope

The purpose of this geotechnical investigation was to explore and evaluate the site's subsurface conditions in order to provide insight into the sites subsurface conditions as they relate to the installation of the gravity sewerline along Malanai Street as well as the groundwater levels along Malo Street. A description of the scope of work is presented below:

Phase 1 – Field Investigation. A total of 8 auger borings were drilled with a Mobil B-59 truck mounted drill rig. Eight-inch hollow stem augers were used to penetrate the upper soils while a 6-inch diameter core barrel equipped with a diamond bit cutting head was used to penetrate the underlying basalt. Three borings were drilled to depths ranging from 13 to 16 feet below the existing ground surface along Malanai Street and five borings were drilled to depths ranging from 8 to 13 feet below the existing ground surface along Malo Street. An engineer with Hawaii Geotechnical Consulting, Inc. observed and directed the boring investigation, maintained a log of the subsurface soils encountered, and collected relatively undisturbed drive samples for laboratory testing. A description of the field exploration and the Logs of Test Borings are presented in Appendix A. The boring locations are presented on the Boring Location Plan, Figure 1.

Phase 2 – Laboratory Testing. Laboratory tests were performed on the few soil samples obtained during our field investigation. Laboratory tests were selected to verify field classifications. Testing consisted of in-place moisture content and dry density and gradation. The laboratory test results are presented on the Logs of Borings in Appendix A while the laboratory test methods are described in Appendix B.

Phase 3 – Geotechnical Report. This report was prepared to present our findings and conclusions regarding the excavateability of the soil and rock underlying Malanai Street as well as the groundwater conditions at the time of drilling along Malo Street. Our report describes our field investigation and the site's general subsurface conditions. Discussions regarding excavateability and groundwater considerations are presented.

1.3 Site Location

The proposed site is located along Malanai Street and Malo Street within the Wahikuli Subdivision in Lahaina, Maui, Hawaii. Malanai Street runs east from its start at Ainkea Road and dead ends just before Fleming Road. The section of Malo Street investigated stretches from its intersection with Kalani Road south to the Lahaina No. 3 Pump Station.

1.4 Site Description and Conditions

Both sites are active roadways paved with asphalt concrete (AC). The 1,200 foot long Malanai Street slopes steeply down to the west from its eastern terminus with an overall relief of about 87 vertical feet and an average slope of 9 horizontal to 1 vertical (9h:1v). Malo Street slopes gently to the south from its eastern terminus with an overall relief of about 4 vertical feet at the pump station.

END OF INTRODUCTION

2. PROJECT DESIGN CONSIDERATIONS

The following sections describe our understanding of the relevant project considerations. Our understanding is based on discussions with Mr. Alan Unemori, P.E. as well as the March 12, 2013 Profile – Malanai Street Alternative 1 & 2 and March 12, 2013 Profile – Malo Street plans by Warren S. Unemori Engineering, Inc.

2.1 Proposed Project/Development Plans

We understand that a gravity sewer system is proposed for the residential structures of the Wahikuli Subdivision. Part of the proposed sewerline installation will run along the steeply sloped Malanai Street alignment. Due to Malanai Street's slope, manholes as deep as 20 feet are required. Excavations for deep manholes was expected to penetrate into the underlying formational basalt.

The subdivision sewerlines will ultimately collect into a larger sewerline running along Malo Street, connecting to the Lahaina No. 3 Pump Station. The proposed Malo Street sewerline will flow down to the south, eventually penetrating the existing groundwater table near Elev. 0.

END OF PROJECT DESIGN CONSIDERATIONS

3. SUBSURFACE INVESTIGATION

On September 19, 2013, a subsurface investigation was performed at the proposed project sites. The following sections describe our investigation.

3.1 Auger Borings

A total of 8 auger borings were drilled with a Mobile B-59 truck mounted drill rig. Three borings were drilled to depths ranging from 13 to 16 feet below the existing ground surface along Malanai Street and five borings were drilled to depths ranging from 8 to 13 feet below the existing ground surface along Malo Street. Eight-inch hollow stem augers were used to penetrate the site's subsurface soils. An engineer with Hawaii Geotechnical Consulting, Inc. observed and directed the boring investigation, maintained a log of the subsurface soils encountered, and collected relatively undisturbed drive samples for laboratory testing. The materials encountered in the test borings are shown on the Log of Test Borings in Appendix A. A Soil Classification Chart can also be found in Appendix A.

While penetrating the subsurface soils, relatively undisturbed drive samples were obtained with a California sampler. The California sampler consisted of a 3-inch O.D. split barrel shaft housing 6-inch long brass sample recovery sleeves. At each test location, the split barrel sampler was driven a total of 18 inches, in three 6-inch increments, with a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler the last 12 of 18 inches is termed the blow count and is recorded on the boring logs. Driving was stopped when greater than 50 blows were recorded for any 6-inch increment. When driving was stopped short of 18 inches, the number of blows required for the indicated penetration was recorded.

3.2 Rock Coring

Core samples of the underlying rock were obtained using a 6-inch diameter core barrel equipped with a diamond bit cutting head and 2.5-inch diameter interior sampler. The core barrel was able to sample the rock in 5-foot intervals. After each 5 foot run, the core barrel was removed and its contents placed in a core box for examination. Both the total length of sample recovered, and the cumulative length of each rock piece 4-inches or longer were recorded. The percent recovery is recorded as the length of recovered sample divide by the total length of the run. The RQD of the rock is recorded as the cumulative length of each rock piece 4-inches or longer divided by the length of the run.

3.3 Laboratory Testing

Laboratory tests were performed on drive samples obtained during the field investigation. Laboratory tests were selected to verify field classifications. Testing consisted of in-place moisture content and dry density and gradation tests. The laboratory test results are presented on the Logs of Borings in Appendix A. The laboratory test methods are described in Appendix B.

END OF SUBSURFACE INVESTIGATION

4. SUBSURFACE CONDITIONS

The following sections describe the subsurface soil and groundwater conditions encountered during our field investigation.

4.1 Residual Soil

Residual reddish brown silty sand with some gravel soil was encountered between the depths of 4 and 6 feet below the existing pavement surface. The residual silty sand soil was generally dense, with in-place dry densities ranging from 97 to 101 pcf and measured in-place moisture contents ranging from 21 to 24 percent.

4.2 Formational Basalt

Fresh formational gray basalt was encountered from depths of 4 to 6 feet to the maximum depth of our explorations at 21 feet. The basalt was generally hard and occasionally broken over its upper 3 to 5 foot depths and massive below. Rock Quality Designations (RQD's) ranged from 17 to 95 percent with percent recoveries ranging from 20 to 100 percent.

4.3 Groundwater Conditions

Groundwater measurements were made within each boring at the time of drilling and then again as close to estimated high tide as possible.

4.3.1 Malanai Street

Groundwater was not encountered in any Malanai Street boring. Groundwater levels within the project area will vary depending on seasonal rainfall and runoff conditions. Therefore, groundwater levels may vary from those presented above at the time of construction.

4.3.2 Malo Street

Groundwater was encountered within each of the 5 Malo Street borings. The following table summarizes our observations:

Malo Street Station	Depth to Elev. 0 (ft)	Groundwater Elevation at Time of Drilling	Groundwater Elevation at Time of Drilling
5+20	13.0	2.2	2.5
17+20	12.0	2.1	2.3
22+50	9.0	2.2	2.6
25+00	9.0	2.1	2.2
30+00	9.0	0.5	0.7

END OF SUBSURFACE CONDITIONS

5. DISCUSSION

5.1 Hard Rock Excavation

We understand that the sewer manholes along Malanai Street will be founded at depths of up to 20 feet below the pavement surface. The results of our borings indicate that hard formational basalt was encountered between the depths of 4 and 6 feet below the pavement surface. The upper 4 to 5 feet of formational basalt, though occasionally broken, was hard and competent. The rock underlying this occasionally broken basalt was hard and massive.

Although occasionally broken basalt was encountered between the depths of 4 and 10 feet, our experience in the project area indicates that excavations within this upper basalt can be problematic for traditional excavation techniques, especially with a narrow excavation condition. We believe that excavations deeper than 5 to 7 feet below the pavement surface will require the use of hard rock removal techniques such as hoe ramming. Excavations deeper than 10 feet will require hoe ramming.

5.2 Groundwater Levels

Groundwater was encountered in each of the 5 Malo Street borings. The groundwater levels were measured at the time of excavation and then again nearest the soonest high tide. Groundwater levels were measured at between Elev. 0.5 and Elev. 2.6. The deepest groundwater level was encountered at Sta. 30+00 with the shallowest measured at Sta. 22+50. Groundwater levels will vary with seasonal, tidal, and runoff conditions. Therefore actual groundwater levels may be different at time of construction.

END OF DISCUSSION

6. LIMITATIONS

This report has been prepared for the exclusive use of Warren S. Unemori Engineering, Inc. and their agents for specific application to the proposed Wahikuli Gravity Sewer System project in Lahaina, Maui, Hawaii.

The findings, conclusions, and recommendations presented in this report were prepared in accordance with generally accepted geotechnical engineering practice as it exists in the site area at the time of our study. No warranty is expressed or implied. The recommendations provided in this report are based on the assumption that our firm will conduct an adequate program of tests and observations during the construction phase in order to evaluate compliance with our recommendations. If the scope of the proposed construction, including the proposed loads, grades, or structural locations change from that described in this report, our recommendations should also be reviewed. We have not reviewed a final grading or building plan for the project.

Hazardous materials may have been discovered during the course of Hawaii Geotechnical Consulting, Inc.'s services. Hawaii Geotechnical Consulting, Inc. will assume no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury that results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

Nothing contained in this scope of work should be construed or interpreted as requiring Hawaii Geotechnical Consulting, Inc. to assume the status of an owner, operator, generator, or person who arranges for disposal, transport, storage, or treatment of hazardous materials within the meaning of any governmental statute, regulation, or order.

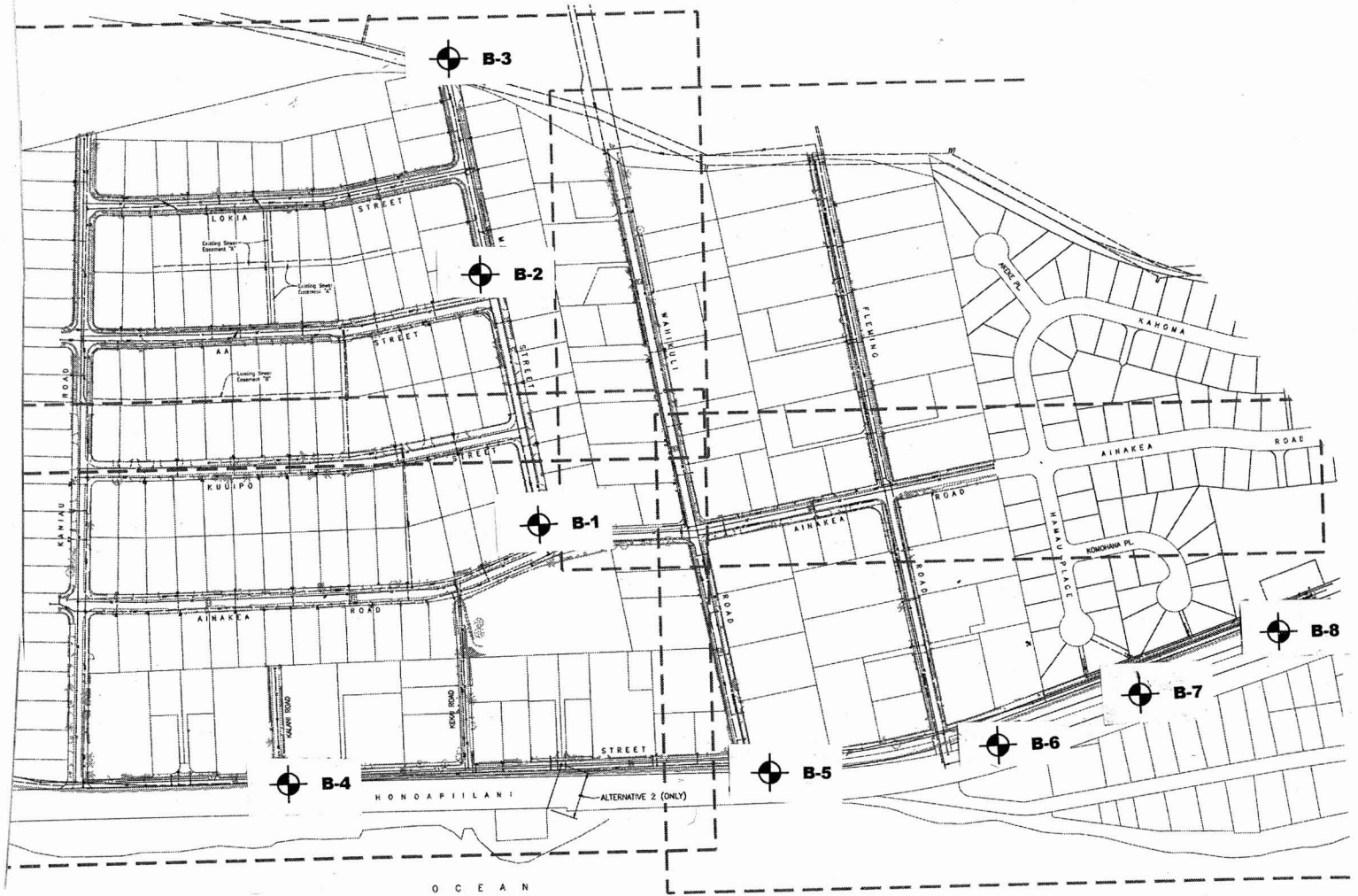
The client has the responsibility to see that all parties to the project, including the designer, contractor, subcontractor, etc., are made aware of this report in its entirety. This report contains information that may be useful in the preparation of contract specifications. However, the report is not designed as a specification document and may not contain sufficient information for this use without proper modification.

The recommendations contained in this report are based on our field observations and our present knowledge of the proposed construction. It is possible that soil conditions could vary between or beyond the areas observed. If soil conditions are encountered during construction which differ from those described herein, we should be notified immediately in order that a review may be made and any supplemental recommendations provided.

This report may be used only by the client and only for the purpose stated, within a reasonable time from its issuance. Land use, site conditions (both onsite and offsite) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify Hawaii Geotechnical Consulting, Inc. of such intended use. Based on the intended use of this report, Hawaii Geotechnical Consulting, Inc. may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Hawaii Geotechnical Consulting, Inc. from any liability resulting from the use of this report by any unauthorized party.

END OF LIMITATIONS

FIGURES



Legend

 **Boring Location**

HAWAII GEOTECHNICAL CONSULTING, INC.

BORING LOCATION PLAN

WAHIKULI GRAVITY SEWER SYSTEM

LAHAINA, MAUI, HAWAII

File: 13028.02

OCTOBER 26'13

FIGURE 1

APPENDIX A
Logs of Borings

<p align="center">COARSE GRAINED SOILS</p> <p align="center">MORE THAN HALF OF THE MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE</p>	<p align="center">GRAVELS</p> <p align="center">MORE THAN HALF OF COURSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE</p>	<p align="center">CLEAN GRAVELS (LITTLE OR NO FINES)</p>	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		<p align="center">GRAVELS WITH APPRECIABLE AMOUNTS OF FINES)</p>	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	<p align="center">SANDS</p> <p align="center">MORE THAN HALF OF COURSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE</p>	<p align="center">CLEAN SANDS (LITTLE OR NO FINES)</p>	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		<p align="center">SANDS WITH APPRECIABLE AMOUNTS OF FINES)</p>	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
	<p align="center">FINE GRAINED SOILS</p> <p align="center">MORE THAN HALF OF THE MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE</p>	<p align="center">SILTS AND CLAYS</p> <p align="center">LIQUID LIMIT LESS THAN 50</p>	ML	INORGANIC SILTSAND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
OL			ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
<p align="center">SILTS AND CLAYS</p> <p align="center">LIQUID LIMIT GREATER THAN 50</p>		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SOILS	
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	

USCS SOIL CLASSIFICATION CHART

FIGURE A1

Date Completed: 09/19/20123
 Drilled By: Precision Drilling
 Drilling Method: HSA/Rock Coring
 Logged By: R.M. Gibbens, P.E.

Water Depth: Not Encountered
 Northing: n/a
 Easting: n/a
 Elevation: 38.0
 Description: Malanai Road, Sta. 0+50
 Symbols: 3" OD Split Spoon Rock Core

Depth (feet)	Sample Type	Sample No.	Blow Count	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Penetrometer (tsf)	Dry Density (pcf)	Moisture Content (%)	Additional Tests
0 - 10	Run 1	1	41	SILTY SAND (SM), with some Gravel, reddish brown, dense, damp RESIDUAL	--	101	22	Gravel = 12% Sand = 63% Silt/Clay = 25%
10 - 16	Run 2		8:00	BASALT (F), gray, hard, occasionally broken to massive FORMATION				RQD = 20% Recovery = 20%
16 - 21	Run 3		16:00					RQD = 83% Recovery = 85%
21 - 50			21:00					RQD = 80% Recovery = 100%
				Bottom of Borehole at 21.0 feet No Groundwater Encountered Borehole backfilled with excavated soil				

Hawaii Geotechnical Consulting, Inc.

PROJECT NO. 13028.01
 DATE 10/02/2013

PROPOSED WAHIKULI SUBDIVISION
 GRAVITY SEWER SYSTEM
 LAHAINA, MAUI, HAWAII

LOG OF TEST BORING 1

FIGURE
A2

Date Completed: 09/19/20123
 Drilled By: Precision Drilling
 Drilling Method: HSA/Rock Coring
 Logged By: R.M. Gibbens, P.E.

Water Depth: Not Encountered
 Northing: n/a
 Easting: n/a
 Elevation: 92.0
 Description: Malanai Road, Sta. 6+75
 Symbols: 3" OD Split Spoon Rock Core

Depth (feet)	Sample Type	Sample No.	Blow Count	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Penetrometer (tsf)	Dry Density (pcf)	Moisture Content (%)	Additional Tests
0 - 6:00	Run 1	1	30	SILTY SAND (SM), with trace Gravel, reddish brown, dense, damp RESIDUAL	--	97	21	Gravel = 3% Sand = 72% Silt/Clay = 25%
6:00 - 13:00	Run 2			BASALT (F), gray, hard, occasionally broken to massive				RQD = 17% Recovery = 23%
13:00 - 16:00	Run 3			FORMATION				RQD = 72% Recovery = 65%
16:00 - 50				Bottom of Borehole at 16.0 feet No Groundwater Encountered Borehole backfilled with excavated soil				RQD = 95% Recovery = 100%

Hawaii Geotechnical Consulting, Inc.

PROJECT NO. 13028.01
 DATE 10/02/2013

PROPOSED WAHIKULI SUBDIVISION
 GRAVITY SEWER SYSTEM
 LAHAINA, MAUI, HAWAII

LOG OF TEST BORING 2

FIGURE

A3

Date Completed: 09/19/20123
 Drilled By: Precision Drilling
 Drilling Method: HSA/Rock Coring
 Logged By: R.M. Gibbens, P.E.

Water Depth: Not Encountered
 Northing: n/a
 Easting: n/a
 Elevation: 124.0
 Description: Fleming Road
 Symbols: 3" OD Split Spoon Rock Core

Depth (feet)	Sample Type	Sample No.	Blow Count	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Penetrometer (tsf)	Dry Density (pcf)	Moisture Content (%)	Additional Tests
0 - 1		1	53	SILTY SAND (SM), with trace Gravel, reddish brown, dense, damp RESIDUAL	--	97	24	Gravel = 9% Sand = 63% Silt/Clay = 28%
1 - 10	Run 1		4:00	BASALT (F), gray, hard, occasionally broken to massive FORMATION				RQD = 29% Recovery = 23%
10 - 20	Run 2		8:00					RQD = 31% Recovery = 65%
20 - 20.0	Run 3		14:00					RQD = 90% Recovery = 95%
Bottom of Borehole at 20.0 feet No Groundwater Encountered Borehole backfilled with excavated soil								

Hawaii Geotechnical Consulting, Inc.

PROJECT NO. 13028.01
 DATE 10/02/2013

PROPOSED WAHIKULI SUBDIVISION
 GRAVITY SEWER SYSTEM
 LAHAINA, MAUI, HAWAII

LOG OF TEST BORING 3

FIGURE

A4

APPENDIX B LABORATORY TESTING

Laboratory testing was performed on selected drive and bulk samples to estimate their pertinent engineering characteristics. Testing was performed in accordance with ASTM Standards for Soil Testing, latest revision.

MOISTURE CONTENT AND DRY DENSITY

Natural moisture content and dry density tests were performed on samples in accordance with ASTM D2216 and D2937, respectively. The results of these tests are presented on the Logs of Borings in Appendix A.

GRAIN SIZE

Grain size analyses were performed on samples in accordance with ASTM D2487. The results are presented on the Logs of Borings in Appendix A.

**APPENDIX B: Sump Pump and Septic Tank Cost Estimates by
Engineering Dynamics Corporation**

Wahikuli Subdivision Gravity Sewer System

Estimated Cost for Individual Package Sewage Lift Station for Lots below the Gravity Sewer

Description: The package sewage lift station would consist of a single grinder sewage pump with within a 2 ft diameter by 5 ft deep fiberglass reinforced basin with polypropylene plastic cover. The pump would be rated for 20-30 gpm at a total dynamic head of 60-70 ft. (Grinder pump utilize a higher rpm to insure shredding of solids which result in higher discharge pressures). The pump would have a 2 Hp motor suitable for 240 volts 1 phase. A simplex control panel with float switches is used control the pump. Pump discharge will be 2-inch diameter PVC force main.

Estimated Installation Cost:

Package Sewage Lift station delivered to site	\$ 5,000
Excavation for sump	\$ 1,500
Installation of lift station and Connection to house.....	\$ 2,000
100 ft of 2-inch PVC force main including trench excavation & backfill.....	\$ 6,000
Electrical Connection of control panel to house	<u>\$ 2,500</u>
Subtotal	\$17,000
10% Contingency	\$ 1,700
25% General Contractor Mark up	<u>\$ 4,675</u>
Total	\$22,375

Alternate

Description: Installation of a Septic Tank and convert the existing cesspool into a seepage pit.

Estimated Installation Cost:

1250 gallon plastic septic tank delivered to site	\$ 1,500
Excavation for septic tank	\$ 2,000
Installation of septic tank (filter fabric & crushed rock)	\$ 1,500
30 ft of 4" PVC gravity sewer	\$1,500
Pump out existing cesspool	\$ 600
Subtotal	\$ 7,100
10% Contingency	\$ 710
25% General Contractor Mark up	<u>\$ 1,952</u>
Total	\$ 9,762

Note: These cost are based on current cost for materials and labor for individual units. These cost could be reduced for multiple units being installed at the same time based on group discount order for materials and mobilization and demobilization cost. Additional adjustments must also be made if the actual construction is projected to occur at a later date.

June 21, 2013

QUOTATION



PACIFIC LIQUID & AIR SYSTEMS

761 AHUA STREET HONOLULU, HI 96819
 TEL: (808) 536-7699 FAX: (808) 536-8761
 Web: <http://www.pacificliquid.com>

Order Number	
1235768	
Order Date	Page
6/18/2013 13:14:35	1 of 1

Bill To:
 CASH PLAS WHOLESALE

Ship To:
 ENGINEERING DYNAMICS
 KAHULUI DOCK
 KAHULUI, HI 96793

Requested By: Mr. Douglas Gomes

Customer ID: 4288

PO Number		Ship Route		Taker				
EDC-Waihikuli simplex sewage lift station				CHARLESA				
Quantities					Item ID	Pricing UOM	Unit Price	Extended Price
Ordered	Allocated	Remaining	UOM Unit Size	Disp.				

Order Note: Availability: Eight to ten weeks after receipt of order.

Delivery Instructions: Shipping: FOB factory (Ashland, OH). Estimated freight charge is based on shipping one unit to the Kahului dock via surface freight. Please multiply estimate by the actual number of units ordered.

Ordered	Allocated	Remaining	UOM Unit Size	Disp.	Item ID	Item Description	Pricing UOM	Unit Price	Extended Price
1.00	0.00	1.00	EA		MRG20-R5PB		EA	3,500.000000	3,500.00
				1.0	2HP GRINDER PUMP W/24"X60" BASIN PKG	Pump package includes: one MRG20-21 2hp grinder pump with piggy-back float switch, 24"x60" fiberglass basin with 24" solid polyethylene cover, 4" basin inlet flange, 2" basin discharge flange, 2" conduit flange, and 2" PVC check valve.			

Order Line Notes: Optional simplex control panel with three normally open float switches are available as a \$800 price adder.

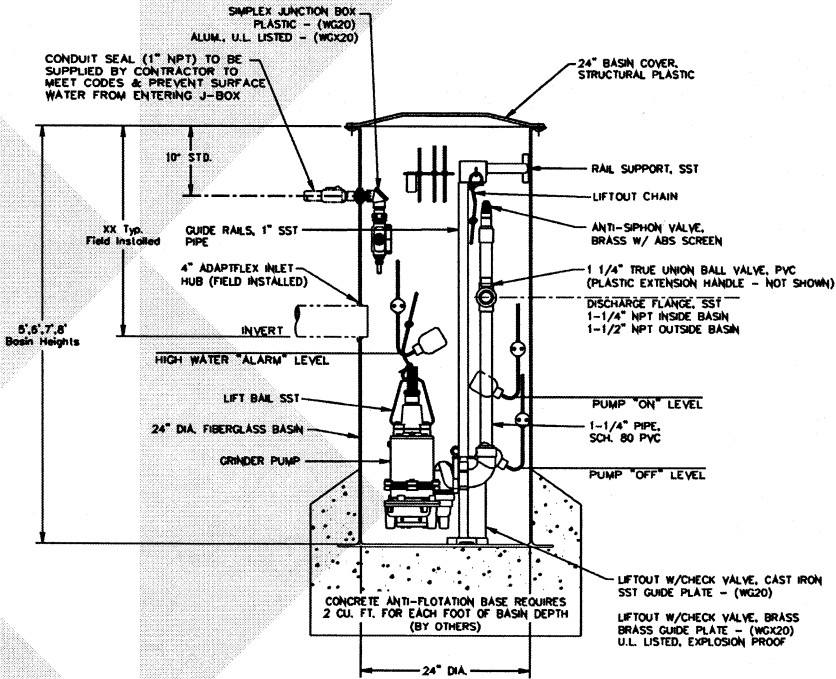
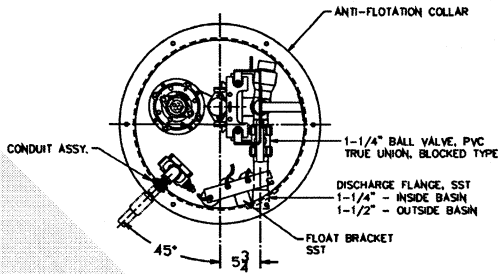
Order Line Notes: Discharge piping is NOT included in this package.

Total Lines: 1

SUB-TOTAL: 3,500.00
TAX: 18.50
FREIGHT: 200.00
AMOUNT DUE: 3,718.50

MYERS® SRA-125S

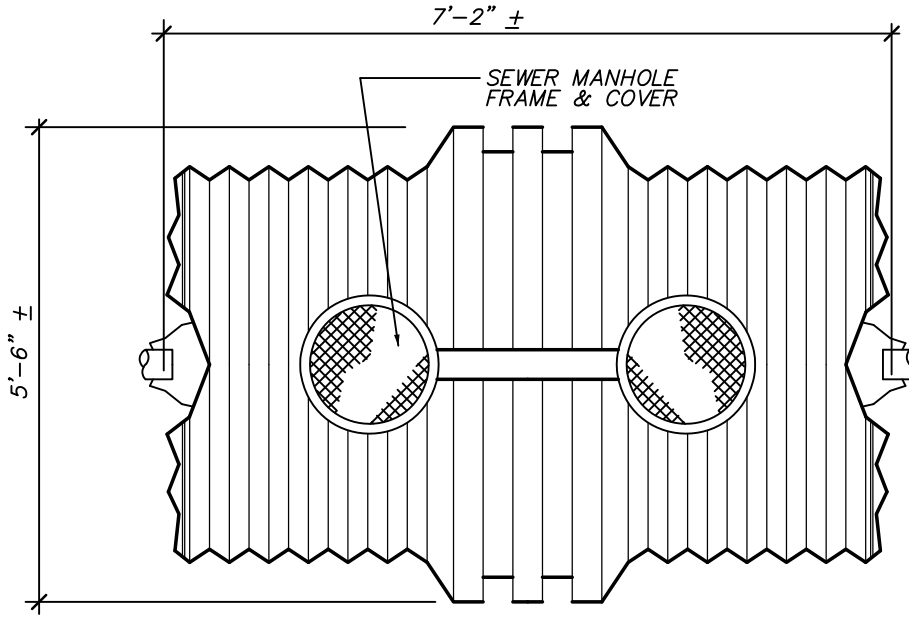
Pump: WG/WGX20
 Control: Float Pro
 Type: Simplex



740 EAST 9TH STREET,
 ASHLAND, OHIO 44805
 WWW.FEMYERS.COM

269 TRILLIUM DRIVE, KITCHENER,
 ONTARIO, CANADA N2G 4W5
 WWW.FEMYERS.COM

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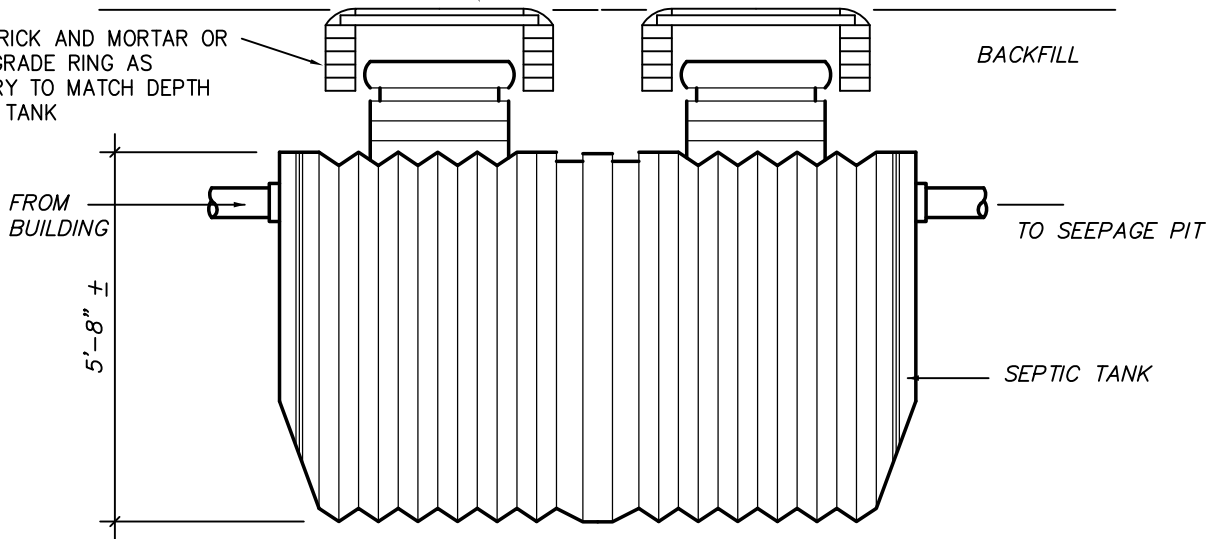


PLAN

NOTE:
INSTALLATION AND BACKFILLING OF
PLASTIC SEPTIC TANKS SHALL BE
DONE IN STRICT ACCORDANCE WITH
MANUFACTURER'S RECOMMENDATION

TYPE SA SEWER MANHOLE
FRAME & COVER

PROVIDE BRICK AND MORTAR OR
PRECAST GRADE RING AS
NECESSARY TO MATCH DEPTH
OF SEPTIC TANK



SECTION

SEPTIC TANK DETAIL
NO SCALE

APPENDIX C: Photographs corresponding to Exhibits EE and FF



Photo No. 1
Facing west between TMK 4-5-28:60 and 61

TMK: (2)4-5-28:60
8/30/2013



Photo No. 2
Facing east between TMK 4-5-28:60 and 61

TMK: (2)4-5-28:60
8/30/2013



Photo No. 3
Facing north between TMK 4-5-28:60 and 49

TMK: (2)4-5-28:60
8/30/2013



Photo No. 4
Facing south between TMK 4-5-28:60 and 49

TMK: (2)5-5-28:60
8/30/2013



Photo No. 5
Facing north between TMK 4-5-28:59 and 50

TMK: (2)4-5-28:59
8/30/2013



Photo No. 6
Facing south between TMK 4-5-28:59 and 50

TMK: (2)4-5-28:59
8/30/2013



Photo No. 7
Facing north between TMK 4-5-28:58 and 51

TMK: (2)4-5-28:58
8/30/2013



Photo No. 8
Facing south between TMK 4-5-28:58 and 51

TMK: (2)4-5-28:58
8/30/2013



Photo No. 9
Facing north between TMK 4-5-28:57 and 52

TMK: (2)4-5-28:57
8/30/2013



Photo No. 10
Facing south between TMK 4-5-28:56 and 53

TMK: (2)4-5-28:56
8/30/2013



Photo No. 11
Facing north between TMK 4-5-28:61 and 48

TMK: (2)4-5-28:61
8/30/2013



Photo No. 12
Facing south between TMK 4-5-28:61 and 48

TMK: (2)4-5-28:61
8/30/2013

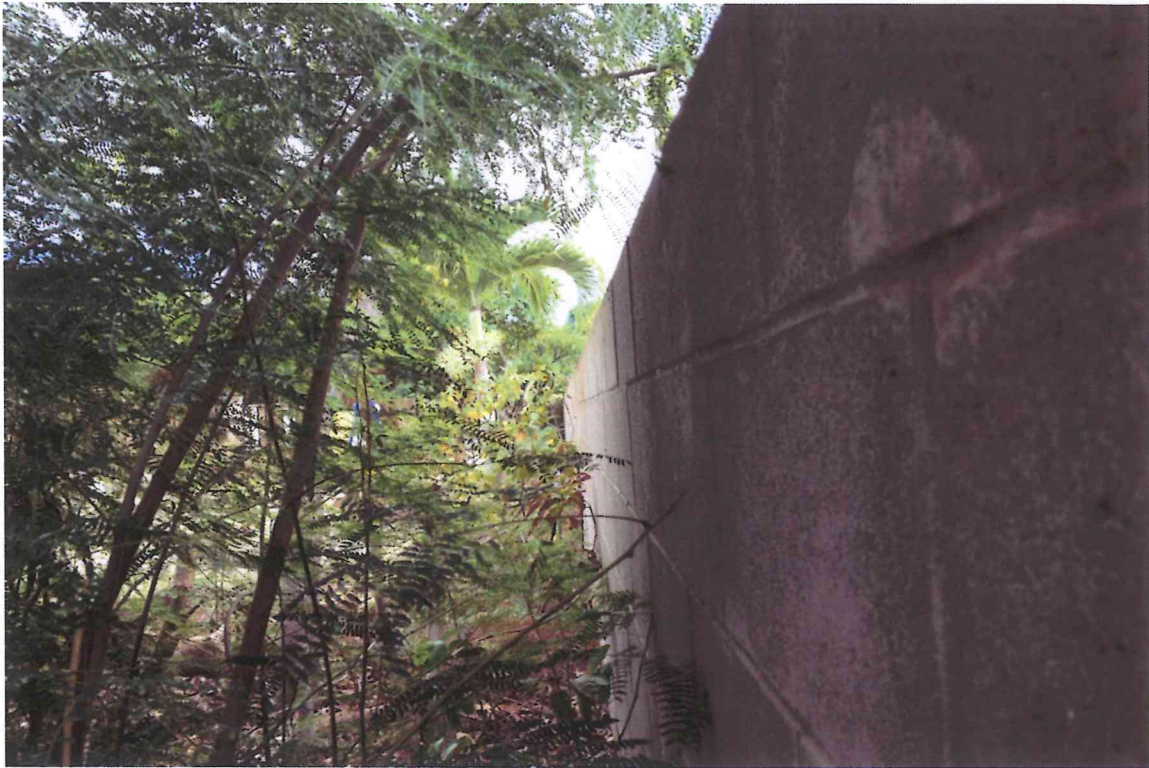


Photo No. 13
Facing north between TMK 4-5-28:62 and 47

TMK: (2)4-5-28:62
8/30/2013

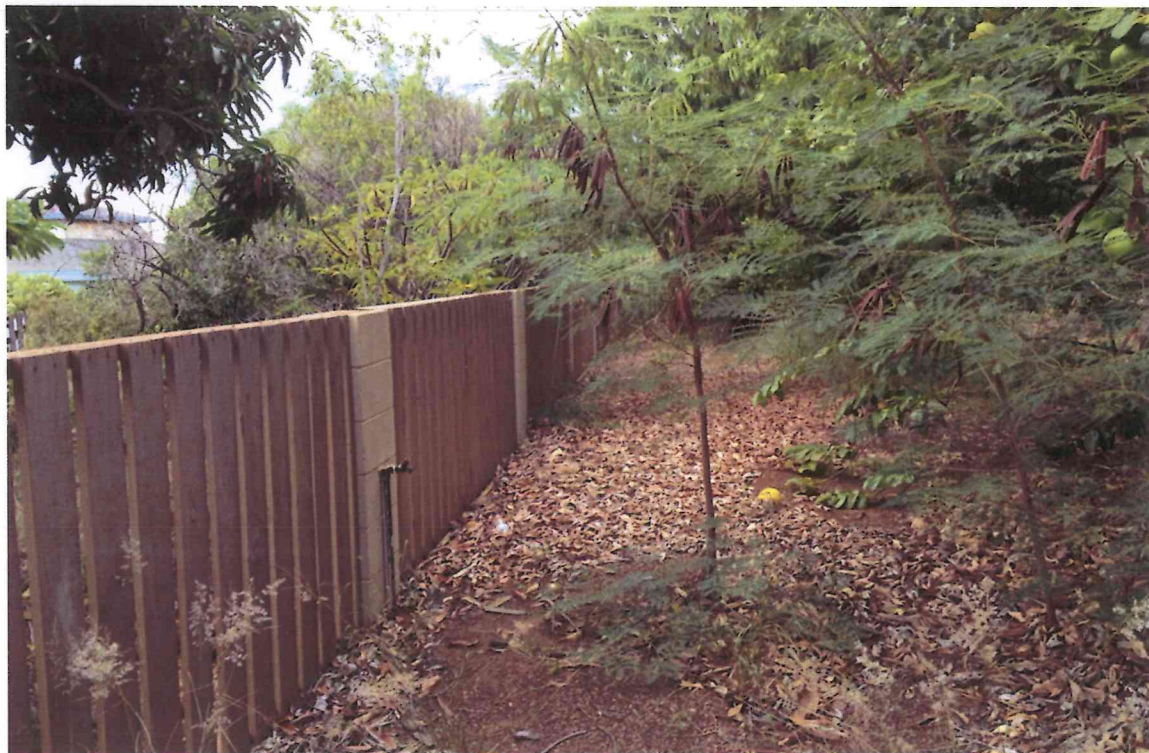


Photo No. 14
Facing north between TMK 4-5-28:63 and 46

TMK: (2)4-5-28:63
8/30/2013



Photo No. 15
Facing north between TMK 4-5-28:64 and 45

TMK: (2)4-5-28:64
8/30/2013



Photo No. 16
Facing south between TMK 4-5-28:64 and 45

TMK: (2)4-5-28:64
8/30/2013



Photo No. 17
Facing east between TMK 4-5-28:48 and 49

TMK: (2)4-5-28:48
9/24/2013

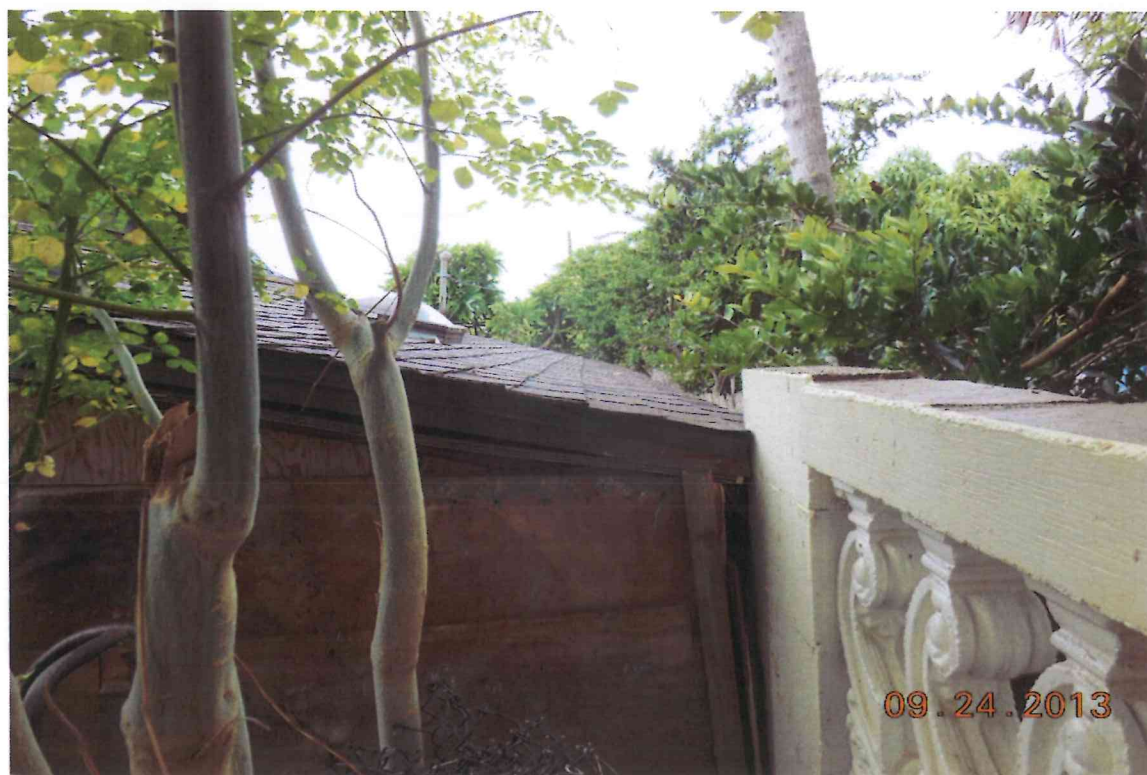


Photo No. 18
Facing west between TMK 4-5-28:48 and 49

TMK: (2)4-5-28:48
9/24/2013



Photo No. 19
Facing east between TMK 4-5-28:49 and 48

TMK: (2)4-5-28:49
9/24/2013



Photo No. 20
Facing east between TMK 4-5-28:49 and 48

TMK: (2)4-5-28:49
9/24/2013



Photo No. 21
Facing west between TMK 4-5-28:49 and 48

TMK: (2)4-5-28:49
9/24/2013



Photo No. 22
Facing west between TMK 4-5-28:61 and 60

TMK: (2)4-5-28:61
9/24/2013



Photo No. 23
Facing west between TMK 4-5-28:61 and 60

TMK: (2)4-5-28:61
9/24/2013



Photo No. 24
Facing east between TMK 4-5-28:61 and 60

TMK: (2)4-5-28:61
9/24/2013



Photo No. 25
Facing west between TMK 4-5-28:25 and 24

TMK: (2)4-5-28:25
9/24/2013



Photo No. 26
Facing west between TMK 4-5-28:25 and 24

TMK: (2)4-5-28:25
9/24/2013



Photo No. 27
Facing north between TMK 4-5-28:24 and 6

TMK: (2)4-5-28:24
8/30/2013



Photo No. 28
Facing south between TMK 4-5-28:24 and 6

TMK: (2)4-5-28:24
8/30/2013



Photo No. 29
Facing north between TMK 4-5-28: 23 and 7

TMK: (2)4-5-28:23
8/30/2013



Photo No. 30
Facing south between TMK 4-5-28:23 and 7

TMK: (2)4-5-28:23
8/30/2013



Photo No. 31
Facing north between TMK 4-5-28:22 and 8

TMK: (2)4-5-28:22
8/30/2013



Photo No. 32
Facing north between TMK 4-5-28:21 and 9

TMK: (2)4-5-28:21
8/30/2013



Photo No. 33

Standing on TMK 4-5-28:9, facing south between TMK 4-5-28:21 and 9

TMK: (2)4-5-28:21
8/30/2013

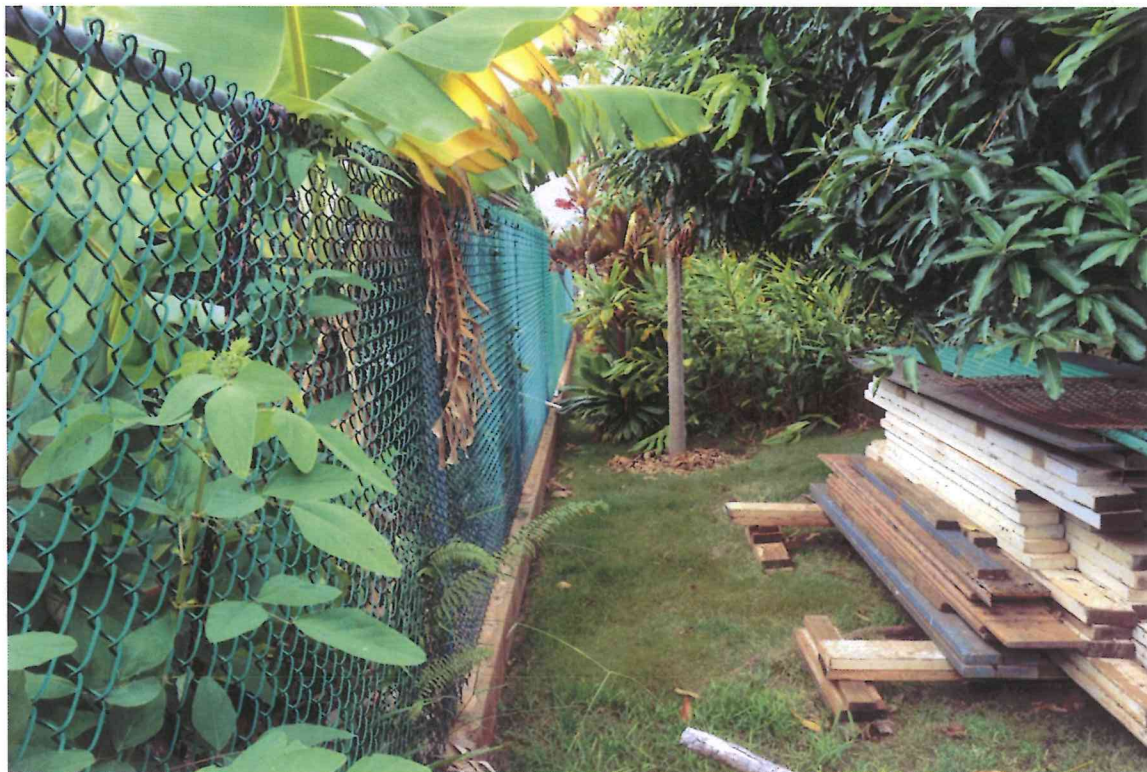


Photo No. 34

Facing north between TMK 4-5-28:20 and 10

TMK: (2)4-5-28:20
8/30/2013



Photo No. 35
Facing south between TMK 4-5-28:20 and 10

TMK: (2)4-5-28:20
8/30/2013



Photo No. 36
Facing north between TMK 4-5-28:19 and 11

TMK: (2)4-5-28:19
8/30/2013



Photo No. 37
Facing south between TMK 4-5-28:19 and 11

TMK: (2)4-5-28:19
8/30/2013



Photo No. 38
Facing north between TMK 4-5-28:18 and 1

TMK: (2)4-5-28:18
8/30/2013



Photo No. 39
Facing south between TMK 4-5-28:17 and 13

TMK: (2)4-5-28:17
8/30/2013



Photo No. 40
Facing north between TMK 4-5-28:16 and 14

TMK: (2)4-5-28:16
8/30/2013



Photo No. 41
Facing south between TMK 4-5-28:16 and 14

TMK: (2)4-5-28:16
8/30/2013



Photo No. 42
Facing north between TMK 4-5-28:25 and 5

TMK: (2)4-5-28:25
8/30/2013



Photo No. 43
Facing south between TMK 4-5-28:25 and 5

TMK: (2)4-5-28:25
8/30/2013



Photo No. 44
Standing in TMK 4-5-28:4, facing north between TMK 4-5-28:26 and 4

TMK: (2)4-5-28:26
8/30/2013



Photo No. 45
Facing north between TMK 4-5-28:27 and 3

TMK: (2)4-5-28:27
8/30/2013



Photo No. 46
Facing north between TMK 4-5-28:28 and 2

TMK: (2)4-5-28:28
8/30/2013



Photo No. 47
Facing south between TMK 4-5-28:29 and 1

TMK: (2)4-5-28:29
8/30/2013



Photo No. 48
Facing east between TMK 4-5-28:5 and 6

TMK: (2)4-5-28:05
9/24/2013



Photo No. 49
Facing west between TMK 4-5-27:36 and 37

TMK: (2)4-5-27:36
8/30/2013



Photo No. 50
Facing south between TMK 4-5-27:36 and 26

TMK: (2)4-5-27:36
8/30/2013



Photo No. 51
Facing west between TMK 4-5-27:25 and 26

TMK: (2)4-5-27:26
8/30/2013



Photo No. 52
Facing east between TMK 4-5-27: 25 and 26

TMK: (2)4-5-27:26
8/30/2013



Photo No. 53
Facing south between TMK 4-5-7:35 and 27

TMK: (2)4-5-27:35
8/30/2013



Photo No. 54
Facing north between TMK 4-5-34 and 28

TMK: (2)4-5-27:34
9/24/2013



Photo No. 55
Facing north between TMK 4-5-37 and 25

TMK: (2)4-5-27:37
8/30/2013



Photo No. 56
Facing south between TMK 4-5-27:37 and 25

TMK: (2)4-5-27:37
8/30/2013



Photo No. 57
Facing east between TMK 4-5-27:38 and 24

TMK: (2)4-5-27:38
8/30/2013



Photo No. 58
Facing south between TMK 4-5-27:38 and 24

TMK: (2)4-5-27:38
8/30/2013



Photo No. 59
Facing north between TMK 4-5-28:39 and 23

TMK: (2)4-5-27:39
8/30/2013



Photo No. 60
Facing south between TMK 4-5-27:40 and 22

TMK: (2)4-5-27:40
8/30/2013



Photo No. 61
Facing north between TMK 4-5-27:41 and 21

TMK: (2)4-5-27:41
8/30/2013



Photo No. 62
Facing south between TMK 4-5-27:41 and 21

TMK: (2)4-5-27:41
8/30/2013



Photo No. 63
Facing north between TMK 4-5-27:42 and 20

TMK: (2)4-5-27:42
8/30/2013



Photo No. 64
Facing south between TMK 4-5-27:43 and 19

TMK: (2)4-5-27:43
8/30/2013



Photo No. 65
Facing south between TMK 4-5-27:44 and 18

TMK: (2)4-5-27:44
8/30/2013



Photo No. 66
Facing north between TMK 4-5-27:45 and 17

TMK: (2)4-5-27:45
8/30/2013



Photo No. 67
Facing south between TMK 4-5-27:45 and 17

TMK: (2)4-5-27:45
8/30/2013



Photo No. 68
Facing south between TMK 4-5-27:46 and 16

TMK: (2)4-5-27:46
8/30/2013



Photo No. 69
Facing south between TMK 4-5-27:47 and 15

TMK: (2)4-5-27:47
9/24/2013



Photo No. 70
Facing north between TMK 4-5-27:47 and 15

TMK: (2)4-5-27:47
9/24/2013

Appendix B-1

Biological Survey Report



Flora and Fauna Survey Report for the Wahikuli Subdivision Gravity Sewer System Project, Maui

DECEMBER 2024

PREPARED FOR

AECOM

PREPARED BY

SWCA Environmental Consultants

FLORA AND FAUNA SURVEY REPORT FOR THE WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM PROJECT, MAUI

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SWCA Project No. 89689

December 2024

EXECUTIVE SUMMARY

The County of Maui has requested technical assistance from the U.S. Environmental Protection Agency for the planning and design of a proposed gravity sewer system in the Wahikuli subdivision, located north of Lahaina. This area suffered significant damage during the fire on August 8, 2023, necessitating an upgraded sewer system as part of the emergency response and recovery efforts. This upgrade aims to create a more resilient and sustainable wastewater management system, better prepared to handle the impacts of climate change and mitigate potential future disasters.

Currently, approximately 231 single-family properties, covering an area of approximately 94 acres, are serviced by cesspools, which are proposed to be upgraded to the sewer system. AECOM commissioned SWCA Environmental Consultants to conduct a terrestrial flora and fauna survey, which was completed on November 5, 2024.

None of the flora and fauna species recorded during the survey of the project area are federally or state-listed as threatened, endangered, proposed for listing, or candidate species. The survey area also does not overlap with any federally designated critical habitats for listed terrestrial fauna. However, the survey identified potential roosting trees for the Hawaiian hoary bat, or 'ope'ape'a, (*Lasiurus cinereus semotus*), a federally and state-listed endangered mammal. Additionally, one nonnative plant species, tree tobacco (*Nicotiana glauca*), was observed in the area. This plant is a potential host for the endangered Blackburn's sphinx moth (*Manduca blackburni*), although no evidence of the moth was detected. The Hawaiian goose, or nēnē (*Branta sandvicensis*), may occasionally use open grasslands, such as parks or sports fields in the area, while the federally and state-listed seabirds band-rumped storm-petrel, or 'ake'ake, (*Hydrobates castro*), Hawaiian petrel, or 'ua'u (*Pterodroma sandwichensis*), and Newell's shearwater, or 'a'o (*Puffinus auricularis newelli*), may fly over the project site en route to inland nesting sites on the island. Overall, the project is expected to have low or discountable impacts on these and other listed species. Any potential impacts can be further minimized through the implementation of avoidance and minimization measures.

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1 INTRODUCTION

The County of Maui is proposing to install a new gravity sewer system in the Wahikuli subdivision, located north of Lahaina on Maui. This area sustained significant damage during the devastating wildfire on August 8, 2023, prompting the need for an upgraded sewer system as part of the emergency response and recovery efforts. The project will be funded by the County of Maui and the Federal Emergency Management Agency and managed by the U.S. Environmental Protection Agency. AECOM will oversee the design and implementation of the project.

AECOM engaged SWCA Environmental Consultants (SWCA) to conduct a flora and fauna survey within the 94-acre project area designated for the sewer system installation. The purpose of the survey was to document the presence of federally and state-listed threatened and endangered species (hereafter special-status species) and to assess the habitat available for these species within the project area. This report presents the methods and results of the survey, conducted on November 5, 2024.

2 PROPOSED PROJECT

The Wahikuli Subdivision Gravity Sewer System project (the project) aims to install a gravity sewer system within approximately 94 acres of the Wahikuli subdivision. The project will involve extensive trenching within existing roadways, easements, and proposed new easements to lay sewer mains. Additionally, trenching will occur along the edges of up to 231 private lots to install lateral connections to individual parcels. This initiative is designed to enhance wastewater management in the area, which currently depends on cesspools and septic systems.

3 REGULATORY ENVIRONMENT

This section describes laws and regulations applicable to aquatic and terrestrial flora and fauna in the context of the project.

3.1 Endangered Species Act

The Endangered Species Act of 1973, as amended (ESA), is regulated by the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration National Marine Fisheries Service. It protects wildlife and plant species that have been listed as threatened or endangered and is designed to conserve the ecosystems on which species depend. Candidate species, which may be listed in the near future, are not afforded protection under the ESA until they are formally listed as endangered or threatened.

Section 9 of the ESA and rules promulgated under Section 4(d) of the ESA prohibit the unauthorized take of any endangered or threatened species of wildlife listed under the ESA. Under the ESA, the term *take* means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect species listed as endangered or threatened, or to attempt to engage in any such conduct.” As defined in regulations, the term *harm* means “an act that actually kills or injures wildlife; it may include significant habitat modification or degradation, which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering” (50 Code of Federal Regulations [CFR] 17.3). The rules define *harass* to mean “an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent, as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering” (50 CFR 17.3).

The ESA affords maximum legal protections to species listed as threatened or endangered under the law and provides authorization for incidental take permits for take that occurs incidental to otherwise legal operations. To comply with federal laws, additional measures must be taken to ensure that take of federally listed species does not occur. Any fatality of a listed species should be reported to the USFWS and the Hawai‘i Department of Land and Natural Resources, Division of Forestry and Wildlife (DLNR-DOFAW) as soon as possible, and an incident report should be filed within 24 hours of detection.

The ESA also provides for the designation of critical habitat for listed species if there are areas of habitat believed to be essential to the conservation of the species. Critical habitat can be designated for a single species or a group of species. A critical habitat designation does not necessarily restrict further development but prevents federal actions from destroying or adversely modifying that habitat.

3.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918, as amended (MBTA), is regulated by the USFWS and prohibits the take of migratory birds. A list of birds protected under the MBTA is published under 50 CFR 10.13. Unless permitted by regulations, under the MBTA, “it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product” (16 United States Code 703–712). The MBTA provides no process for authorizing incidental take of MBTA-protected birds. As a result, birds that are not covered under the ESA that may be adversely affected by the project cannot be covered by take authorizations. Regardless, incidental take of individual MBTA-protected species is unlikely to adversely affect MBTA-protected species as a whole; however, any take of MBTA-protected species should be documented and reported in a similar manner as any endangered or threatened species of wildlife listed under the ESA.

3.3 Hawai‘i Revised Statutes 195D

The purpose of Hawai‘i Revised Statutes (HRS) 195D is “to ensure the continued perpetuation of indigenous aquatic life, wildlife, and land plants, and their habitats for human enjoyment, for scientific purposes, and as members of ecosystems” and is regulated by the DLNR-DOFAW. HRS 195D-4 states that any endangered or threatened species of fish or wildlife recognized by the ESA shall be so deemed by the state statute. Like the ESA, the unauthorized take of such endangered or threatened species is prohibited (HRS 195-D-4(e)), but incidental take licenses can be obtained (HRS 195D-21). In addition to species protected under the ESA, rules adopted under HRS 195D-4 allow for the listing of indigenous species as threatened or endangered for the following reasons:

- Habitat destruction or alteration (current or predicted)
- Overexploitation
- Disease or predation
- Lack of regulatory mechanisms
- Other factors threatening the species’ continued existence

Determinations are made based on all available sources of data (scientific, commercial, and other) and consultation with appropriate agencies (federal, state, and county) and interested organizations and parties.

4 LITERATURE REVIEW

SWCA performed a literature review during preparation of the field survey. The purpose of the literature review was to conduct a preliminary desktop habitat assessment to evaluate whether special-status species (or their habitats), and sensitive natural communities are known to occur in the project area. Table 1 lists the literature that was reviewed as part of this assessment.

Table 1. Wahikuli Subdivision Flora and Fauna Literature Review

Document (author)	Relevance
<i>Final Environmental Impact Statement: Honoapiilani Highway (FAP Route 30) Puamana to Honokowai</i> . Report No. FHWA-HI-EIS-88-02-F. (U.S. Department of Transportation 1991)	Describes the location and flora and fauna in the Lahaina area.
Recovery Plan for the Hawaiian Hoary Bat (<i>Lasiurus cinereus semotus</i>) (USFWS 1998)	Describes the current understanding, threat status, recovery strategy, and criteria for delisting Hawaiian hoary bat.
Recovery Plan for Hawaiian Waterbirds (USFWS 2011)	Describes the current understanding, threat status, recovery strategy, and criteria for delisting endangered Hawaiian waterbirds. Also describes federally listed waterbird locations on Maui.
Band-Rumped Storm-Petrel (<i>Oceanodroma castro</i>) Hawai'i Distinct Population Segment 5-Year Review Summary and Evaluation (USFWS 2021)	Describes the current understanding, threat status, and criteria for delisting band-rumped storm-petrel.
Hawaiian Petrel (<i>Pterodroma sandwichensis</i>) 5-Year Review (USFWS 2022)	Describes the current understanding, threat status, and criteria for delisting Hawaiian petrel.
'A'o (Newell's shearwater, <i>Puffinus newelli</i>) 5-Year Review (USFWS 2024)	Describes the current understanding, threat status, and criteria for delisting Newell's shearwater.

5 SITE INFORMATION

The project area, which is the area where the flora and fauna survey was undertaken (i.e., the survey area), is located within the *ahupua'a* (land division) of Wahikuli, in the *moku* (district) of Lahaina, on the *mokupuni* (island) of Maui. It lies just *mauka* (inland) of Honoapi'ilani Highway, within the Wahikuli subdivision (Figure 1). The project area covers approximately 94 acres and primarily contains residential housing lots and two public parks. It is bordered to the north by Aipuni Street, which is just outside the project area boundary, to the south by Fleming Road, which is just inside the boundary, and to the west by the most inland portions of the Wahikuli subdivision. The topography within the project area slopes gently downhill toward the west. The mean annual rainfall for the area is approximately 15 inches (38 centimeters), with the highest rainfall typically occurring between November and April, and the lowest between May and October (Frazier et al. 2016).

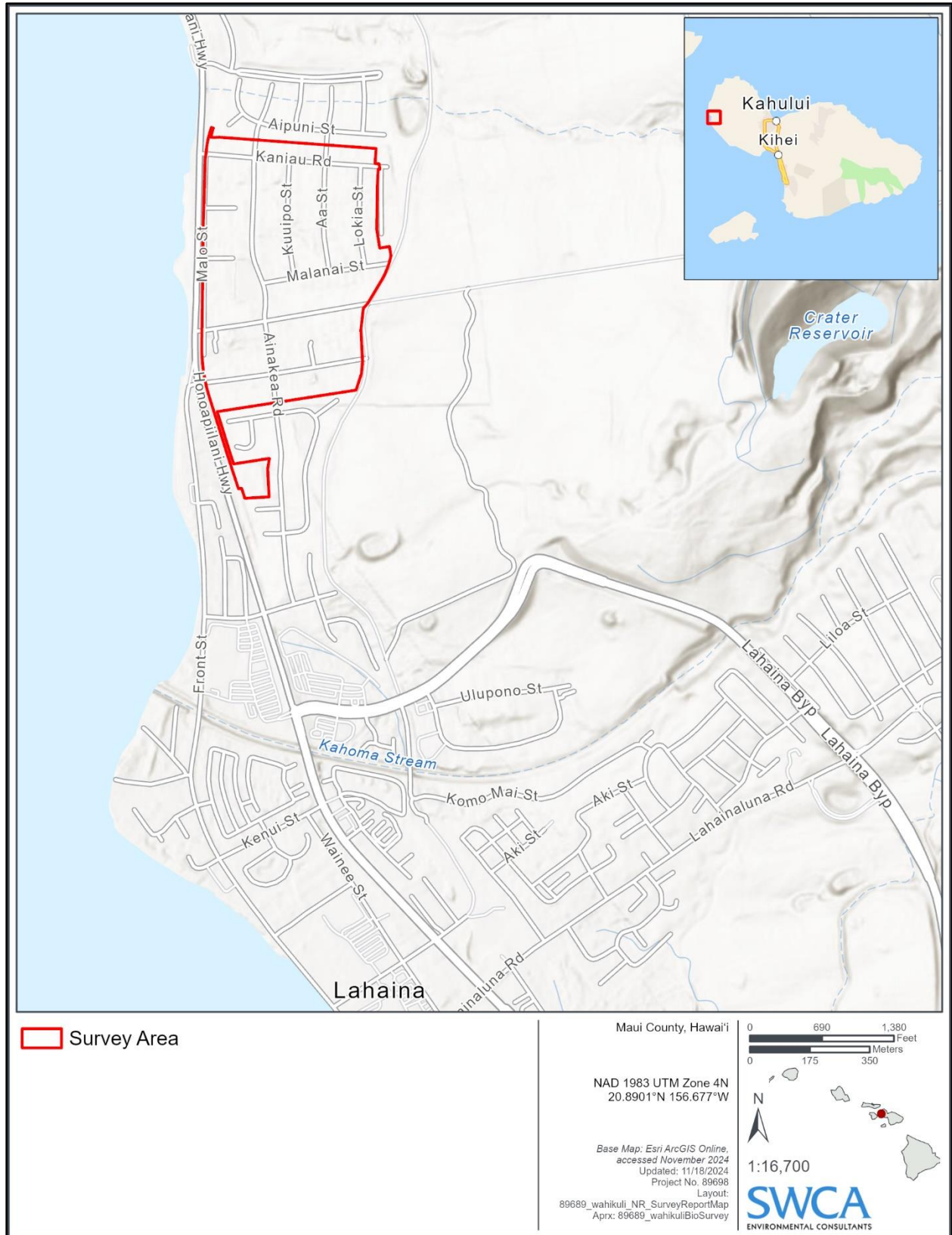


Figure 1. Location of the flora and fauna survey area for the Wahikuli Subdivision Gravity Sewer System project.

6 METHODS

SWCA reviewed available scientific and technical literature regarding natural resources in and near the project area. This literature review encompassed a thorough search of referenced scientific journals, technical journals and reports, environmental assessments, environmental impact statements, relevant government documents, USFWS online data, and unpublished data that provide insight into the area's natural history and ecology. SWCA also reviewed available geospatial data, aerial photographs, and topographic maps of the project area. The purpose of the literature review was to conduct a preliminary desktop habitat assessment to evaluate whether special-status species, their habitats, and sensitive natural communities are known to occur in the project area.

On November 5, 2024, an SWCA biologist conducted a comprehensive survey of the project area (see Figure 1). The survey was conducted on foot and documented all vascular plant, vertebrate (birds, mammals, and amphibians), and macroinvertebrate (gastropods and arthropods) species within the survey area. The survey specifically focused on locating populations of special-status species; however, specific acoustic surveys for the species such as the Hawaiian hoary bat, or 'ope'ape'a (*Lasiurus cinereus semotus*), were not conducted. Identification of birds was aided by 10 × 42–millimeter binoculars, as well as auditory vocalization identifications. Any signs of animals, such as scat or tracks, were noted.

7 RESULTS

7.1 Flora

In all, 105 vascular plant species were recorded in the survey area, five of which are native to the Hawaiian Islands: naupaka (*Scaevola taccada*), milo (*Thespesia populnea*), pōhinahina (*Vitex rotundifolia*), hau (*Hibiscus tiliaceus*), and 'uhaloa (*Waltheria indica*). One nonnative plant species that was recorded, tree tobacco (*Nicotiana glauca*), is a known host plant for the Blackburn's sphinx moth (*Manduca blackburni*). No special-status plant species were observed in the survey area. Appendix A provides a list of the vascular plant species recorded during the survey.

7.2 Vegetation and Land Cover Types

The vegetation in the survey area consists of two vegetation types: ruderal, and landscaped, described in detail below.

7.2.1 Ruderal

Ruderal vegetation was widespread across much of the survey area, particularly along roadways and other disturbed sites. This vegetation type was dominated by weedy species, with buffelgrass (*Cenchrus ciliaris*), 'uhaloa, and koa haole (*Leucaena leucocephala*) being the most commonly observed plants (Figure 2).



Figure 2. Typical ruderal vegetation in the survey area.

7.2.2 *Landscaped*

Landscaped vegetation was primarily found on private lots within the survey area, with occasional street trees near sidewalks. Commonly observed species included mango (*Mangifera indica*), plumeria (*Plumeria rubra*), and malunggay (*Moringa oleifera*). Coconut palms (*Cocos nucifera*) were frequently planted in these landscaped areas. Common shrubs in this vegetation type included mock orange (*Murraya paniculata*) and crownflower (*Calotropis gigantea*) (Figure 3).



Figure 3. Landscaped vegetation in the survey area.

7.3 Fauna

7.3.1 Avifauna

Eight nonnative bird species were observed during the survey (Table 2). All of these species are common in disturbed low-elevation areas on Maui. Two of these species are listed under the MBTA: cattle egret (*Bubulcus ibis*) and northern cardinal (*Cardinalis cardinalis*).

Table 2. Birds Observed in and Near the Survey Area on September 18, 2023

Common Name	Scientific Name	Status*	MBTA Species (Yes or No)
Cattle egret	<i>Bubulcus ibis</i>	NN	Yes
Common myna	<i>Acridotheres tristis</i>	NN	No
Feral chicken	<i>Gallus gallus</i>	NN	No
House finch	<i>Haemorhous mexicanus</i>	NN	No
Java finch	<i>Lonchura oryzivora</i>	NN	No
Northern cardinal	<i>Cardinalis cardinalis</i>	NN	Yes
Red-crested cardinal	<i>Paroaria coronata</i>	NN	No
Zebra dove	<i>Geopelia striata</i>	NN	No

* NN = nonnative permanent resident

While none of the birds observed during the survey are native, habitat exists for native birds in the survey area, including habitat for special-status species. Seabirds may potentially fly over the survey area to and from higher-elevation nesting areas during the seabird nesting and fledging period. Small areas of habitat

for the threatened Hawaiian goose, or nēnē (*Branta sandvicensis*), exists in the area, although none were seen in the survey area.

7.3.2 Mammals

No wild mammals were detected in the survey area. Although house mice (*Mus musculus*), rats (*Rattus* spp.), and small Indian mongoose (*Herpestes auropunctatus*) were not detected, they are likely to occur in the survey area. In addition, foraging and roost habitat for the endangered Hawaiian hoary bat is present in the survey area, primarily in the landscaped vegetation type. Nonnative tree species such as mango and monkeypod (*Samanea saman*) are known to provide roosting habitat for this bat species (Montoya-Aiona et al. 2023).

7.3.3 Terrestrial Reptiles and Amphibians

Brown anole (*Anolis sagrei*) was detected in the survey area. No terrestrial reptiles and amphibians are native to Hawai'i.

7.3.4 Insects and Other Invertebrates

The survey area contains habitat for one special-status invertebrate species, Blackburn's sphinx moth. This species feeds on plants in the potato family (Solanaceae), such as the invasive tree tobacco, which was present in the survey area. No native insects or other invertebrates were observed during the survey. Nonnative invertebrates recorded within the survey area were yellow crazy ant (*Anoplolepis gracilipes*), western honeybee (*Apis mellifera*), yellow oriental paper wasp (*Polistes olivaceus*), and monarch butterfly (*Danaus plexippus*).

8 SPECIAL-STATUS SPECIES AND CRITICAL HABITAT

No special-status species were observed in the survey area. Similarly, no USFWS-designated critical habitat for special-status plant species or wildlife overlaps with the survey area.

9 DISCUSSION AND RECOMMENDATIONS

The following avoidance and mitigation measures are recommended to minimize or eliminate project-related impacts and prevent adverse effects on special-status species that may periodically occur in the project area. These measures should be incorporated into the project.

9.1 Flora

The vegetation types and species identified during the survey are not unique, and no special-status plant species were recorded within the site. Over 90% of the plants observed in the survey area are nonnative to the Hawaiian Islands. As such, the proposed project is not anticipated to have a significant adverse impact on botanical resources

Weedy nonnative plant species are common in the survey area. Most of these weedy species are widespread in Hawai'i, and their control is not expected to result in a significant decrease in their number or distribution. However, construction activities are known to spread invasive species to new areas through the movement of vehicles and materials. For this reason, SWCA recommends the following

invasive species minimization measures to avoid the unintentional introduction or transport of new terrestrial invasive species to Maui.

- All construction equipment and vehicles arriving from outside of Maui should be washed and inspected before entering the project area.
- Construction materials arriving from outside of Maui should also be washed and/or visually inspected (as appropriate) for excessive debris, plant materials, and invasive or harmful nonnative species (plants, amphibians, reptiles, and insects).
- Inspection and cleaning activities should take place at a designated location before entering the project area. Inspectors should be qualified botanists and/or entomologists with expertise in identifying invasive species of concern based on the point of origin of the equipment, vehicles, or materials.
- When possible, raw materials (e.g., gravel, rock, soil) should be purchased from a local supplier on Maui to avoid introducing nonnative species not yet present on the island.
- If landscaping occurs as part of the project, native Hawaiian plants or non-invasive plants should be used to the maximum extent possible. Additional information on selecting appropriate (non-invasive) plants for landscaping can be obtained from the following online sources:
 - <https://plantpono.org/>
 - http://www.hear.org/alternativestoinvasives/pdfs/mcaac_hpwra_a2i_list.pdf
 - <http://www.hear.org/oisc/oahuearlydetectionproject/pdfs/oedposterwhatnottoplant.pdf>

9.2 Fauna

Three endangered special-status fauna species may periodically occur in the project area based on previous surveys, presence of suitable habitat, and the USFWS species records (USFWS 2016): Hawaiian goose, Hawaiian hoary bat, and Blackburn's sphinx moth. In addition, three special-status seabird species could transit over the project area while traveling to and from their upland nesting sites: band-rumped storm-petrel, or 'ake'ake (*Hydrobates castro*), Hawaiian petrel, or 'ua'u (*Pterodroma sandwichensis*), and Newell's shearwater, or 'a'o, (*Puffinus auricularis newelli*). These species are discussed in detail below.

9.2.1 *Hawaiian Goose*

The Hawaiian goose occupies various habitat types ranging from beach strand, shrubland, and grassland to lava rock at elevations ranging from coastal lowlands to alpine areas, and are found on the islands of Hawai'i, Maui, Moloka'i, and Kaua'i (Banko 1988; Banko et al. 1999). The geese eat plant material, and the composition of their diet depends largely on the vegetative composition of their surrounding habitats. Most Hawaiian goose food items are leaves and seeds of grasses and sedges, leaves and flowers of various herbaceous composites, and various fruits of several species of shrub (Banko et al. 1999; Black et al. 1994). They appear to be opportunistic in their choice of food plants as long as the plants meet their nutritional demands (Banko et al. 1999; Woog and Black 2001). The Hawaiian goose has an extended breeding season, with eggs reported from all months except May, June, and July, although most nest during the rainy (winter) season between October and March (Banko et al. 1999; Kear and Berger 1980).

Although Hawaiian goose was not observed during the surveys, suitable foraging habitat was identified at the two public parks within the project area. To mitigate potential impacts should the Hawaiian goose occur in the project area, the following measures are recommended:

- If a Hawaiian goose is observed in the area during construction activities, all activities within 100 feet (30 m) of individuals of this species should cease, and work should not continue until the species leaves the area on its own accord.
- In the unlikely event that a Hawaiian goose nest is discovered, all activities within 150 feet (46 m) of the nest should cease, and the USFWS should be contacted. Work should not resume until directed by the USFWS.
- In areas where the Hawaiian goose is known to occur, post and implement reduced speed limits, and inform project personnel about the presence of the Hawaiian goose.

9.2.2 Hawaiian Hoary Bat

Hawaiian hoary bats are found on Maui across a variety of landscapes, including native and nonnative habitats, agricultural areas, and developed regions (U.S. Department of Agriculture [USDA] 2009; USFWS 1998). They forage in open areas, wooded environments, and along linear habitats, utilizing a wide range of vegetation types. As insectivores, these bats are frequently observed hunting over streams, reservoirs, and wetlands, sometimes venturing up to 300 feet (about 91 meters [m]) offshore (USDA 2009).

Hawaiian hoary bats typically roost in trees taller than 16 feet (5 m), preferring locations with either 1) dense canopy foliage or 2) sparse canopies that allow open access for flight (Gorresen et al. 2013; USDA 2009). They have been documented roosting in nonnative tree species such as mango that are present within the project area (Montoya-Aiona et al. 2023).

Direct impacts to bats could occur during vegetation removal if a juvenile bat that is too small to fly but too large to be carried by a parent is present in a tree or branch that is cut down. To prevent direct impacts to Hawaiian hoary bats, the following measures are recommended:

- No trees taller than 15 feet (4.6 m) in the survey area should be trimmed or removed between June 1 and September 15 when flightless juvenile bats may be roosting in the trees.
- Any fences that are erected as part of the project should have a barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire.

Implementation of these measures, which have been promulgated by the USFWS (1998), is expected to result in avoidance of all direct impacts to Hawaiian hoary bats during the course of the project.

9.2.3 Blackburn's Sphinx Moth

The Blackburn's sphinx moth was not observed in the survey area. However, nonnative host plants suitable for its larval stages are likely to establish in unmaintained sections of the site. The primary native host plants for Blackburn's sphinx moth larvae are two species of 'aiea, small trees in the genus *Nothocestrum* (*N. latifolium* and *N. breviflorum*) (USFWS 2005). Neither of these native host species were found in the survey area.

At lower elevations, Blackburn's sphinx moth larvae are most commonly associated with nonnative tree tobacco, but they have also been found on common tobacco (*Nicotiana tabacum*), eggplant (*Solanum melongena*), tomato (*S. lycopersicum* var. *cerasiforme*), and the indigenous pōpolo (*S. americanum*) (USFWS 2005). Before pupating, larvae descend from their host plants to search for suitable sites in soil. They are most likely to pupate within 33 feet (10 m) of their host plant, although they may travel farther, even across paved or hardened surfaces, to find an appropriate site for burrowing. The pupal stage of the Blackburn's sphinx moth has been speculated to last up to 1 year (Zimmerman 1958), though no data

currently support this claim. In captivity, moths have emerged after as little as 6 weeks (Rubinoff and San Jose 2010).

The following are recommended during construction to avoid effects to the Blackburn's sphinx moth:

- A survey for potential larval host plants for Blackburn's sphinx moth (particularly tree tobacco) should be conducted by biologists before construction/vegetation clearing. Results of the survey should be provided to the USFWS.
- If host plants are found, surveys for Blackburn's sphinx moth should be performed according to the most recent USFWS guidance, and preferably during the wet season (January to April), roughly 4 to 8 weeks following a significant rainfall event. Results of the survey should be provided to the USFWS. Any necessary follow-up actions should be coordinated with the USFWS.

9.2.4 Seabirds

Major threats to the endangered band-rumped storm-petrel and Hawaiian petrel, and threatened Newell's shearwater include the attraction of adults and newly fledged juveniles to bright lights while transiting between their nest sites and the ocean. Juvenile birds are particularly vulnerable to light attraction and are sometimes grounded when they become disoriented by lights (Mitchell et al. 2005). Many of these grounded birds are vulnerable to mammalian predators or to being struck by vehicles. The following recommendations are provided to avoid and minimize light attraction of these seabird species to the survey area:

- Construction activity should be restricted to daylight hours as much as practicable during the seabird breeding season (April–November) to avoid the use of nighttime lighting that could attract seabirds.
- All outdoor lights should be shielded to prevent upward radiation. This has been shown to reduce the potential for seabird attraction (Reed et al. 1985; Telfer et al. 1987).
- Outside lights that are not needed for security and safety should be turned off from dusk through dawn during the fledgling fallout period (September 15–December 15).

10 CONCLUSIONS

SWCA conducted a flora and fauna survey in November 2024 for the proposed Wahikuli Subdivision Gravity Sewer System project, located in the Wahikuli subdivision, north of Lahaina. The survey focused on identifying populations of special-status species federally or state-listed as threatened, endangered, proposed for listing, or candidate species. No special-status species were observed during the survey.

The survey area does not overlap with any federally designated critical habitats for listed terrestrial fauna. However, potential roosting trees for the Hawaiian hoary bat, a federally and state-listed endangered species, were identified within the area. Additionally, tree tobacco, a nonnative plant and potential host for the endangered Blackburn's sphinx moth, was observed, but there was no evidence that this moth species is present within the project area. Lastly, the Hawaiian goose has a low likelihood of periodically occurring in the project area, and three special-status seabird species may transit the area while traveling to and from nesting or fledging sites.

Since no current evidence indicates the presence of special-status species within the project area, the project is not expected to have adverse effects on federally or state-listed species. If any of the species

discussed in this report are detected in the future, impacts can be minimized to low or discountable levels through the implementation of the avoidance and minimization measures outlined in the report.

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APPENDIX A

Vascular Plant Species Recorded During the November 5, 2024, Survey

Table A-1 provides a checklist of plant species observed by SWCA on November 5, 2024, during surveys of the Wahikuli subdivision gravity sewer system project area. The plant names are arranged alphabetically by family and then by species into two groups: monocots, and eudicots. The taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999) and Staples and Herbst (2005). Recent name changes are those recorded in Wagner et al. (2012).

Table A-1. Vascular Plants Observed within the Proposed Survey Area on November 5, 2024

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status*
Monocots			
Agavaceae	<i>Cordyline fruticosa</i> (L.) A.Chev.	kī, ti	P
Agavaceae	<i>Dracaena marginata</i> Lamarck		X*
Aloeaceae	<i>Aloe vera</i> (L.) Burm.f.	aloe	X*
Arecaceae	<i>Adonidia merrillii</i> (Becc.) Becc.	Manila palm	X*
Arecaceae	<i>Caryota mitis</i> Lour.		X
Arecaceae	<i>Cocos nucifera</i> L.	niu, lolani, coconut	P
Arecaceae	<i>Dypsis lutescens</i> (H.Wendl.) Beentje & J.Dransf.	areca palm	X*
Arecaceae	<i>Hyophorbe lagenicaulis</i> (L. H. Bailey) H. E. Moore	bottle palm	
Arecaceae	<i>Phoenix roebelenii</i> O'Brien	dwarf date palm	X*
Arecaceae	<i>Pritchardia pacifica</i> Seem. & H.Wendl.		X*
Arecaceae	<i>Roystonea regia</i> (Kunth) O.F.Cook		X
Arecaceae	<i>Washingtonia robusta</i> H.Wendl.		X
Arecaceae	<i>Wodyetia bifurcata</i> A. K. Irvine	foxtail palm	X*
Liliaceae	<i>Crinum asiaticum</i> L.	giant lily	X*
Musaceae	<i>Musa</i> hybrid	banana, apple banana	X*
Poaceae	<i>Axonopus fissifolius</i> (Raddi) Kuhlm.	narrow-leaved carpetgrass	X
Poaceae	<i>Cenchrus ciliaris</i> L.	buffelgrass	X
Poaceae	<i>Cenchrus echinatus</i> L.	common sandbur, 'ume'alu, mau'u kukū	X
Poaceae	<i>Chloris barbata</i> Sw.	swollen fingergrass, mau'u lei	X
Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass, mānienie, mānienie haole	X
Poaceae	<i>Eleusine indica</i> (L.) Gaertn.	wiregrass, mānienie ali'i	X
Poaceae	<i>Eragrostis amabilis</i> (L.) Wight & Arn.	lovegrass	X
Poaceae	<i>Melinis repens</i> (Willd.) Zizka	Natal redtop, Natal grass	X
Poaceae	<i>Urochloa maxima</i> (Jacq.) R.D.Webster	Guinea grass	X
Strelitziaceae	<i>Strelitzia reginae</i> Dryander	bird of paradise	X*
Zingiberaceae	<i>Alpinia purpurata</i> (Vieill.) K.Schum.	red ginger, 'awapuhi 'ula'ula	X
Eudicots			
Aizoaceae	<i>Trianthema portulacastrum</i> L.		X
Amaranthaceae	<i>Amaranthus spinosus</i> L.	spiny amaranth, pakai kukū	X
Anacardiaceae	<i>Mangifera indica</i> L.	mango, manakō, manakō meneke, meneke	X

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status*
Anacardiaceae	<i>Schinus terebinthifolius</i> Raddi	Christmas berry, wilelaiki, nani o Hilo (Moloka'i)	X
Apocynaceae	<i>Adenium obesum</i> (Forsskål) J. Roemer & J. A. Schultes	desert rose	X*
Apocynaceae	<i>Carissa macrocarpa</i> (Eckl.) A.DC.		X
Apocynaceae	<i>Catharanthus roseus</i> (L.) G.Don	Madagascar periwinkle, kīhāpai	X
Apocynaceae	<i>Nerium oleander</i> L.		X*
Apocynaceae	<i>Plumeria obtusa</i> L.	Singapore plumeria	X*
Apocynaceae	<i>Plumeria rubra</i> L.	plumeria	X*
Apocynaceae	<i>Thevetia peruviana</i> (Pers.) K.Schum.	be-still tree	X
Araliaceae	<i>Polyscias guilfoylei</i> (W. Bull) L. H. Bailey	panax	X*
Araliaceae	<i>Schefflera actinophylla</i> (Endl.) Harms	octopus tree, umbrella tree	X
Araliaceae	<i>Schefflera arboricola</i> (Hayata) Merr.	dwarf umbrella tree	X
Asclepiadaceae	<i>Calotropis gigantea</i> (L.) W.T.Aiton		X
Asteraceae	<i>Calyptocarpus vialis</i> Less.		X
Asteraceae	<i>Tridax procumbens</i> L.	coat buttons	X
Asteraceae	<i>Vernonia elliptica</i> DC.		X
Bignoniaceae	<i>Spathodea campanulata</i> P.Beauv.	African tulip tree	X
Bignoniaceae	<i>Tabebuia aurea</i> (Silva Manso) Benth. & Hook.f. ex S.Moore		X
Bignoniaceae	<i>Tabebuia heterophylla</i> (DC.) Britton		X
Bignoniaceae	<i>Tecoma stans</i> (L.) Juss. ex Kunth	yellow elder	X
Boraginaceae	<i>Carmona retusa</i> (Vahl) Masam.	Fukien tea	X
Boraginaceae	<i>Heliotropium procumbens</i> var. <i>depressum</i> (Cham.) Fosberg		X
Cactaceae	<i>Cereus uruguayanus</i> F.Ritter ex R.Kiesling	hedge cactus	X
Cactaceae	<i>Hylocereus undatus</i> (Haw.) Britton & Rose	night-blooming cereus, pānini-o-ka-Punahou, pāpīpi pua	X
Caricaceae	<i>Carica papaya</i> L.	papaya, mīkana, hē'i, milikana, papaia, pawpaw	X
Clusiaceae	<i>Clusia rosea</i> Jacq.	autograph tree, copey, Scotch attorney	X
Convolvulaceae	<i>Ipomoea batatas</i> (L.) Lam.	'uala, 'uwala, sweet potato	P
Convolvulaceae	<i>Ipomoea obscura</i> (L.) Ker Gawl.	morning glory	X
Convolvulaceae	<i>Merremia aegyptia</i> (L.) Urb.	hairy merremia, koali kua hulu, kuahulu	X
Cucurbitaceae	<i>Momordica charantia</i> L.	balsam pear, bitter melon	X
Euphorbiaceae	<i>Aleurites moluccana</i> (L.) Willd.	kukui, candlenut	P
Euphorbiaceae	<i>Codiaeum variegatum</i> (L.) Blume	croton	X*
Euphorbiaceae	<i>Euphorbia hirta</i> L.	hairy spurge, garden spurge, koko kahiki	X
Euphorbiaceae	<i>Euphorbia tirucalli</i> L.	pencil tree, milkbush	X
Euphorbiaceae	<i>Jatropha integerrima</i> N. Jacquin		X*
Euphorbiaceae	<i>Jatropha podagrica</i> Hook.		X

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status*
Euphorbiaceae	<i>Ricinus communis</i> L.	castor bean, pā'aila, ka'apehā, kamākou, kolī, lā'au 'aila	X
Fabaceae	<i>Caesalpinia pulcherrima</i> (Linnaeus) Swartz	dwarf poinciana	X*
Fabaceae	<i>Cassia x nealiae</i> H.S. Irwin & Barneby	rainbow shower tree	X*
Fabaceae	<i>Delonix regia</i> (Bojer ex Hook.) Raf.	royal poinciana, flame tree, flamboyant, 'ohai 'ula	X
Fabaceae	<i>Desmanthus pernambucanus</i> (L.) Thell.	slender mimosa, virgate mimosa	X
Fabaceae	<i>Indigofera spicata</i> Forssk.	creeping indigo	X
Fabaceae	<i>Leucaena leucocephala</i> (Lam.) de Wit	koa haole	X
Fabaceae	<i>Macroptilium atropurpureum</i> DC.) Urb.		X
Fabaceae	<i>Samanea saman</i> (Jacq.) Merr.	monkeypod, rain tree, 'ohai, pū 'ohai	X*
Fabaceae	<i>Sesbania grandiflora</i> (Linnaeus) Poiret		X*
Goodeniaceae	<i>Scaevola taccada</i> (Gaertn.) Roxb.	naupaka kahakai, huahekili, naupaka kai, auaka (Ni'ihau)	I
Lamiaceae	<i>Lavandula dentata</i> Linnaeus var. <i>candicans</i>	Lavendar	X*
Lamiaceae	<i>Leonotis nepetifolia</i> (L.) R.Br.	lion's ear	X
Malvaceae	<i>Hibiscus tiliaceus</i> L.	hau	I
Malvaceae	<i>Hibiscus rosa-sinensis</i> L.	hibiscus	X*
Malvaceae	<i>Malvastrum coromandelianum</i> ssp. <i>coromandelianum</i>	false mallow	X
Malvaceae	<i>Sida ciliaris</i> L.		X
Malvaceae	<i>Sida rhombifolia</i> L.		X
Malvaceae	<i>Thespesia populnea</i> (L.) Sol. ex Corrêa	milo, portia tree	I
Moraceae	<i>Ficus carica</i> Linnaeus	common fig, edible fig	X*
Moraceae	<i>Ficus elastica</i> Hornemann	rubber plant	X*
Moraceae	<i>Ficus microcarpa</i> L.f.	Chinese banyan, Malayan banyan	X
Moraceae	<i>Ficus pumila</i> L.		X
Myrtaceae	<i>Psidium guajava</i> L.	common guava, kuawa, kuawa ke'oke'o, kuawa lemi, kuawa momona, puawa	X
Myrtaceae	<i>Syzygium cumini</i> (L.) Skeels	Java plum	X
Nyctaginaceae	<i>Boerhavia coccinea</i> Mill.		X
Nyctaginaceae	<i>Bougainvillea spectabilis</i> Willd.	bougainvillea	X*
Ochnaceae	<i>Ochna thomasiana</i> Engl. & Gilg		X
Polygonaceae	<i>Antigonon leptopus</i> Hook. & Arn.	Mexican creeper, mountain rose, confederate vine, chain-of-love, hearts-on-a-chain	X
Portulacaceae	<i>Portulacaria afra</i> (Linnaeus) N. Jacquin,	miniature jade tree	X*
Proteaceae	<i>Macadamia integrifolia</i> Maiden & Betche		X
Rubiaceae	<i>Gardenia taitensis</i> A.P. de Candolle	Tahitian gardenia	X*
Rubiaceae	<i>Morinda citrifolia</i> L.	noni, Indian mulberry	P
Rutaceae	<i>Citrus aurantiifolia</i> (Christmann) Swingle	lime	X*
Rutaceae	<i>Murraya paniculata</i> (L.) Jack		X
Solanaceae	<i>Nicotiana glauca</i> Graham	tree tobacco, mustard tree, mākāhala, paka	X

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status*
Solanaceae	<i>Solanum lycopersicum</i> var. <i>cerasiforme</i> (Dunal) D.M. Spooner, G.J. Anderson & R.K. Jansen	tomato, 'ōhi'a lomi, kamako, 'ōhi'a, 'ōhi'a haole	X
Sterculiaceae	<i>Waltheria indica</i> L.	'uhaloa, 'ala'ala pū loa, hala 'uhaloa, hi'aloa, kanakaloa	I?
Turneraceae	<i>Turnera ulmifolia</i> L.	yellow alder	X
Verbenaceae	<i>Duranta erecta</i> L.		X
Verbenaceae	<i>Vitex rotundifolia</i> L.f.	kolokolo kahakai, hinahina kolo, mānawanawa, māwanawana, pōhinahina, pōlinalina (O'ahu), beach vitex	I

Notes: P = Polynesian-introduced, I = indigenous, I? = possibly indigenous, X = nonnative, X* = nonnative cultivated.

Appendix B-2

Endangered Species Act Section 7 Consultation



REGION 9

SAN FRANCISCO, CA 94105

March 5, 2025

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Subject: Request Concurrence of Proposed Determination Under Section 7 of the Endangered Species Act (ESA); Wahikuli Subdivision Gravity Sewer System Information for Planning and Consultation (IPaC) Project Code: 2025-0039291

Dear Dr. Campbell,

The U.S. Environmental Protection Agency (EPA) in cooperation with the County of Maui plans to undertake the “Wahikuli Subdivision Gravity Sewer System” project, in an area affected by the August 8, 2023, Maui wildfires. Pursuant to Section 7 of the Endangered Species Act, the EPA is requesting concurrence from the United States Fish and Wildlife Service (USFWS) that the proposed project may affect, but is not likely to adversely affect, the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*); Hawaiian seabirds including the endangered Hawaii Distinct Population Segment (DPS) of the band-rumped storm-petrel (*Hydrobates castro*), endangered Hawaiian petrel (*Pterodroma sandwichensis*), and the threatened Newell’s shearwater (*Puffinus newelli*); Hawaiian waterbirds including the endangered Hawaiian coot (*Fulica alai*), the endangered Hawaiian duck (*Anas wyvillian*), the threatened Hawaiian goose (*Branta (=Nesochen) sandvicensis*), the endangered Hawaiian stilt (*Himantopus mexicanus knudseni*), and the endangered Blackburn's Sphinx Moth (*Manduca blackburni*).

The EPA has determined that there would be no effect on the threatened green sea turtle, the endangered Hawksbill Sea turtle, or to listed Hawaiian Plants. There is no critical habitat in the project area. Therefore, no effect on designated critical habitat is anticipated.

Project Description

A new gravity sewer system is being proposed for the Wahikuli subdivision, located north of Lāhainā Town, Maui. See *Enclosure 1 – Project Area Map*. The Wahikuli subdivision consists of approximately 231 single-family house lots, each currently serviced by cesspools and septic systems. The proposed project would upgrade these properties to a gravity sewer system, eliminating environmental impacts from cesspools and leaking septic systems while providing a

more resilient and sustainable wastewater management system, better equipped to withstand climate impacts and disasters.

The proposed undertaking involves designing and constructing a gravity sewer system for the Wahikuli subdivision. The new sewer system would connect to the existing Lāhainā sewer system at the operational Lāhainā No. 3 Pump Station located approximately 975 feet south of Fleming Road. The proposed connection is to the existing sanitary manhole (SMH) #10 directly in front of the wet well for the Lāhainā No. 3 Pump Station on the Mauka (eastern) side of the Honoapiʻilani Highway, outside of the Hawaiʻi Department of Transportation right-of-way (ROW).

The new sewer system would be installed in the County of Maui roadway ROWs. This would require trenching along all the streets within the project area, described below. The depth of trenching for the gravity sewer lines would range from 4 to 14 feet below grade. The sewer laterals would extend a maximum of 2 feet into the serviced house lots. The proposed action may involve installing sump or grinder pumps for certain properties where connecting to the sewer system (within the roadways) via gravity is difficult due to grade differences. In addition, easements may be required for the construction of sewer laterals and potential county sewer lines for properties lacking direct access to a public roadway. Both activities would occur on private property.

Construction could begin as early as Winter 2026 and take approximately 12 months to complete. The project does not include any night work.

Coordination with the USFWS' Information for Planning and Consultation

On January 9, 2025, the EPA used the Information for Planning and Consultation (IPaC) online portal to obtain an official species list for the project area. *See Enclosure 2 – USFWS IPaC Official Species List*. The generated list included the following species under Project Code 2025-0039291:

The endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*)

Hawaiian seabirds, including:

- the endangered band-rumped storm-petrel (*Hydrobates castro*)
- the endangered Hawaiian petrel (*Pterodroma sandwichensis*)
- the threatened Newell's shearwater (*Puffinus newelli*)

Hawaiian waterbirds, including:

- the endangered Hawaiian Common Gallinule (*Gallinula galeata sandvicensis*)
- the endangered Hawaiian coot (*Fulica alai*)
- the endangered Hawaiian duck (*Anas wyvillian*)
- the threatened Hawaiian goose (*Branta (=Nesochen) sandvicensis*)
- the endangered Hawaiian stilt (*Himantopus mexicanus knudseni*)

Hawaiian sea turtles, including:

- the threatened green sea turtle (*Chelonia mydas*)
- the endangered hawksbill sea turtle (*Eretmochelys imbricata*)

The endangered Blackburn's Sphinx Moth (*Manduca blackburni*)

Hawaiian plants, including:

- the endangered 'ena'ena (*Pseudognaphalium sandwicense* var. *molokaiense*)
- the endangered Awiwi (*Schenkia sebaeoides*)
- the endangered Carter's Panicgrass (*Panicum fauriei* var. *carteri*)
- the endangered Dwarf Naupaka (*Scaevola coriacea*)
- the endangered Ihi (*Portulaca villosa*)
- the endangered Ko'oloa'ula (*Abutilon menziesii*)
- the endangered Ohai (*Sesbania tomentosa*)
- the endangered Round-leaved Chaff-flower (*Achyranthes splendens* var. *rotundata*)
- the endangered O'ahu cowpea (*Vigna o-wahuensis*)

After reviewing the generated species list, the EPA has identified the following species that may occur in, or transit through, the vicinity of the proposed area:

The Hawaiian hoary bat

Hawaiian seabirds, including:

- the band-rumped storm-petrel
- the Hawaiian petrel
- the Newell's shearwater

Hawaiian waterbirds, including:

- the endangered Hawaiian coot
- the endangered Hawaiian duck
- the threatened Hawaiian goose
- the endangered Hawaiian stilt

The Blackburn's Sphinx Moth

The EPA has determined that the following species are not likely to be present in the project area:

Hawaiian plants, including:

- the endangered 'ena'ena
- the endangered Awiwi
- the endangered Carter's Panicgrass
- the endangered Dwarf Naupaka
- the endangered Ihi
- the endangered Ko'oloa'ula
- the endangered Ohai
- the endangered Round-leaved Chaff-flower
- the endangered *Vigna o-wahuensis*

Hawaiian sea turtles, including:

- the threatened green sea turtle
- the endangered hawksbill sea turtle

There is no federally designated critical habitat within the project area or its vicinity.

Summary of November 2024 Biological Field Survey

A Flora and Fauna survey was conducted in November 2024 for the proposed Wahikuli Subdivision Gravity Sewer System project. *See Enclosure 3 – Flora and Fauna Survey Report.* The survey focused on identifying populations of special-status species federally or state-listed as threatened, endangered, proposed for listing, or candidate species. No threatened or endangered species were observed during the survey. The survey documented vegetation types and plant species that are not unique to the project area or Hawai'i, and no threatened or endangered plant species were recorded within the area. Over ninety percent of the plants observed in the survey area are non-native to the Hawaiian Islands.

The survey area does not overlap with federally designated critical habitats for listed terrestrial fauna. However, potential roosting trees for the endangered Hawaiian hoary bat were identified within the area. Additionally, tree tobacco, a non-native plant and potential host for the endangered Blackburn's sphinx moth was observed, but there was no evidence that this moth species is present within the project area. Lastly, the Hawaiian goose has a low likelihood of periodically occurring in the project area, and three endangered Hawaiian seabird species including the band-rumped storm-petrel, Hawaiian petrel, and Newell's shearwater may transit the area while traveling to and from nesting or fledging sites.

No species of plants or animals currently proposed for listing or listed under either the federal or State of Hawai'i endangered species statutes were recorded by the survey.

Biological Evaluation

Hawaiian Hoary Bat

The Hawaiian hoary bat roosts in woody vegetation across all the main Hawaiian Islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, June 1 through September 15, there is a risk that young bats could inadvertently be harmed or killed, since they are too young to fly or may not move away from disturbance. Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

Hawaiian Seabirds

The band-rumped storm-petrel, Hawaiian petrel, and the Newell's shearwater (collectively known as Hawaiian seabirds) may transit over the project area at night during their breeding season (March 1 through December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from mountain nests to the sea, are particularly vulnerable to light attraction.

Hawaiian Waterbirds

The Hawaiian coot, Hawaiian duck, and Hawaiian stilt (collectively known as Hawaiian waterbirds) are found in a variety of wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, kalo or taro (*Colocasia esculenta*) lo'i or patches, irrigation ditches, sewage treatment ponds, and in the case of the Hawaiian duck, montane streams and marshlands. Hawaiian stilts may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. Hawaiian ducks are also subject to threats from hybridization with introduced mallards.

Construction projects that create standing or open water may result in the attraction of Hawaiian waterbirds to the project area (attractive nuisance). Hawaiian waterbirds attracted to sub-optimal habitats may suffer adverse impacts, such as predation and reduced reproductive success.

There are no marshes or ponds in the vicinity of the project area that would provide suitable habitat for Hawaiian waterbirds. There are no streams in the project area. Wahikuli Stream is a non-perennial culverted, mostly underground, stream located approximately 200 feet north of the project area. The nearest perennial stream is Kahoma Stream located approximately 2,200 feet south of the project area.

The proposed sewer system would be confined to the roadway ROWs and as needed, easements across private property. If the proposed project creates any temporary or permanent standing water, Hawaiian waterbirds could use these areas for loafing, foraging, and possibly nesting.

Hawaiian Goose (Nēnē)

Hawaiian geese, Nēnē, are found on the islands of Hawai'i, Maui, Moloka'i, and Kauai. They are observed in various habitats but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands, shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes. The Hawaiian goose has an extended breeding season, with eggs reported from all months except May, June, and July, although most nest during the rainy (winter) season between October and March.

Although Hawaiian geese were not observed during the surveys, suitable foraging habitat was identified at the two public parks within the project area, 'Ainakea Park and Wahikuli Terrace Park.

Blackburn's Sphinx Moth

Adult Blackburn's sphinx moths feed on nectar from native plants, including beach morning glory (*Ipomoea pes-caprae*), iliee (*Plumbago zeylanica*), and maiapilo (*Capparis sandwichiana*). Larvae feed upon non-native tree tobacco (*Nicotiana glauca*) and native 'aiea (*Nothocestrum* sp.). To pupate, the larvae burrow into the soil and can remain in a state of torpor for a year or more before emerging. Soil disturbance can result in the death of the pupae.

The project area would be confined to the roadway ROWs, including paved or landscaped roadway shoulders and sidewalks, and as needed, easements across private property. As mentioned above, the biological survey conducted for the proposed project observed the presence of tree tobacco, a non-native plant and potential host for the endangered Blackburn's sphinx moth. Although the Blackburn's sphinx moth was not observed in the survey area, non-native host plants suitable for its larval stages are likely to establish in unmaintained sections of the Project Area. Based on recommendations from USFWS and the biological survey conducted for the proposed project, a survey for the moth and its host plants would be conducted by a biologist familiar with the species prior to construction and vegetation clearing, consistent with the most recent USFWS guidance.

No Effect Determination

Hawaiian Sea Turtles

Green sea turtles may nest on any sandy beach area in the Pacific Islands. Hawksbill sea turtles exhibit a wide tolerance for nesting substrate (ranging from sandy beach to crushed coral) with nests typically placed under vegetation. Both species exhibit strong nesting site fidelity. Nesting occurs on Hawaii beaches from May through September, peaking in June and July, with hatchlings emerging through November and December.

Construction on, or in the vicinity of, beaches can result in sand and sediment compaction, sea turtle nest destruction, beach erosion, contaminant, and nutrient runoff, and an increase in direct and ambient light pollution which may disorient hatchlings or deter nesting females. Off-road vehicle traffic may result in direct impacts on sea turtles and nests and contribute to habitat degradation through erosion and compaction.

The optimal nesting habitat is a dark beach free of barriers that restrict sea turtle movement. Nesting turtles may be deterred from approaching or laying successful nests on lighted or disturbed beaches. They may become disoriented by artificial lighting, leading to exhaustion and placement of a nest in an inappropriate location (such as at or below the high tide line). Hatchlings that emerge from nests may also be disoriented by artificial lighting. Inland areas visible from the beach should be sufficiently dark to allow for successful navigation to the ocean.

The Project Area is located inland within a neighborhood along the coast but is separated from the coastline by Honoapi'ilani Highway (Highway 30) and is distant from sandy beach habitats that could be used for sea turtle nesting. The makai side of the Honoapi'ilani Highway consists of a rocky shoreline, making it less suitable for sea turtle nesting. Therefore, threatened green sea turtles and endangered Hawksbill sea turtles are not anticipated to be present in the project area. Additionally, no night work is proposed for the project.

Listed Hawaiian Plants

The project area would be confined to the roadway ROWs, including paved or landscaped roadway shoulders and sidewalks, and as needed, easements across private property. Therefore, listed Hawaiian plant species are not anticipated to be present in the project area.

Avoidance and Minimization Measures

Based on the information provided by the USFWS IPaC tool, applicable species-specific measures would be incorporated into the project to avoid and minimize potential effects to federally threatened and endangered species with the potential to occur in the project area:

Hawaiian Hoary Bat

To avoid and minimize potential impacts on Hawaiian hoary bats the following measures would be incorporated into the project:

- Woody plants greater than 15 feet in height shall not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15).
- No barbed wire for fencing shall be used.

Hawaiian Seabirds

The project does not include any night work; therefore, the following conservation measures do not apply:

- All new streetlighting and nighttime construction lighting shall be fully shielded and directed toward the ground so the bulb can only be seen from below.
- Night construction would be avoided during the seabird fledging season, September 15 through December 15.
- All outdoor lighting, except streetlights, would have automatic motion sensor switches and controls or would be turned off when construction activities are occurring in the lighted area.

The project does not include any towers; therefore, the following conservation measures do not apply:

- The profile of the tower shall be as small as possible, minimizing the extent of the tower that protrudes above the surrounding vegetation layer, and avoiding the use of guy-wires.
- If the top of the tower must be lit to comply with Federal Aviation Administration regulations, use a flashing red light versus a steady-beam red or white light.
- If possible, co-locate with existing towers or facilities.

The project does not involve any fence installation, removal, or alteration; therefore, the following conservation measures do not apply:

- Where fences extend above vegetation, integrate three strands of polytape into the fence to increase visibility.

The project does not involve any above-ground utility replacements or installation of new above-ground utilities; therefore, the following conservation measures do not apply:

- For powerlines, guy-wires, and other cables, minimize exposure above vegetation height and vertical profile

Hawaiian Waterbirds

To avoid and minimize potential impacts on Hawaiian waterbirds the following measures would be incorporated into the project:

- Applicable measures from the USFWS's Best Management Practices for Work in or Around Aquatic Environments would be incorporated into the project design.

The project area is confined to active roadways, shoulders, and sidewalks; therefore, the following conservation measures do not apply:

- In areas where waterbirds are known to be present reduced speed limits would be posted and enforced. In addition, project personnel and contractors will be informed about the presence of endangered species on-site.
- A biological monitor that is familiar with the species' biology will conduct Hawaiian waterbird nest surveys, where appropriate habitat occurs within the vicinity of the proposed project area, before project initiation. These surveys will be repeated within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). If a nest or active brood is found:
 - The USFWS will be contacted within 48 hours for further guidance.
 - A 100-foot buffer will be established and maintained around all active nests and/or broods until the chicks/ducklings have fledged. No potentially disruptive activities or habitat alterations may occur within the buffer.
 - A biological monitor familiar with the species' biology will be on-site during earth-moving activities to ensure Hawaiian waterbirds and nests are not adversely impacted until the chicks/ducklings fledge.

Hawaiian Goose (Nēnē)

To avoid and minimize potential impacts to nēnē the following measures would be incorporated into the project:

- Nēnē would not be approached, fed, or disturbed.
- If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), a biologist familiar with nēnē nesting behavior would survey for nests in and around the project area before the resumption of any work. Surveys would be repeated after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
- All work would immediately cease and the USFWS would be contacted for further guidance if a nest is discovered within a radius of 150 feet of the proposed project, or a previously undiscovered nest is found within the 150-foot radius after work begins.
- In areas where nēnē are known to be present, reduced speed limit signs would be posted and implemented, and project personnel and contractors would be informed about the presence of endangered species on-site.

Blackburn's Sphinx Moth

To avoid and minimize potential impacts on Blackburn's sphinx moth the following measures would be incorporated into the project:

- Have a biologist familiar with the species survey areas of proposed activities for Blackburn's sphinx moth and its larval host plants before work initiation.

- Surveys would be conducted during the wettest portion of the year (usually November-April or several weeks after a significant rain) and within 4-6 weeks before construction.
- Surveys would include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage).
- If native 'aiea or tree tobacco over 3 feet tall, or adult Blackburn's sphinx moths are found during surveys, they would not be disturbed and the USFWS would be contacted for additional guidance to avoid take.

If no Blackburn's sphinx moth, 'aiea, or tree tobacco are found during surveys, measures would be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet after surveys have been completed, the plants may become a host plant for Blackburn's sphinx moth larvae. The following recommendations would be implemented:

- Any tree tobacco less than 3 feet tall would be removed.
- The sites would be monitored every 4-6 weeks for new tree tobacco growth before, during, and after the proposed ground-disturbing activity.

Request for Concurrence

With the implementation of the avoidance and minimization measures described above and the nature of the proposed work, the EPA has determined that the proposed project may affect but is not likely to adversely affect the Hawaiian hoary bat, the band-rumped storm-petrel, Hawaiian petrel, Newell's shearwater, Hawaiian coot, Hawaiian duck, Hawaiian goose, Hawaiian stilt, and the Blackburn's sphinx moth. The project would not affect the Hawaiian green sea turtles, hawksbill sea turtles, or listed Hawaiian plants. There is no Federally designated critical habitat in the project area. Therefore, no effect on designated critical habitat is anticipated.

Consequently, the EPA respectfully requests USFWS concurrence with its determination within 60 days of receipt of this letter. If you have any questions, please feel free to contact Kate Rao, Ground Water Project Section, at (415) 972-3533 or by email at rao.kate@epa.gov.



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Tomás Torres
Director, Water Division

Enclosures

- Enclosure 1 – Project Area Map
- Enclosure 2 – USFWS IPaC Official Species List
- Enclosure 3 – Flora and Fauna Survey Report

Enclosure 1

Project Area Map

Enclosure 2

United States Fish and Wildlife Service – Information for Planning and Consultation (IPaC) Official Species List



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pacific Islands Fish And Wildlife Office
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000
Phone: (808) 792-9400 Fax: (808) 792-9580

In Reply Refer To:

01/09/2025 07:37:50 UTC

Project Code: 2025-0039291

Project Name: Wahikuli Subdivision Gravity Sewer System

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened and endangered species, as well as designated critical habitat that may occur within the boundary of your proposed project and that may be affected by project related actions. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Please contact the Service's Pacific Islands Fish and Wildlife Office (PIFWO) at 808-792-9400 if you have any questions regarding your IPaC species list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may adversely affect threatened and endangered species and/or designated critical habitat.

Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a Biological

Evaluation, similar to a Biological Assessment, be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment or Biological Evaluation are described at 50 CFR 402.12.

Due to the significant number of listed species found on each island within PIFWO's regulatory jurisdiction, and the difficulty in accurately mapping ranges for species that we have limited information about, your species list may include more species than if you obtained the list directly from a Service biologist. We recommend you use the species links in IPaC to view the life history, habitat descriptions, and recommended avoidance and minimization measures to assist with your initial determination of whether the species or its habitat may occur within your project area. If appropriate habitat is present for a listed species, we recommend surveys be conducted to determine whether the species is also present. If no surveys are conducted, we err on the side of the species, by regulation, and assume the habitat is occupied. Updated avoidance and minimization measures for plants and animals, best management practices for work in or near aquatic environments, and invasive species biosecurity protocols can be found on the PIFWO website at: <https://www.fws.gov/office/pacific-islands-fish-and-wildlife/library>.

If a Federal agency determines, based on the Biological Assessment or Biological Evaluation, that a listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <http://www.fws.gov/endangered/esa-library/index>.

Non-federal entities can also use the IPaC generated species list to develop Habitat Conservation Plans (HCP) in accordance with section 10(a)(1)(B) of the Act. We recommend HCP applicants coordinate with the Service early during the HCP development process. For additional information on HCPs, the Habitat Conservation Planning handbook can be found at <https://www.fws.gov/sites/default/files/documents/habitat-conservation-planning-handbook-entire.pdf>.

Please be aware that wind energy projects should follow the Service's wind energy guidelines (<http://www.fws.gov/windenergy>) for minimizing impacts to migratory birds. Listed birds and the Hawaiian hoary bat may also be affected by wind energy development and we recommend development of a Habitat Conservation Plan for those species, as described above. Guidance for minimizing impacts to migratory birds for projects including communications towers can be found at:

- <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers>
- <http://www.towerkill.com>
- <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow>

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation actions that benefit threatened and endangered species into their project planning to further the purposes of the Act in accordance with section 7(a)(1). Please include the Consultation Tracking Number associated with your IPaC species list in any

request for consultation or correspondence about your project that you submit to our office. Please feel free to contact us at PIFWO_admin@fws.gov or 808-792-9400 if you need more current information or assistance regarding the potential impacts to federally listed species and federally designated critical habitat.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Pacific Islands Fish And Wildlife Office
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000
(808) 792-9400

ENDANGERED SPECIES ACT SPECIES

There is a total of 20 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Hawaiian Hoary Bat <i>Lasiurus cinereus semotus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/770 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6477.pdf	Endangered

BIRDS

NAME	STATUS
Band-rumped Storm-petrel <i>Hydrobates castro</i> Population: USA (HI) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1226 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6939.pdf	Endangered
Hawaiian Coot (alae Ke`oke`o) <i>Fulica alai</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7233 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6934.pdf	Endangered
Hawaiian Duck <i>Anas wyvilliana</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7712 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6934.pdf	Endangered
Hawaiian Goose <i>Branta (=Nesochen) sandvicensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1627 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6925.pdf	Threatened
Hawaiian Petrel <i>Pterodroma sandwichensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6746 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6939.pdf	Endangered
Hawaiian Stilt <i>Himantopus mexicanus knudseni</i> No critical habitat has been designated for this species.	Endangered

NAME	STATUS
Species profile: https://ecos.fws.gov/ecp/species/2082 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6934.pdf	
Newell's Shearwater <i>Puffinus newelli</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2048 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6939.pdf	Threatened

REPTILES

NAME	STATUS
Green Sea Turtle <i>Chelonia mydas</i> Population: Central North Pacific DPS There is proposed critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6199 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6929.pdf	Threatened
Hawksbill Sea Turtle <i>Eretmochelys imbricata</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3656	Endangered

INSECTS

NAME	STATUS
Blackburn's Sphinx Moth <i>Manduca blackburni</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4528 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/6926.pdf	Endangered

FLOWERING PLANTS

NAME	STATUS
`ena`ena <i>Pseudognaphalium sandwicense</i> var. <i>molokaiense</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5993	Endangered
Awiwi <i>Schenkia sebaeoides</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7103	Endangered

NAME	STATUS
Carter's Panicgrass <i>Panicum fauriei</i> var. <i>carteri</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5578	Endangered
Dwarf Naupaka <i>Scaevola coriacea</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4669	Endangered
Ihi <i>Portulaca villosa</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4886	Endangered
Ko`oloa`ula <i>Abutilon menziesii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3268	Endangered
Ohai <i>Sesbania tomentosa</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8453 General project design guidelines: https://ipac.ecosphere.fws.gov/project/7H3ONRZIYRAVDB4R5BOWDU462I/documents/generated/7050.pdf	Endangered
Round-leaved Chaff-flower <i>Achyranthes splendens</i> var. <i>rotundata</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4709	Endangered
Vigna o-wahuensis There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8445	Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

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1. The [Bald and Golden Eagle Protection Act](#) of 1940.
 2. The [Migratory Birds Treaty Act](#) of 1918.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

THERE ARE NO BALD AND GOLDEN EAGLES WITHIN THE VICINITY OF YOUR PROJECT AREA.

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

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1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
'apapane <i>Himatione sanguinea</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. https://ecos.fws.gov/ecp/species/9659	Breeds Dec 1 to Jul 31
Black Noddy <i>Anous minutus melanogenys</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. https://ecos.fws.gov/ecp/species/10559	Breeds Apr 1 to Nov 30

NAME	BREEDING SEASON
Black-footed Albatross <i>Phoebastria nigripes</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. https://ecos.fws.gov/ecp/species/8033	Breeds Apr 1 to Aug 31
Buller's Shearwater <i>Ardenna bulleri</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. https://ecos.fws.gov/ecp/species/11939	Breeds elsewhere
Bulwer's Petrel <i>Bulweria bulwerii</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. https://ecos.fws.gov/ecp/species/10579	Breeds May 1 to Sep 30
Hawai'i 'amakihi <i>Chlorodrepanis virens</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. https://ecos.fws.gov/ecp/species/9655	Breeds Nov 15 to Aug 15
Maui 'alauahio <i>Paroreomyza montana</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. https://ecos.fws.gov/ecp/species/9663	Breeds Apr 15 to Aug 15
Red-tailed Tropicbird <i>Phaethon rubricauda melanorhynchos</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. https://ecos.fws.gov/ecp/species/10563	Breeds Dec 15 to Oct 15
Wandering Tattler <i>Tringa incana</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. https://ecos.fws.gov/ecp/species/11941	Breeds elsewhere

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

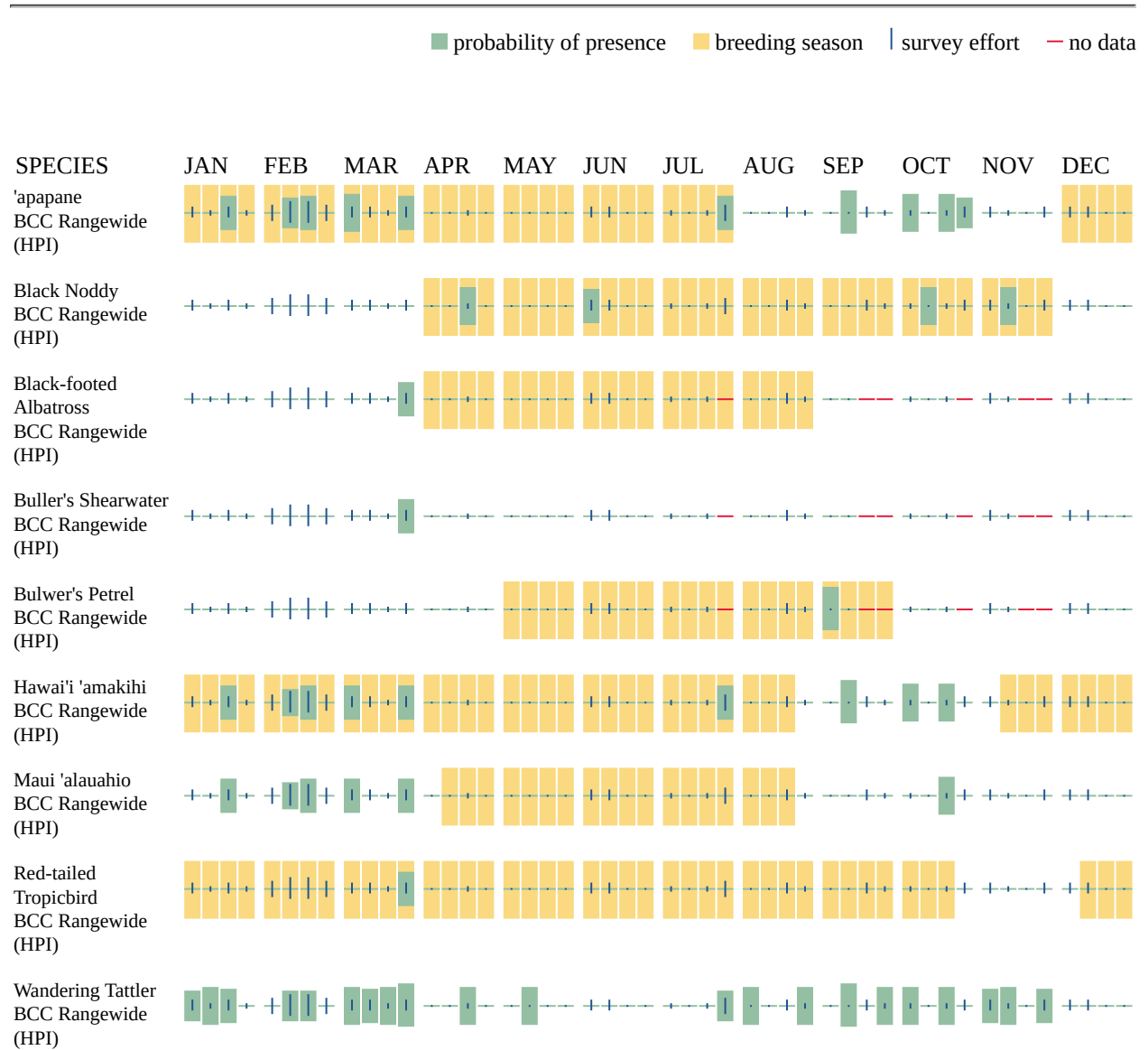
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (-)

A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>

- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

IPAC USER CONTACT INFORMATION


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Name: Megan Laurance
Address: 1001 Bishop Street
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LEAD AGENCY CONTACT INFORMATION

Lead Agency: Environmental Protection Agency

Enclosure 3

Flora and Fauna Survey Report for the Wahikuli Subdivision Gravity
Sewer System Project



Flora and Fauna Survey Report for the Wahikuli Subdivision Gravity Sewer System Project, Maui

DECEMBER 2024

PREPARED FOR

AECOM

PREPARED BY

SWCA Environmental Consultants

FLORA AND FAUNA SURVEY REPORT FOR THE WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM PROJECT, MAUI

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SWCA Project No. 89689

December 2024

EXECUTIVE SUMMARY

The County of Maui has requested technical assistance from the U.S. Environmental Protection Agency for the planning and design of a proposed gravity sewer system in the Wahikuli subdivision, located north of Lahaina. This area suffered significant damage during the fire on August 8, 2023, necessitating an upgraded sewer system as part of the emergency response and recovery efforts. This upgrade aims to create a more resilient and sustainable wastewater management system, better prepared to handle the impacts of climate change and mitigate potential future disasters.

Currently, approximately 231 single-family properties, covering an area of approximately 94 acres, are serviced by cesspools, which are proposed to be upgraded to the sewer system. AECOM commissioned SWCA Environmental Consultants to conduct a terrestrial flora and fauna survey, which was completed on November 5, 2024.

None of the flora and fauna species recorded during the survey of the project area are federally or state-listed as threatened, endangered, proposed for listing, or candidate species. The survey area also does not overlap with any federally designated critical habitats for listed terrestrial fauna. However, the survey identified potential roosting trees for the Hawaiian hoary bat, or 'ope'ape'a, (*Lasiurus cinereus semotus*), a federally and state-listed endangered mammal. Additionally, one nonnative plant species, tree tobacco (*Nicotiana glauca*), was observed in the area. This plant is a potential host for the endangered Blackburn's sphinx moth (*Manduca blackburni*), although no evidence of the moth was detected. The Hawaiian goose, or nēnē (*Branta sandvicensis*), may occasionally use open grasslands, such as parks or sports fields in the area, while the federally and state-listed seabirds band-rumped storm-petrel, or 'ake'ake, (*Hydrobates castro*), Hawaiian petrel, or 'ua'u (*Pterodroma sandwichensis*), and Newell's shearwater, or 'a'o (*Puffinus auricularis newelli*), may fly over the project site en route to inland nesting sites on the island. Overall, the project is expected to have low or discountable impacts on these and other listed species. Any potential impacts can be further minimized through the implementation of avoidance and minimization measures.

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1 INTRODUCTION

The County of Maui is proposing to install a new gravity sewer system in the Wahikuli subdivision, located north of Lahaina on Maui. This area sustained significant damage during the devastating wildfire on August 8, 2023, prompting the need for an upgraded sewer system as part of the emergency response and recovery efforts. The project will be funded by the County of Maui and the Federal Emergency Management Agency and managed by the U.S. Environmental Protection Agency. AECOM will oversee the design and implementation of the project.

AECOM engaged SWCA Environmental Consultants (SWCA) to conduct a flora and fauna survey within the 94-acre project area designated for the sewer system installation. The purpose of the survey was to document the presence of federally and state-listed threatened and endangered species (hereafter special-status species) and to assess the habitat available for these species within the project area. This report presents the methods and results of the survey, conducted on November 5, 2024.

2 PROPOSED PROJECT

The Wahikuli Subdivision Gravity Sewer System project (the project) aims to install a gravity sewer system within approximately 94 acres of the Wahikuli subdivision. The project will involve extensive trenching within existing roadways, easements, and proposed new easements to lay sewer mains. Additionally, trenching will occur along the edges of up to 231 private lots to install lateral connections to individual parcels. This initiative is designed to enhance wastewater management in the area, which currently depends on cesspools and septic systems.

3 REGULATORY ENVIRONMENT

This section describes laws and regulations applicable to aquatic and terrestrial flora and fauna in the context of the project.

3.1 Endangered Species Act

The Endangered Species Act of 1973, as amended (ESA), is regulated by the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration National Marine Fisheries Service. It protects wildlife and plant species that have been listed as threatened or endangered and is designed to conserve the ecosystems on which species depend. Candidate species, which may be listed in the near future, are not afforded protection under the ESA until they are formally listed as endangered or threatened.

Section 9 of the ESA and rules promulgated under Section 4(d) of the ESA prohibit the unauthorized take of any endangered or threatened species of wildlife listed under the ESA. Under the ESA, the term *take* means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect species listed as endangered or threatened, or to attempt to engage in any such conduct.” As defined in regulations, the term *harm* means “an act that actually kills or injures wildlife; it may include significant habitat modification or degradation, which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering” (50 Code of Federal Regulations [CFR] 17.3). The rules define *harass* to mean “an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent, as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering” (50 CFR 17.3).

The ESA affords maximum legal protections to species listed as threatened or endangered under the law and provides authorization for incidental take permits for take that occurs incidental to otherwise legal operations. To comply with federal laws, additional measures must be taken to ensure that take of federally listed species does not occur. Any fatality of a listed species should be reported to the USFWS and the Hawai‘i Department of Land and Natural Resources, Division of Forestry and Wildlife (DLNR-DOFAW) as soon as possible, and an incident report should be filed within 24 hours of detection.

The ESA also provides for the designation of critical habitat for listed species if there are areas of habitat believed to be essential to the conservation of the species. Critical habitat can be designated for a single species or a group of species. A critical habitat designation does not necessarily restrict further development but prevents federal actions from destroying or adversely modifying that habitat.

3.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918, as amended (MBTA), is regulated by the USFWS and prohibits the take of migratory birds. A list of birds protected under the MBTA is published under 50 CFR 10.13. Unless permitted by regulations, under the MBTA, “it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product” (16 United States Code 703–712). The MBTA provides no process for authorizing incidental take of MBTA-protected birds. As a result, birds that are not covered under the ESA that may be adversely affected by the project cannot be covered by take authorizations. Regardless, incidental take of individual MBTA-protected species is unlikely to adversely affect MBTA-protected species as a whole; however, any take of MBTA-protected species should be documented and reported in a similar manner as any endangered or threatened species of wildlife listed under the ESA.

3.3 Hawai‘i Revised Statutes 195D

The purpose of Hawai‘i Revised Statutes (HRS) 195D is “to ensure the continued perpetuation of indigenous aquatic life, wildlife, and land plants, and their habitats for human enjoyment, for scientific purposes, and as members of ecosystems” and is regulated by the DLNR-DOFAW. HRS 195D-4 states that any endangered or threatened species of fish or wildlife recognized by the ESA shall be so deemed by the state statute. Like the ESA, the unauthorized take of such endangered or threatened species is prohibited (HRS 195-D-4(e)), but incidental take licenses can be obtained (HRS 195D-21). In addition to species protected under the ESA, rules adopted under HRS 195D-4 allow for the listing of indigenous species as threatened or endangered for the following reasons:

- Habitat destruction or alteration (current or predicted)
- Overexploitation
- Disease or predation
- Lack of regulatory mechanisms
- Other factors threatening the species’ continued existence

Determinations are made based on all available sources of data (scientific, commercial, and other) and consultation with appropriate agencies (federal, state, and county) and interested organizations and parties.

4 LITERATURE REVIEW

SWCA performed a literature review during preparation of the field survey. The purpose of the literature review was to conduct a preliminary desktop habitat assessment to evaluate whether special-status species (or their habitats), and sensitive natural communities are known to occur in the project area. Table 1 lists the literature that was reviewed as part of this assessment.

Table 1. Wahikuli Subdivision Flora and Fauna Literature Review

Document (author)	Relevance
<i>Final Environmental Impact Statement: Honoapiilani Highway (FAP Route 30) Puamana to Honokowai</i> . Report No. FHWA-HI-EIS-88-02-F. (U.S. Department of Transportation 1991)	Describes the location and flora and fauna in the Lahaina area.
Recovery Plan for the Hawaiian Hoary Bat (<i>Lasiurus cinereus semotus</i>) (USFWS 1998)	Describes the current understanding, threat status, recovery strategy, and criteria for delisting Hawaiian hoary bat.
Recovery Plan for Hawaiian Waterbirds (USFWS 2011)	Describes the current understanding, threat status, recovery strategy, and criteria for delisting endangered Hawaiian waterbirds. Also describes federally listed waterbird locations on Maui.
Band-Rumped Storm-Petrel (<i>Oceanodroma castro</i>) Hawai'i Distinct Population Segment 5-Year Review Summary and Evaluation (USFWS 2021)	Describes the current understanding, threat status, and criteria for delisting band-rumped storm-petrel.
Hawaiian Petrel (<i>Pterodroma sandwichensis</i>) 5-Year Review (USFWS 2022)	Describes the current understanding, threat status, and criteria for delisting Hawaiian petrel.
'A'o (Newell's shearwater, <i>Puffinus newelli</i>) 5-Year Review (USFWS 2024)	Describes the current understanding, threat status, and criteria for delisting Newell's shearwater.

5 SITE INFORMATION

The project area, which is the area where the flora and fauna survey was undertaken (i.e., the survey area), is located within the *ahupua'a* (land division) of Wahikuli, in the *moku* (district) of Lahaina, on the *mokupuni* (island) of Maui. It lies just *mauka* (inland) of Honoapi'ilani Highway, within the Wahikuli subdivision (Figure 1). The project area covers approximately 94 acres and primarily contains residential housing lots and two public parks. It is bordered to the north by Aipuni Street, which is just outside the project area boundary, to the south by Fleming Road, which is just inside the boundary, and to the west by the most inland portions of the Wahikuli subdivision. The topography within the project area slopes gently downhill toward the west. The mean annual rainfall for the area is approximately 15 inches (38 centimeters), with the highest rainfall typically occurring between November and April, and the lowest between May and October (Frazier et al. 2016).

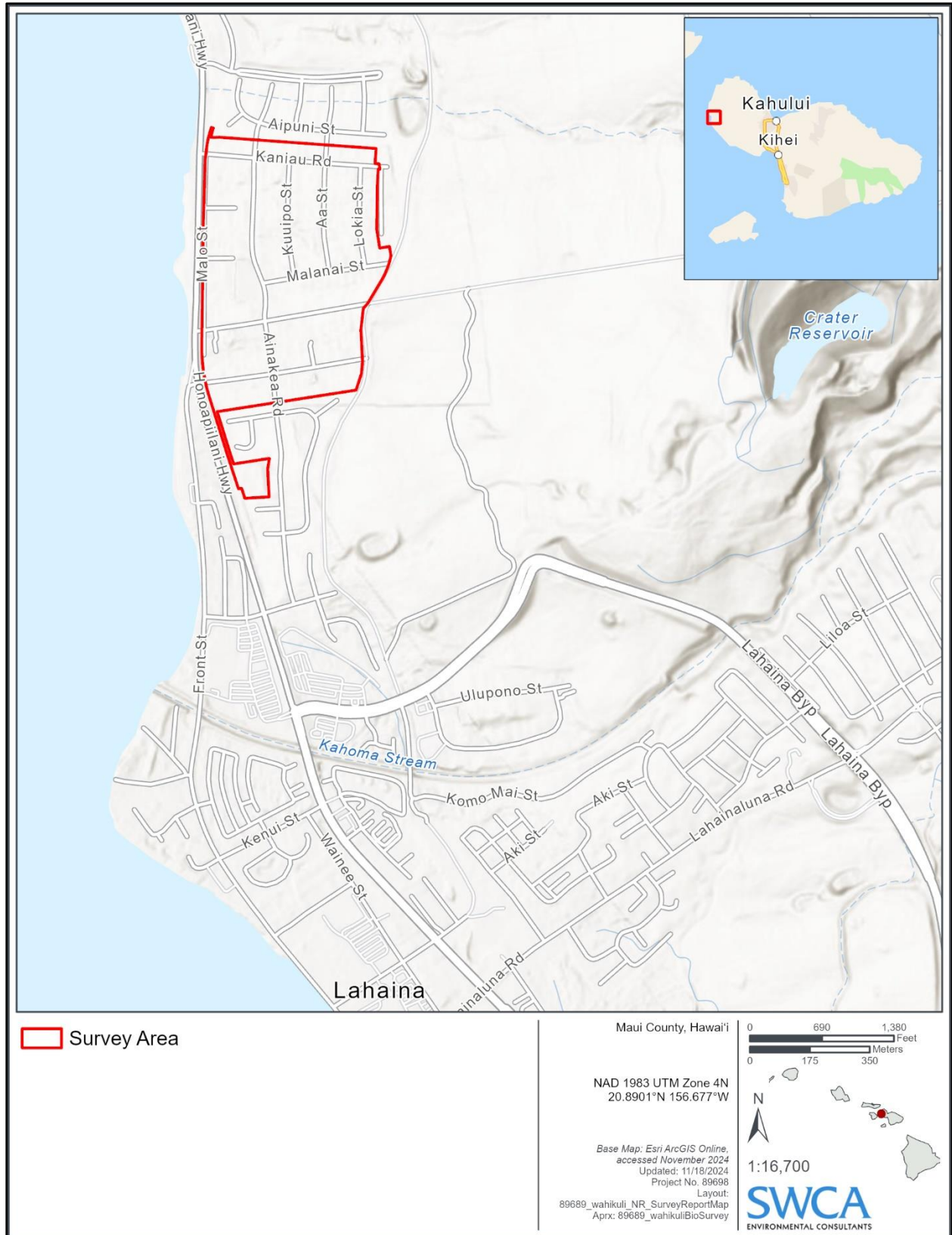


Figure 1. Location of the flora and fauna survey area for the Wahikuli Subdivision Gravity Sewer System project.

6 METHODS

SWCA reviewed available scientific and technical literature regarding natural resources in and near the project area. This literature review encompassed a thorough search of referenced scientific journals, technical journals and reports, environmental assessments, environmental impact statements, relevant government documents, USFWS online data, and unpublished data that provide insight into the area's natural history and ecology. SWCA also reviewed available geospatial data, aerial photographs, and topographic maps of the project area. The purpose of the literature review was to conduct a preliminary desktop habitat assessment to evaluate whether special-status species, their habitats, and sensitive natural communities are known to occur in the project area.

On November 5, 2024, an SWCA biologist conducted a comprehensive survey of the project area (see Figure 1). The survey was conducted on foot and documented all vascular plant, vertebrate (birds, mammals, and amphibians), and macroinvertebrate (gastropods and arthropods) species within the survey area. The survey specifically focused on locating populations of special-status species; however, specific acoustic surveys for the species such as the Hawaiian hoary bat, or 'ope'ape'a (*Lasiurus cinereus semotus*), were not conducted. Identification of birds was aided by 10 × 42–millimeter binoculars, as well as auditory vocalization identifications. Any signs of animals, such as scat or tracks, were noted.

7 RESULTS

7.1 Flora

In all, 105 vascular plant species were recorded in the survey area, five of which are native to the Hawaiian Islands: naupaka (*Scaevola taccada*), milo (*Thespesia populnea*), pōhinahina (*Vitex rotundifolia*), hau (*Hibiscus tiliaceus*), and 'uhaloa (*Waltheria indica*). One nonnative plant species that was recorded, tree tobacco (*Nicotiana glauca*), is a known host plant for the Blackburn's sphinx moth (*Manduca blackburni*). No special-status plant species were observed in the survey area. Appendix A provides a list of the vascular plant species recorded during the survey.

7.2 Vegetation and Land Cover Types

The vegetation in the survey area consists of two vegetation types: ruderal, and landscaped, described in detail below.

7.2.1 Ruderal

Ruderal vegetation was widespread across much of the survey area, particularly along roadways and other disturbed sites. This vegetation type was dominated by weedy species, with buffelgrass (*Cenchrus ciliaris*), 'uhaloa, and koa haole (*Leucaena leucocephala*) being the most commonly observed plants (Figure 2).



Figure 2. Typical ruderal vegetation in the survey area.

7.2.2 *Landscaped*

Landscaped vegetation was primarily found on private lots within the survey area, with occasional street trees near sidewalks. Commonly observed species included mango (*Mangifera indica*), plumeria (*Plumeria rubra*), and malunggay (*Moringa oleifera*). Coconut palms (*Cocos nucifera*) were frequently planted in these landscaped areas. Common shrubs in this vegetation type included mock orange (*Murraya paniculata*) and crownflower (*Calotropis gigantea*) (Figure 3).



Figure 3. Landscaped vegetation in the survey area.

7.3 Fauna

7.3.1 Avifauna

Eight nonnative bird species were observed during the survey (Table 2). All of these species are common in disturbed low-elevation areas on Maui. Two of these species are listed under the MBTA: cattle egret (*Bubulcus ibis*) and northern cardinal (*Cardinalis cardinalis*).

Table 2. Birds Observed in and Near the Survey Area on September 18, 2023

Common Name	Scientific Name	Status*	MBTA Species (Yes or No)
Cattle egret	<i>Bubulcus ibis</i>	NN	Yes
Common myna	<i>Acridotheres tristis</i>	NN	No
Feral chicken	<i>Gallus gallus</i>	NN	No
House finch	<i>Haemorhous mexicanus</i>	NN	No
Java finch	<i>Lonchura oryzivora</i>	NN	No
Northern cardinal	<i>Cardinalis cardinalis</i>	NN	Yes
Red-crested cardinal	<i>Paroaria coronata</i>	NN	No
Zebra dove	<i>Geopelia striata</i>	NN	No

* NN = nonnative permanent resident

While none of the birds observed during the survey are native, habitat exists for native birds in the survey area, including habitat for special-status species. Seabirds may potentially fly over the survey area to and from higher-elevation nesting areas during the seabird nesting and fledging period. Small areas of habitat

for the threatened Hawaiian goose, or nēnē (*Branta sandvicensis*), exists in the area, although none were seen in the survey area.

7.3.2 Mammals

No wild mammals were detected in the survey area. Although house mice (*Mus musculus*), rats (*Rattus* spp.), and small Indian mongoose (*Herpestes auropunctatus*) were not detected, they are likely to occur in the survey area. In addition, foraging and roost habitat for the endangered Hawaiian hoary bat is present in the survey area, primarily in the landscaped vegetation type. Nonnative tree species such as mango and monkeypod (*Samanea saman*) are known to provide roosting habitat for this bat species (Montoya-Aiona et al. 2023).

7.3.3 Terrestrial Reptiles and Amphibians

Brown anole (*Anolis sagrei*) was detected in the survey area. No terrestrial reptiles and amphibians are native to Hawai'i.

7.3.4 Insects and Other Invertebrates

The survey area contains habitat for one special-status invertebrate species, Blackburn's sphinx moth. This species feeds on plants in the potato family (Solanaceae), such as the invasive tree tobacco, which was present in the survey area. No native insects or other invertebrates were observed during the survey. Nonnative invertebrates recorded within the survey area were yellow crazy ant (*Anoplolepis gracilipes*), western honeybee (*Apis mellifera*), yellow oriental paper wasp (*Polistes olivaceus*), and monarch butterfly (*Danaus plexippus*).

8 SPECIAL-STATUS SPECIES AND CRITICAL HABITAT

No special-status species were observed in the survey area. Similarly, no USFWS-designated critical habitat for special-status plant species or wildlife overlaps with the survey area.

9 DISCUSSION AND RECOMMENDATIONS

The following avoidance and mitigation measures are recommended to minimize or eliminate project-related impacts and prevent adverse effects on special-status species that may periodically occur in the project area. These measures should be incorporated into the project.

9.1 Flora

The vegetation types and species identified during the survey are not unique, and no special-status plant species were recorded within the site. Over 90% of the plants observed in the survey area are nonnative to the Hawaiian Islands. As such, the proposed project is not anticipated to have a significant adverse impact on botanical resources

Weedy nonnative plant species are common in the survey area. Most of these weedy species are widespread in Hawai'i, and their control is not expected to result in a significant decrease in their number or distribution. However, construction activities are known to spread invasive species to new areas through the movement of vehicles and materials. For this reason, SWCA recommends the following

invasive species minimization measures to avoid the unintentional introduction or transport of new terrestrial invasive species to Maui.

- All construction equipment and vehicles arriving from outside of Maui should be washed and inspected before entering the project area.
- Construction materials arriving from outside of Maui should also be washed and/or visually inspected (as appropriate) for excessive debris, plant materials, and invasive or harmful nonnative species (plants, amphibians, reptiles, and insects).
- Inspection and cleaning activities should take place at a designated location before entering the project area. Inspectors should be qualified botanists and/or entomologists with expertise in identifying invasive species of concern based on the point of origin of the equipment, vehicles, or materials.
- When possible, raw materials (e.g., gravel, rock, soil) should be purchased from a local supplier on Maui to avoid introducing nonnative species not yet present on the island.
- If landscaping occurs as part of the project, native Hawaiian plants or non-invasive plants should be used to the maximum extent possible. Additional information on selecting appropriate (non-invasive) plants for landscaping can be obtained from the following online sources:
 - <https://plantpono.org/>
 - http://www.hear.org/alternativestoinvasives/pdfs/mcaac_hpwra_a2i_list.pdf
 - <http://www.hear.org/oisc/oahuearlydetectionproject/pdfs/oedposterwhatnottoplant.pdf>

9.2 Fauna

Three endangered special-status fauna species may periodically occur in the project area based on previous surveys, presence of suitable habitat, and the USFWS species records (USFWS 2016): Hawaiian goose, Hawaiian hoary bat, and Blackburn's sphinx moth. In addition, three special-status seabird species could transit over the project area while traveling to and from their upland nesting sites: band-rumped storm-petrel, or 'ake'ake (*Hydrobates castro*), Hawaiian petrel, or 'ua'u (*Pterodroma sandwichensis*), and Newell's shearwater, or 'a'o, (*Puffinus auricularis newelli*). These species are discussed in detail below.

9.2.1 *Hawaiian Goose*

The Hawaiian goose occupies various habitat types ranging from beach strand, shrubland, and grassland to lava rock at elevations ranging from coastal lowlands to alpine areas, and are found on the islands of Hawai'i, Maui, Moloka'i, and Kaua'i (Banko 1988; Banko et al. 1999). The geese eat plant material, and the composition of their diet depends largely on the vegetative composition of their surrounding habitats. Most Hawaiian goose food items are leaves and seeds of grasses and sedges, leaves and flowers of various herbaceous composites, and various fruits of several species of shrub (Banko et al. 1999; Black et al. 1994). They appear to be opportunistic in their choice of food plants as long as the plants meet their nutritional demands (Banko et al. 1999; Woog and Black 2001). The Hawaiian goose has an extended breeding season, with eggs reported from all months except May, June, and July, although most nest during the rainy (winter) season between October and March (Banko et al. 1999; Kear and Berger 1980).

Although Hawaiian goose was not observed during the surveys, suitable foraging habitat was identified at the two public parks within the project area. To mitigate potential impacts should the Hawaiian goose occur in the project area, the following measures are recommended:

- If a Hawaiian goose is observed in the area during construction activities, all activities within 100 feet (30 m) of individuals of this species should cease, and work should not continue until the species leaves the area on its own accord.
- In the unlikely event that a Hawaiian goose nest is discovered, all activities within 150 feet (46 m) of the nest should cease, and the USFWS should be contacted. Work should not resume until directed by the USFWS.
- In areas where the Hawaiian goose is known to occur, post and implement reduced speed limits, and inform project personnel about the presence of the Hawaiian goose.

9.2.2 Hawaiian Hoary Bat

Hawaiian hoary bats are found on Maui across a variety of landscapes, including native and nonnative habitats, agricultural areas, and developed regions (U.S. Department of Agriculture [USDA] 2009; USFWS 1998). They forage in open areas, wooded environments, and along linear habitats, utilizing a wide range of vegetation types. As insectivores, these bats are frequently observed hunting over streams, reservoirs, and wetlands, sometimes venturing up to 300 feet (about 91 meters [m]) offshore (USDA 2009).

Hawaiian hoary bats typically roost in trees taller than 16 feet (5 m), preferring locations with either 1) dense canopy foliage or 2) sparse canopies that allow open access for flight (Gorresen et al. 2013; USDA 2009). They have been documented roosting in nonnative tree species such as mango that are present within the project area (Montoya-Aiona et al. 2023).

Direct impacts to bats could occur during vegetation removal if a juvenile bat that is too small to fly but too large to be carried by a parent is present in a tree or branch that is cut down. To prevent direct impacts to Hawaiian hoary bats, the following measures are recommended:

- No trees taller than 15 feet (4.6 m) in the survey area should be trimmed or removed between June 1 and September 15 when flightless juvenile bats may be roosting in the trees.
- Any fences that are erected as part of the project should have a barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire.

Implementation of these measures, which have been promulgated by the USFWS (1998), is expected to result in avoidance of all direct impacts to Hawaiian hoary bats during the course of the project.

9.2.3 Blackburn's Sphinx Moth

The Blackburn's sphinx moth was not observed in the survey area. However, nonnative host plants suitable for its larval stages are likely to establish in unmaintained sections of the site. The primary native host plants for Blackburn's sphinx moth larvae are two species of 'aiea, small trees in the genus *Nothocestrum* (*N. latifolium* and *N. breviflorum*) (USFWS 2005). Neither of these native host species were found in the survey area.

At lower elevations, Blackburn's sphinx moth larvae are most commonly associated with nonnative tree tobacco, but they have also been found on common tobacco (*Nicotiana tabacum*), eggplant (*Solanum melongena*), tomato (*S. lycopersicum* var. *cerasiforme*), and the indigenous pōpolo (*S. americanum*) (USFWS 2005). Before pupating, larvae descend from their host plants to search for suitable sites in soil. They are most likely to pupate within 33 feet (10 m) of their host plant, although they may travel farther, even across paved or hardened surfaces, to find an appropriate site for burrowing. The pupal stage of the Blackburn's sphinx moth has been speculated to last up to 1 year (Zimmerman 1958), though no data

currently support this claim. In captivity, moths have emerged after as little as 6 weeks (Rubinoff and San Jose 2010).

The following are recommended during construction to avoid effects to the Blackburn's sphinx moth:

- A survey for potential larval host plants for Blackburn's sphinx moth (particularly tree tobacco) should be conducted by biologists before construction/vegetation clearing. Results of the survey should be provided to the USFWS.
- If host plants are found, surveys for Blackburn's sphinx moth should be performed according to the most recent USFWS guidance, and preferably during the wet season (January to April), roughly 4 to 8 weeks following a significant rainfall event. Results of the survey should be provided to the USFWS. Any necessary follow-up actions should be coordinated with the USFWS.

9.2.4 Seabirds

Major threats to the endangered band-rumped storm-petrel and Hawaiian petrel, and threatened Newell's shearwater include the attraction of adults and newly fledged juveniles to bright lights while transiting between their nest sites and the ocean. Juvenile birds are particularly vulnerable to light attraction and are sometimes grounded when they become disoriented by lights (Mitchell et al. 2005). Many of these grounded birds are vulnerable to mammalian predators or to being struck by vehicles. The following recommendations are provided to avoid and minimize light attraction of these seabird species to the survey area:

- Construction activity should be restricted to daylight hours as much as practicable during the seabird breeding season (April–November) to avoid the use of nighttime lighting that could attract seabirds.
- All outdoor lights should be shielded to prevent upward radiation. This has been shown to reduce the potential for seabird attraction (Reed et al. 1985; Telfer et al. 1987).
- Outside lights that are not needed for security and safety should be turned off from dusk through dawn during the fledgling fallout period (September 15–December 15).

10 CONCLUSIONS

SWCA conducted a flora and fauna survey in November 2024 for the proposed Wahikuli Subdivision Gravity Sewer System project, located in the Wahikuli subdivision, north of Lahaina. The survey focused on identifying populations of special-status species federally or state-listed as threatened, endangered, proposed for listing, or candidate species. No special-status species were observed during the survey.

The survey area does not overlap with any federally designated critical habitats for listed terrestrial fauna. However, potential roosting trees for the Hawaiian hoary bat, a federally and state-listed endangered species, were identified within the area. Additionally, tree tobacco, a nonnative plant and potential host for the endangered Blackburn's sphinx moth, was observed, but there was no evidence that this moth species is present within the project area. Lastly, the Hawaiian goose has a low likelihood of periodically occurring in the project area, and three special-status seabird species may transit the area while traveling to and from nesting or fledging sites.

Since no current evidence indicates the presence of special-status species within the project area, the project is not expected to have adverse effects on federally or state-listed species. If any of the species

discussed in this report are detected in the future, impacts can be minimized to low or discountable levels through the implementation of the avoidance and minimization measures outlined in the report.

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APPENDIX A

Vascular Plant Species Recorded During the November 5, 2024, Survey

Table A-1 provides a checklist of plant species observed by SWCA on November 5, 2024, during surveys of the Wahikuli subdivision gravity sewer system project area. The plant names are arranged alphabetically by family and then by species into two groups: monocots, and eudicots. The taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999) and Staples and Herbst (2005). Recent name changes are those recorded in Wagner et al. (2012).

Table A-1. Vascular Plants Observed within the Proposed Survey Area on November 5, 2024

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status*
Monocots			
Agavaceae	<i>Cordyline fruticosa</i> (L.) A.Chev.	kī, ti	P
Agavaceae	<i>Dracaena marginata</i> Lamarck		X*
Aloeaceae	<i>Aloe vera</i> (L.) Burm.f.	aloe	X*
Arecaceae	<i>Adonidia merrillii</i> (Becc.) Becc.	Manila palm	X*
Arecaceae	<i>Caryota mitis</i> Lour.		X
Arecaceae	<i>Cocos nucifera</i> L.	niu, lolani, coconut	P
Arecaceae	<i>Dypsis lutescens</i> (H.Wendl.) Beentje & J.Dransf.	areca palm	X*
Arecaceae	<i>Hyophorbe lagenicaulis</i> (L. H. Bailey) H. E. Moore	bottle palm	
Arecaceae	<i>Phoenix roebelenii</i> O'Brien	dwarf date palm	X*
Arecaceae	<i>Pritchardia pacifica</i> Seem. & H.Wendl.		X*
Arecaceae	<i>Roystonea regia</i> (Kunth) O.F.Cook		X
Arecaceae	<i>Washingtonia robusta</i> H.Wendl.		X
Arecaceae	<i>Wodyetia bifurcata</i> A. K. Irvine	foxtail palm	X*
Liliaceae	<i>Crinum asiaticum</i> L.	giant lily	X*
Musaceae	<i>Musa</i> hybrid	banana, apple banana	X*
Poaceae	<i>Axonopus fissifolius</i> (Raddi) Kuhlm.	narrow-leaved carpetgrass	X
Poaceae	<i>Cenchrus ciliaris</i> L.	buffelgrass	X
Poaceae	<i>Cenchrus echinatus</i> L.	common sandbur, 'ume'alu, mau'u kukū	X
Poaceae	<i>Chloris barbata</i> Sw.	swollen fingergrass, mau'u lei	X
Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass, mānienie, mānienie haole	X
Poaceae	<i>Eleusine indica</i> (L.) Gaertn.	wiregrass, mānienie ali'i	X
Poaceae	<i>Eragrostis amabilis</i> (L.) Wight & Arn.	lovegrass	X
Poaceae	<i>Melinis repens</i> (Willd.) Zizka	Natal redtop, Natal grass	X
Poaceae	<i>Urochloa maxima</i> (Jacq.) R.D.Webster	Guinea grass	X
Strelitziaceae	<i>Strelitzia reginae</i> Dryander	bird of paradise	X*
Zingiberaceae	<i>Alpinia purpurata</i> (Vieill.) K.Schum.	red ginger, 'awapuhi 'ula'ula	X
Eudicots			
Aizoaceae	<i>Trianthema portulacastrum</i> L.		X
Amaranthaceae	<i>Amaranthus spinosus</i> L.	spiny amaranth, pakai kukū	X
Anacardiaceae	<i>Mangifera indica</i> L.	mango, manakō, manakō meneke, meneke	X

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status*
Anacardiaceae	<i>Schinus terebinthifolius</i> Raddi	Christmas berry, wilelaiki, nani o Hilo (Moloka'i)	X
Apocynaceae	<i>Adenium obesum</i> (Forsskål) J. Roemer & J. A. Schultes	desert rose	X*
Apocynaceae	<i>Carissa macrocarpa</i> (Eckl.) A.DC.		X
Apocynaceae	<i>Catharanthus roseus</i> (L.) G.Don	Madagascar periwinkle, kīhāpai	X
Apocynaceae	<i>Nerium oleander</i> L.		X*
Apocynaceae	<i>Plumeria obtusa</i> L.	Singapore plumeria	X*
Apocynaceae	<i>Plumeria rubra</i> L.	plumeria	X*
Apocynaceae	<i>Thevetia peruviana</i> (Pers.) K.Schum.	be-still tree	X
Araliaceae	<i>Polyscias guilfoylei</i> (W. Bull) L. H. Bailey	panax	X*
Araliaceae	<i>Schefflera actinophylla</i> (Endl.) Harms	octopus tree, umbrella tree	X
Araliaceae	<i>Schefflera arboricola</i> (Hayata) Merr.	dwarf umbrella tree	X
Asclepiadaceae	<i>Calotropis gigantea</i> (L.) W.T.Aiton		X
Asteraceae	<i>Calyptocarpus vialis</i> Less.		X
Asteraceae	<i>Tridax procumbens</i> L.	coat buttons	X
Asteraceae	<i>Vernonia elliptica</i> DC.		X
Bignoniaceae	<i>Spathodea campanulata</i> P.Beauv.	African tulip tree	X
Bignoniaceae	<i>Tabebuia aurea</i> (Silva Manso) Benth. & Hook.f. ex S.Moore		X
Bignoniaceae	<i>Tabebuia heterophylla</i> (DC.) Britton		X
Bignoniaceae	<i>Tecoma stans</i> (L.) Juss. ex Kunth	yellow elder	X
Boraginaceae	<i>Carmona retusa</i> (Vahl) Masam.	Fukien tea	X
Boraginaceae	<i>Heliotropium procumbens</i> var. <i>depressum</i> (Cham.) Fosberg		X
Cactaceae	<i>Cereus uruguayanus</i> F.Ritter ex R.Kiesling	hedge cactus	X
Cactaceae	<i>Hylocereus undatus</i> (Haw.) Britton & Rose	night-blooming cereus, pānini-o-ka-Punahou, pāpīpi pua	X
Caricaceae	<i>Carica papaya</i> L.	papaya, mīkana, hē'i, milikana, papaia, pawpaw	X
Clusiaceae	<i>Clusia rosea</i> Jacq.	autograph tree, copey, Scotch attorney	X
Convolvulaceae	<i>Ipomoea batatas</i> (L.) Lam.	'uala, 'uwala, sweet potato	P
Convolvulaceae	<i>Ipomoea obscura</i> (L.) Ker Gawl.	morning glory	X
Convolvulaceae	<i>Merremia aegyptia</i> (L.) Urb.	hairy merremia, koali kua hulu, kuahulu	X
Cucurbitaceae	<i>Momordica charantia</i> L.	balsam pear, bitter melon	X
Euphorbiaceae	<i>Aleurites moluccana</i> (L.) Willd.	kukui, candlenut	P
Euphorbiaceae	<i>Codiaeum variegatum</i> (L.) Blume	croton	X*
Euphorbiaceae	<i>Euphorbia hirta</i> L.	hairy spurge, garden spurge, koko kahiki	X
Euphorbiaceae	<i>Euphorbia tirucalli</i> L.	pencil tree, milkbush	X
Euphorbiaceae	<i>Jatropha integerrima</i> N. Jacquin		X*
Euphorbiaceae	<i>Jatropha podagrica</i> Hook.		X

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status*
Euphorbiaceae	<i>Ricinus communis</i> L.	castor bean, pā'aila, ka'apehā, kamākou, kolī, lā'au 'aila	X
Fabaceae	<i>Caesalpinia pulcherrima</i> (Linnaeus) Swartz	dwarf poinciana	X*
Fabaceae	<i>Cassia x nealiae</i> H.S. Irwin & Barneby	rainbow shower tree	X*
Fabaceae	<i>Delonix regia</i> (Bojer ex Hook.) Raf.	royal poinciana, flame tree, flamboyant, 'ohai 'ula	X
Fabaceae	<i>Desmanthus pernambucanus</i> (L.) Thell.	slender mimosa, virgate mimosa	X
Fabaceae	<i>Indigofera spicata</i> Forssk.	creeping indigo	X
Fabaceae	<i>Leucaena leucocephala</i> (Lam.) de Wit	koa haole	X
Fabaceae	<i>Macroptilium atropurpureum</i> DC.) Urb.		X
Fabaceae	<i>Samanea saman</i> (Jacq.) Merr.	monkeypod, rain tree, 'ohai, pū 'ohai	X*
Fabaceae	<i>Sesbania grandiflora</i> (Linnaeus) Poiret		X*
Goodeniaceae	<i>Scaevola taccada</i> (Gaertn.) Roxb.	naupaka kahakai, huahekili, naupaka kai, auaka (Ni'ihau)	I
Lamiaceae	<i>Lavandula dentata</i> Linnaeus var. <i>candicans</i>	Lavendar	X*
Lamiaceae	<i>Leonotis nepetifolia</i> (L.) R.Br.	lion's ear	X
Malvaceae	<i>Hibiscus tiliaceus</i> L.	hau	I
Malvaceae	<i>Hibiscus rosa-sinensis</i> L.	hibiscus	X*
Malvaceae	<i>Malvastrum coromandelianum</i> ssp. <i>coromandelianum</i>	false mallow	X
Malvaceae	<i>Sida ciliaris</i> L.		X
Malvaceae	<i>Sida rhombifolia</i> L.		X
Malvaceae	<i>Thespesia populnea</i> (L.) Sol. ex Corrêa	milo, portia tree	I
Moraceae	<i>Ficus carica</i> Linnaeus	common fig, edible fig	X*
Moraceae	<i>Ficus elastica</i> Hornemann	rubber plant	X*
Moraceae	<i>Ficus microcarpa</i> L.f.	Chinese banyan, Malayan banyan	X
Moraceae	<i>Ficus pumila</i> L.		X
Myrtaceae	<i>Psidium guajava</i> L.	common guava, kuawa, kuawa ke'oke'o, kuawa lemi, kuawa momona, puawa	X
Myrtaceae	<i>Syzygium cumini</i> (L.) Skeels	Java plum	X
Nyctaginaceae	<i>Boerhavia coccinea</i> Mill.		X
Nyctaginaceae	<i>Bougainvillea spectabilis</i> Willd.	bougainvillea	X*
Ochnaceae	<i>Ochna thomasiana</i> Engl. & Gilg		X
Polygonaceae	<i>Antigonon leptopus</i> Hook. & Arn.	Mexican creeper, mountain rose, confederate vine, chain-of-love, hearts-on-a-chain	X
Portulacaceae	<i>Portulacaria afra</i> (Linnaeus) N. Jacquin,	miniature jade tree	X*
Proteaceae	<i>Macadamia integrifolia</i> Maiden & Betche		X
Rubiaceae	<i>Gardenia taitensis</i> A.P. de Candolle	Tahitian gardenia	X*
Rubiaceae	<i>Morinda citrifolia</i> L.	noni, Indian mulberry	P
Rutaceae	<i>Citrus aurantiifolia</i> (Christmann) Swingle	lime	X*
Rutaceae	<i>Murraya paniculata</i> (L.) Jack		X
Solanaceae	<i>Nicotiana glauca</i> Graham	tree tobacco, mustard tree, mākāhala, paka	X

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status*
Solanaceae	<i>Solanum lycopersicum</i> var. <i>cerasiforme</i> (Dunal) D.M. Spooner, G.J. Anderson & R.K. Jansen	tomato, 'ōhi'a lomi, kamako, 'ōhi'a, 'ōhi'a haole	X
Sterculiaceae	<i>Waltheria indica</i> L.	'uhaloa, 'ala'ala pū loa, hala 'uhaloa, hi'aloa, kanakaloa	I?
Turneraceae	<i>Turnera ulmifolia</i> L.	yellow alder	X
Verbenaceae	<i>Duranta erecta</i> L.		X
Verbenaceae	<i>Vitex rotundifolia</i> L.f.	kolokolo kahakai, hinahina kolo, mānawanawa, māwanawana, pōhinahina, pōlinalina (O'ahu), beach vitex	I

Notes: P = Polynesian-introduced, I = indigenous, I? = possibly indigenous, X = nonnative, X* = nonnative cultivated.

Appendix C-1

National Historic Preservation Act (NHPA) Section 106 Consultation



FEMA

IN REPLY REFER TO: PN 20250131 - Wahikuli Subdivision Gravity Sewer System

January 31, 2025

Dawn N.S. Chang
State Historic Preservation Officer
Chairperson, Department of Land and Natural Resources
Kalanimoku Building 1151 Punchbowl St. Honolulu, HI 96813
via: Hawai'i Cultural Resource Information System (HICRIS)

Stacy Kealohalani Ferreira
Pouhana, Chief Executive Officer
Office of Hawaiian Affairs
560 N. Nimitz Hwy., Suite 200
Honolulu, Hawai'i 96817
via: ohacompliance@oha.org

Attention: Jessica L. Puff, Administrator, SHPD
Susan A. Lebo, Archaeology Branch Chief, SHPD
Kai Markell, Compliance Enforcement Manager, OHA

Subject: National Historic Preservation Act Section 106 Consultation –
Environmental Protection Agency (EPA) – Mission Assigned Agency
Federal Emergency Management Agency – FEMA-4724-DR-HI
Wahikuli Subdivision Gravity Sewer System
Wahikuli Ahupua'a, Lāhainā District, Island of Maui
TMK: (2) 4-5-014: var, 4-5-027: var, 4-5-028: var, 4-5-030: var, and 4-5-036: var

Dear Chairperson Chang and Ms. Ferreira:

A new gravity sewer system is proposed in the Wahikuli Subdivision of Lāhainā Town. The County of Maui requested technical assistance from the Environmental Protection Agency (EPA) with the planning and design of the proposed gravity sewer system, an area affected by the August 8, 2023, Maui wildfires. The planning and design of this project are funded by the Federal Emergency Management Agency (FEMA) through its mission assignment authority and managed

by the EPA. The FEMA funding is through Robert T. Stafford Disaster Relief and Emergency Assistance Act, or “Stafford Act” (codified as amended at 42 U.S.C. § 5121 et seq.¹).

The proposed Undertaking is being reviewed pursuant to Section 106 of the National Historic Preservation Act (NHPA) and the Programmatic Agreement currently in effect with *FEMA of the U.S. Department of Homeland Security, the Hawai‘i State Historic Preservation Officer (SHPO), the Office of Hawaiian Affairs (OHA), and the State of Hawai‘i Department of Defense, Hawaii Emergency Management Agency (HI-EMA)* (Agreement), executed in 2016, as extended through amendment in 2023. The project would be subject to the NHPA Section 106, HRS Chapter 6E-8, and HRS Chapter 6E-42 review processes. **This letter only addresses the Section 106 portion of the overall project.**

Undertaking

A new gravity sewer system is being proposed for the Wahikuli subdivision, located north of Lāhainā Town. The Wahikuli subdivision consists of approximately 231 single-family house lots, each currently serviced by cesspools and septic systems. The proposed project would upgrade these properties to a gravity sewer system, eliminating environmental impacts from cesspools and leaking septic systems while providing a more resilient and sustainable wastewater management system, better equipped to withstand climate impacts and disasters. This project would support broader recovery efforts by enhancing residents' quality of life, promoting sustainable economic development, and increasing property values in a historically underserved area. Furthermore, it aligns with Act 125², which mandates the statewide replacement of cesspools by 2050, as amended by Act 87 to include alternative wastewater systems approved by the Hawai‘i Department of Health.

The proposed undertaking would involve designing and constructing a gravity sewer system for the Wahikuli subdivision. The new sewer system would connect to the existing Lāhainā sewer system at the operational Lāhainā No. 3 Pump Station located approximately 975 feet south of Fleming Road. The proposed connection is to the existing sanitary manhole (SMH) #10 directly in front of the wet well for the Lāhainā No. 3 Pump Station on the mauka (eastern) side of the Honoapiilani Highway, outside of Hawai‘i Department of Transportation right-of-way (ROW).

The new sewer system would be installed in County of Maui roadway ROWs. This will require trenching along all the streets within the Area of Potential Effect (APE), described below. The depth of trenching for the gravity sewer lines would range from 4 to 14-feet below grade. The sewer laterals would extend a maximum of 2-feet into the serviced house lots. The proposed action may involve installing sump or grinder pumps for certain properties where connecting to the sewer system (within the roadways) via gravity is difficult due to grade differences. Additionally, easements might be necessary for constructing sewer laterals for properties that do not have direct access to the public roadway. Both activities would take place on private property.

¹FEMA. 2019 *Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended, 42 U.S.C. 5121 et seq., and Related Authorities, United States Code, Title 42. The Public Health and Welfare, Chapter 68. Disaster Relief*. Website https://www.fema.gov/sites/default/files/2020-03/stafford-act_2019.pdf

²State of Hawai‘i. 2023 *Bill for Act 125*. Website https://www.capitol.hawaii.gov/sessions/session2023/bills/GM1226_.PDF

Area of Potential Effects

The NHPA Section 106 Area of Potential Effect (APE) for the proposed undertaking is approximately 94.8 acres, as shown in Figure 1. It includes the Wahikuli subdivision where gravity sewer lines and laterals would be installed, the section of Malo Street that would be used to connect the sewer system to the Lāhainā No. 3 Pump Station, and the Lāhainā No. 3 Pump Station property and Wahikuli Terrace Park that might be used as staging areas. The Tax Map Keys (TMKs) within the APE are listed in Enclosure 1. All project staging would occur within the APE.

Identification of Historic Properties

The identification of historic properties for the proposed undertaking included a review of the environmental setting, historic land use, prior development, and prior archaeological studies in the vicinity of the APE. SWCA Environmental Consultants are in the process of completing an Archaeological Literature Review and Field Inspection Report for the proposed undertaking. The field inspection was completed on November 8, 2024. Preliminary information and findings from the literature review and field inspections report, as well as information related to recent findings during archaeological monitoring for the Kilohana Group Housing Site, Fleming Road Permanent Sewer Line Construction Project are presented below.

Environmental Setting

The APE would be located in the coastal zone of the Wahikuli Ahupua‘a, in the Lāhainā District, on the west side of the Island of Maui. The inland portions of the ahupua‘a have crater geological formations, *pu‘u*. There are no streams in the APE. Wahikuli Stream is a non-perennial culverted, mostly underground, stream located approximately 200 feet north of the APE. The nearest perennial stream is Kahoma Stream located approximately 2,200 feet south of the APE in Lāhainā Town. Native soils in the APE consist of stony silty clay including: Wahikuli very stony silty clay (WdB), Wahikuli stony silty clay (WcB and WcC), and Ewa silty clay loam (EaA) (USDA soil survey³).

Pre-Contact

The District of Lāhainā was a favored place of residence and primary seat of government for the high chiefs of Maui (Handy et al 1991⁴). This was likely due to the mild year-round climate, abundant marine and terrestrial resources, close proximity to Lana‘i and Moloka‘i, and easy communication with other population centers in West Maui and settlements along the western and southern shores of Haleakalā. Following the unification of the islands, Lāhainā became the center

³ USDA Natural Resources Conservation Service. 2019 *Web Soil Survey*, National Cooperative Soil Survey Website <https://websoilsurvey.nrcs.usda.gov/app/>

⁴ Handy, E.S. Craighill, Elizabeth Green Handy, and Mary Kawena Pukui. 1991 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Revised ed. Bernice P. Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.

of government for the Kingdom of Hawai‘i. The APE would be within the Ahupua‘a of Wahikuli which is directly north of the former Hawaiian government capital in the District of Lāhainā.

While little evidence of pre-contact land use practices has been found to-date, the APE was likely used for transportation along the coastal region, traditional agricultural practices, and coastal food procurement.

The presence of crater (*pu‘u*) geological features inland of the proposed APE suggests the region held religious and/or ceremonial importance to native Hawaiians. Some *pu‘u* in this region are also regarded as leaping off places for the souls (*leina a ka uhane*). Additionally, Halulukoakoa Heiau (SIHP No. 50-50-03-00011) was identified in the APE from archival research. Walker (1931⁵) described Halulukoakoa Heiau as a large partially destroyed human sacrifice heiau. No surface remnants of the heiau remain today. Based on the information available the heiau was likely located within or near the modern day Wahikuli Terrace Park property.

Early Historic Period

The District of Lāhainā included a major whaling port during the height of the whaling era from 1820 to 1860. In the years 1844 and 1845, Lāhainā recorded 326 and 379 whaling vessels at port, respectively. The Ahupua‘a of Wahikuli occurs north of the whaling port and was mainly used for agriculture purposes during this time.

A Hawaiian Government survey map from 1854 shows Wahikuli was a “coaco nut tree” grove with an expansive wall separating it from the 2,914-acres of government land leased to L. Kamehameha to the east. A major government road ran along the coast connecting Wahikuli to the Ahupua‘a of Lāhainā in the south and Kanapali to the north (Figure 1).

While the majority of Ahupua‘a of Wahikuli was retained as government lands, two small Land Commission Awards (L.C.A.s) were granted in the southern portion of the ahupua‘a to J. Kaeo (L.C.A. 5483:2) and F. Keliipio (L.C.A. 477). These L.C.A.s can be seen on a map of the Ahupua‘a of Wahikuli produced by D.D. Baldwin in 1865 (Figure 2). The map also appears to note a boundary marker to the north called out as the *Pokahu* (stone) of Wahikuli.

Sugar Plantation Era

The Pioneer Mill Co. Ltd. (Pioneer Mill) began leasing the government land within the Ahupua‘a of Wahikuli in 1890. The majority of the land at this time was covered in large boulders making it only usable with hand cultivation. Some inland portions of the ahupua‘a, east of the current APE, were considered to have “good soil” and were subject to steam plow cultivation.

By 1913, the majority of the ahupua‘a was under sugar cane cultivation and the Pioneer Mill constructed a sophisticated network of agricultural fields, transportation networks, and water

⁵ Walker, Winslow. 1931 Archaeology of Maui. Bernice Pauahi Bishop Museum, Honolulu.

control systems serving the plantation which covered a vast area extending throughout the District of Lāhainā.

By the 1930's the plantation footprint reduced within Wahikuli with the development of homestead lots along the seaward portions of ahupua'a. The homesteads lots were planned for development along the less desirable rocky soil portions of the former agricultural fields, however maps from this era show the Pioneer Mill retained an extensive network of agriculture fields, water control features, railroads, and unimproved plantation roads within Wahikuli (Figure 3).

The Pioneer Mill remained in operation within the Ahupua'a of Wahikuli until 1999, however the majority of the mill's operations occurred within the Ahupua'a of Lāhainā. While Wahikuli included mainly production fields and related infrastructure, the Pioneer Mill's more notable components such as the main office building and iconic smokestack were located south of the current APE in the Ahupua'a of Lāhainā. The majority of the Pioneer Mill's business infrastructure was located along Lahainaluna Road in Lāhainā town (Figure 4). The workforce labors lived within the town which is very dense with L.C.A.s.

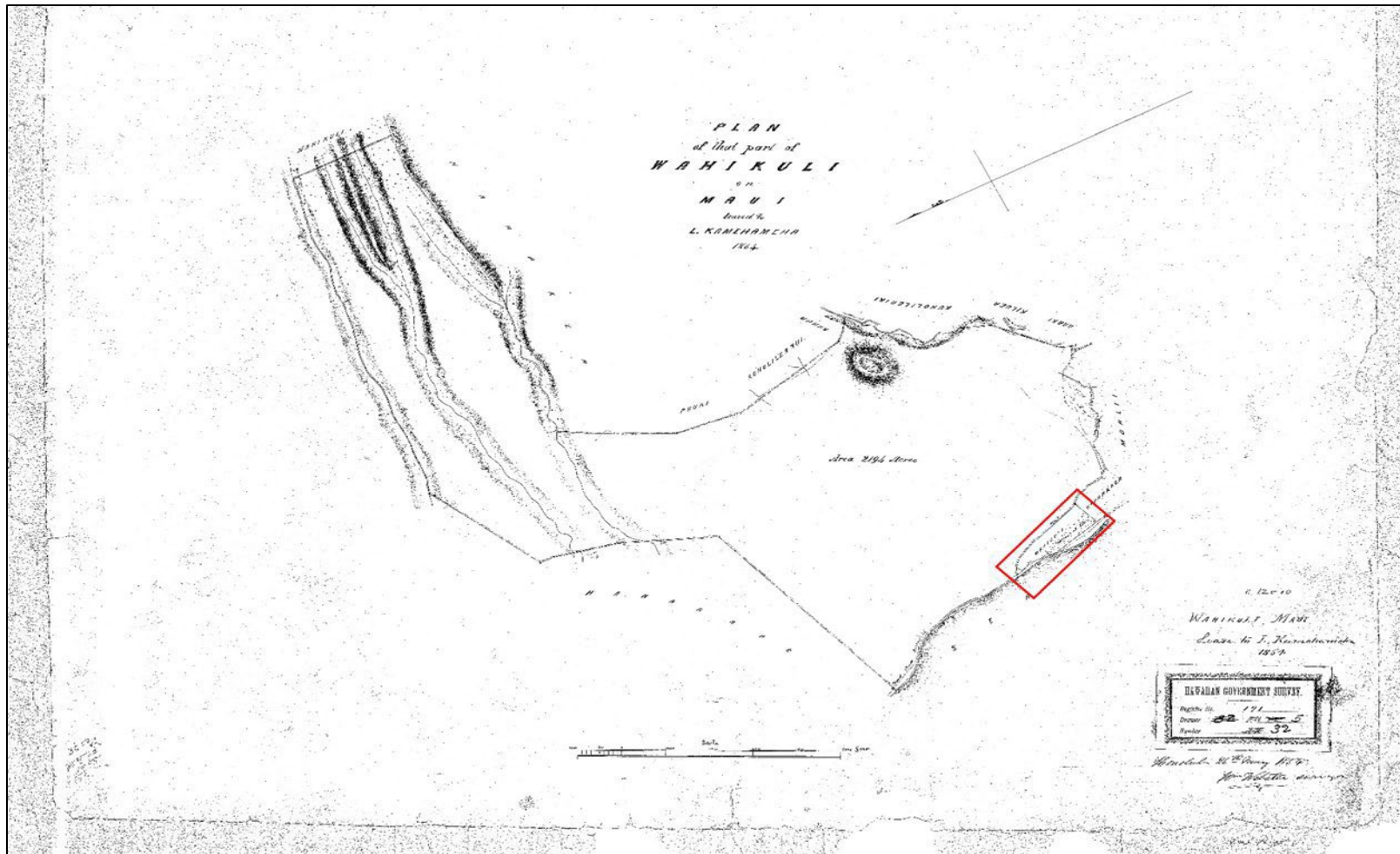


Figure 1. Hawaiian Government survey map from 1854 showing Wahikuli was a “coaco nut tree” grove with an expansive wall separating it from the 2,914-acres of government land.

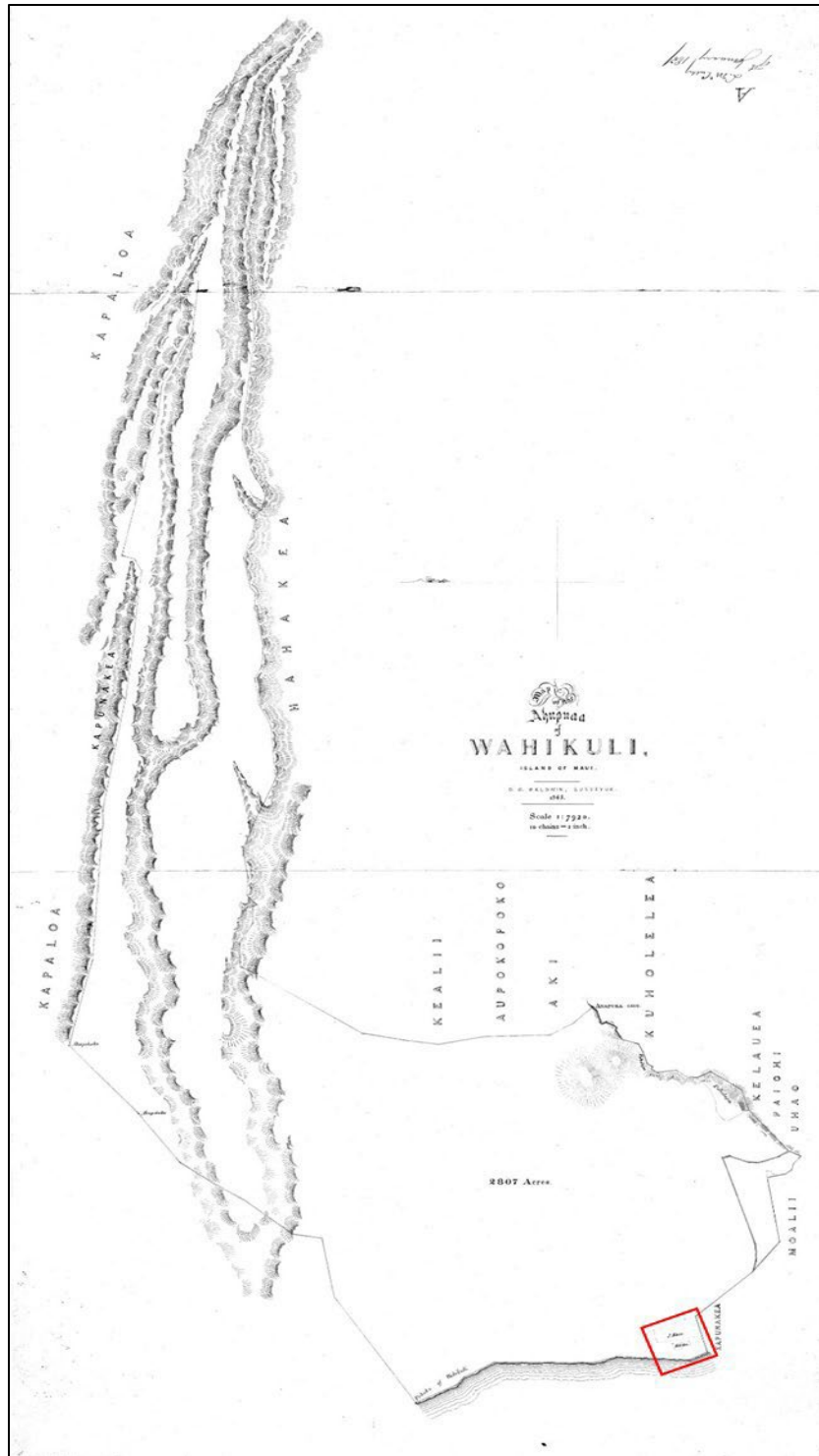


Figure 2. Map of the Ahupua'a of Wahikuli showing the locations of L.C.A. 5483:2 and L.C.A. 477 (D.D. Baldwin 1865).

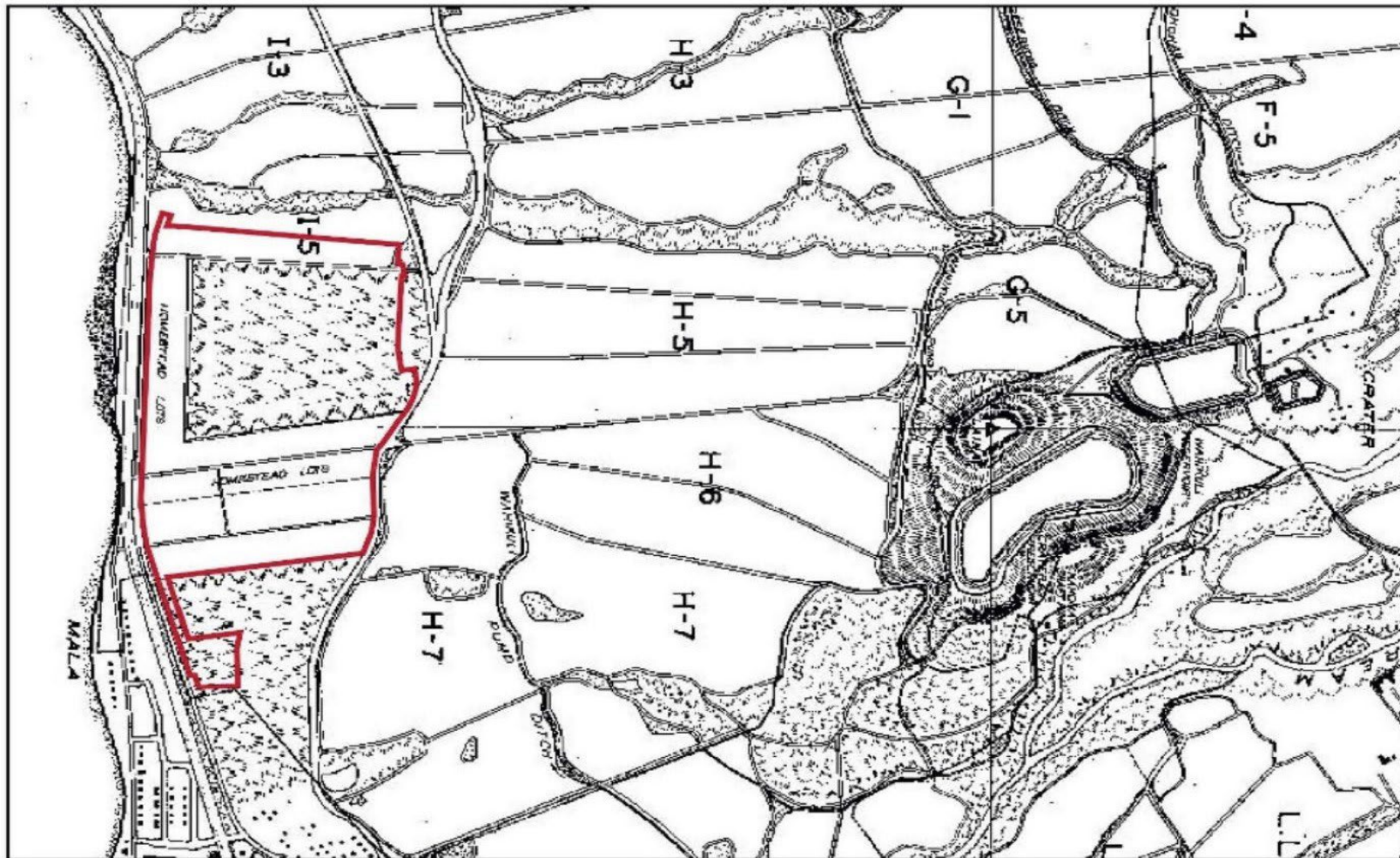


Figure 3. 1938 Pioneer Mill Co. Map depicting “Homestead Lots” mapped within the APE and surrounded by agricultural fields.

NPS Form 10-900-a
(8-86)

OMB No. 1024-0018

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section 8 Page 37 Pioneer Mill Company, Ltd. Office
name of property

Maui, HI
county and state

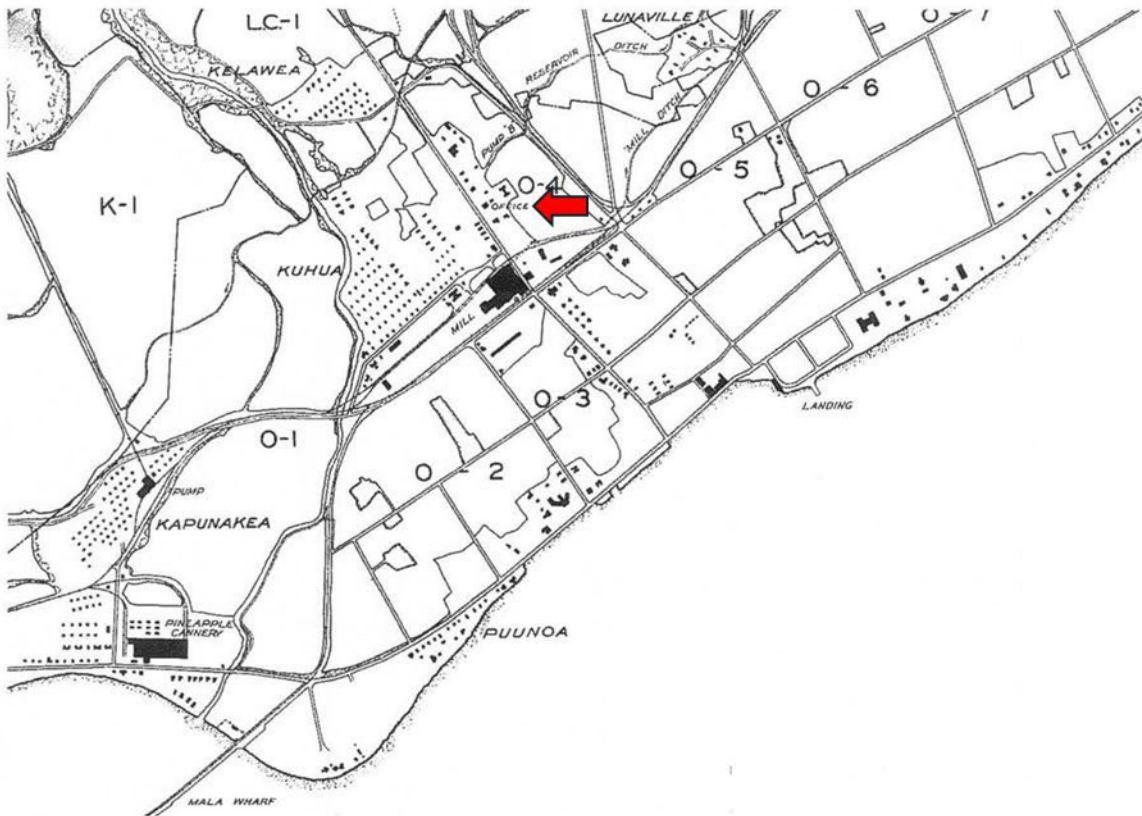


Figure 13. Lahaina, Maui, Pioneer Mill Company Field Map (1930). Pioneer Mill Co., Ltd. 1930.

Figure 4. Map showing the location of the main Pioneer Mill office and business infrastructure along Lahainaluna Road in Lāhainā town (Maui County Planning Department’s NRHP nomination form for the Pioneer Mill Company, Ltd. Office, Solamillo 2007).

House Lot Development

Following the early economic success of the Pioneer Mill, public interest in beach and house lots in Wahikuli for homesteading reached a high demand. By the 1920's, government property in Wahikuli was auctioned off and about two-thirds of the lots sold for more than the demand price (Figure 5).

The development of these lots occurred in five stages (1st through 5th Series) and included plans for a more robust roadway system serving the new community. The 1st Series included the development of Lots 1 through 12 along Malo Road and included the construction of three new roads including Kaniau Road, Kalani Road, and Kekai Road. The 2nd Series included the development of Lots 13 through 33 along Wahikuli Road and included the construction of Kapunakea Road. The 3rd Series included the development of Lots 34 through 57 along Fleming Road and included an extension of Kapunakea Road which was renamed Ainakea Road in 1943 (Figure 6). These first three series of construction are also referred to as “homestead lots” in government survey maps and are much larger than the lots in the final two series of development. An aerial photograph from 1949 shows the 1st and 2nd Series of house lots fully developed and what appears to be initial construction phases of the 3rd Series of house lots (Figure 7).

By 1964 access to the seaward portion of the ahupua'a had greatly increased with the construction of the Honopaliilani Highway (Federal Aid Project S-0300-1), while the inland portions remained in sugar cane cultivation under the control of the Pioneer Mill. A small portion of seaward lands were retained as government lands to be further developed as part of the Wahikuli House Lot (Figure 8). The 4th Series (Lots 1 through 74) were developed around the newly constructed Puuipo Street, Malanai Street, AA Street, and an extension of Ainakea Street. A small portion of the government lands (96,412 square feet) occurring at the corner of Ainakea Road and Kekai Road were retained as a park reserve (Figure 9). An aerial photograph dated 1965 shows the 3rd Series of house lots completed and what appears to be the early stages of development of the 4th Series of house lots (Figure 10).

The 5th Series of the Wahikuli House Lots (Lots 1 through 72) was planned in 1974 and included the development of the remaining government lands along Kaniau Road, Malanai Street, and AA Street and included the construction of Lokia Street (Figure 10). An aerial photograph dated 1976 shows all five series of development completed (Figure 11).

The State Historic Preservation Division (SHPD) reviewed several submissions associated with the more recent development and utility improvements within the subdivision as summarized below. However, an archaeological inventory survey (AIS) was never performed for the area.

- February 14, 1991 (Log No. AG:aal 2/14/91, Doc. No. 1476a/2232). Preliminary Plat Review of Lot 14 of the Wahikuli House Lots Second Series. Determination “*No Historic Properties Affected*”
- April 7, 1992 (Log No. 4950, Doc. No. 2203A). Preliminary Plat Review of the Wahikuli House Lots LUCA File No. 4.664 (TMK: [2] 4-5-014:005). Determination “*No Historic Properties Affected*”

- February 7, 2003 (Log No. 31666, Doc. No. 0302CS07). Final Plat and Subdivision Review for the Wahikuli House Lots Subdivision File No.: 4.815 (Log No. 31666, Doc. No. 0302CD07). Additional information was requested regarding a rock wall. No record of a final determination.
- July 25, 2019 (Log No. 2019.00128, 1907LS01). Preliminary Plat Map Review (File No. 2.2914), 183 Fleming Rd., Lāhainā – Eric & Willa Romanchak Subdivision, Wahikuli House Lots 3rd Series. Determination “*No Historic Properties Affected / No Objections*”
- August 25, 2022 (Project No. 2022PRE00841, Doc. No. 2208AM20). County of Maui, Department of Public Works, Engineering Division Central and West Maui Drain-Line Repair, Wahikuli House Lots 4th and 5th Series (DPW Job No. 22-04). Determination “*No Historic Properties Affected*”

All five series of development within the Wahikuli House Lots were impacted by the Lāhainā wildfires on August 8, 2023. Based on aerial photographs of the area, 40 lots appear to retain intact structures on them to date. Table 1 below lists the address and build dates for the lots that appear to retain intact structures within the subdivision. Each lot has been correlated with the associated development series and architectural style based on the year built. The architectural styles include the Homestead Era (pre-1941), World War II/Post-war Era (1941-1959), and Modern Era (1960 to present). The majority of the surviving structures appear to be from the Modern Era (1960 to present). Two properties were identified on Wahikuli Road that may contain Homestead Era buildings. The current undertaking is not anticipated to affect any of the existing buildings on any of the properties within the APE.

Table 1. Properties within the APE with Intact Structures

TMK No.	Address	Development Series	Architectural Style	Year Built (Eff Year Built)	Function
(2) 4-5-014:057	142 Fleming Rd (Major Damage)	3 rd Series	World War II/Post-War Era / Modern Era	1949 (1995) / 2019	Residence / Condominiums
(2) 4-5-014:001	113 Fleming Rd (Destroyed)	3 rd Series	World War II/Post-War Era / Modern Era	1952 (1994) / 2003	Residence / Ohana Addition
(2) 4-5-014:036	115 Fleming Rd / 117 Fleming Rd	3 rd Series	World War II/Post-War Era / Modern Era	1955 / 1988 / 2019	Residence / Condominiums
(2) 4-5-014:037	123 Fleming Rd	3 rd Series	World War II/Post-War Era	1956	Residence

TMK No.	Address	Development Series	Architectural Style	Year Built (Eff Year Built)	Function
(2) 4-5-014:090	131 Fleming Rd	3 rd Series	Modern Era	1960 (1985) / 1991	Residence
(2) 4-5-014:038	1491 Ainakea Rd	3 rd Series	Modern Era	2006	Residence
(2) 4-5-014:098	1495 Ainakea Rd	3 rd Series	Modern Era	2011	Residence
(2) 4-5-014:005	130 Wahikuli Rd / 1497 Ainakea Rd	2 nd Series	Homestead Era / Modern Era	1928 (1952) / 1989 / 1990	Residence / Condominiums
(2) 4-5-014:003	114 Wahikuli Rd	2 nd Series	Homestead Era	1940 (1959)	Residence
(2) 4-5-014:063	1500 Malo St	1 st Series	Modern Era	1983	Residence
(2) 4-5-014:104	1518 Malo St	1 st Series	Modern Era	1961 / 1987	Iglesia Ni Cristo-Locale of Lahaina Church
(2) 4-5-014:061	1512 Malo St	1 st Series	World War II/Post-War Era	1950	Residence
(2) 4-5-014:010	1526 Malo St	1 st Series	Modern Era	1998	Residence
(2) 4-5-014:060	115 Wahikuli Rd / 107 Wahikuli Rd	2 nd Series	Modern Era	1967 / 2014	Residence
(2) 4-5-014:065	129 Wahikuli Rd	2 nd Series	Modern Era	1970	Residence
(2) 4-5-014:006	133 Wahikuli Rd	3 rd Series	World War II/Post-War Era	1943	Residence
(2) 4-5-014:017	1594 Malo St	1 st Series	Modern Era	1964 (1983)	Ko e Siasi'o Sisu Kalaisi 'oe Kau Ma'oni'oni Church
(2) 4-5-027:008	1627 Ainakea Rd	4 th Series	Modern Era	1967 / 1977	Residence
(2) 4-5-027:009	1635 Ainakea Rd	4 th Series	Modern Era	1967	Residence
(2) 4-5-027:010	1641 Ainakea Rd	4 th Series	Modern Era	1968	Residence
(2) 4-5-027:011	1647 Ainakea Rd	4 th Series	Modern Era	1968/1979	Residence
(2) 4-5-027:012	1657 Ainakea Rd	4 th Series	Modern Era	1968	Residence
(2) 4-5-027:013	1665 Ainakea Rd	4 th Series	Modern Era	1969	Residence
(2) 4-5-027:014	1671 Ainakea Rd	4 th Series	Modern Era	1968	Residence
(2) 4-5-028:066	1565 Lokia St / 229 Malanai St	5 th Series	Modern Era	1977 / 1990	Residence

TMK No.	Address	Development Series	Architectural Style	Year Built (Eff Year Built)	Function
(2) 4-5-028:065	1579 Lokia St	5 th Series	Modern Era	1977	Residence
(2) 4-5-028:064	1587 Lokia St	5 th Series	Modern Era	1977	Residence
(2) 4-5-028:039	232 Malanai St	4 th Series	Modern Era	1980	Residence
(2) 4-5-028:036	211 Malanai St / 1564 Aa St (5 th Series	Modern Era	1969	Residence
(2) 4-5-028:044	1580 Aa St	5 th Series	Modern Era	1976	Residence
(2) 4-5-028:046	1594 Aa St	5 th Series	Modern Era	1974	Residence
(2) 4-5-027:050	11 Kaniau Rd	5 th Series	Modern Era	1974	Residence
(2) 4-5-027:051	19 Kaniau Rd	5 th Series	Modern Era	1986	Residence
(2) 4-5-027:052	27 Kaniau Rd	5 th Series	Modern Era	1975	Residence
(2) 4-5-027:053	33 Kaniau Rd	5 th Series	Modern Era	1975	Residence
(2) 4-5-027:054	41 Kaniau Rd	5 th Series	Modern Era	1977	Residence
(2) 4-5-027:056	61 Kaniau Rd	5 th Series	Modern Era	1975	Residence
(2) 4-5-027:057	67 Kaniau Rd	5 th Series	Modern Era	1975 (1986)	Residence
(2) 4-5-027:058	75 Kaniau Rd	5 th Series	Modern Era	1974	Residence
(2) 4-5-028:082	161 Kaniau Rd	5 th Series	Modern Era	1977	Residence

Maui News

WAILUKU, MAUI COUNTY, HAWAII, FRIDAY, JANUARY 28, 1921. PRICE 7 CENTS

WAILUKU TEMPERATURES

January 21	Max.	Min.	Rainfall
" 22	82	75	00
" 23	81	68	00
" 24	79	64	00
" 25	75	66	04
" 26	76	66	00
" 27	80	65	00

Rainfall .94 inches.

Maui News

WAILUKU, MAUI COUNTY, HAWAII, FRIDAY, JANUARY 28, 1921. PRICE 7 CENTS

NEXT WEEK'S MAILS

From the Coast—Kono Maru, Sunday; Simons, Monday; Albatross, Tuesday.

To the Coast—Wahaloa and Tropic Star, Wednesday; Makani (For Vancouver), Friday.

COUNTY LIBRARY LAW FOR WOMAN'S CLUB IS DRAFTED

Measure as Prepared Will be Submitted First to Attorney General and Later go to Legislature.

In preparation for the creation of county libraries and the establishment of a library on Maui conferences were held this week and a bill prepared for presentation to the legislature. The meeting was called by the Library Committee of Maui Woman's Club composed of Katherine M. Case, chairman, Gertrude M. P. Moir, Katherine Hadden, Louise C. Jones and Marie G. Vincent. H. H. Punalow, president of the Chamber of Commerce, D. C. Lindsay, representing the board of education, R. E. Kalama, chairman of the board of supervisors, Senator Harold W. Rice, representing the legislature, J. H. Gray, representing the press and D. H. Case as legal adviser were invited and Messrs. Rice, Punalow, Case and Gray participated in drawing the measure.

Two meetings were held, one on Monday and one yesterday. At the latter meeting it was said a bill was being prepared by the attorney general and Senator Rice will take the bill to him next week in an effort to have the proposed law made an administration measure.

A proposal to make the Library of Hawaii subject to draft for books from county libraries will be presented as an amendment to the present Library of Hawaii law.

Maui's Library Bill

The measure designed to secure a library for Maui and each other counties as may desire them follows:

Section. The Boards of Supervisors of the several counties of the Territory of Hawaii shall have power to establish and maintain, within their

"Tom" Clark, One-time Prominent in Island Politics, Passes on

"Tom Clark is dead. He passed away at Mahaloa Hospital this morning following a stroke of apoplexy at his home on Wednesday evening. There has passed from the stage one of the best known of the Hawaiians on Maui, one who, in his day was a prominent figure in the troubled politics that followed annexation, was ranked prominently as a public speaker and wielded no inconsiderable influence among his people and when in his declining years, held the esteem of those who knew him as an efficient holder and a man by reason of his conscientious and faithful performance of his duties in office as well as in life.

"Tom" was at the court house in Honolulu on Wednesday, returned to his home and, after supper, was talking with his adopted son when he was stricken. He was taken to Mahaloa Hospital and never rallied.

Long a sufferer from asthma, Clark had been failing for several years and his declining health was more noticeable for the past year. Though he was daily at his duties it took him some time to make his way from a to his home.

In early years Clark was a cowboy and established a reputation in that profession in which he always was prominent.

When the first county home law was passed he was appointed district magistrate and served for about two weeks until the law was held unconstitutional. At the first county election he was elected deputy sheriff and served one term in that office. Mr. Judge Edman went on the bench and was named as court bailiff.

It was especially well compensated for Prince David that Clark won his reputation as an orator in the Hawaiian tongue, one which he sustained for several years until failing health rebuked him from the speaker's platform.

This morning court adjourned in

Active Demand For Wahikuli Beach And House Lots Stimulates Bidding

Demand for beach and house lots at Lahaina is shown by the fact that every lot in the Wahikuli group that was offered at public auction at Lahaina last Monday sold for more than the upset price set by the government. In some instances the parcels were knocked down to bidders who offered from two to three times the upset price. Two thirds more than the demanded figures were paid by the successful bidder for the 13 parcels. With the exception of one bidder from Wailuku, one from Makawao and one from Honolulu, all of the purchasers are residents of Lahaina.

The following table gives full details of the offerings, prices bought and purchasers:

No.	Square Feet	Upset Price	Purchase Price	Purchaser
Beach Lots.				
1.	14205	Withdrawn.		
2.	5207	1450.00	4237.00	Chas. Aho, Lahaina.
3.	5028	452.00	712.00	Katie Mullenbarr, Lahaina.
4.	8884	445.00	865.00	J. N. Root, Lahaina.
5.	7124	277.00	680.00	Ned Nicholas, Wailuku.
6.	6107	306.00	460.00	David T. Fleming, Lahaina.
7.	4128	207.00	335.00	Catholic Church, Honolulu.
House Lots.				
1.	.76	\$500.00	\$500.00	F. B. Cameron, Makawao.
2.	.29	500.00	600.00	John F. Silva, Lahaina.
3.	1.16	400.00	700.00	Sam Aho, Lahaina.
4.	1.00	350.00	720.00	Thomas Hussey, Lahaina.
5.	1.00	250.00	655.00	Wm. Searborn, Lahaina.
6.	.91	350.00	675.00	Manuel Castro, Lahaina.
7.	.51	350.00	410.00	Chauncey Miles, Lahaina.
8.	1.00	200.00	411.00	Y. K. Chew, Lahaina.
9.	.51	200.00	471.00	Gilbert Yamashita, Lahaina.
10.	.51	200.00	600.00	K. Yanagihara, Lahaina.
11.	1.00	200.00	700.00	Antone D. Furtado, Lahaina.
12.	1.00	200.00	670.00	Annie Stark, Lahaina.
			\$5,583.00	\$10,758.00

Sleepers Awakened by Shouts of "Fire" Flee Hastily None Too Soon

Alarmed by shouts of "Fire, Fire,"

Banana Plantations On Paying Basis and Four Months Young

Hawaii Banana Plantations, Ltd.

Simulate Demand For Canned Pineapples is W. A. Baldwin's Advice

Organization of Hawaiian Island pineapple packers to plan ways of simulating demand for the fruit abroad is advocated by W. A. Baldwin, vice-president and assistant manager of the Hilo Pine Fruit and Packing Company of Hilo, who returned Wednesday morning following a vacation in San Francisco since December 1.

The Griffith-Lacey company of San Francisco is the mainhand representative and controlling factor in the fruit company, and Mr. Baldwin held a private conference with the San Francisco firm, headed during his absence, Mr. Baldwin says.

The pineapple packers of the Islands are more fortunate than most fruit canners. The volume of business during 1920 was remarkable.

The bulk of the recent pack of more than 4,000,000 was sold. Pineapple is more popular than any other fruit, and this, coupled with the fact that it is sold at a lower price than any other fruit, has still further popularized this delicacy.

Like much else at present, the pineapple market is dull. The Hawaiian packers should get together and devise ways and means to meet the situation by still further stimulating consumption to balance the increased production.

Journalists of World Will be Invited to Make Visit to Maui

Newspaper men from all parts of the Islands are to meet in Honolulu a week from tomorrow to make preliminary plans for the International Press Congress which is to be held in the Islands October 4-14, next.

The congress is to be not one of the several Pan-Pacific Congresses or

BUSINESS MEN SQUARELY BACK OF BOY SCOUTS

Annual Meeting Shows Year of Great Importance and Makes Plans For Large Expansion in Future.

Maui Council of the Boy Scouts of America held its annual meeting in the Chamber of Commerce rooms on Wednesday afternoon, elected officers for the year and adopted plans, which will tend to make 1921 even more successful than was last year, called in the report of the executive secretary "a year which will stand out for a long time as most important in the history of scouting on Maui." The importance which attaches to the Boy Scout movement was shown by the caliber of the men in attendance and the keen interest shown by all those present in all of the proceedings.

Officers Elected

Officers for the year of the council are: C. D. Larkin, president; Dan T. Carey, vice-president; Walter Emale, treasurer; and W. P. Crockett, secretary. The executive secretary is again C. S. Childs. W. H. Hinton is scout commissioner and C. L. Bowler is deputy commissioner for Lahaina. Following the election of officers, was read the report of the executive secretary, which will be printed in full in next week's issue of Maui News, and the treasurer's report showing a balance on hand of \$70. Later the names of several who had moved from the county were stricken from the roll and a score of new members admitted to the council.

The report of the secretary told of the formation of troops at Wailuku, Paunoi, Paia, Makawao, Kahului, Spreckelsville, Lahaina, Kipahulu, Wahee and Pukalani and requests for organization from groups at Keope, Wailuku, Hanalei and Hilo.

Figure 5. Excerpt from the Maui News dated Friday, January 28, 1921, regarding the auction of the Wahikuli Beach and House Lots.

www.fema.gov

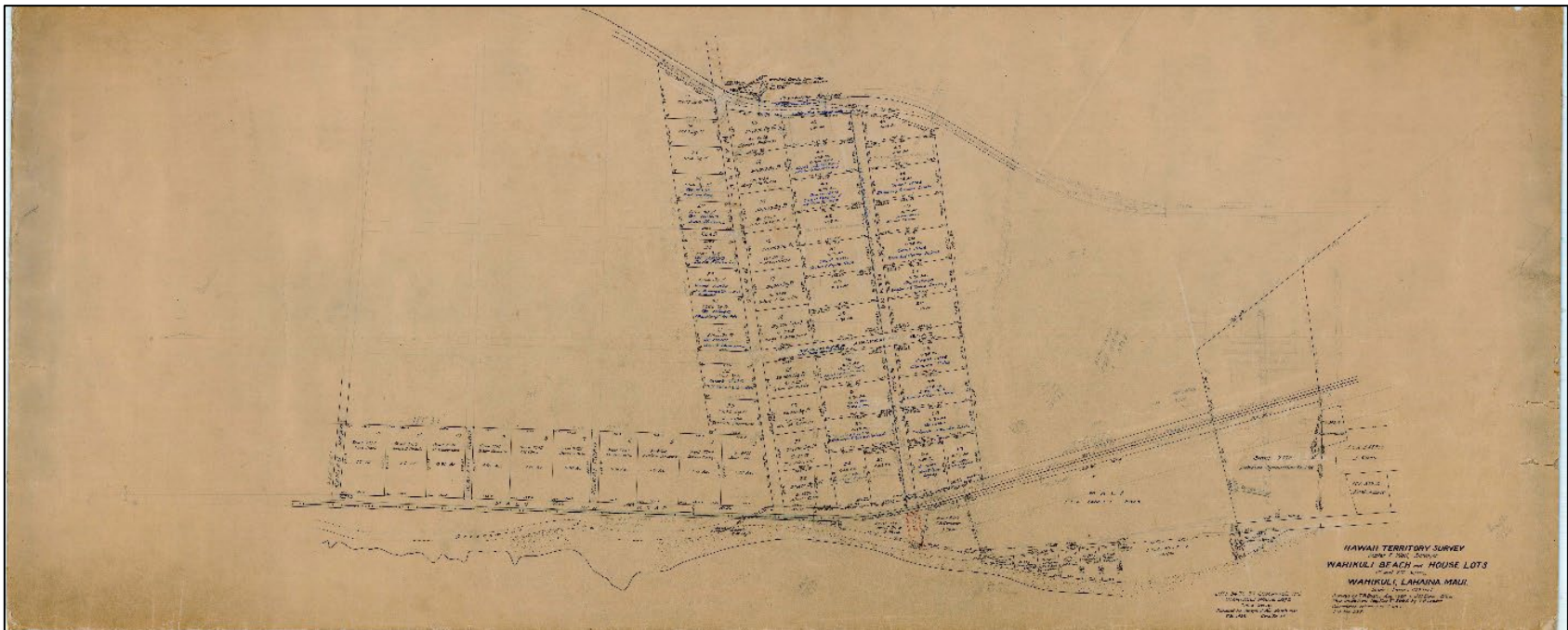


Figure 6. Hawaii Territory Survey Map of the Wahikuli Beach and House Lots 1st, 2nd, and 3rd Series (Aiu 1943).



Figure 7. Aerial photograph from 1949 showing the status of development within the 1st, 2nd, and 3rd Series house lots (homestead lots).

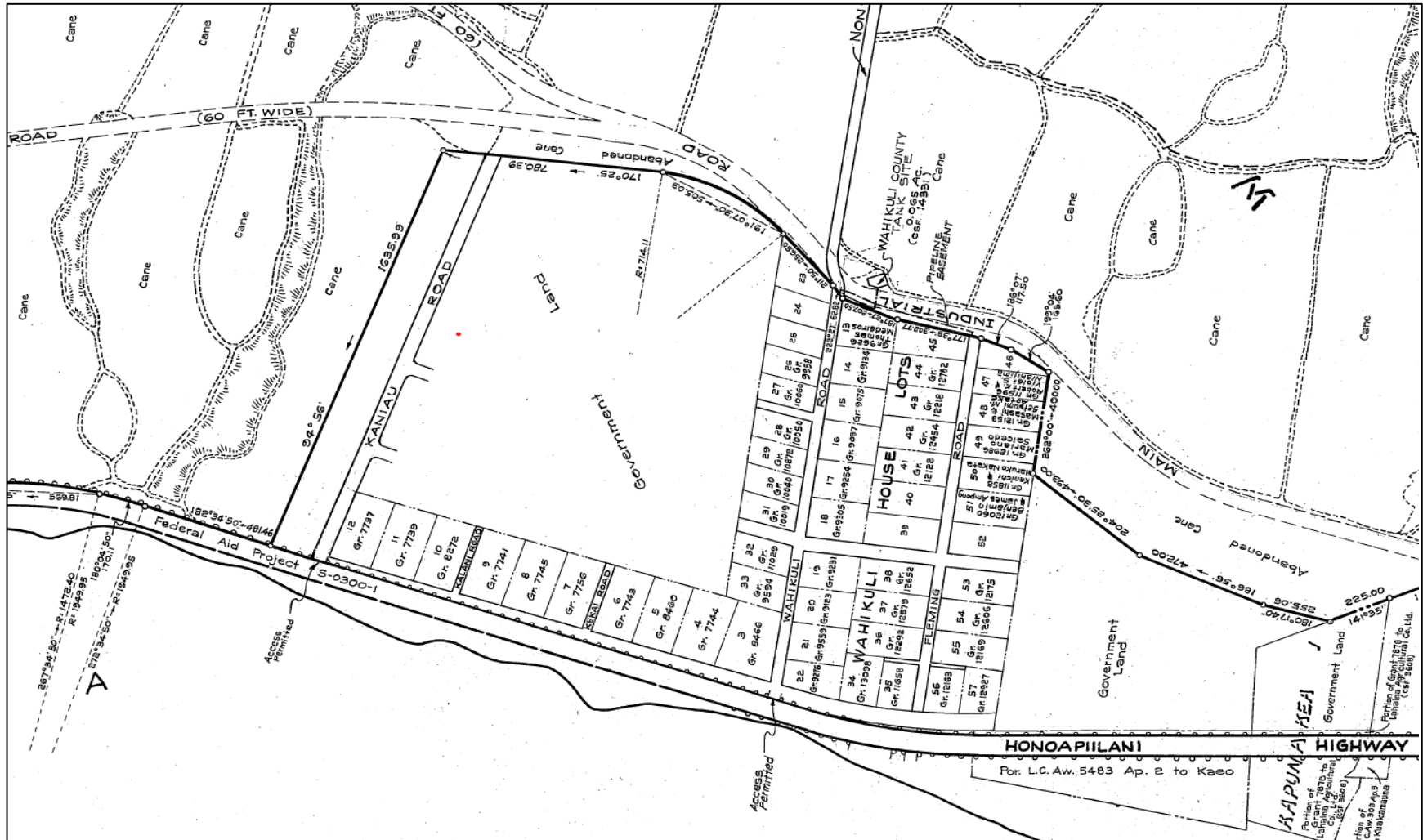


Figure 8. State of Hawaii Department of Accounting and General Services map showing the development of the Wahikuli House lots and surrounding area (Fukuyd1964).

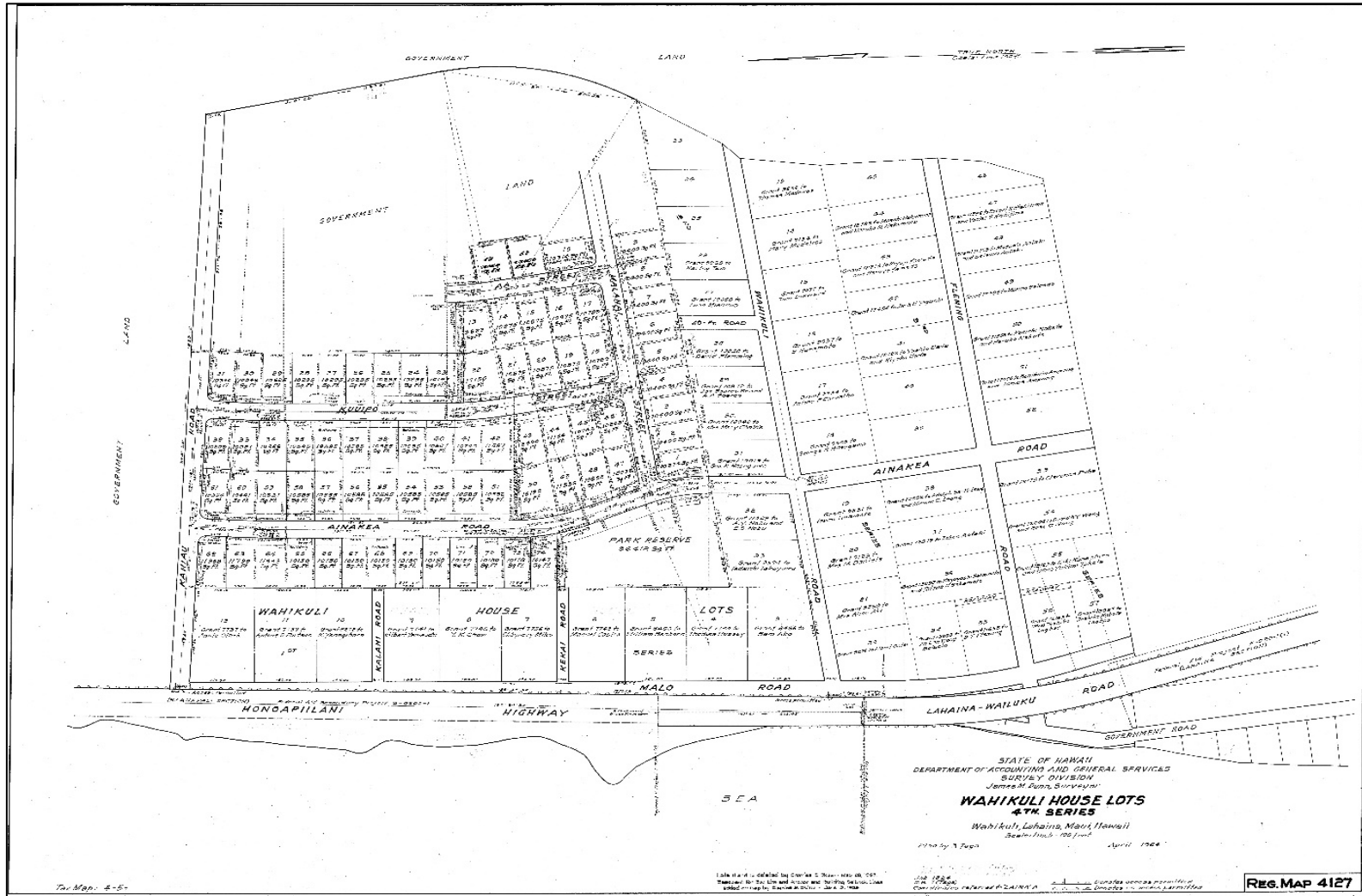


Figure 9. State of Hawaii Department of Accounting and General Services Map for Wahikuli House Lots 4th Series.

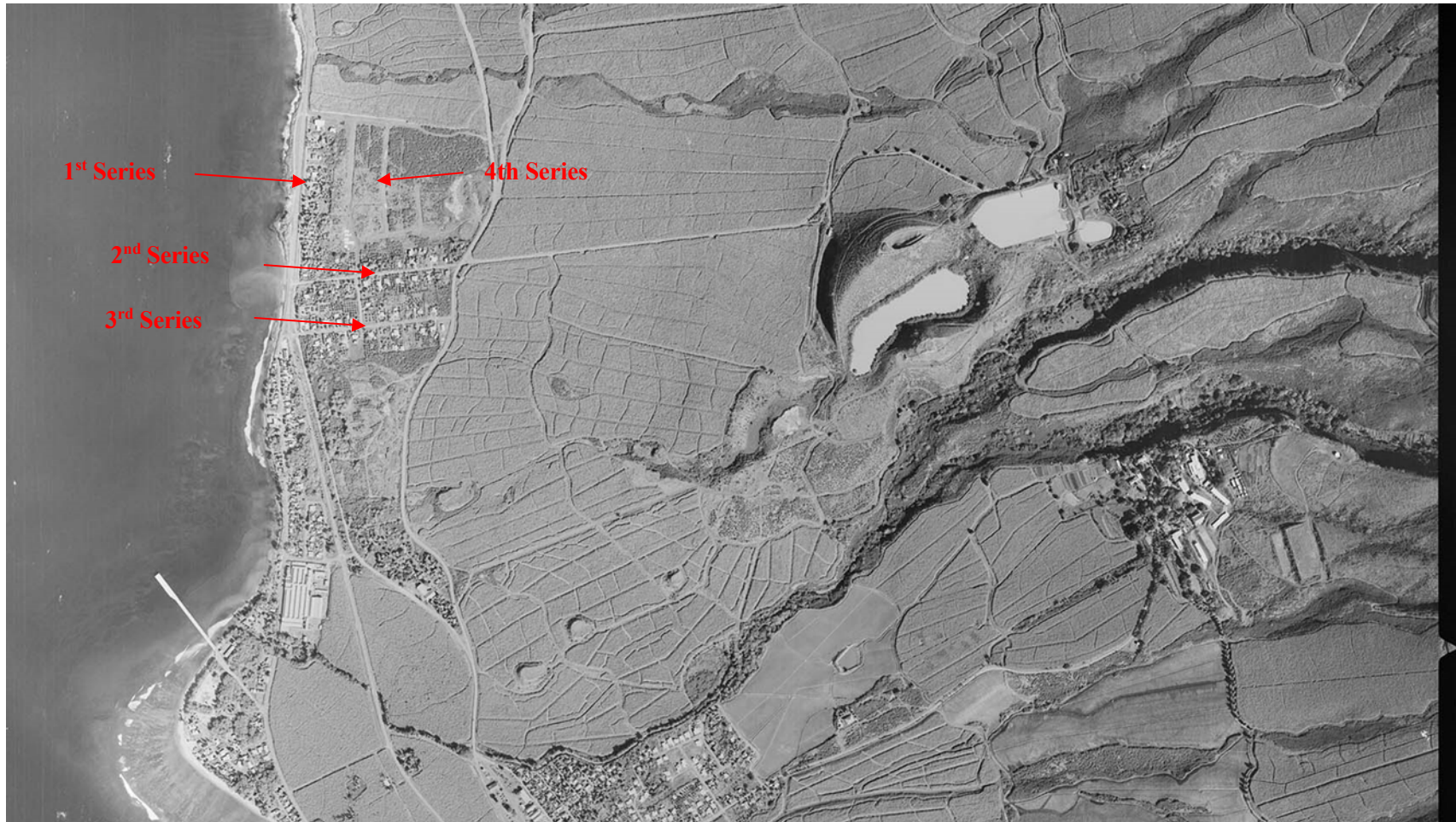


Figure 10. USDA aerial photograph dated 1965 showing the status of development within the 1st, 2nd, 3rd, and 4th Series house lots.



Figure 11. State of Hawaii Department of Land and Natural Resources as built plans for the Wahikuli House Lots Subdivision 5th Series (1972).

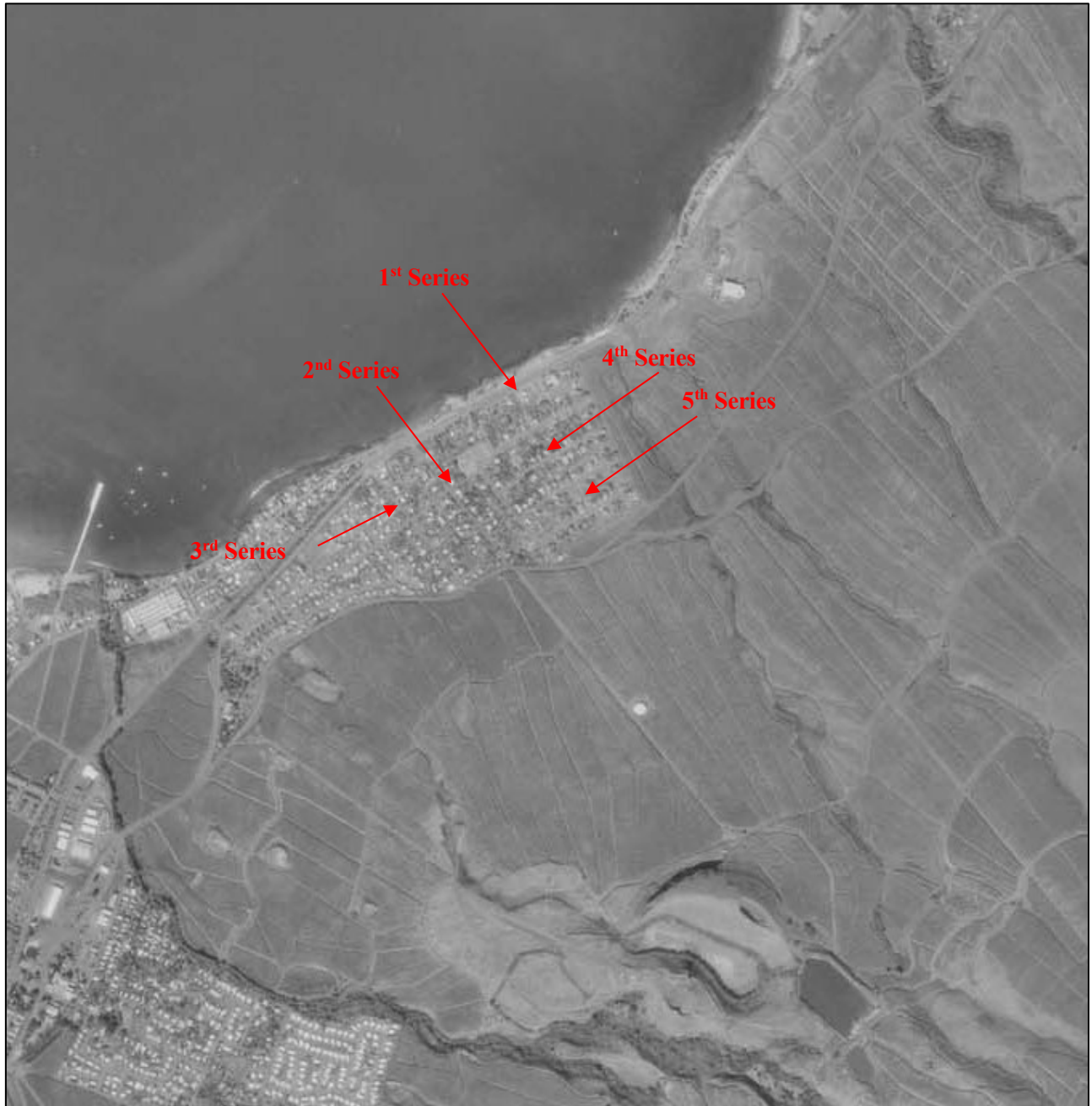


Figure 12. USGS aerial photograph dated 1976 showing all five series of the Wahikuli House Lots fully developed.

Prior Archaeological Studies

No archaeological studies have been performed in the APE for the proposed undertaking; however, numerous archaeological studies have been conducted in the vicinity of the APE. Prior archaeological studies in the project vicinity are listed and summarized in Table 2. Figure 13 shows the locations of most of these studies.

Table 2. Prior Archaeological Studies in the Project Vicinity

Reference	Type of Study	Location	Findings (SIHP No. 50-50-03-)
Walker (1931) ⁶	Island wide survey focused on large-scale architecture or traditional ceremonial <i>heiau</i> sites	Halulukoakoa Heiau – Wahikuli Terrace Park TMK: (2) 4-5-030:016	Described Halulukoakoa Heiau (SIHP No. 50-50-03-00011). Note: Within the APE
Keau (1981) ⁷	Reconnaissance survey	Hāhākea Beach Park; TMK: (2) 4-4-06:033	No historic properties identified.
Neller (1982) ⁸	Reconnaissance survey	Hāhākea Beach Park; TMK: (2) 4-4-06:033	Notes a previously identified historic property, SIHP No. - 01204, grinding stone.
Haun (1988) ⁹	Reconnaissance survey with subsurface testing	Lahaina Cannery; TMKs: (2) 4-5-05:009 through 011; TMK: (2) 4-5-011:003	Identified a buried pre-Contact cultural layer and pond field sediments. Note: The study area and cultural layer for the reconnaissance survey are over 1,000 feet south of the APE for the proposed undertaking.

⁶ Walker, Winslow. 1931 *Archaeology of Maui*. Bernice Pauahi Bishop Museum, Honolulu.

⁷ Keau, Charles. 1981 *Archaeological Reconnaissance (Surface Survey) for Hanakao 'o (Hahakea) Beach Park*. SHPD, Honolulu, Hawai'i

⁸ Neller, Earl. 1982 *An Archaeological Reconnaissance of Hahakea Beach Park, Hanakaoo, Maui TMK: 4-4-06: 33; Archaeological Reconnaissance (Surface Survey) for Hanakaoo (Hahakea) Beach Park*. SHPD, Honolulu, Hawai'i.

⁹ Haun, Alan E. 1988 *Subsurface Archaeological Reconnaissance Survey Lahaina Cannery Makai and Mauka Parcels, Land of Moalii, Lahaina District, Island of Maui (TMK: 4-5-05:9,10,11; 4-4-11:3)*. Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai'i.

Reference	Type of Study	Location	Findings (SIHP No. 50-50-03-)
Jensen (1989) ¹⁰	AIS	Lahaina Master Plan development area; Hāhākea Gulch, Kahoma Stream, Crater Reservoir. Note: This study area is directly adjacent to and inland of the APE for the proposed undertaking.	Identified 11 new historic properties: SIHP Nos. -02478 through -02485 and -02488, agricultural features (terraces and walled enclosures), SIHP No. -02486, large formal cairn/marker and 13 mounds interpreted as probable graves/grave markers; and SIHP No. -02487, historic agricultural access road; assessed components of a previously identified historic property, SIHP No. -01203, Kahoma Complex; SIHP Nos. -02478 and -02480. Note: All of the sites identified are over 3,000 feet inland of the APE for the proposed undertaking.
Kennedy and Denham (1992) ¹¹	AIS	Proposed baseball complex adjacent to the Lahaina Civic/Recreation Center; TMK: (2) 4-5-021:003	No historic properties identified.

¹⁰ Jensen, Peter M. 1989 *Archaeological Inventory Survey Lahaina Master Planned Project Site, Land of Wahikuli, Lahaina District, Island of Maui*. Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai‘i.

¹¹ Kennedy, Joseph, and Tim Denham. 1992 *Archaeological Inventory Survey Report for Proposed Baseball Complex Adjacent to the Existing Lahaina Civic/Recreation Center Located at Lahaina, Island of Maui TMK: (2) 4-5-21:03*. *Archaeological Consultants of Hawaii, Inc.*, Haleiwa, Hawaii.

Reference	Type of Study	Location	Findings (SIHP No. 50-50-03-)
Fredericksen and Fredericksen (2003) ¹²	AIS	Kā'anapali and Honokowai	Recorded 81 newly identified historic properties, SIHP Nos - 05241 through -05321, consisting of pre-Contact to post-Contact agricultural sites, habitation areas, petroglyph panel sites, plantation era sites, and possible ceremonial areas, shrines, burial features, also further documented SIHP # - 02893, Puukolii Cemetery Note: All of these sites are located along Wahikuli Gulch, which is over 4,000 feet from the APE for the proposed undertaking.
Lee-Greig et al. (2008) ¹³	AIS	17.5-acre area for a realignment section (Phase 1A) of Honoapi'ilani Highway	Identified SIHP Nos. -06492 and -06596, two push piles remnant of agricultural field improvement activity; project prompted by inadvertent discovery of SIHP No. -06277, a system of over 400 historic agricultural terraces. Note: All of the sites identified are over 2,000 feet inland of the APE for the proposed undertaking.
Formolo et al. (2005) ¹⁴	AIS	Keawe Street roadway extension; TMK: (2) 4-5-021:003, 022 pors.	No historic properties identified

¹² Fredericksen, Erik M., and Demaris L. Fredericksen. 2003 *An Archaeological Inventory Survey of the Ka'anapali 2020 Project Area, Located in Hanakao'o and Honokowai Ahupua'a, Lahaina District, Island of Maui TMK: 4-4-02, 4-4-04, 4-4-05, 4-4-06*. Xamanek Researches, Pukalani, Hawai'i.

¹³ Lee-Greig, Tanya L., Robert Hill, and Hallett H. Hammatt. 2008 *An Archaeological Inventory Survey Report for the Realignment of a Section of the Honoapi'ilani Highway Phase IA Kelawea, Paeohi, and Wahikulu Ahupua'a, Lāhainā District, Maui Island TMK: (2) 4-5-021, 010, 015, and 031: Multiple Parcels*. Cultural Surveys Hawai'i, Inc., Wailuku, Hawai'i.

¹⁴ Formolo, Holly, Lisa J. Rotunno-Hazuka, and Jeffrey Pantaleo. 2005 *Archaeological Assessment Report for the Proposed Keawe Street extension Hanaka'o'o Ahupua'a, Lahaina District, Island of Maui TMK 4-4-08:07,13*. Archaeological Services Hawaii, LLC, Wailuku, Hawai'i.

Reference	Type of Study	Location	Findings (SIHP No. 50-50-03-)
Perzinski and Dega 2009 ¹⁵	LRFI	Lāhainā No. 3 Force Main Replacement Project in Lāhainā, Wahikuli and Hanakā‘ō‘ō Ahupua‘a, Lāhainā District, TMK (2) 4-4-013 por., (2) 4-5-021 por. Honoapi‘ilani Highway ROW	No historic properties identified within the linear project area, formed by the Honoapi‘ilani Highway corridor, (situated along the northern portion of the western APE boundary).
Madeus et al. (2022) ¹⁶	AIS	Villages of Leiali‘i, Phase 1-B Subdivision; TMKs: (2) 4-5-021:010 por., 014 por., 020, and 021 por.; (2) 4-5-036:109, 110, and 112 Note: This study area is directly north of the APE for the proposed undertaking.	Documented three new historic properties: SIHP No. -08886 asphalt-paved road and former plantation railroad corridor (intersects and trends east boundary of APE); SIHP No. -08887 portion of the existing Lāhainā, Kā‘anapali & Pacific (LK&P) railroad that was established as a tourist attraction in 1969: (borders west boundary and NW corner of APE); and SIHP No. -08888 is an asphalt-paved road that was used for historic commercial agricultural operations and formerly labeled as “Main Industrial Road”

¹⁵ Perzinski and Dega. 2009 *Archaeological Field Inspection and Literature Review for the Proposed Lāhainā No. 3 Force Main Replacement Project in Lāhainā, Wahikuli and Hanakā‘ō‘ō Ahupua‘a, Lāhainā District, Island of Maui, Hawai‘i [TMK (2) 4-4-13 (por), 4-5-21 (por)]*, Scientific Consultant Services, Inc. Wailuku, Hawai‘i.

¹⁶ Madeus, Jonas K., Trevor M. Yucha, Josephine M. Yucha, and Hallett H. Hammatt. 2022 *Archaeological Inventory Survey for the Villages of Leiali‘i, Phase 1-B Subdivision and Related Improvements Project, Wahikuli Ahupua‘a, Lāhainā District, Maui Island, TMKs: [2] 4-5-021:010 por., 014 por., 020, and 021 por.; [2] 4-5-036:109, 110, and 112; and Honoapi‘ilani Highway Right-of-Way*, Cultural Surveys Hawai‘i, Inc. Wailuku, Hawai‘i.

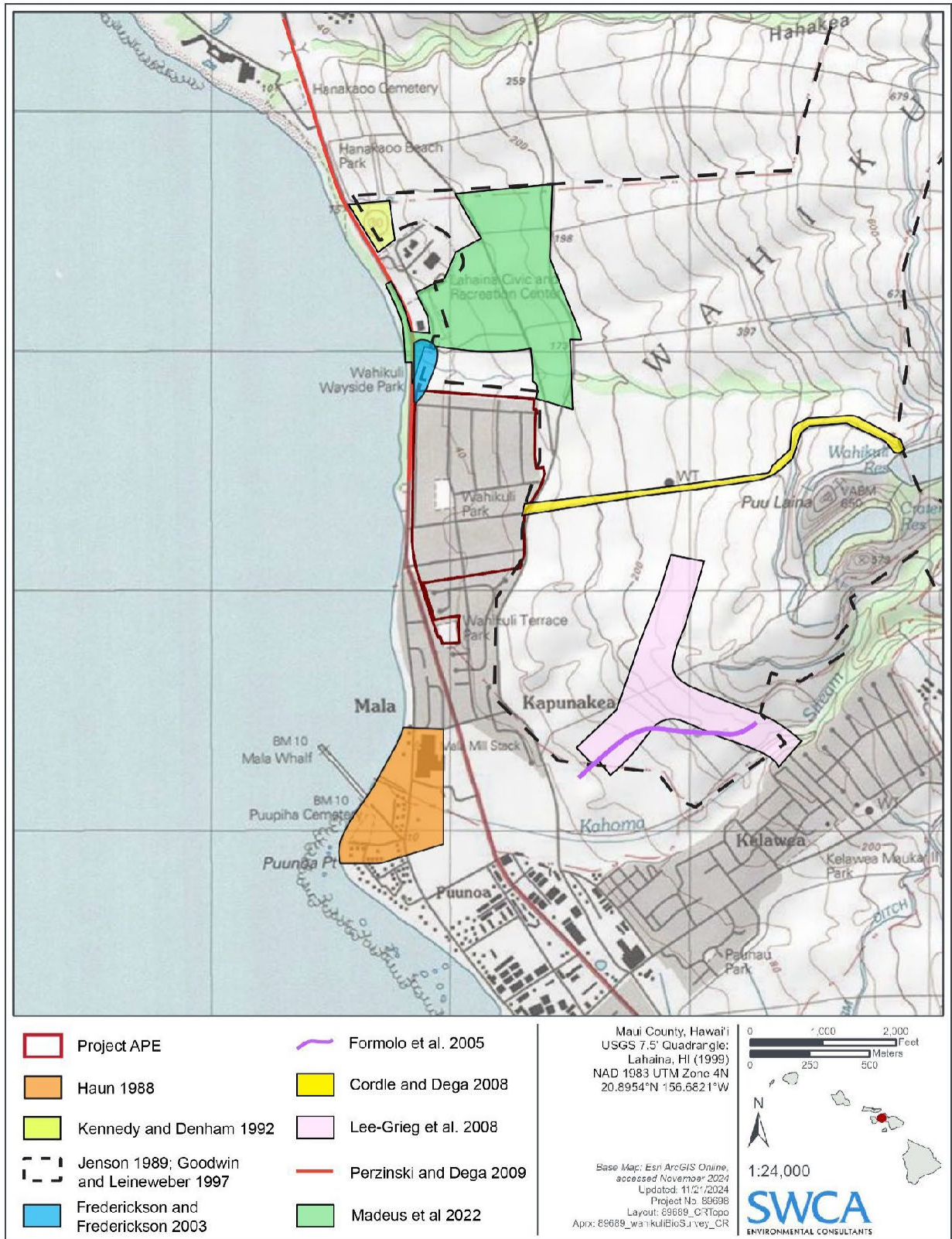


Figure 13. Previous archaeological studies conducted in the vicinity of the APE (Gross and Hopkins, December 2024).

Findings During Archaeological Monitoring for the Kilohana Group Housing Site, Fleming Road Permanent Sewer Line Construction Project

The Kilohana Group Housing Site, Fleming Road Permanent Sewer Line Construction Project is currently under construction. The proposed temporary housing project was reviewed by the SHPO in accordance with Section 106 of the NHPA and the Programmatic Agreement. On February 9, 2024, the SHPO concurred with the proposed APE, FEMA's determination of no historic properties affected, and archaeological monitoring being conducted. The SHPO also requested FEMA's concurrence with the proposed archaeological monitoring conventions (Project No.: 2023PR00979; Doc. No.: 2402IK02). No historic properties were identified during archaeological monitoring for construction of the temporary housing within TMK (2) 4-5-021:021.

On May 6, 2024, SHPD received a FEMA memorandum, pursuant to Stipulation III.A. of the Programmatic Agreement, indicating that the previously agreed-upon APE and the scope of work have been modified for a proposed installation of a permanent sewer line under Fleming Road and Malo Street. FEMA indicated that no previously identified historic properties have been identified within the APE and that the proposed sewer line be included in the previously agreed-upon archaeological monitoring program. On May 13, 2024, the SHPO concurred with the modified APE and undertaking for the proposed new sewer line and that the proposed work be included in the current archaeological monitoring program for the overall project (Project No.: 2023PR00979; Doc. No.: 2402IK02).

During archaeological monitoring for construction of the permanent sewer line under the Fleming Road ROW, ASM Affiliates made inadvertent discoveries of human skeletal remains on June 17, 2024, and August 29, 2024 (Minutes Maui Island Burial Council Meeting August 28, 2024, and September 25, 2024). The remains (SIHP No. 50-50-03-09023) have not been evaluated as eligible to the National Register of Historic Places (NRHP), however they have been evaluated as significant under Hawai'i Administrative Rules (HAR) §13-275-6 Criterion e.

Identification and Evaluation of Historic Properties

The background research on the development of the Wahikuli House Lots found that the subdivision was built in five phases (1st through 5th Series). The 1st through 3rd Series are referred to as homestead lots on some historic maps. These homesteads along with the early Pioneer Mill infrastructure could be considered a rural historic landscape. The landscape included the early established road infrastructure including Malo Road, Kaniau Road, Kalani Road, Kekai Road, Wahikuli Road, Kapunakea Road, Fleming Road, and Kapunakea Road. The early Pioneer Mill infrastructure includes the two railroad alignments that border the APE to the east and west (SIHP Nos. 50-50-03-08886 and 50-50-03-08887) and have been previously evaluated as significant under Criterion d pursuant to HAR §13-275-6 (Madeus et al. September 2022). Additionally, Wahikuli Road appears to have been established as a plantation road prior to the development of the house lots.

The Wahikuli House Lots are associated with events that have made an important contribution to the broad patterns of our history including the development of homesteading in the Ahupua'a of

Wahikuli. This is particularly true for the 1st through 3rd Series of development (homestead lots). Additionally, the house lots may be associated with important person in our past. These includes Antone D. Furtado who was original buyer for Lot 11 and a prominent leader in the early Hawaiian Democrat Party; and the Thomas Hussey who was the original buyer of Lot 4 and related to Kaai-Kaula-Kalei-Kau-Welaha-Makanoe Naweluokekikipaa “Makanoe” who was a descendant of Hawaiian royalty. However, they lack integrity due to decades of modifications, further subdivisions of the lots, and new constructions within the original house lots including the addition of condominiums within the subdivision. More recently, the house lots were heavily impacted by the Lāhainā Wildfires in 2023. The associated roads and infrastructure have also been modernized over the years. Neither the structures nor roadway alignments will be adversely affected by the current project, which mainly includes the installation of subsurface sewer infrastructure within the subdivision.

SWCA Environmental Consultants produced an archaeological literature review and field inspection (LRFI) in support of the current undertaking. Included as an attachment is a copy of the LRFI report (Gross et al., December 2024). During the field inspection, SWCA confirmed the two previously identified railroad alignments (SIHP Sites No. 50-50-03-08886 and 50-50-03-08887) bordering the APE and will not be impacted by the project (Figure 14).

As discussed above, previously disturbed human remains (SIHP No. 50-50-03-09023) were inadvertently discovered during archaeological monitoring for the installation of sewer lines serving the Kilohana Group Housing Site project, and within the current APE (Figure 14). The human remain were identified within Fleming Road and were not indicative of an *in-situ* burial site where the human remains were originally interred. The current information available suggests the human remains were imported with fill material during the construction of Fleming Road, associated with the 3rd Series of development within the Wahikuli House Lots.

Additionally, Halulukoakoa Heiau (SIHP No. 50-50-03-00011) was identified by the Bernice Pauahi Bishop Museum (Walker 1931¹⁷). The report describes Halulukoakoa Heiau as a large partially destroyed human sacrifice heiau. No surface remnants of the heiau remain today, however based on the information available, it would have existed near the Wahikuli Terrace Park portion of the APE (Figure 14).

The National Park Service (NPS) has provided guidelines for evaluating and registering cemeteries and burial places in the National Register Bulletin 41 (Potter and Boland 1992¹⁸). However, due to previous disturbances to the human remains associated with SIHP No. 50-50-03-09023, they do not meet the National Register criteria for evaluation of cemeteries and burial places provided by the NPS.

¹⁷ Walker, Winslow. 1931 Archaeology of Maui. Bernice Pauahi Bishop Museum, Honolulu.

¹⁸ Potter and Boland. 1992 Guidelines for Evaluating and Registering Cemeteries and Burial Places” National Register Bulletin, Volume National Register Bulletin, Volume 41 (National Park Service [NPS], U.S. Department of the Interior [DOI])

On March 1, 2023, the Advisory Council on Historic Preservation (ACHP) released a policy statement regarding burial sites, human remains, and funerary objects¹⁹. On June 30, 2023, the ACHP offered further explanations and discussion on thirteen principles which are intended to provide ACHP staff, federal agencies, and other interested parties with additional context, guidance, and advice on the interpretation and implementation of the policy²⁰. The ACHP encourages federal agencies to tailor implementation of the Burial Policy to their unique mission and authorities to advance protection of these sites, remains, and objects.

The current undertaking will include excavation in soils that may contain previously disturbed human remains. Although the human remains associated with (SIHP No. 50-50-03-09023) have not been evaluated as eligible to the NRHP, they have however been evaluated as significant under HAR §13-275-6 Criterion e.

No historic properties eligible for listing on the NRHP were identified within the APE, however due to the possibility of encountering additional human remains subsurface within the APE, the FEMA will follow 11 principles within the ACHP's Policy Statement on Burial Sites, Human Remains, and Funerary Objects, when applicable to the current undertaking.

Principle 1: Burial sites, human remains, and funerary objects should be treated with dignity and respect in all circumstances regardless of National Register eligibility or the circumstances of the action (i.e., exemptions, disaster, and emergencies). This includes, but is not limited to, all times prior to and during consultation, during field surveys, when handling must occur, in documenting and/or reporting, if treatment actions occur, and in all other forms of interaction.

Principle 2: Disturbing or disinterring burial sites, human remains, or funerary objects, when not requested by descendants, associated Indian Tribes or Native Hawaiian Organizations (NHOs), or required by applicable law or regulation, should not be pursued unless there are no other alternatives available and only after consultation with descendants or other legally associated individuals or groups and fully considered avoidance of impact and preservation in place.

Principle 3: Only through consultation, which includes the early and meaningful exchange of information and a concerted effort to reach consensus, can informed decisions be made about the identification, documentation, National Register eligibility, and treatment of burial sites, human remains, and funerary objects.

Principle 4: To the maximum extent possible, decision making should give deference to the treatment requests of descendants or other legally associated individuals or groups. Where known, and in accordance with applicable law,

¹⁹ ACHP March 1, 2023. Policy Statement on Burial Sites, Human Remains, and Funerary Objects. Website https://www.achp.gov/sites/default/files/policies/2023-03/PolicyStatementonBurialSitesHumanRemainsandFuneraryObjects20230301_1.pdf

²⁰ ACHP June 30, 2023. Policy Statement on Burial Sites, Human Remains, and Funerary Objects: Explanations and Discussion. Website <https://www.achp.gov/sites/default/files/2023-07/BurialPolicyExplanationandDiscussionGuidanceDocument30June2023.pdf>

cultural practices of the descendants or associated groups should be followed if burial sites, human remains, or funerary objects may be encountered, are inadvertently identified, impacted, or must be disinterred.

Principle 5: The Indigenous Knowledge held by an Indian Tribe, NHO, or other Indigenous Peoples is a valid and self-supporting source of information. To the fullest extent possible, deference should be provided to the Indigenous Knowledge and expertise of Indian Tribes, NHOs, and Indigenous Peoples in the identification, documentation, evaluation, assessment, and treatment of their burial sites, human remains, and funerary objects.

Principle 6: Burial sites, human remains, and funerary objects are important in and of their own right. They may also constitute or be part of a sacred site and may include or incorporate several possible elements of historic significance including religious and cultural significance. The integrity of burial sites, human remains, and funerary objects is best informed by those who ascribe significance to them.

Principle 7: Burial sites, human remains, and funerary objects are frequently associated with cultural practices, sacred sites, Indigenous Knowledge, and other forms of culturally sensitive actions and/or information unique to a people. Maximum effort should be taken to limit the disclosure of confidential or sensitive information through all available mechanisms including, but not limited to, the proper handling and labeling of records, limiting documentation to necessary information, and through the application of existing law.

Principle 9: The legacies of colonization, including cultural assimilation, forced relocation, and slavery, have led to an uneven awareness of where and why practitioners are likely to encounter burial sites, human remains, and funerary objects across the United States and its territories. The historic preservation community has a key role in expanding public education to support greater awareness of and consideration for the histories and lifeways of Indian Tribes, Native Hawaiians, African Americans, and Indigenous Peoples including recognizing and respecting the historical trauma that these groups and individuals may experience.

Principle 10: Access to and/or repatriation of burial sites, human remains, and funerary objects should be enabled through fair, transparent, and effective mechanisms developed in conjunction with descendant communities to the fullest extent of the law.

Principle 11: Human remains and funerary objects may be relocated or removed from a location by or at the request of descendent communities for a variety of reasons. The continued presence of human remains or funerary objects may not be essential to the ongoing significance and integrity of a site or its relevance to a broad theme in history. The historic significance and integrity of such sites are best determined in consultation with lineal descendants and/or associated communities.

Principle 13: Respectful consideration of burial sites, human remains, or funerary objects may require additional assistance from consulting parties to properly identify, document, evaluate for National Register eligibility, and/or conduct treatment actions. If a federal agency requests or relies on an Indian Tribe, NHO, or other party to carry out activities that are the federal agency's responsibility under the NHPA, the Indian Tribe, NHO, or other consulting party should be reimbursed or compensated.

The two within the ACHP's Policy Statement on Burial Sites, Human Remains, and Funerary Objects that are not included in the list above are specific to climate change impacts and the federal Indian boarding school system and were not included because they would not be applicable to the proposed undertaking.

Native Hawaiian Organizations

FEMA is required to consult with Native Hawaiian Organizations (NHOs) in a manner appropriate to the scale of the undertaking and is therefore providing this documentation to NHOs who may have knowledge of cultural resources in the APE or who may have other concerns about the undertaking. FEMA is providing this documentation concurrently to the SHPD, OHA, and NHOs in accordance with Stipulation II.C of the Agreement. A list of NHOs and other parties invited to participate in the Section 106 consultation process is provided as Enclosure 2. Any responses or comments received from NHOs will be shared with the SHPD.

On November 8, 2024, the EPA and their consultant AECOM met with the SHPD to discuss the proposed project and receive guidance regarding the Section 106 process. This letter incorporates recommendations received from SHPD during the meeting.



Figure 14. Previously identified historic properties and newly identified resource segments in the vicinity of the APE (Gross et al., December 2024).

Determination of Effect

FEMA reviewed the Undertaking for compliance with Section 106 of the NHPA in accordance with the *2016 Programmatic Agreement Among the Federal Emergency Management Agency, The Hawaii State Historic Preservation Officer, the Office of Hawaiian Affairs and the State of Hawaii Department of Defense* (Agreement), as amended in 2023, and found that the Undertaking meets the definition of a Federal Undertaking as defined in 36 CFR 800.16(l) ²¹

FEMA has found there are two existing sites (SIHP Site 50-50-03-09023 [Malo Street Burial] and 50-50-03-00011 [Halulukoakoa Heiau]) that are mapped within the APE; and there are two historic properties, (SIHP Site 50-50-03-08886 [railroad], and SIHP Site 50-50-03-08887 [railroad]) bordering the APE.

FEMA has determined that while the presence of these historic resources could indicate that significant subsurface historic properties, including traditional Hawaiian and/or historic period archaeological deposits and human remains, may be present within the APE, it is unlikely that any effects to properties would occur from the Undertaking as they have likely been severely impacted by previous agricultural activities and the widespread Wahikuli lot development. All five series of development within the Wahikuli House Lots were impacted by the Lāhainā wildfires on August 8, 2023. Neither the structures nor roadway alignments will be adversely affected by the current project, which mainly includes the installation of subsurface sewer infrastructure within the subdivision.

As with the example of SIHP Site 50-50-03-09023 (Malo Street Burial), human skeletal remains are associated within imported sand fill sediments underlying existing sewer infrastructure of the lot development. The location of SIHP Site 50-50-03-00011 (Halulukoakoa Heiau) has shown significant land alterations from development, as well as evidence of previous removal of the heiau *pohaku* for the construction of the historic railroad.

FEMA is therefore initiating Standard Project Review in accordance with Stipulation II.C. of the Programmatic Agreement that while NHPA eligible historic properties were identified within the APE, in accordance with Stipulation II.C.5.a. of the Agreement, FEMA finds the Undertaking would result in *No Adverse Effect* to historic properties. FEMA intends to incorporate avoidance and minimization measures to avoid potential effects to historic properties.

Since the application of avoidance and minimization measures would avoid effects to historic properties, FEMA does not believe that additional surveys to identify and inventory historic properties prior to construction are necessary, and that such surveys would significantly delay completion of the undertaking. In addition, and as noted above, the APE has been heavily disturbed by the Pioneer Mill's agricultural activities and the subsequent development of the subdivision. Completion of the proposed gravity sewer system is needed as soon as possible.

To incorporate avoidance and minimization measures for inadvertent effects to historic properties as a result of this undertaking, FEMA will require the following:

²¹ National Archives. 2024 U.S. Code of Federal Regulations. Website <https://www.ecfr.gov/current/title-36/chapter-VIII/part-800/subpart-B>

- Archaeological monitor(s) who meets the Secretary of the Interior Professional Qualifications Standards for that discipline, and is based in Hawai‘i, will be on site during all new ground disturbing activities.
- Cultural observer(s) will be on site during all new ground disturbing activities.
- Contractors, along with Archaeological monitor(s) and Cultural Observer(s) will meet before the project start to identify and delineate, with flags or flagging tape, historic areas of concern and avoidance.
- In the event of an inadvertent discovery of human remains, the process outlined in Stipulation III.B. of the Programmatic Agreement and HAR §13-300-40 would be followed. Additionally, the federal agency will follow the 11 of the 13 principles developed by the ACHP in the policy statement on burial sites, human remains, and funerary objects as they pertain to the current undertaking.
- The locations of the inadvertent discovery of human remains (SIHP No. 50-50-03-09023) and SIHP No. 50-50-03-00011 [Halulukoakoa Heiau]) previously identified in the APE will be marked with flagging or temporary fencing as areas of avoidance prior to commencement of construction.
- The locations of the railroad alignment (SIHP No. 50-50-30-08886 and 50-50-03-08887) just outside the APE will be annotated on the project related construction plans.
- It is highly recommended that a location for temporary curation of any iwi revealed during the project be decided before the start of construction.

Based on the results of above research and analysis, FEMA has made a finding of *No Adverse Effect* to historic properties pursuant to II.C.5.a. Given the prior ground disturbance associated with the previous agricultural activities and the widespread Wahikuli lot development, the likelihood of intact archaeological or historic properties within the APE is deemed negligible. Any unexpected archaeological or historic resources are addressed under Stipulation III.B.1.a-d of the Agreement. FEMA, therefore, requests the SHPO’s review and concurrence with this finding.

Conclusion

FEMA respectfully requests the SHPO’s review and concurrence with this finding via response within 15 days from receipt of this transmittal. Unless the SHPO objects to this finding within 15 calendar days in accordance with Stipulation I.E.2.c., the Section 106 review will conclude in accordance with Stipulation I.E.2.b of the Agreement, and FEMA may fund the Undertaking. In the interest of time, however, your prompt attention to this matter would be greatly appreciated. Should you have any

questions or comments, please do not hesitate to contact FEMA Historic Preservation Specialist, Trisha Drennan at trisha.drennan@fema.dhs.gov or 202-550-5875, or myself.

Sincerely,
**AARON C
CLARK**

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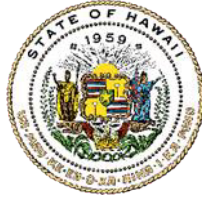
Kate Rao, USEPA Region 9
Nova Blazej, USEPA Region 9
Jarrett Brown, AECOM
Courtney Hymes, AECOM
Rommel Yanos, County of Maui
Janet Pape, County of Maui

Enclosures:

- Figure 1 – Project Area / Area of Potential Effect
- Enclosure 1 – TMKs within the APE
- Enclosure 2 – List of Native Hawaiian Organizations and Consulting Parties
- Enclosure 3 – Archeological Literature Review and Field Inspection Report

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

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'AINA



STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAI'I
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February 14, 2025

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IN REPLY REFER TO:
Project No. 2024PR01223
Doc. No. 2502LS15
Archaeology

Dear Aaron C. Clark:

SUBJECT: National Historic Preservation Act (NHPA) Section 106 Consultation – Request for Concurrence with a Project Effect Determination Environmental Protection Agency (EPA) – Mission Assigned Agency Federal Emergency Management Agency – FEMA-4724-DR-HI In Reply Refer To: PN 20250131 – Wahikuli Subdivision Gravity Sewer System Wahikuli Ahupua'a, Lāhainā District, Island of Maui TMK: (2) 4-5-014 var.; (2) 4-5-027 var.; (2) 4-5-028 var.; (2) 4-5-030 var.; and (2) 4-5-036 var.

This letter provides the State Historic Preservation Division's (SHPD) review of the County of Maui's proposed new gravity sewer system within the Wahikuli Subdivision, which was affected by the August 8, 2023, Maui wildfires. This County project is subject to Hawaii Revised Statutes (HRS) 6E review and, due to federal assistance from FEMA, has been determined to be a federal undertaking as defined in 36 CFR 800.16(y) and thus subject to compliance with Section 106 of the NHPA.

On January 31, 2024, the SHPD received a letter from the FEMA dated January 31, 2025 (PN 20250131), initiating the Section 106 consultation (HICRIS Submission No. 2024PR01223.010). Additionally, FEMA provided four supporting enclosures: (1) a map of the area of potential effects (APE) prepared by AECOM, (2) a list of TMK within the APE, (3) a list of the Section 106 consulting parties, and (4) an archaeological literature review and field inspection (LRFI) report prepared in support of the current project by SWCA Environmental Consultants (Gross and Hopkins, December 2024). The APE totals ~94.8 acres and includes County, State, and private property where sewer lines, laterals, and connections will be installed, along with staging areas.

FEMA's letter indicates that the County of Maui requested technical assistance from the Environmental Protection Agency (EPA) with the planning and design of the proposed gravity sewer system, and that this assistance is being funded by FEMA, and that the undertaking will comply with Section 106 and "the Programmatic Agreement currently in effect with FEMA of the U.S. Department of Homeland Security, the Hawai'i State Historic Preservation Officer (SHPO), the Office of Hawaiian Affairs (OHA), and the State of Hawai'i Department of Defense, Hawaii Emergency Management Agency (HI-EMA) (Agreement), executed in 2016, as extended through amendment in 2023." Further, FEMA states their "letter only addresses the Section 106 portion of the overall project." [bold in original]

FEMA describes the scope of work as involving the installation of a gravity sewer system for the Wahikuli subdivision to replace the current cesspools and septic systems of ~231 single-family house lots. The new sewer system would connect to the existing Lāhainā sewer system at the operational Lāhainā No. 3 Pump Station. The new sewer system would be installed in County-owned right-of-way (ROWs). It would require trenching 4 to 14-ft. below grade along all the streets within the APE. The sewer laterals would extend a maximum of 2 ft. into the serviced house lots. Additionally, sump or grinder pumps may be installed for certain properties when connecting to the sewer system via gravity is difficult due to grade differences. Further, easements may be necessary to install sewer laterals for properties with no direct access to a public roadway. These activities would occur on private property.

FEMA provides a summary table (Table 1) of 40 lots that on which structures are still present. Of these, 38 are residential buildings and 2 are churches. The SHPO agrees that the proposed project would not adversely affect the residential and church buildings summarized in FEMA's letter (Table 1) as the proposed installation of the new sewer system will be largely confined to roadways and extend only 2 ft. into individual private lots, and the proposed staging areas (Lāhainā No. 3 Pump Station property and Wahikuli Terrace Park) would not impact any private lots.

Additionally, FEMA indicates that previous archaeological studies conducted in the vicinity (Table 2) and the findings of the LRFI (Gross and Hopkins, December 2024) conducted for the current project, that (1) the APE has been heavily impacted; (2) two historic properties have been identified within the APE, disarticulated human remains found in imported sand fill sediments (State Inventory of Historic Places [SIHP] No. 50-50-03-09023) and Halulukoakoa Heiau (SIHP No. 50-50-03-00011); and (3) bordering the APE, an asphalt-paved road and former plantation railroad corridor (SIHP No. 50-50-03-08886) and a portion of the existing Lāhainā, Kā'anapali & Pacific (LK&P) railroad that was established as a tourist attraction in 1969 (SIHP No. 50-50-03-08887); note: none of these cultural resources have been evaluated for NRHP eligibility.

In summary, FEMA indicates on page 33 that “in accordance with Stipulation II.C of the Programmatic Agreement that while NHPA eligible historic properties were identified within the APE, in accordance with Stipulation II.C.5.a. of the Agreement,” **FEMA's determination is no adverse effect** as “FEMA intends to incorporate avoidance and minimization measures to avoid potential effects to historic properties” involving the following:

- Archaeological monitor(s) who meets the Secretary of the Interior Professional Qualifications Standards for that discipline, and is based in Hawai'i, will be on site during all new ground disturbing activities.
- Cultural observer(s) will be on site during all new ground disturbing activities.
- Contractors, along with Archaeological monitor(s) and Cultural Observer(s) will meet before the project start to identify and delineate, with flags or flagging tape, historic areas of concern and avoidance.
- In the event of an inadvertent discovery of human remains, the process outlined in Stipulation III.B. of the Programmatic Agreement and HAR §13-300-40 would be followed. Additionally, the federal agency will follow the 11 of the 13 principles developed by the ACHP in the policy statement on burial sites, human remains, and funerary objects as they pertain to the current undertaking.
- The locations of the inadvertent discovery of human remains (SIHP No. 50-50-03-09023) and SIHP No. 50-50-03-00011 [Halulukoakoa Heiau] previously identified in the APE will be marked with flagging or temporary fencing as areas of avoidance prior to commencement of construction.
- The locations of the railroad alignment (SIHP No. 50-50-30-08886 and 50-50-03-08887) just outside the APE will be annotated on the project related construction plans.
- It is highly recommended that a location for temporary curation of any iwi revealed during the project be decided before the start of construction.

Lastly, FEMA stipulates that “Any unexpected archaeological or historic resources are addressed under Stipulation III.B.1.a-d of the Agreement.”

The SHPO concurs with FEMA's determination of *no adverse effect* and FEMA's stipulation that FEMA will implement avoidance and mitigation measures to avoid, minimize, or mitigation potential effects to historic properties. In addition to the mitigation measures provided by FEMA (see above), the SHPD requests that the Archaeological Monitoring Conventions (AMCs) specified in the Attachment also be implemented.

Note: the SHPO's concurrence with FEMA's determination of *no adverse effect* is based on the information provided in FEMA's letter dated January 31, 2025 (PN 202501310). However, the SHPO's concurrence may, if appropriate, be revised to take into consideration any comments provided by NHOs, other interested parties, and the public. The SHPO looks forward to receiving FEMA's documentation of their Section 106 consultation efforts, including who was consulted, the comments received, and how FEMA has taken the comments into consideration.

Please submit all forthcoming information regarding the subject project, including initiation of the HRS Chapter 6E historic preservation review to SHPD via HICRIS to Project No. 2024PR01223 using the Project Supplement option. If additional agencies and/or individuals need to be added as contributors to the Wahikuli Subdivision Gravity Sewer System Project, please contact SHPD to have them designated as project contacts. This will grant them the ability to submit documents associated with the project.

The SHPD looks forward to initiation of the HRS §6E historic preservation review process for the Wahikuli Subdivision Gravity Sewer System Project.

The FEMA and EPA are the offices of record for this undertaking. Please maintain a copy of this letter with your environmental review for this undertaking.

Please contact Jessica Puff, Deputy SHPO and SHPD Administrator, at Jessica.Puff@hawaii.gov, for any matters regarding architectural resources, and Susan A. Lebo, Archaeology Branch Chief, at Susan.A.Lebo@hawaii.gov, for any matters regarding archaeological resources or this letter.

Aloha,



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Attachment

These Archaeological Monitoring Conventions (AMCs) have been prepared in accordance with Hawaii Administrative Rules (HAR) §13-279-4 governing standards for Archaeological Monitoring Plans (AMP). Specific monitoring provisions are provided below.


1. Archaeological monitoring will be conducted full-time, on-site basis for all ground-disturbing activities throughout the project. If there is a request to switch to spot monitoring, it must be submitted in writing to SHPD. This request should include appropriate field documentation (including photos) and a rationale to support the change. Any modifications to the monitoring plan can only happen with prior written approval by the SHPD.
2. Archaeological monitoring will be conducted by an archaeologist who meets the qualifications of HAR §13-281-3 to be a Principal Investigator (PI) or, as stipulated by FEMA (see above) “who meets the Secretary of the Interior Professional Qualifications Standards for that discipline.”
3. The County of Maui archaeologist and SHPD staff will be able to conduct site visits with advance written approval.
4. At least one archaeological monitor will be assigned to each piece of moving equipment. If significant cultural deposits or features are identified and additional archaeological monitors are required, the PI will notify the County of Maui Archaeologist and SHPD.
5. The archaeological PI and archaeological monitor shall conduct a pre-construction briefing with all construction personnel and the landowner. The purpose of the briefing is to ensure all parties are aware of the need for archaeological monitoring, the types of historic properties (archaeological, cultural, and/or burial) that may be encountered, the archaeological provisions set forth in the AMC, and the responsibility of the construction team to ensure that no ground disturbing work is conducted without an archaeological monitor present. They must also understand the responsibilities and procedures to be conducted by each party should construction activities result in an inadvertent discovery of human remains and/or archaeological historic properties. Additionally, they shall be informed that the removal of any artifacts or photography of human remains is prohibited.
6. The PI and archaeological monitor shall be responsible for conducting all coordination with the contractor, landowner, and SHPD. The archaeological monitor shall coordinate all monitoring, sampling, and documentation activities with the safety officers for the contractors to ensure that proper safety regulations and protective measures meet compliance.
7. The archaeological monitor shall provide a copy of this letter containing the AMCs to the contractor and landowner. The monitor shall also keep a copy of this letter and AMCs on-site throughout the archaeological monitoring fieldwork.
8. The archaeological monitor shall ensure that all backhoe trench excavations involve the use of shallow lifts (10-15 cm max.) and short draws (1-2 m max.) to provide greater control and minimize impact on cultural deposits, features, or human remains, if present. Manual excavation will be used if cultural deposits or features are encountered.
9. GPS data shall be collected for all excavated trenches and units, site boundaries and, where appropriate, features. A GPS unit with sub-meter accuracy must be used. Site boundaries need to be recorded as a polygon, not as a single point.
10. If any potential cultural deposits, features, or archaeological sites are identified, the archaeological monitor has the authority to halt the work in the immediate area (up to 5 meters) to carry out appropriate identification and documentation. If the find is determined to be a potential historic property, the archaeological monitor will notify the County of Maui Archaeologist and the SHPD’s Archaeology Branch Chief regarding identification, appropriate documentation, and assessments of site significance and integrity.

11. Archaeological documentation of cultural deposits, features, etc. will include recording its location using a sub-meter accurate GPS unit (to obtain point or polygon data as appropriate); plotting its location on a scaled site map; taking digital photographs with scale and north arrow, and where possible, in both plan view and profile; illustrating feature morphology in scaled plan view and profile drawings; recording dimensions (length, width, depth, etc.); screening at least a 25% sample of a cultural deposit [or other % as determined in consultation with SHPD] through 1/8-inch wire mesh screen to identify potential small-fraction remains; screening a measured volume of pit fill matrix through 1/8-inch wire mesh screen to facilitate identification of pit function; documenting in the field historic artifacts in large infilled pit features and fill layers, including digital photographs with scales, and descriptions of the range of artifact types and relative abundance of types; collecting all historic artifacts from cultural layers and pit features [unless a sampling strategy is agreed to by SHPD] to facilitate identification of function and age. Construction work will only continue in the area of the non-burial find when all documentation has been completed.
12. Stratigraphy will be recorded to provide an accurate sequence from the top to the base of the excavation. Soil descriptions will be completed using USDA soils terminology and attributes, as well as Munsell soil color charts or manuals. Photographs with scales and north arrows will be taken at all locations where stratigraphic profiles are recorded. According to SHPD directives, measured soil samples will be collected from cultural deposits and features. Their locations will be recorded on the site map using a hand-held GPS with submeter capability, and also on individual stratigraphic profiles. Soil samples will also be collected from each of the layers identified in the field as possible former A-horizons.
13. In the event that no significant historic properties are identified, representative soil profiles will be collected from across the project area. Representative soil profiles will measure a minimum of 2 meters across (when possible) and their locations will be recorded using GPS data points and on a USGS topographic Quadrangle Map.
14. In the event that human remains (burial or isolated, displaced skeletal elements) are inadvertently encountered, all work in the immediate area of the find will cease, the area and human remains will be secured, and the archaeological monitor will immediately notify the contractor and landowner, notification via both phone and email, to the Maui Police Department, the County of Maui Archaeologist, SHPD (archaeologist and burial sites specialist staff), and the Maui/Lanai Island Burial Council geographic representative. Treatment of the human remains (including archaeological documentation and completion of SHPD Inadvertent Burial documentation) shall be in accordance with Hawaii Revised Statutes §6E-43.6, Hawaii Administrative Rules §13-300-40, and written SHPD directives. Work will resume in the area of the inadvertent find only following written SHPD approval.
15. All artifacts and samples collected during the project (excluding human remains) shall be transported to the archaeological firm's office/laboratory on Maui for analysis in accordance with HAR §13-279; none will be transported off island. They will be cleaned, sorted, counted, weighed (metric), and analyzed (both qualitative and quantitative data), with all data recorded on standard laboratory forms. Midden samples will be minimally identified to major class (e.g., bivalve, gastropod mollusk, echinoderm, fish, bird, and mammal). Digital photographs with scales will be taken of a representative sample of the diagnostic artifacts. Tables and text discussing the artifact and sample results will be provided in the report, along with appropriate digital photographs.
16. Samples (wood charcoal, shell, non-human bone, kukui nut) identified as potentially suitable for dating from an undisturbed context (e.g., cultural layer, pit feature) shall be considered for radiocarbon dating in consultation with SHPD and the landowner. Prior to submittal, potential wood charcoal samples shall first be submitted to International Archaeological Research Institute, Inc. (IARII) for wood taxa identification. Only samples identified as short-lived endemic or Polynesian-introduced species will be selected for dating purposes.
17. All stratigraphic profiles and plan view maps of identified historic properties (e.g., sites, cultural layers, features) shall be drafted for presentation in the final report. Photographs of project work, including overviews, and of individual profiles, cultural layers, and features shall also be included in the final report. Representative soil profiles (non-cultural) summaries, stratigraphy and their location will be plotted on a USGS topographic map.

18. The archaeological firm contracted to conduct the archaeological monitoring shall store all project documentation (field notes, photographs, profiles and plan view drawings, laboratory data, etc.) in their office/lab on the island of Maui. They shall also store all collected artifacts and sample material until final disposition of the artifacts and samples is determined in consultation with SHPD and the landowner.
19. All historic properties, both burial and non-burial sites, that are identified and/or further documented during archaeological monitoring (such as cultural layers, pit features, and buried walls) must be assessed for site significance according to HAR §13-275-6, Criteria a through e. This assessment, along with an appropriate recommendation for future mitigation must be included in the final report.
20. The archaeological PI is responsible for sending to SHPD a written notification via email and HICRIS at the start of archaeological monitoring, and responsible for ensuring that the County of Maui Archaeologist is also notified via email.

Appendix C-2

Archaeological Literature Review and Field Inspection (LRFI) Report



Archaeological Literature Review and Field Inspection for the Wahikuli Subdivision Gravity Sewer System Project

Wahikuli Ahupua'a, Lahaina District, Island of Maui
County of Maui Tax Map Key Plats (2) 4-5-014, (2) 4-5-027,
(2) 4-5-028, (2) 4-5-030, and (2) 4-5-036

Project Proponent and/or Funding from: County of Maui,
Federal Emergency Management Agency, and the
Environmental Protection Agency

JANUARY 2025

PREPARED FOR
AECOM

PREPARED BY
SWCA Environmental Consultants

**ARCHAEOLOGICAL LITERATURE REVIEW AND
FIELD INSPECTION FOR THE WAHIKULI SUBDIVISION
GRAVITY SEWER SYSTEM PROJECT**

**Wahikuli Ahupua‘a,
Lahaina District, Island of Maui
County of Maui Tax Map Key Plats
(2) 4-5-014, (2) 4-5-027, (2) 4-5-028, (2) 4-5-030, and (2) 4-5-036**

Project Proponent and/or Funding from:

**County of Maui,
Federal Emergency Management Agency, and the
Environmental Protection Agency**

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SWCA Project No. 89689-000-HON
SWCA Cultural Resources Report No. 24-927

January 2025

EXECUTIVE SUMMARY

At the request of AECOM and on behalf of the Federal Emergency Management Agency (FEMA), SWCA Environmental Consultants completed an archaeological literature review and field inspection for the Wahikuli Subdivision Gravity Sewer System Project (project). The planning and design of this project are funded by the Federal Emergency Management Agency (FEMA) through its mission assignment authority and managed by the EPA. The FEMA funding is through Robert T. Stafford Disaster Relief and Emergency Assistance Act, or “Stafford Act” (codified as amended at 42 U.S.C. § 5121 et seq.).

The project area of potential effects (APE) is located within the *ahupua‘a* (traditional land division) of Wahikuli in the traditional *moku* (district) of Lahaina on the Island of Maui. The APE totals approximately 94 acres and includes County of Maui Tax Map Key plats (2) 4-5-014, (2) 4-5-027, (2) 4-5-028, (2) 4-5-030, and (2) 4-5-036. The APE is bounded to the west by Malo Street, to the north by existing residences, to the south by recently burned residential areas, and to the east by temporary housing developments currently under construction.

The project proposes to install a gravity sewer system within a roughly 94-acre area. The ground disturbances associated with the project will require substantial trenching within existing Maui County rights-of-way and easements at depths ranging from 4 to 14 feet below existing street grades and within new proposed easements to install the sewer mains and associated infrastructure (i.e., sump and/or grinder pumps and piping). Lateral sewer connections for servicing up to 231 private lots will extend up to 2 linear feet on to privately owned lots.

The following report has been prepared to support the FEMA’s request for historic preservation review of the project by the Hawai‘i State Historic Preservation Division (SHPD) under Hawaii Revised Statute 6E-8, *Review of Effect of Proposed State Projects*. Hawaii Administrative Rules (HAR) Chapter 13-275-5 (a) requires that an effort be made to determine whether historic properties are present in the APE and, if so, to ensure that these properties are properly identified and inventoried. The purpose of the literature review and field inspection was to determine whether historic properties were present within the APE and to provide background information to assist the SHPD in their historic preservation review of the project.

Additionally, due to the use of federal funding through the FEMA and the U.S. Environmental Protection Agency, this project is considered a federal undertaking and, as such, requires National Historic Preservation Act Section 106 review (under 36 Code of Federal Regulations 800.3[a]). Section 106 of the National Historic Preservation Act requires federal agencies take into account the effects of undertakings on historic properties. This literature review aids in the identification of historic properties that could be affected by the undertaking, as required under Section 106.

A field inspection of the publicly accessible portions of the APE identified one surface historic property, a newly identified segment of existing State Inventory of Historic Properties (SIHP) Site 50-50-03-08887 (railroad), situated just outside the western boundary of the APE. The literature review demonstrated that one other historic property (SIHP Site 50-50-03-08886 [railroad]) is mapped just outside the eastern boundary of the APE. Both of these former railroad alignments appear to have been abandoned for some time. The literature review also demonstrated that two existing historic properties (SIHP Site 50-50-03-09023 [disarticulated human remains] and Site 50-50-03-00011 [Halulukoakoa Heiau]) are mapped within the APE.

The presence of these historic properties indicate that significant subsurface historic properties, including traditional Hawaiian and/or historic period archaeological deposits and human remains, may be present within the APE that could be adversely affected by the undertaking. Therefore, a program of archaeological monitoring during all ground-disturbing construction activities is recommended for the

project. The archaeological monitoring program should be determined in consultation with the SHPD and meet the guidelines of HAR Chapter 13-279, *Rules Governing Standards for Archaeological Monitoring Studies and Reports*.

Alongside archaeological monitoring, a program of cultural monitoring is recommended to be implemented for the project. Project activities should take into consideration and apply the principles as set forth in the Policy Statement on Burial Sites, Human Remains, and Funerary Objects (Advisory Council on Historic Preservation 2023). Temporary preservation methods recommended include installing construction fencing along the border of the APE where it trends near the railroad corridors, and for project construction plans to include annotations of the locations of the railroads, inadvertent discovery, and former heiau site.

Report Citation:

Gross, Ryan, and Uluwehi Hopkins

2024 *Archaeological Literature Review and Field Inspection for the Wahikuli Subdivision Gravity Sewer Project, Wahikuli Ahupua‘a, Lahaina District, Island of Maui, County of Maui Tax Map Key Plats (2) 4-5-014, (2) 4-5-027, (2) 4-5-028, (2) 4-5-030, and (2) 4-5-036*. Prepared for AECOM by SWCA Environmental Consultants, Honolulu, Hawai‘i.

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1 INTRODUCTION

At the request of AECOM and on behalf of the Federal Emergency Management Agency (FEMA), SWCA Environmental Consultants (SWCA) completed an archaeological literature review and field inspection for the Wahikuli Subdivision Gravity Sewer System Project (project). The project area of potential effects (APE) is within the *ahupua‘a* (traditional land division) of Wahikuli in the traditional *moku* (district) of Lahaina on the Island of Maui (Figure 1).

The research for this literature review was conducted by SWCA’s Pacific Islands Cultural Resources Staff Historian Uluwehi Hopkins, Ph.D., and Archaeology Project Manager Ryan Gross, M.A., RPA. R. Gross also served as principal investigator for the project and conducted a field inspection of the APE with SWCA Archaeologist Hattie Gerrish, B.A. Rowland Reeve, M.A., provided quality control review of this report. All work was conducted under SWCA’s Hawai‘i State Historic Preservation Division (SHPD)–approved Permit to Conduct Archaeological Activities in the State of Hawaii Number 24-25.

1.1 Area of Potential Effects

As defined in 36 Code of Federal Regulations (CFR) Section 800.16(d), the APE for an undertaking is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

The APE for the current project totals approximately 94 acres and includes County of Maui Tax Map Key (TMK) plats (2) 4-5-014, (2) 4-5-027, (2) 4-5-028, (2) 4-5-030, and (2) 4-5-036. A listing of individual TMK parcels forming the APE are included as Appendix A and depicted below in Figure 2, Figure 3, and Figure 4. The APE is bounded to the west by Malo Street and the Honoapi‘ilani Highway (State Route 30), to the north by existing residences, to the south by recently burned residential areas, and to the east by temporary housing developments currently under construction.

1.2 Project Background

In January 2024, the County of Maui requested that the U.S. Environmental Protection Agency (EPA) provide technical assistance with the planning and design of a proposed gravity sewer system to be constructed in the underserved Wahikuli subdivision north of Lahaina Town. Approximately 231 properties zoned for single-family use currently serviced by cesspools are proposed to be upgraded to this sewer system. The planning and design of this undertaking are funded by the Federal Emergency Management Agency (FEMA) through its mission assignment authority and managed by the EPA. The FEMA funding is through Robert T. Stafford Disaster Relief and Emergency Assistance Act, or “Stafford Act” (codified as amended at 42 U.S.C. § 5121 et seq.).

The repair and enhancement of existing wastewater infrastructure in Lahaina following the August 2023 wildfires, and the proposed EPA technical assistance, would result in a more resilient and sustainable wastewater management system that is better able to withstand climate impacts and disasters. This enhancement would also support other aspects of the overall recovery effort, such as enhancing resident quality of life, promoting sustainable economic development, and reducing economic burden on residents returning to their homes in this historically underserved area.

1.3 Project Description

The project proposes to install a gravity sewer system within a roughly 94-acre area. The ground disturbances associated with the project will require substantial trenching within existing Maui County rights-of-way and easements at depths ranging from 4 to 14 feet below existing street grades and within new proposed easements to install the sewer mains and associated infrastructure (i.e., sump and/or grinder pumps and piping). Lateral sewer connections for servicing up to 231 private lots will extend up to 2 linear feet on to privately owned lots.

1.4 Regulatory Requirements

The following report has been prepared to support the FEMA's request for historic preservation review of the project by the SHPD under Hawaii Revised Statute (HRS) 6E-8, *Review of Effect of Proposed State Projects*. Hawaii Administrative Rules (HAR) Chapter 13-275-5 (a) requires that an effort be made to determine whether historic properties are present in the APE and, if so, to ensure that these properties are properly identified and inventoried. The purpose of the literature review and field inspection was to determine whether historic properties were present within the APE and to provide background information to assist the SHPD in their historic preservation review of the project.

Additionally, due to the use of federal funding through the FEMA and the EPA, this project is considered a federal undertaking and, as such, requires National Historic Preservation Act Section 106 review (under 36 CFR] 800.3[a]). Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of undertakings on historic properties. This literature review aids in the identification of historic properties that could be affected by the undertaking, as required under Section 106.

The results of this literature review and field inspection will therefore support the Hawaii SHPD's historic preservation review of the project under both HRS 6E-8 and Section 106 (36 CFR 800).

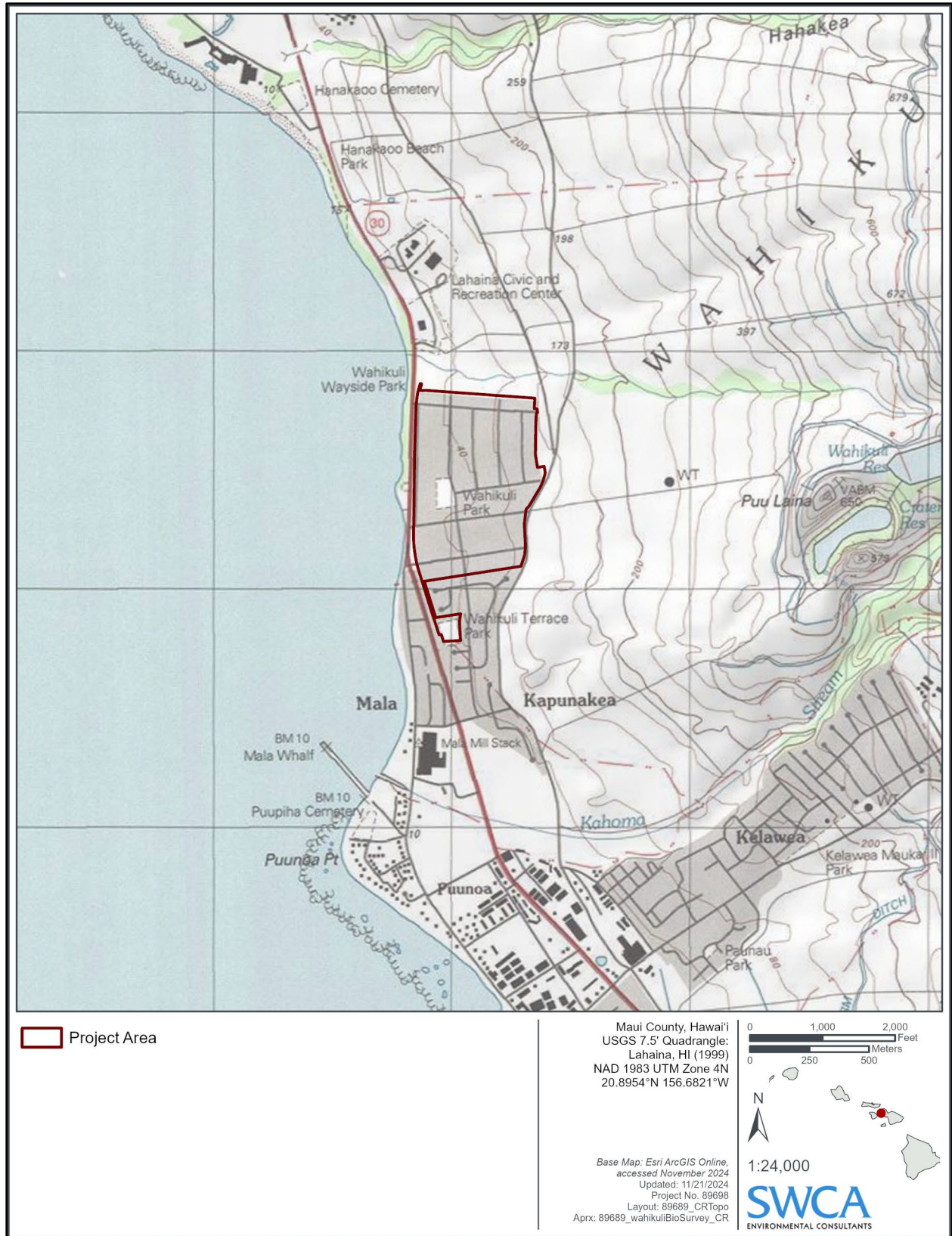


Figure 1. APE depicted on the U.S. Geological Survey 1999 Lahaina, Hawaii, quadrangle.



Figure 2. Satellite imagery showing the APE and Maui County TMK parcel boundaries.

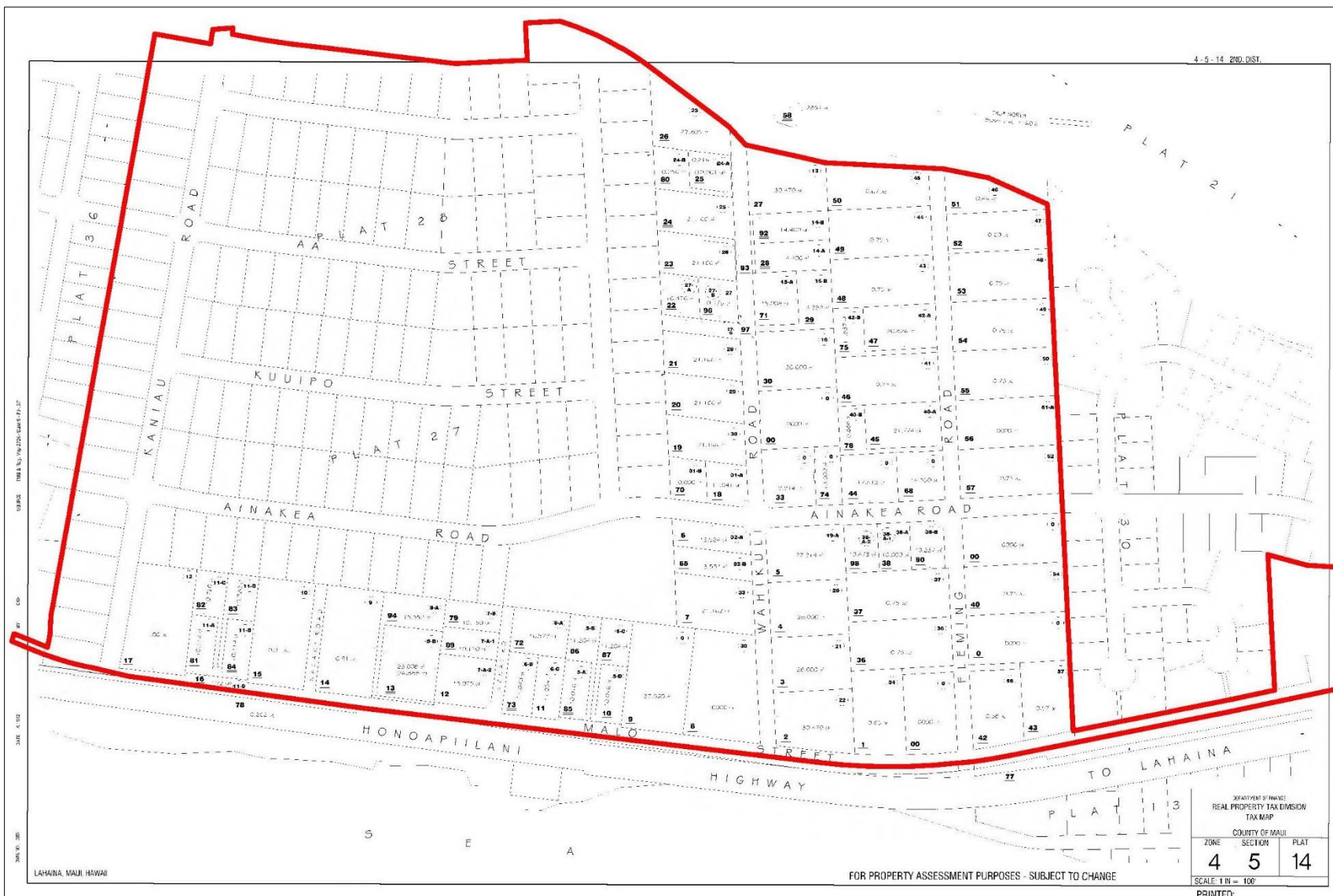


Figure 3. State of Hawaii tax map for plat 4-5-014 depicting northern portion of APE, courtesy of AECOM.

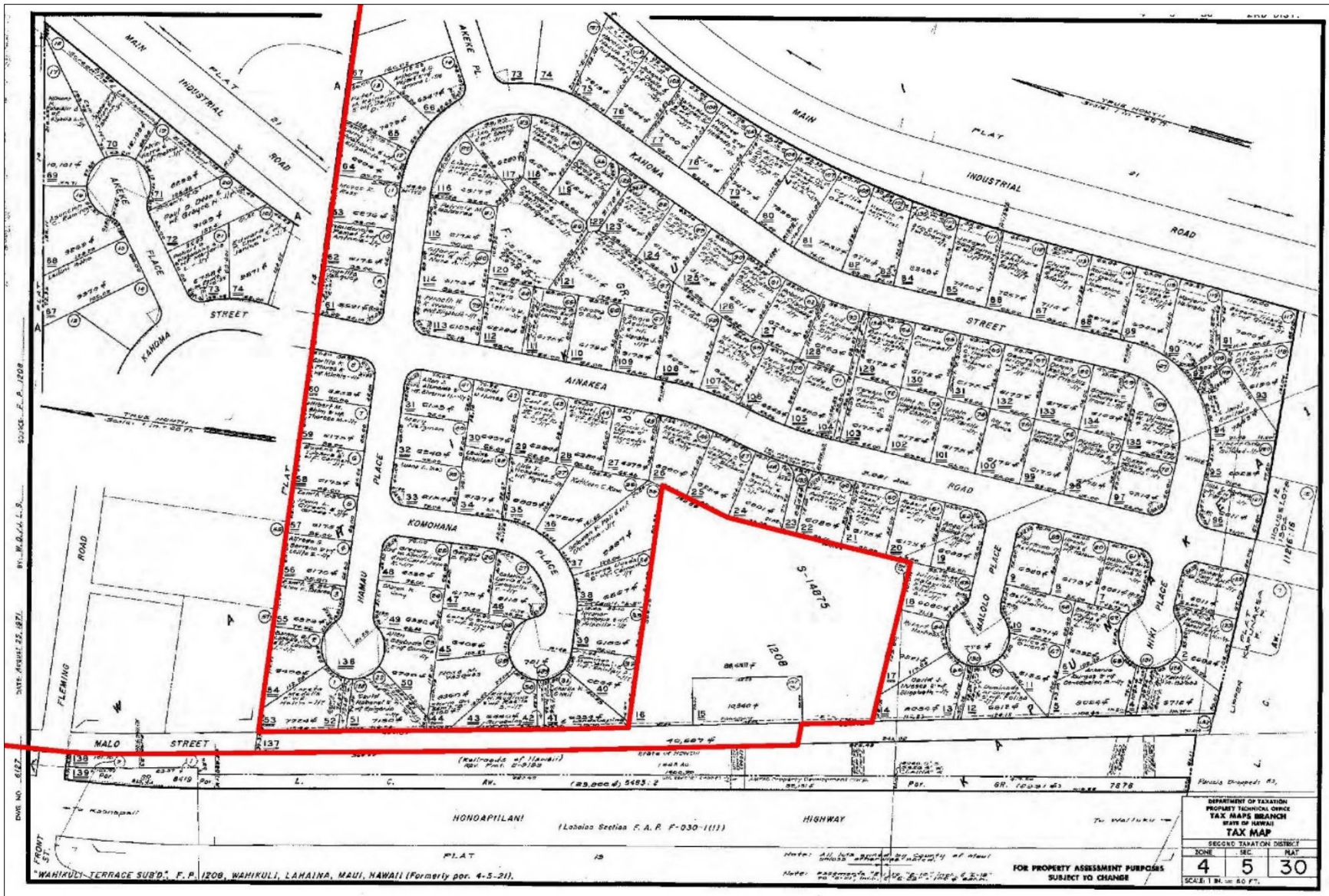


Figure 4. State of Hawaii tax map for plat 4-5-030 depicting southern portion of APE, courtesy of AECOM.

1.5 Report Organization

This report is composed of five principal sections. Following this **Introduction** section (Section 1), which presents the location, purpose, and background of the project and a discussion of the relevant government statutes and regulations, an **Environmental Setting** section (Section 2) provides information on the natural environment of the APE. The **Cultural and Historical Context** section (Section 3) presents the methods and results of archival research into the cultural and historical literature relating to the APE and vicinity. The **Archaeological Context** section (Section 4) details the previously identified historic properties within and surrounding the APE and the results of relevant archaeological studies undertaken in these areas, while the **Field Inspection** section (Section 5) describes the results of the archaeological field inspection, which included pedestrian and vehicular surveys of all publicly accessible portions of the APE. The **Summary and Recommendations** section (Section 6) presents an overview of this report, its findings, and archaeological recommendations for the project. The **Glossary of Hawaiian Words Used in the Text** provides a list of Hawaiian words used in this report and their translations in English, while the **References Cited** section lists all references cited.

2 ENVIRONMENTAL SETTING

The APE is located approximately 200 feet from Maui’s western coastline and comprises a grid of paved, active roadways and existing and proposed easements within a residential area. Most structures in the APE were burned during a wildfire in August 2023. At the time of this study, the rebuilding of some single-family homes on individual privately owned lots had begun, but most lots, while cleared of burned structural debris, remain undeveloped and covered with a surficial layer of engineered aggregate material (Figure 5).

The natural terrain in the APE has a moderate western aspect with elevations ranging from 6 to 115 feet above mean sea level. West Maui is generally arid, with average annual rainfall in the APE and vicinity measuring approximately 33 millimeters (1.3 inches) (Giambelluca et al. 2013). Temperatures range from 65 to 87 degrees Fahrenheit throughout the year, with the highest temperatures occurring between July and August (Armstrong 1973).



Figure 5. Gravelled lot following fire debris clean-up activities, view to the east along a proposed sewer line easement within an existing drainage easement east of Aa Street.

2.1 Soils

The majority of soils underlying the APE are mapped as stony and very stony silty clays of the Wahikuli series (WdB, WcC, and WcB) (Natural Resources Conservation Service [NRCS] 2024) (see Figure 7). These are well-drained soils that developed in material weathered from basic igneous rock, and while not classified as prime farmland, were historically used for irrigated commercial sugar cane cultivation until the 1990s. The depth to bedrock is typically less than 3 feet. A small area of Ewa silty clay loam (EaA) is also mapped in the southern portion of the western boundary of the APE (see Figure 7).

2.2 Vegetation

The natural vegetation patterns within the APE have been severely altered by residential development over the last 60 years. Vegetation observed within the APE during the field inspection (see Section 5.0) consisted of ruderal species of non-native grasses and small shrubs beginning to grow back following the August 2023 wildfires that burned through the area. Some larger landscaped trees and decorative shrubs on private parcels also survived the fires and were growing back (Figure 6).



Figure 6. Non-native species growing in cracks in pavement and a sidewalk strip near the eastern terminus of Kaniau Street, with landscaped trees and shrubs growing on private parcels, view to the south.

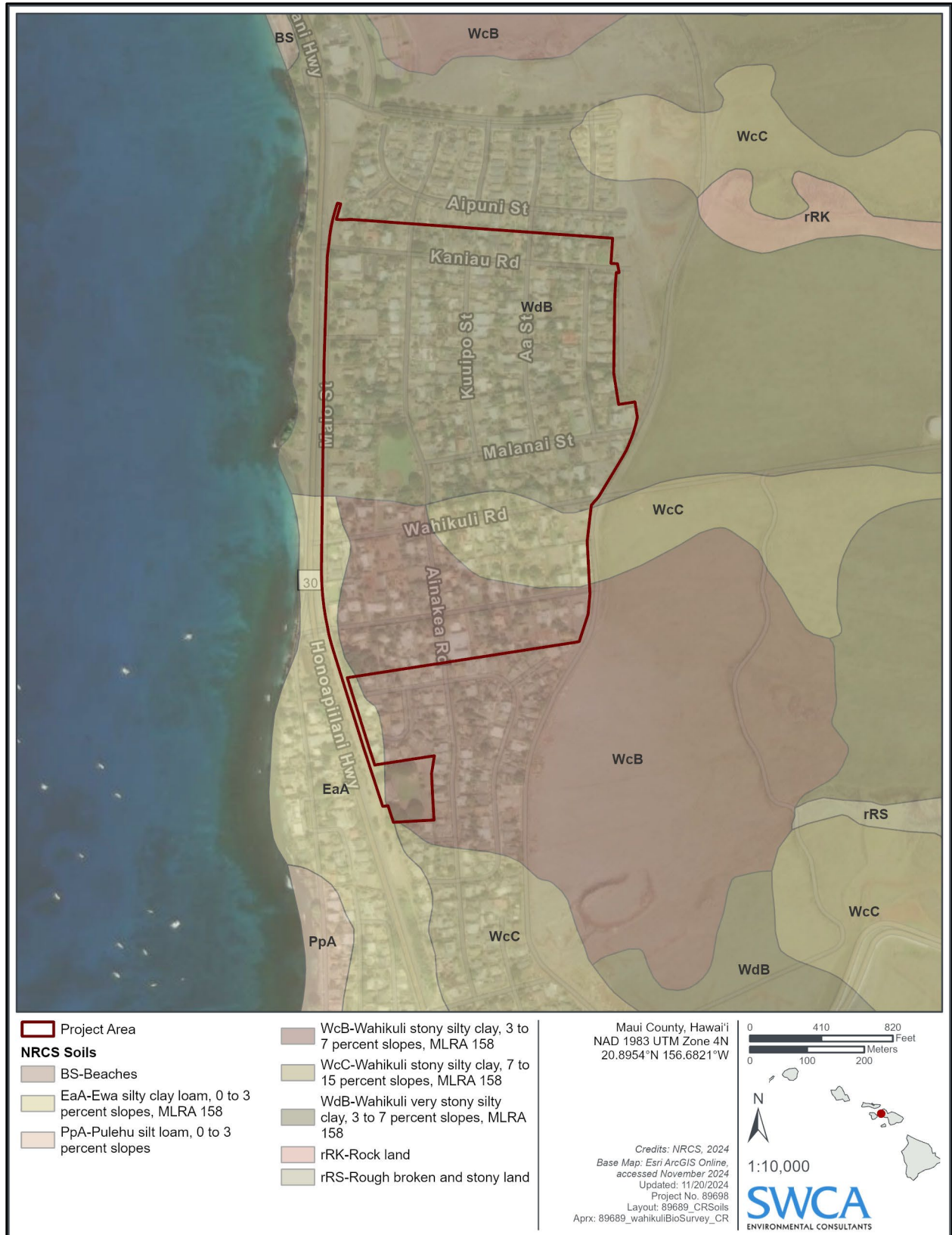


Figure 7. Soils mapped within the APE and vicinity (NRCS 2024).

2.3 Traditional Environmental Zone

During the traditional Hawaiian period, the APE would have formed part of the *kula uka* (inland plain). This environmental zone would have supported dry shrubs and grassland interspersed with dryland trees such as *wiliwili* (*Erythrina sandwicensis*), *lama* (*Diospyros ferrea*), and *'iliahi* (sandalwood [*Santalum* sp.]). Native shrubs would have included *'a'ali'i* (*Dodonaea viscosa*) and *'ilima* (*Sida fallax*). The primary grass present would likely have been *pili* (*Heteropogon contortus*).

These open grasslands would have provided the pre-Contact residents of Wahikuli ahupua'a with a number of resources, such as the native pili grass, which would have been gathered to provide thatching materials for their house walls and roofs (Neal 1948:72–73), as well as medicinal and decorative native dryland shrubs such as the *'ilima* (Neal 1948:485). Here also, birds like the *kōlea* (Pacific golden plover, *Pluvialis fulva*) may have been seasonally hunted for food.

3 CULTURAL AND HISTORICAL CONTEXT

The following section provides a review of the cultural and historical background of the APE and vicinity. This review was undertaken to assess the potential for historic properties to be present within and in the vicinity of the APE.

3.1 Research Methods

Archival research addressed both the traditional Hawaiian and post-Contact land use of the APE and its possible cultural significance. During the course of research, a range of documentary sources were consulted. Historic documents and reference volumes consulted were found in the Hawai‘i State Archives, the Hawai‘i State Library system, the University of Hawai‘i Mānoa library, as well as within SWCA’s library of Hawaiian reference volumes. Historic maps from the collection of the Hawai‘i State Survey Division were obtained through their website, as were maps held at the University of Mānoa Library. Land documents and place name information were obtained from online sources.

3.2 Traditional Hawaiian Place Names

The *inoa* (names) of *wahi pana* (storied and legendary places [Pukui and Elbert 1986:376]) are an integral part of Hawaiian culture. The traditions related to these places are often preserved within their names. Place names can contain a plethora of information relating to environmental features or characteristics, political history, and mythological origins and often provide valuable cultural insights into the history and significance of an area. Therefore, place names are an appropriate starting point for archival research and investigation into place, having been passed on through language and oral tradition, thus preserving the unique significance of the place.

Maui Komohana (West Maui) is comprised of three moku, and each contains a *kalana* along with several ahupua‘a (Pata 2022:1). A *kalana* is a land division that is nestled within a moku and includes a handful of ahupua‘a (Pata 2022:xxiii). This type of land division is most often found on Maui since its geographic shape differs from that of the other islands. In the moku of Lahaina, in the section “that extends from Launiupoko to Wahikuli, the ahupua‘a were divided into various parcels, spanning different elevational zones, and occurring in detached pieces,” and “do not run in contiguous parcels from sea to mountain, as is the normal configuration of lands in Hawai‘i, but appear as ‘lele,’ or detached parcels with portions of other lands between them” (Maly and Maly 2007:ii). Designating a *kalana* within a moku helped to group together some of these detached lands that were administratively connected.

The APE falls within the moku of Lahaina, in the *kalana* of Lahaina, and in the ahupua‘a of Wahikuli. There is no universal agreement on what the name Lahaina means or how it should be pronounced. Published in 1974, the Pukui and Elbert reference *Place Names of Hawaii* spelled this place name as Lāhainā, translating it as “cruel sun” (Pukui and Elbert 1974:127), but there has always been those who did not agree with this pronunciation or translation. In his 2022 book on West Maui place names, Cody Kapueola‘ākeanui Pata summarizes the debate:

Although scholars provide evidence that an older pronunciation for Lahaina was “Lāhainā,” most modern-day scholars choose the spelling that reflects modern-day pronunciation, “Lahaina.” Even in the vast majority of her works, native Hawaiian speaker and renowned scholar Mary Kawena Pukui chose to represent this place name without diacritical markings, as have other contemporary scholars. This is likewise reflected in the pronunciation of residents, kūpuna, and in recordings of manaleo. (Pata 2022:57)

Based on its pronunciation, Lahaina could refer to a variety of sugar cane, a variety of sweet potato, or to the acts of poisoning or leaping. Additionally, Pata goes on to cite an 1871 newspaper article that says Lahaina is a new name, and that the older names are Lele and Nāhonoapiʻilani (Pata 2022:57–58).

Wahikuli is translated as “noisy place,” given when the volcano goddess, Pele, traveled through the area. As she arrived on Maui, she began to dig there with her digging stick, and the noise of that act was remembered in the place name (Pata 2022:100).

3.3 Traditional Hawaiian Period

Lahaina is situated on the leeward (*kona*) side of West Maui, where settlement is approximated to have taken place between 800–1000 AD (Maly and Maly 2007:7–8). The area is well-situated to take advantage of many types of subsistence resources. There are excellent fishing grounds, flat plains and ample sunlight for growing breadfruit, and streams from the West Maui mountains to irrigate wetland *kalo* (taro [*Colocasia esculenta*]) fields. Since the fishing was so abundant, house lots were generally located closer to the shore with *loʻi* (wetlands) situated inland (Handy and Handy 1991:272). Although the overall cultivation capacity of Maui seemed lower than the other large islands, West Maui, and Lahaina in particular, stood out as areas of that could sustain higher populations:

Of the four larger islands...Maui produced the least taro. In sweet-potato production it probably equalled Hawaii and outproduced Oahu and Kauai. Of breadfruit, Hawaii probably produced most, Kauai came second, Maui third, and Oahu fourth. Taken altogether in terms of areas cultivated and number of communities, Maui certainly ranked last... There were two areas, however, in which population was concentrated. One was in “The Four Wai” (Streams)—Waikapu, Wailuku, Waiehu, Waiheʻe—the four largest streams and *loʻi* areas on windward West Maui, which were contiguous. The other was on the southwest and west coast of West Maui, with Lahaina at its center. No doubt this factor of concentration of population was what enabled Maui’s courageous and ambitious chiefs to conquer and dominate great neighboring island areas as they did. (Handy and Handy 1991:488).

Throughout its history, Maui has periodically been divided and ruled over by two different *aliʻi* (chiefs) with the boundaries of those divisions varying based on the political dynamic at the time. On the western side of the island, the seat of power was most often situated at or close to Lahaina.

One of the most noted and revered Maui rulers was Kakaʻalaneo, who reigned over the island in partnership with his brother, Kakae, in the early 1500s. Lahaina, referring to the populous area along the shoreline, was then known as Lele. After Kakaʻalaneo planted *ʻulu* (breadfruit, *Artocarpus altilis*) trees there, the place was poetically referred to as “Malu ulu o Lele,” “the shady breadfruit grove of Lele” (Nakuina 1904:55). At that time in history

...breadfruit trees were a very valuable possession, and to plant one was a meritorious act, worthy of commendation by one’s superior. To plant a grove, even if only a small one, was an act worthy of the gods. (Nakuina 1904:56).

To destroy even one tree was punishable by death, but to destroy several trees was a declaration of war. Kakaʻalaneo was forced to penalize his own son, Kaululāʻau, for doing just that. The boy, at only ten years old, destroyed several trees to clear a field for sport. The community complained, and Kakaʻalaneo banished his son to the island of Lānaʻi, then the home of only ghosts and wild spirits. In a story of redemption and responsible leadership, Kaululāʻau eventually conquered or tamed all the supernatural troublemakers, built a fishpond and planted food patches, then kindly and generously greeted fishermen that arrived from other islands. Soon, word of his generosity spread, and people came to live on Lānaʻi

with him. He ruled over the island as an ali‘i, choosing to stay there instead of going back and taking his place as the ruler of Maui. This is how Lāna‘i became part of the Maui kingdom (Nakuina 1904:55-58). Kaka‘alaneo is also the first ali‘i to have possessed an ‘ahu‘ula (feather cloak), establishing it as a tradition for future chiefs (Nakuina 1907:147–155).

As evidenced above, Kaka‘alaneo has been memorialized more than his brother, Kakae, although they ruled jointly. They and their descendants were successful in cultivating communities, establishing seats of power, and giving names to sites of wealth that would persist into the present day. During his time

Kekaa was the capital of Maui when Kakaalaneo was reigning over West Maui. It is said that there were many people there. Many houses were constructed and people cultivated a great deal of potatoes, bananas, sugar cane, and things of a like nature...that country from above Kekaa to Hahakea and Wahikuli...was all cultivated; Kekaa became a city populated by a great many. (Kaha 1919: 540–541)

Keka‘a is currently situated in the ahupua‘a of Hanaka‘ō‘ō (the northernmost ahupua‘a in the Lahaina kalana), although it is generally thought of as being in Ka‘anapali since the recreational area called Ka‘anapali Beach is at Keka‘a Point.

The great-grandson of Kakae was Pi‘ilani, who managed to surpass the fame of his predecessors. Rather than ruling jointly as had his ancestors, Pi‘ilani (c. 1600) unified the island under one rule. He married a chiefess of O‘ahu, Laielohelohe, then their daughter, Pi‘ikea, married the famous chief ‘Umi of Hawai‘i Island. From that time on the O‘ahu, Maui, and Hawai‘i island chiefly lines became intertwined (Kamakau 1992:19).

There are six bays along the Ka‘anapali coastline that became renowned during Pi‘ilani’s lifetime: Honokōwai, Honokeana, Honokahua, Honolua, Honokōhau, and Hononana (Pukui and Elbert 1974:48). Collectively, they became known as Nā Hono a Pi‘ilani, which has been used since that time as a descriptor for the island of Maui. These bays offer a view of Kaho‘olawe, Moloka‘i, and Lāna‘i, all of which were taken and ruled over by Pi‘ilani during his reign.

He also established Lahaina as the royal center and maintained his residence at Moku‘ula, a small island in the center of a lake that once existed in the center of Lahaina town. This continued to be the seat of power for rulers until the time of Kamehameha III, the Mō‘ī (Ruling Chief) of the Kingdom of Hawai‘i. Lahaina’s importance is evidenced by the fact that Kamehameha III’s mother, Keōpūolani, is buried in the cemetery there.

3.4 Historic Period

Kamehameha I, the founder of the Kingdom of Hawaii, was a Hawai‘i Island chief who conquered all the islands with the backing of powerful Maui Island ali‘i, thus making the chiefly areas on these islands important in the newly-unified government. Two ancient capitals, Kailua-Kona on Hawai‘i and Lahaina on Maui, continued to be active sites of politics and commerce into the new regime.

Lahaina’s value lay in its strategic location and cultural significance: Kaho‘olawe, Moloka‘i, and Lāna‘i could be seen from this coast, the famous ‘ulu grove and ‘uala (sweet potato, *Ipomoea batatas*) fields made it capable of producing an abundance of food, and Lele (later known as Lahaina town) was a *pu‘uhonua*, a place of refuge, where lawbreakers could receive pardons for their infractions if they reached the area before being caught. Moku‘ula, a small island in the middle of Loko Mokuhinia (one of Lahaina’s two lakes), was also the seat of royalty for generations. Lahaina could be regarded as the birthplace of the Constitutional Monarchy, as the “Lua‘ehu Constitution,” the first constitution of the Kingdom, was promulgated at Lua‘ehu in Lahaina (Kamakau 2001:197).

Once foreign ships began to frequent Hawaiian waters, Lahaina's port soon became one of the most accessible for these larger, deep-draft vessels, making it a center of commerce across the archipelago. Hawai'i's earliest commercial value was as a waystation between continents; it was the place to stop, rest, and restock supplies. This made it a bustling center of activity for foreigners sailors, many of whom spent the time indulging in vices. The first two laws, issued in 1822, were printed in English because their express intent was to manage the unruly behavior of drunk and lascivious sailors during their stays in Hawai'i:

NOTICE. Whereas disturbances have arisen of late on shore, the peace broken, and the inhabitants annoyed, by the crews of different vessels having liberty granted them on shore, it is hereby ordered by His Majesty the King, that in future, should any seamen of whatever vessel, be found riotous or disturbing the peace in any manner, he or they shall be immediately secured in the Fort, where he or they shall be detained until thirty dollars is paid for the release of each offender.

Masters of vessels are informed that all deserters shall be returned to their respective commanders. No seamen shall be left on shore without permission from the King.

NOTICE. His Majesty the King, desirous of preserving the peace and tranquility of his dominions, has ordered that any foreigner residing on his Islands, who shall be guilty of molesting strangers, or in any way disturbing the peace, shall on complaint be confined in the Fort, and thence sent from the Islands by the first conveyance (as reprinted in Kuykendall and Gregory 1926:128).

Soon thereafter, Hawai'i became a supplier of commercial resources on a global scale, primarily sandalwood, whale oil, and sugar. All of these commodities flowed through the bustling seaport of Lahaina. As more sailors arrived on ships of various nations, conflict ignited between them and the pious Calvinist missionaries who had come to the Islands to convert the Hawaiians to Christianity. In 1825, the ali'i began to prohibit Hawaiian women from visiting the ships in port, and the sailors believed this new regulation was due to the influence of the missionaries (Arista 2019:132–133). This left the Hawaiian elite with the challenging task of mitigating discord between these two groups while negotiating for the welfare of native Hawaiians. The government of Hawai'i had to maintain a balance, giving in to some demands while denying others, and always being mindful of the Kingdom's precarious sovereign status in the international arena. Thus, from the 1820s onward, politics, commerce, religion, and education all shaped the landscape of Lahaina, taking it from a well-watered royal center to a dry plantation desert.

3.4.1 Whaling Era (1819–1870s)

With the gradual wane in the trade in sandalwood to China due to the overharvesting of the native 'iliahi forests, resupply of the Pacific whaling fleet became the major commercial pursuit in Lahaina. After the discovery of sperm whaling grounds near Japan, ships began stopping at Hawaiian ports in 1819 and the number of vessels significantly multiplied each successive year. West Maui farmers actively supplied ships with food and firewood, making Lahaina a bustling market town. Some of the earliest bridges over deep river gullies were built in West Maui to allow producers to bring their food crops to the Lahaina markets (MacLennan 2014:107–108).

Whaling seasons were concentrated to 2 or 3 months in the spring and again in the fall, when sailors were on their way to or coming back from the hunting grounds. Lahaina became Maui's most populated port, serving whalers' needs for supplies, relaxation, and entertainment.

At such seasons Honolulu harbor and Lahaina "roads" were crowded with vessels and the dusty or muddy streets and byways of the towns were filled with sailors cruising about in search of recreation, which to many of them meant only drunkenness and debauchery.

Street brawls were frequent and there were some serious clashes between sailors and local authorities. (Kuykendall 1938:93)

The ever-present indulgence in vices stoked the tensions between whalers and missionaries, erupting in conflicts and riots. In 1825, the governor of Maui, Hoapili, proclaimed that women would no longer be allowed to go to foreign ships. Judging this to be the work of the missionaries, “twenty sailors from the English ship *Daniel the 4th* surrounded the mission house...threatening to kill the ministers and their families if they did not consent to allow Native females on board their ship” (Kashay 2008:374). This situation would emerge again over the next several years in both Lahaina and Honolulu, culminating in the need to construct the earliest forts and prisons in these highly volatile locales.

Small-scale whaling hunts off the coast of Maui and O‘ahu began in the 1840s (Lebo 2022:73), but the whaling industry started to decline after the discovery of petroleum oil in 1859 and the American Civil War in 1861, leading to a shift from whale oil to petroleum as a primary energy source (Jones and Osgood 2015:13).

3.4.2 Missionaries and the Lahainaluna Seminary

Keōpūolani was the highest-ranking wife of Kamehameha I and mother to the heirs of the Kingdom, Liholiho (Kamehameha II) and Kūikeyouli (Kamehameha III). She was from Maui and chose to reside at Lahaina after the death of her husband. Missionaries from the American Board of Commissioners for Foreign Missions (ABCFM) attached themselves to her, realizing that the *maka‘āinana* (commoners) would follow the examples of their ali‘i. If she became a Protestant, they believed, the rest would follow. Keōpūolani allowed them to stay, thus securing their livelihoods in the islands. Other ali‘i who followed her example eventually gave the second cohort from ABCFM permission to build a school, which would later become known as Lahainaluna.

In an 1831 meeting, the missionaries decided that they needed an institution to train teachers, and the small school huts in upper Lahaina were repurposed to meet that directive. Named Lahainaluna, the school’s first class consisted of 25 adult males. In 1836, it became a boarding school for boys, converting it to a high school, and the next year changing it to a “Mission Seminary.” Most of the graduates of Lahainaluna became teachers or government officials (Kuykendall 1938:111–112). According to the Lahaina Restoration Foundation, Lahainaluna was the first secondary school founded west of the Rockies, and likewise, published the first newspaper west of the Rocky Mountains (Lahaina Restoration Foundation 2024).

In 1835, Reverend Dwight Baldwin was granted 2,675 acres of land in northwest Maui. This land formed the foundation for ventures in West Maui undertaken by his son, Henry Perrine Baldwin. Henry Perrine Baldwin, known for his academic excellence at Oahu College (Punahou School) originally had plans to go into medical school before working in the commercial sugar industry at Lahaina. He became the *luna* (overseer) at the Waihee Plantation and eventually ran other sugar operations in Lahaina.

3.4.3 Early Sugarcane Ventures

Kō (sugar cane, *Saccharum officinarum*) was brought to the island by the earliest Pacific settlers, and Hawaiians had been growing it throughout the generations (Jones and Osgood 2015:1). It was not until the arrival of westerners, however, that growing the crop for profit was a consideration. The first known experiment in the cultivation of sugar on Maui started in Wailuku in the early 1820s and by the 1840s, other small cane growing ventures were emerging in West Maui and along the leeward coast of the island (Jones and Osgood 2015:26–27). Hawaiians and foreigners alike engaged in the industry, with the result that “Lahaina exported the largest portion of sugar and molasses produced in the islands during this

decade” (MacLennan 2014:108). At the same time, cattle were already becoming a problem in the area, destroying cane crops and denuding the hills above Lahaina, creating a dust problem in the town below.

3.4.4 The Mahele

In 1848, as part of the process that ushered in land ownership in the Kingdom of Hawaii, all the ali‘i serving under Kamehameha III signed the *Buke Mahele*. Each listed an inventory of the lands they oversaw, then divided that same list into two: the lands they would keep, and the lands they would give to their king, Kauikeaouli. After everyone had completed their divisions, Kauikeaouli then listed all of the lands under his supervision, then also divided these into two lists: those he would keep, and those he would give to the government. Through this process, islands were divided into three broad categories: Konohiki, lands retained by individual chiefs; Crown, lands considered the personal holding of the king; and Government, to be used for the good of the public.

No Land Claim Awards (LCA) were awarded in the APE, however three LCAs in Wahikuli are located near the APE. *Helu* (number) 7724:2 (‘āpana 2) to Poholapu is a 12-acre lot (LCA Volume 9:35) situated along Kahoma Stream more than 1 kilometer (km) southeast of the APE. Closer to the APE are *Helu* 5483 (‘āpana 2), described as a six-acre coconut grove mauka of the government road claimed by Kaeo, and *Helu* 477F (‘āpana 2), a one-acre coastal house lot claimed by P. Keliipio situated makai of the government road (LCA Volume 2:1528) (Figure 8). Both these LCAs are situated west of and outside the southwestern portion of the APE.

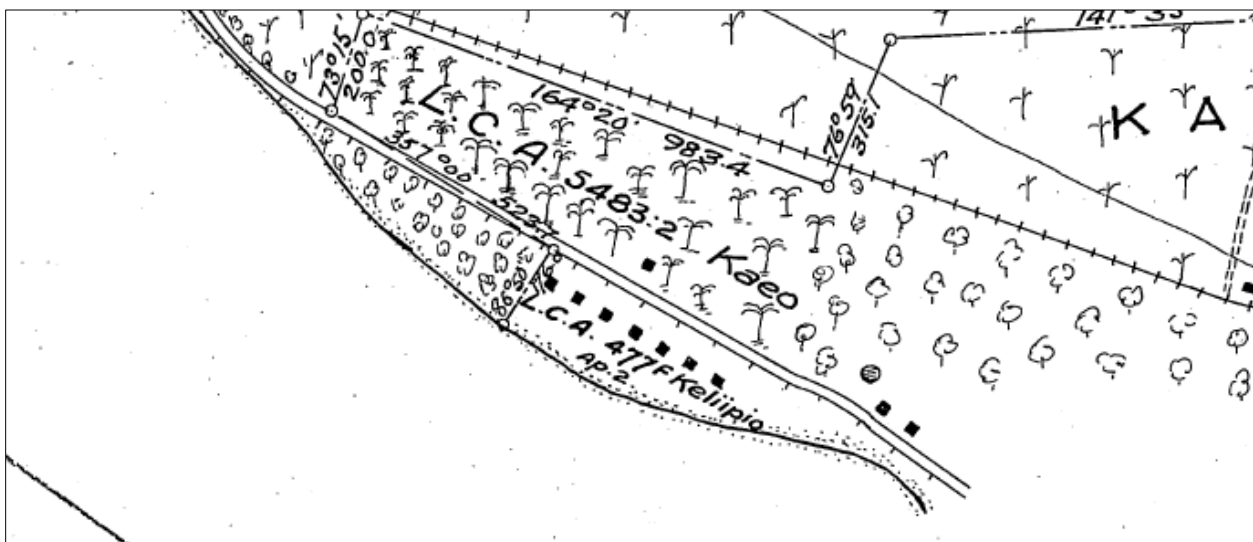


Figure 8. Detail of Hawaii Registered Map 2569 (Kanakanui and Lutz 1914) depicting LCAs 5483:2 and 477F, located outside the APE.

3.4.5 The West Maui Sugar Company (1864–1874)

With the advent of the first steam mill and the development of the railroad line, Lahaina's sugar economy boomed. While the West Maui Sugar Company effectively cultivated Lahaina cane, it relied on the Pioneer Mill Company for sugar processing (Madeus et al. 2022). Together, these two companies dominated the sugar industry in the Lahaina District (Madeus et al. 2022).

The West Maui Sugar Company was created by King Kamehameha V from Crown Lands in 1864. He combined several tracts of land and established leases to form the West Maui Sugar Company (1864)

(Madeus et al. 2022). In 1874, the West Maui Sugar Company was purchased by Pioneer Mills (Nickerson 1978).

3.4.6 The Pioneer Mills Company (1860s–1990s)

The history of Pioneer Mill is intimately tied with Honolua Ranch, which became Baldwin Packers, then Maui Pineapple Company, and later, the Maui Land and Pineapple Company. It is commonly known today as Maui Land & Pine (Wilcox 1997:126).

In the 1860s, James Campbell, Henry Turton, and James Dunbar started Lahaina Mill, originally processing sugar cane from independent planters (Wilcox 1997:126). A few years later, they established Campbell & Turton, which soon evolved into the Pioneer Mill Company. This sugar plantation operation came to dominate the Lahaina area for over a century until it finally shut down in 1999 (Jones and Osgood 2015:185). It utilized a railway system starting in 1882, and when the railway shut down in 1952, plantation railroading came to an end on Maui (Ramsay 1966:16, 26).

The Pioneer Mill began taking larger amounts of water in 1898 to irrigate its cultivated lands by constructing flumes deep in the valleys that siphoned water from the Honokohau and Honolua streams, reducing the volume that traveled down to the residents of Lahaina. In 1904, Honolua Ranch constructed the Honokohau Ditch. An agreement was made that the ranch would own and build the ditch while the mill would finance it and use its water (Wilcox 1997:126). In 1914, this first ditch was replaced by the Honolua Ditch and the agreement remained the same.

In 1918, Pioneer Mill built the Honokowai Ditch to replace the earlier flumes, and continued to construct Kahoma, Kanaha, Kauaula, Launiupoko, Olowalu, and Ukumehame Ditches (Wilcox 1997:66–67, 134). The company grew, and “by 1931, Pioneer Mill received from 50 to 60 mgd [million gallons per day] from these sources and an additional 40 mgd was supplied by pumping groundwater” (Wilcox 1997:126). Whenever their water needs had been fulfilled, Pioneer Mill sold any “surplus water” to the county, which was then diverted into the Lahainaluna Ditch (Wilcox 1997:136–137).

Pioneer Mill continued to dominate Lahaina, absorbing smaller plantations throughout its lifespan. After over a century of operations, its downturn occurred by the early 1980s when it no longer received all of the Honokohau Ditch water. Having outlasted most sugar plantations around the islands, due to foreign competition, Pioneer Mill closed in 1996 (Wilcox 1996:137).

3.5 Historic Maps and Aerial Photographs

Historic land use activities, such as commercial sugar cane cultivation and the subsequent establishment of residential developments, significantly altered the natural landscape of the entire project APE and much of the surrounding region. The changes in land use since the 1920s can be traced through a series of historical maps and aerial photographs of the area.

By the 1920s, the sugar plantations established in West Maui during the preceding decades were flourishing. A 1924 Territory of Hawaii Mala quadrangle map (USGS 1924) depicts the APE flanked on its east and west boundaries by two railroads. One rail line (SIHP Site 50-50-03-08887) is shown running along the coastline, while the other (SIHP Site 50-50-03-08886) can be seen trending along a contour; both are labeled as “PIONEER MILL RR (NARROW GAGE)” (Figure 9). Four structures, possibly representing residences, appear to dot the coastal road north of Wahikuli Street, which was used to access the reservoirs near Pu‘u Laina (see Figure 9).

A map of Pioneer Mill Co.'s landholdings in 1939 (State of Hawaii Department of Accounting and General Services 1939) depicts the northern half of the APE surrounded by sugar cane lands with individual fields marked by their alphanumeric designations (Figure 10). Areas labeled "HOMESTEAD LOTS" are shown on the 1939 map trending along the coast from Kaniau Road to Wahikuli Road where the lots extend east to the railroad (SIHP Site 50-50-03-08886); individual structures are depicted in other areas of this map, suggesting that the homesteads had not yet been constructed (see Figure 10). Much of the remainder of the project APE appears to have been uncultivated (with the exception of a sliver along its northern edge that forms part of field I-5). The structures located along the coast to the west of the southernmost portion of the APE may represent Mala Camp, as noted on the 1924 topographic map.

Aerial photographs indicate that by the early 1950s, most of the areas designated as homestead lots on the earlier maps had been developed. A close examination reveals that the majority of the remaining portions of the APE appear to be in natural ground cover rather than under sugar cane cultivation (Figure 11 and Figure 12). In 1965, residential areas were expanding to the north and south of Wahikuli Road between the railroad corridors (Figure 13). Just more than a decade later, in 1976, the entire APE was developed as housing (Figure 14). The APE continued to serve as a residential area, eventually expanding to Leialii Parkway to the north in the early 2000s (Figure 15).

In August 2023, a series of wildfires burned the vast majority of single-family homes within the APE. Remediation efforts in the APE following the wildfires have been completed, with hazardous debris and ash being removed from all of the individual lots.

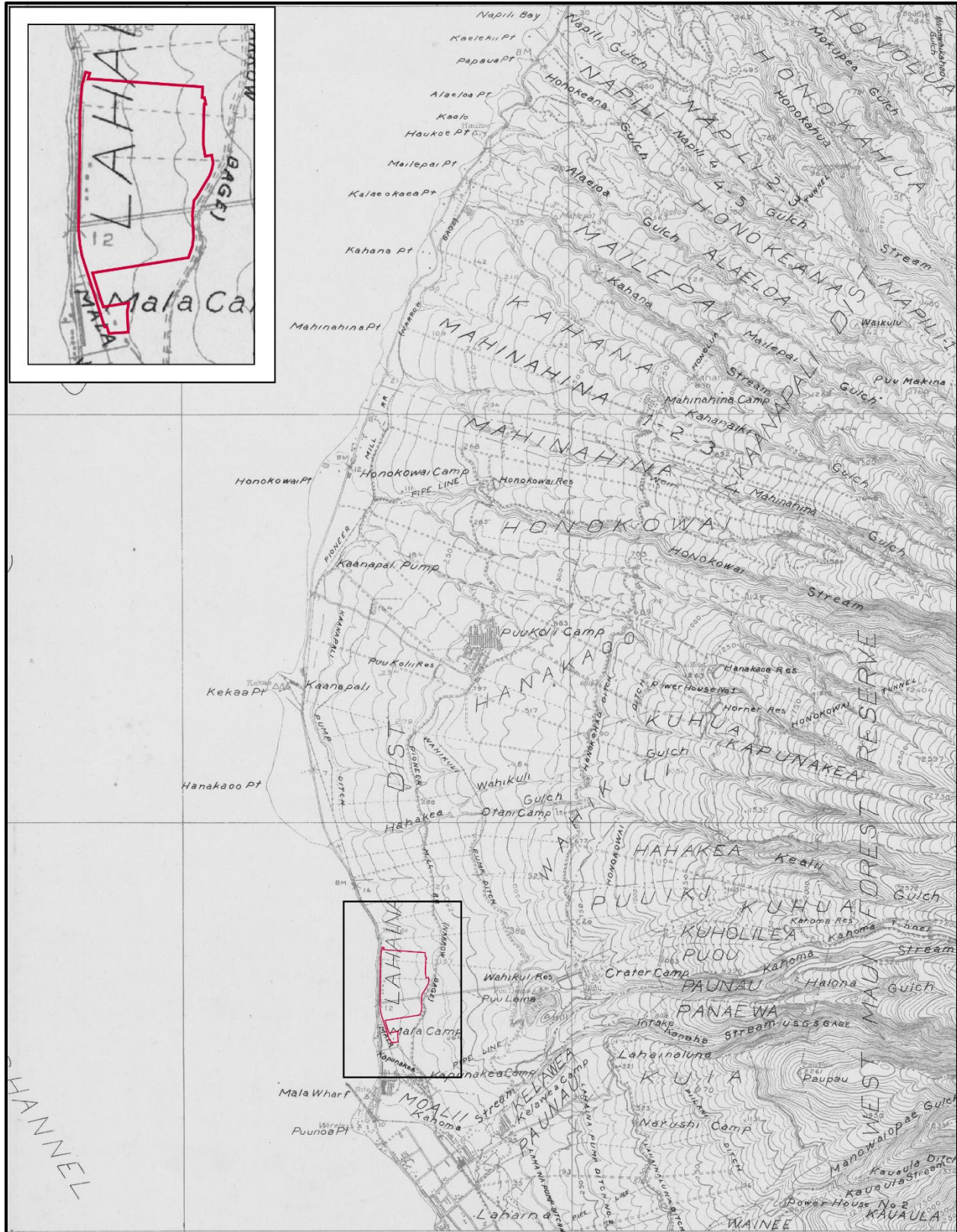


Figure 9. Portion of USGS Mala quadrangle (1924) depicting the APE.

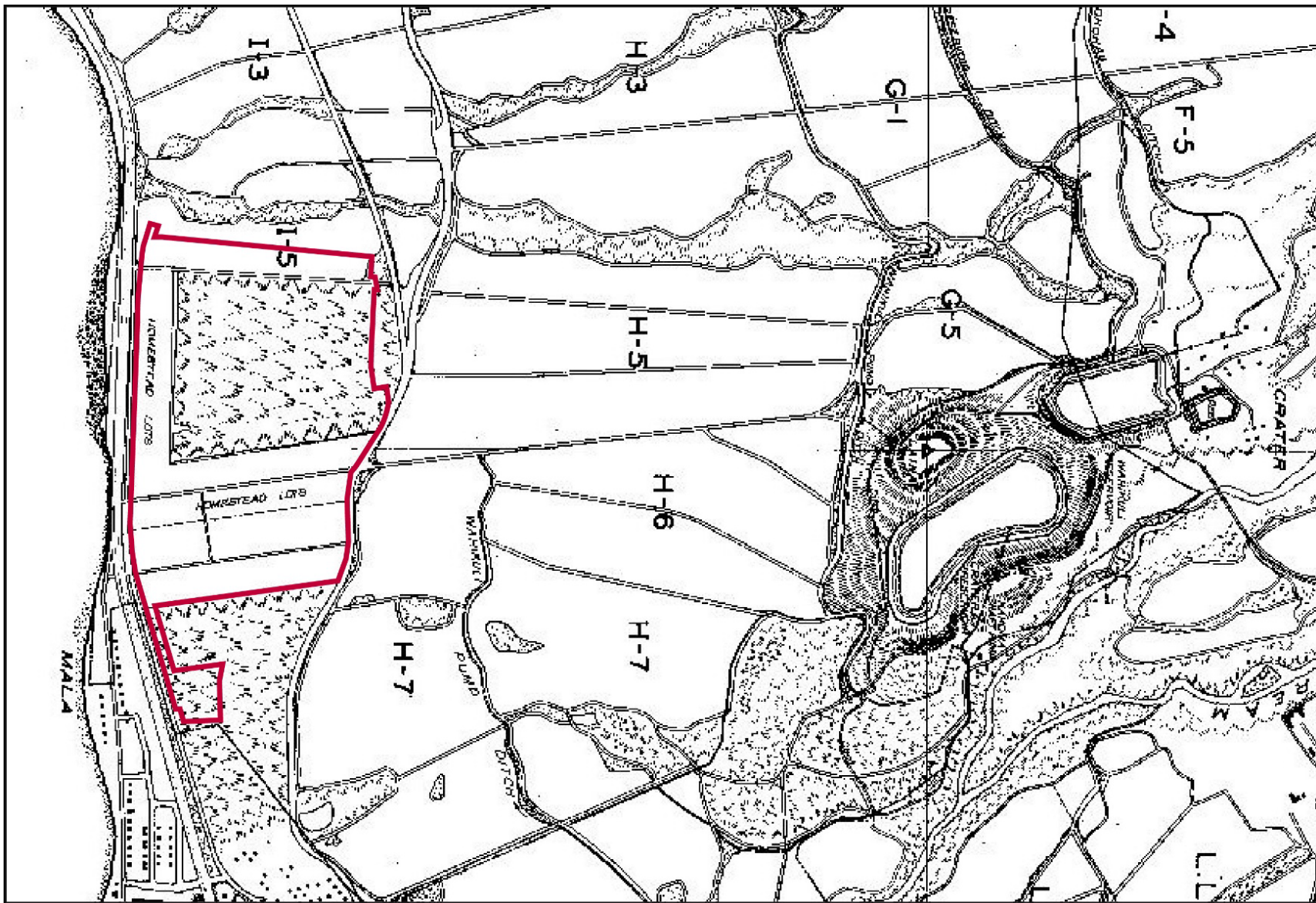


Figure 10. Detail of 1939 Pioneer Mill Co. map (State of Hawaii Department of Accounting and General Services 1939) depicting “HOMESTEAD LOTS” mapped within the APE along the coastline and Wahikuli Road (not labeled).



Figure 11. Historic aerial photograph (USGS 1950) showing development of homestead lots surrounded by commercial agricultural fields within the APE in 1950.



Figure 12. Historic oblique aerial photograph showing developed homestead lots and commercial agricultural areas in the APE within 1952 (USGS 1952).



Figure 13. Historic aerial photograph showing expansion of residential development in the APE in 1965 (USDA 1965).



Figure 14. Historic aerial photograph showing the APE nearly encompassed in residential development in 1976 (USGS 1976).



Figure 15. Aerial photograph showing continued expansion of residential development to the north of the APE in 2000 (National Oceanic and Atmospheric Administration 2000).

4 ARCHAEOLOGICAL CONTEXT

A review of archaeological literature indicates that numerous archaeological investigations have been conducted within the vicinity of the APE, while one study (Fredricksen and Fredricksen 2003) slightly overlaps the northeastern corner of the APE (Figure 16). The current literature review demonstrated that two historic properties have been previously identified within the APE, and two others are situated adjacent to the APE. Summaries of the archaeological studies that identified these historic properties are presented below, while Table 1 presents the results of other relevant studies conducted in the vicinity of the APE.

The previous archaeological investigations that have occurred nearest to the APE are associated with the State of Hawai'i Housing Finance and Development Corporation's (HHFDC's) Lahaina Master Plan project. The project planning began in the 1970s and included several archaeological investigations conducted mostly within the inland (mauka) portion of the ahupua'a. The project later became known as the Villages of Leiaili'i and included several phases of development which are currently ongoing. The archaeological investigations associated with this project include Jensen (1989); Jensen and O'Claray (1991); Goodwin and Leineweber (1997); Corbin and Rosendahl (2008); Lee and Dega (2021); and Madeus et al. (2022).

Archaeological investigations that have occurred outside of the current APE have identified remnants of the former traditional Hawaiian agriculture practices, burial sites, and habitation sites in area within portions of the ahupua'a that were not heavily disturbed by Pioneer Mill's agricultural infrastructure. Most of the mill's operations and footprint within Wahikuli consisted of the development of sugar cane agricultural fields and associated infrastructure such as water control features and transportation networks.

4.1 Walker 1931

From 1929 to 1930, W.M. Walker conducted an inventory of archaeological sites on the island of Maui for the Bishop Museum. As a result of his fieldwork, informant interviews, and research, Walker prepared a manuscript (Walker 1931) titled "*Archaeology of Maui*," reporting on a wide range of sites and traditions of places around the island.

At the site of the former Halulukoakoa Heiau (SIHP Site 50-50-03-00011), situated within the southwest portion of the APE, Walker described the site as "a large heiau for human sacrifice" and stated that at the time of his recording, only a few fragments of the *heiau* (traditional temple or shrine) walls existed, as most of the stone had been removed for use as ballast during railroad construction. Walker also stated that "the site has been further cleared and levelled (*sic*) to make a playground, and what remains has been used for a dump of debris of every kind, and the whole is heavily overgrown with kiawe bushes" (Walker 1931:114). These *kiawe* [*Prosopis pallida*] thickets are visible in the 1965 aerial photograph (Figure 13). The site of the former Halulukoakoa Heiau may rest within the grounds of Wahikuli Terrace Park. Walker did not identify any other sites within the APE.

4.2 Madeus et al. 2022

In 2021, Madeus et al. (2022) conducted an archaeological inventory survey (AIS) to the north of the APE to support a residential development project (see Figure 16). Three historic properties were designated during the AIS, including two railroad corridors (SIHP Sites 50-50-03-08886, a plantation-era railroad corridor, and 50-50-03-08887, the Lāhainā, Kā'anapali & Pacific (LK&P) railroad) that extend south to trend along the east and west boundaries of the APE. The third site is a 400-meter-long asphalt-

paved road segment (SIHP Site 50-50-03-08888) located approximately 1,000 feet north of the APE. Madeus et al. (2022:94-95) assessed all identified historic properties as significant under National Historic Preservation Act (NRHP) Criterion “d” pursuant to HAR Chapter 13-13-275-6 and recommended archaeological monitoring during future project construction activities.

4.3 Kulaiwi Archaeology (in progress)

In June 2024, Kulaiwi Archaeology identified human skeletal remains (SIHP Site 50-50-03-09023) while conducting archaeological monitoring within the APE for the Proposed Identification and Remediation of Contaminated Drinking Water Infrastructure in Lahaina Project (HICRIS Project No. 2024PR00182). The human skeletal remains were disturbed, highly fragmented, and interspersed within a layer of imported sand fill underlying sewer pipes which possibly originated from the Pu‘u One dunes in the central windward portion of Maui (Solomon Kailihiwa III, personal communication). To date, the archaeological reporting for this project is not complete.

Table 1. Relevant Archaeological Studies Conducted in the Vicinity of the APE

Author (Year)	Title	Results
Connolly (1974)	Phase I Archaeological Survey of Kahoma Stream Flood-Control Project Area, Lahaina, Maui.	Identified three historic properties including a burial mound (the Pu'u Piha Cemetery [former Mala graveyard & fishpond] (SIHP Site 50-50-03-00226), the Kahoma Stream Terrace System Complex (SIHP Site 50-50-03-01775), and the Haia Terrace System (SIHP Site 50-50-03-01776); located approximately 200 meters south of the APE.
Hommon (1973)	Report of a Walk-Through Survey of Kahoma Stream Flood Control Project Area.	Identified one historic property, the Kahoma Stream Terrace Complex (SIHP Site 50-50-03-01775) located approximately 1.3 km southeast of the APE.
Joerger and Kaschko (1979)	A Cultural History Overview of the Kahoma Stream Flood Control Project, Lāhainā, Maui, and Ma'alaea Small Boat Harbor Project, Ma'alaea, Maui, Hawai'i.	Identified one historic property approximately 1 km southwest of the APE, the 'Alamihi Fishpond (SIHP Site 50-50-03-03799); no fieldwork was conducted.
Ahlo and Morgenstein (1980)	Archaeological Test Excavations Near the Mouth of Kahoma Stream, Maui, Hawaii.	Identified two features (an imu and an 'auwai) associated with the 'Alamihi Fishpond (SIHP Site 50-50-03-03799) located approximately 600 meters south of the APE.
Barrera (1988)	Honoapiilani Highway, Maui: Archaeological Reconnaissance.	Identified seven previously recorded historic properties including Lahaina Historical District (SIHP Site 50-50-03-03001), Pioneer Sugar Mill (Site 50-50-03-1998 [now part of the Pioneer Mill Operations Historic District SIHP site 50-50-03-4420]), Hale Pa'i Printing Museum (SIHP Site 50-50-03-01596), Kahoma Complex (Site SIHP Site 50-50-03-01203), Honokowai Petroglyphs (Site 50-50-03-01207), Honokowai House Outline (SIHP Site 50-50-03-01208), and Kaanapali Power Plant (portion of SIHP Site 50-50-03-01978), and two newly identified historic properties consisting of an agricultural complex at Kahoma Stream (SIHP Site 50-50-03-01775), and a possible habitation terrace near Honokowai Stream (SIHP Site 50-50-03-04104); located between approximately 1.3 km southeast and 5 kilometers north of the APE.
Haun (1988)	Subsurface Archaeological Reconnaissance Survey Lahaina Cannery Makai and Mauka Parcels, Land of Moalii, Lahaina District, Island of Maui (TMK: 4-5-05:9,10,11; 4-4-11:3).	Identified subsurface pre-Contact midden deposits containing volcanic glass flakes, charcoal, and pond sediments (SIHP Site 50-50-03-02963) approximately 400 meters south of the APE.
Jensen (1989)	Archaeological Inventory Survey Lahaina Master Planned Project Site, Land of Wahikuli, Lahaina District, Island of Maui.	Identified 12 historic properties (SIHP Sites 50-50-03-02478 to 50-50-03-02488 and 50-50-03-01203 [the Kahoma Complex]) north and east outside of the of the APE. Identified sites included terraces, enclosures, a road, and possible burials/burial markers) related to the Pioneer Mill Co. and dating to the post-Contact period.
Jensen (1991)	Archaeological Inventory Survey Honoapi'ilani Highway Realignment Project Lāhainā Bypass Section – Modified Corridor Alignment Lands of Honokōwai, Wahikuli, Pana'ewa, Kuia, Halaka a, Puehuehunui, Pāhoa, Polanui, and Launiupoko Lāhainā District, Island of Maui.	Identified four historic properties within or adjacent to the project APE (SIHP Sites 50-50-03-02484, 50-50-03-02487, 50-50-03-02489, and 50-50-03-02490); located approximately 700 meters north of the APE.
Jensen and O'Claray (1991)	Supplemental Archaeological Survey Lahaina Master Planned Project Offsite Sewer, Water Improvements, And Cane Haul Road Lands of Wahikuli, Hanakaoo, Honokawai, Kuhua, Kuholilea, Puou, Puuiki, and Aki Lahaina District, Island of Maui.	No newly identified historic properties were identified during the project; located approximately 1.75 kilometers east of the APE.
Kennedy and Denham (1992)	Archaeological Inventory Survey Report for Proposed Baseball Complex Adjacent to the Existing Lahaina Civic/Recreation Center Located at Lahaina, Island of Maui TMK: (2) 4-5-21:03.	No historic properties identified during the project; located approximately 800 meters north of the APE.

Archaeological Literature Review and Field Inspection for the Wahikuli Subdivision Gravity Sewer System Project

Goodwin and Leineweber (1997)	Archaeological Inventory Survey Report Pioneer Mill Company, Ltd, Sugar Enterprise Lands, Site No. 5-5-03-4120, Villages of Leialii Project, Lahaina, Maui, Hawaii	Designated multiple historic features as SIHP Site 50-50-03-04420); located directly east outside of the APE.
Fredericksen and Fredericksen (2003)	An Archaeological Inventory Survey of the Proposed Sandwich Isles Communications, Inc. Fiber Optics Landing Location Near the Lahaina Post Office, Wahikuli Ahupua'a, Lahaina District, Island of Maui (TMK: 4-5-21: 15)	Late historic to modern material identified within seven archaeological test trenches. No historic properties identified during the project; located directly north outside of the APE.
Formolo et al. (2005)	Archaeological Assessment Report for the Proposed Keawe Street extension Hanaka'o'o Ahupua'a, Lahaina District, Island of Maui TMK 4-4-08:07,13.	No historic properties identified during the project located approximately 950 meters southeast of the APE.
Corbin and Rosendahl (2008)	Archaeological Survey and Cultural Impact Assessment Villages of Leiali'i (Phases A and B) Master Planning Project. Report 2692-031908. Prepared for State of Hawaii, c/o Belt Collins Hawaii Ltd.	Ten historic properties (SIHP Sites 50-50-03-02478 to -02482 and -02484 to -02488) identified approximately 1 km east and northeast of the APE including enclosures, terraces, an access road, and possible grave markers.
Lee-Greig et al. (2008)	An Archaeological Inventory Survey Report for the Realignment of a Section of the Honoapi'ilani Highway Phase IA Kelawea, Paeohi, and Wahikuli Ahupua'a, Lāhainā District, Maui Island TMK: (2) 4-5-021, 010, 015, and 031: Multiple Parcels.	Identified two post-Contact push piles (SIHP Sites 50-50-03-06492 and 50-50-03-06496) 800 meters southeast of the APE.
Lee-Greig et al. (2009)	Archaeological Inventory Survey Documentation for an Inadvertent Historic Property Discovery Identified During Pre-Construction Walk Through for the Bypass Phase IA Project: State Inventory of Historic Properties 50-50-03- 6277.	Identified one historic property consisting of a large agricultural complex (SIHP Site 50-50-03-06277); located approximately 1.2 km southeast of the APE
Cordle and Dega (2008)	An Archaeological Inventory Survey Of Four Access Road Easements In Wahikuli, Kuhua, And Puuiki Ahupua'a, Lahaina District, Maui Island, Hawai'i [TMK: (2) 4-5-021: Por. 003, Por. 022, Por. 002; And (2) 4-5-22: Por. 02]	Identified five post-Contact features (two reservoirs, an irrigation ditch, and two earthen furrows) associated with SIHP Site 50-50-03-04420 along linear project area extending 1.7 km from the eastern APE boundary.
Perzinski and Dega (2009)	Archaeological Field Inspection and Literature Review for the Proposed Lāhainā No. 3 Force Main Replacement Project in Lāhainā, Wahikuli and Hanakā'ō'ō Ahupua'a, Lāhainā District, Island of Maui, Hawai'i [TMK (2) 4-4-13 (por), 4-5-21 (por)]	No historic properties identified within the linear project area, formed by the Honoapi'ilani Highway corridor situated along the northern portion of the western APE boundary.
Lee and Dega (2021)	Archaeological Inventory Survey for Kaiaulu O kukuia Apartment Project at the Villages of Leialii, Wahikuli and Moalii Ahupua'a, Lahaina District, Island of Maui, [TMK: (2) 4-5-021:021 por., 026 por., 027 por., and 041 por.; (2) 4-5-011:011 por.;(2) 4-5-035:037 por. (Honoapi'ilani Highway and Kapunakea St. ROWs)]	Identified one previously recorded post-contact era historic property (SIHP Site 50-50-03-04420) with four features within the project area (two clearing mounds, cistern, and a road) located approximately 500 meters southeast of the APE. The cistern (Structure 6) was recommended to be removed due to high levels of asbestos. Test units conducted did not reveal any subsurface results.

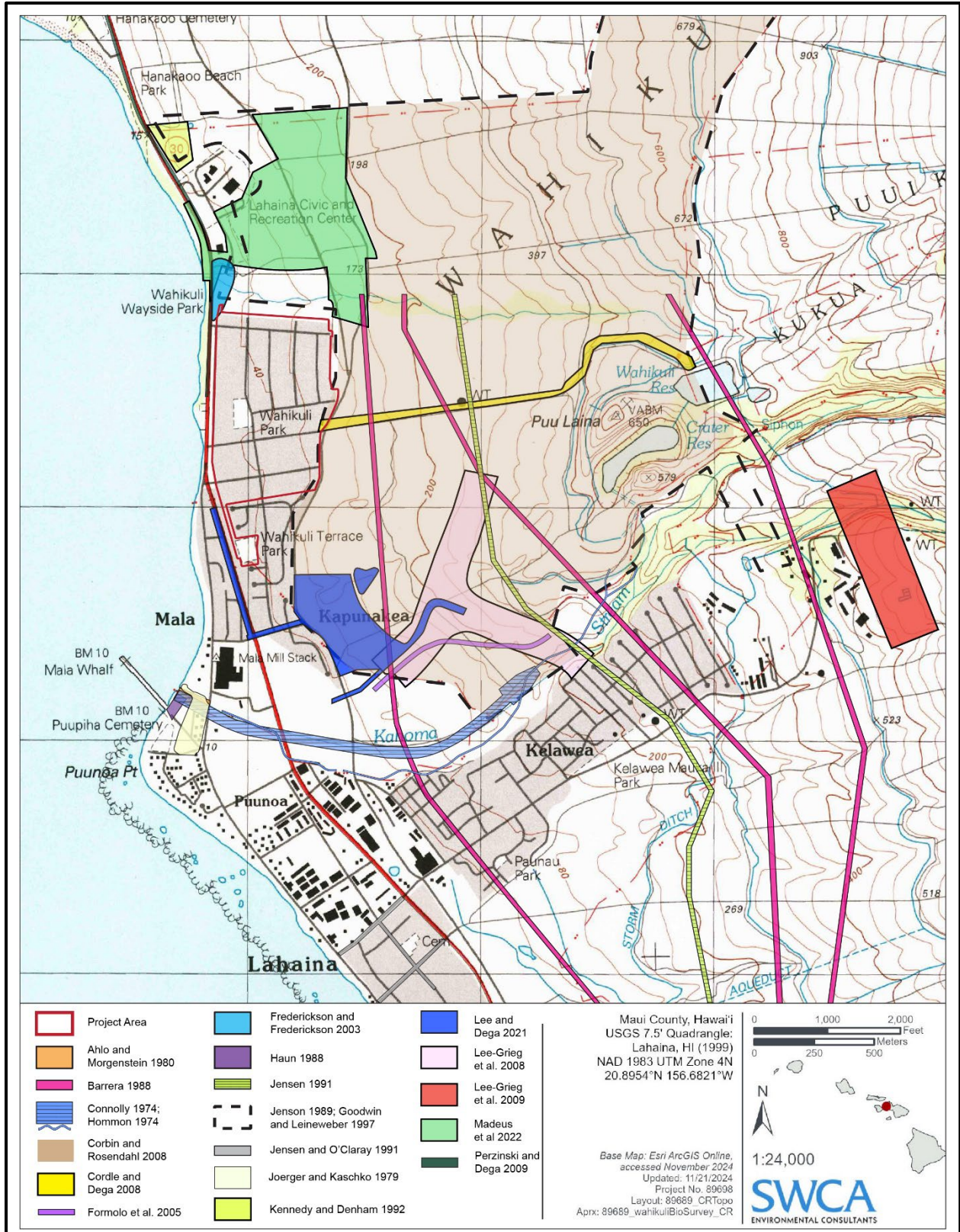


Figure 16. Previous archaeological studies conducted within the APE and vicinity.

4.4 Historic Properties Identified Within and in the Vicinity of the APE

The results of previous archaeological investigations undertaken within, adjacent to, and in the vicinity of the APE reveal a distinct pattern of site distribution. That is, any surface archaeological sites that may have once existed in the APE were likely destroyed by post-Contact development, or exist as a result of post-Contact development.

According to the SHPD's available data, two historic properties are mapped in the APE (Figure 17 and Figure 18). These include the disarticulated human remains (SIHP Site 50-50-03-09023) and the site of Halulukoakoa Heiau (SIHP Site 50-50-03-00011), reported to have been largely destroyed at the time of its original recording by Walker in 1929 to 1930 (Walker 1931:114).

Two other nearby historic properties (SIHP Site 50-50-03-08886 and 50-50-03-08887) are abandoned historic period railroad alignments that trend along the APE's western and eastern boundaries but do not enter the APE (see Figure 17 and Figure 18). Additional information on these historic properties and their identification was obtained during a review of available literature and data obtained from the SHPD and is presented below.

4.4.1 SIHP Site 50-50-03-00011 (Halulukoakoa Heiau)

The remnant surface features (i.e., walls) of Halulukoakoa Heiau (SIHP Site 50-50-03-00011) were reported as mostly destroyed more than 90 years ago (Walker 1931:114). However, the site of the former heiau within the APE (see Figure 17), if mapped accurately, could indicate an elevated potential to identify subsurface traditional Hawaiian archaeological resources, artifacts, and/or human remains in this area.

4.4.2 SIHP Site 50-50-03-08886 (Railroad)

While not mapped within the APE, SIHP Site 50-50-03-08886 (railroad) trends along a portion of the eastern boundary of the APE, extending approximately 400 meters from the eastern terminus of Malanai Street in the north past Fleming Road to the south (see Figure 17 and Figure 18). Madeus et al. (2022:88–89) recorded a segment of the site to the northeast of the APE and describe the site as an asphalt-paved road trending along a former plantation railroad corridor. Madeus et al. (2022:88) also assessed the site as significant under HAR Chapter 13-275-6, Criterion “d”. The tracks were removed by 1956. SIHP Site 50-50-03-08886 has been recommended as eligible to the NRHP under Criterion D

4.4.3 SIHP Site 50-50-03-08887 (Railroad)

A segment of SIHP Site 50-50-03-08887 (railroad) trends along the APE's entire western boundary for approximately 1 km; it is outside but adjacent to the APE (see Figure 17 and Figure 18). Madeus et al. (2022:90–91) recorded a segment of the site to the northwest of the APE and describe the site as “the southernmost portion of the existing Lāhainā, Kā‘anapali & Pacific (LK&P) railroad” (Madeus et al. 2022:90). Madeus et al. (2022:88) also assessed the site as significant under HAR Chapter 13-275-6, Criterion “d”. The railroad was in use as a tourist attraction as recently as 2019. SIHP Site 50-50-03-08887 has been recommended as eligible to the NRHP under Criterion D.

4.4.4 SIHP Site 50-50-03-09023 (disarticulated human remains)

Based on data available in HICRIS, SIHP Site 50-50-03-09023 was identified on June 17, 2024, comprised of 18 disarticulated fragments of human skeletal remains interspersed within imported

construction fill sediments. Following the inadvertent discovery, which occurred adjacent to 120 Fleming Road, the remains were relocated off-site (Project No.: 2023PR00979, Doc. No.: 2409IK11). The site was identified during archaeological monitoring of utility trenching and to date, the archaeological reporting for this project (HICRIS Project No. 2024PR00182) is not complete. The burial possesses important value to the native Hawaiian residents of Lahaina and is considered significant under Criterion “e”; however, the site will likely be considered not eligible to the NRHP.

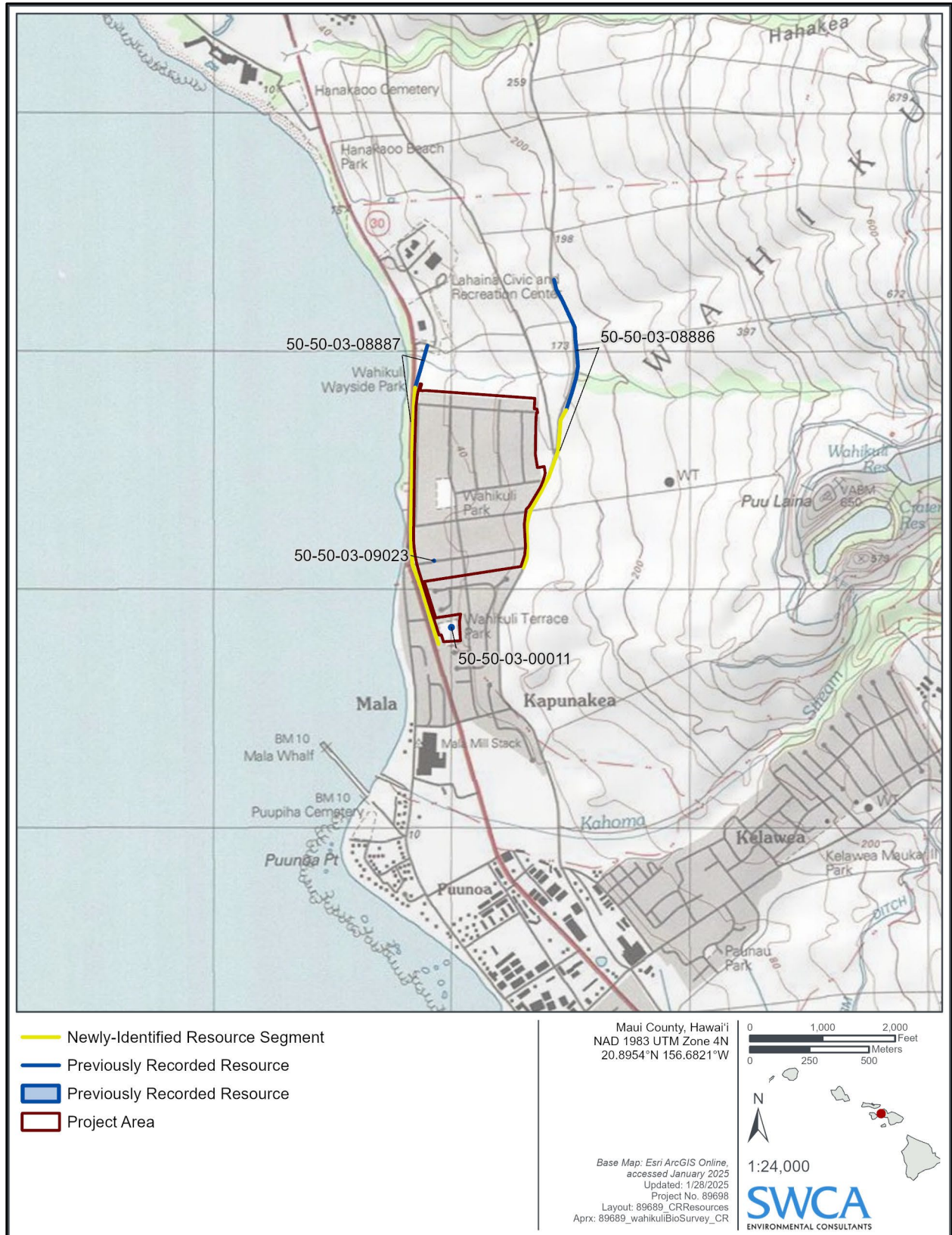


Figure 17. Previously identified historic properties and newly identified resource segments within the APE and vicinity depicted on U.S. Geological Survey Lahaina (1999) quadrangle.

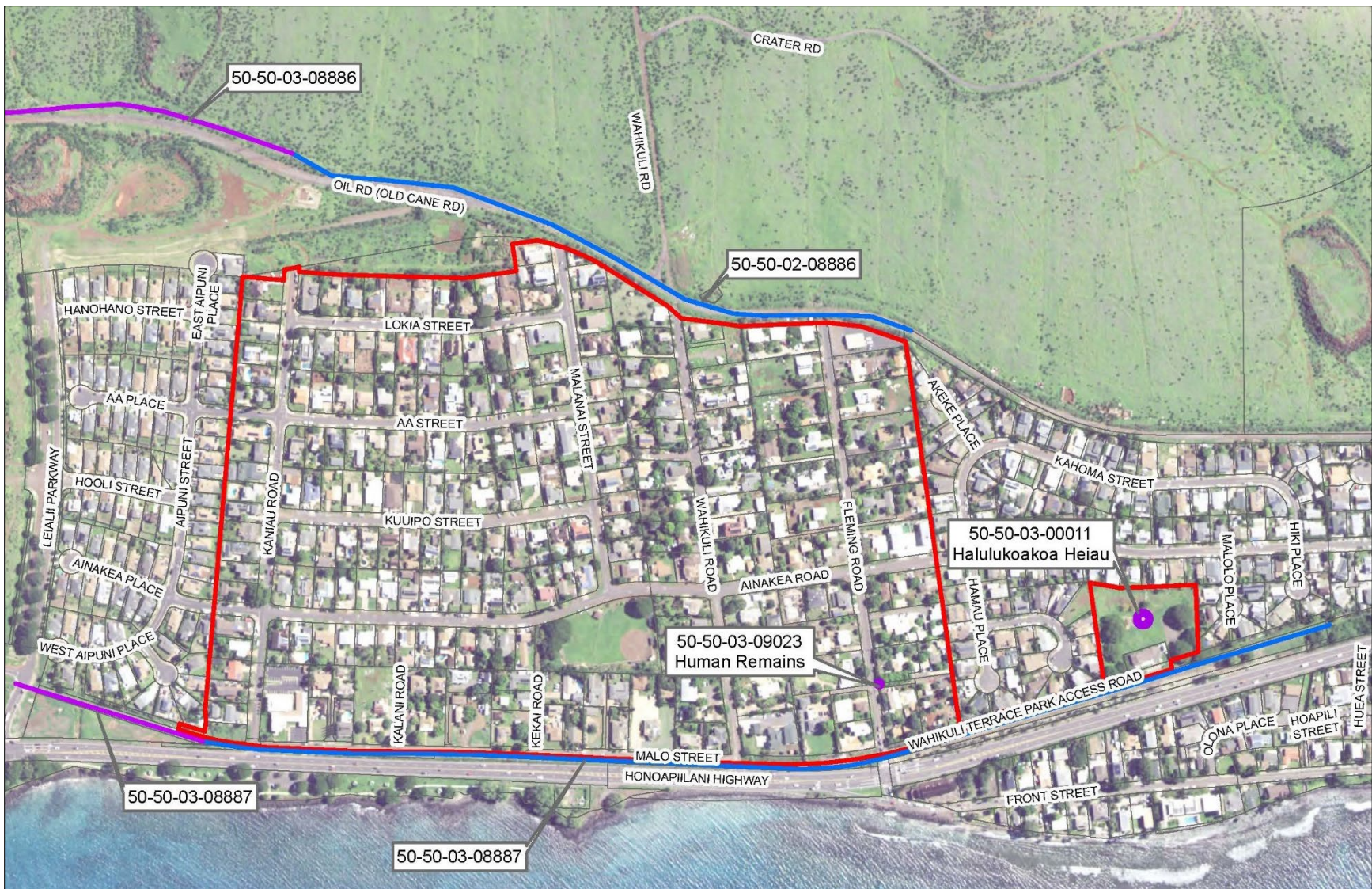


Figure 18. Previously identified historic properties and newly identified resource segments within the APE and vicinity depicted on satellite imagery, courtesy of AECOM.

5 FIELD INSPECTION

SWCA Principal Investigator Ryan Gross, M.A., RPA, and Archaeologist Hattie Gerrish, B.A. conducted a field inspection of the publicly accessible portions of the APE on November 8, 2024. The field inspection was conducted to determine if surface historic properties were present in the APE.

5.1 Field Inspection Results

During the field inspection, SWCA staff inspected and photographed all publicly accessible portions of the APE for surface archaeological resources (Figure 19) and photographed existing drainage easements on private property from publicly accessible areas. Photographs documenting the current conditions of these areas are included in Appendix B.

No new surface historic properties were identified during the field inspection. Newly identified segments of two existing historic properties were, however, identified during the field inspection (see Figure 17 and Figure 18). The SIHP Site 50-50-03-08887 (railroad) trends along the length of the western boundary just outside the APE (Figure 20 and Figure 21) while SIHP Site 50-50-03-08886 appears to trend outside but adjacent to the southern portion of the eastern boundary of the APE. The proposed sewer line does not enter the railroad alignment but abuts it. As SIHP Site 50-50-03-08886 was located outside of the APE, it was not closely inspected, but it appears that all railroad infrastructure (e.g., rails, ties, and ballast) has been completely removed, and the site is currently developed as an active paved roadway labeled “Cane Haul Road” (Figure 22). Both of these former railroad alignments appear to have been abandoned for some time.

The mapped location of Halulukoakoa Heiau (SIHP Site 50-50-03-00011), in the southernmost portion of the APE, was also inspected, which comprised an unpaved lot housing Maui County’s Lahaina 3 Pump Station, an equipment and materials storage yard, and Wahikuli Terrace Park, which included a small playground and basketball court (Figure 23 and Figure 24). Significant ground disturbances were evident in this area, including mass grading and a roughly 25 foot-tall slope-cut along the *mauka* portion of these County-owned properties (TMK Parcels [2] 4-5-030:015 and :016) (Figure 25) within the APE. Modern burned rubbish (e.g., sawcut faunal bones, *opihi* (limpiti, *Cellana exarata*) shells, and bottle glass) originating from private residential lots to the east was observed at the top of the slope-cut. Sand fill sediments were also observed in an exposure near the Lahaina 3 Pump Station near the southernmost portion of the APE (Figure 26 and Figure 27).



Figure 19. Surveyed areas within the APE and photograph location points (corresponding to Figure 20 to Figure 27 below).



Figure 20. Newly identified segment of SIHP Site 50-50-03-08887 (railroad) near the southern terminus of Malo Street adjacent to the southernmost portion of the APE, view to the north.



Figure 21. Newly identified segment of SIHP Site 50-50-03-08887 (railroad) trending along Malo Street north of the Fleming Road-Honoapi'ilani Highway junction outside the western boundary of the APE, view to the north.



Figure 22. Newly identified segment of SIHP Site 50-50-03-08886 (railroad), adjacent to the APE (lined with delineators), photographed from the eastern APE boundary at Wahikuli Road, view to the northeast.



Figure 23. Lahaina 3 Pump Station near the southernmost portion of the APE, view to the northeast.



Figure 24. Equipment and materials storage behind the Lahaina 3 Pump Station building, view to the northeast.



Figure 25. The mapped location of Halulukoakoa Heiau (SIHP Site 50-50-03-00011), taken from the top of a slope-cut along the eastern boundary of TMK (2) 4-5-030:016, view to the north.



Figure 26. Open exposure near the Lahaina 3 Pump Station, view to the north.



Figure 27. Sand fill sediments observed in an open exposure near the Lahaina 3 Pump Station, view to the southeast.

6 SUMMARY AND RECOMMENDATIONS

At the request of AECOM and on behalf of FEMA, SWCA completed an archaeological literature review and field inspection for the project within the ahupua‘a of Wahikuli, in the moku of Lahaina, on the island of Maui. These tasks were completed to support FEMA’s request for historic preservation review of the project by the SHPD.

A field inspection of the publicly accessible portions of the APE conducted on November 8, 2024 identified one surface historic property, a newly identified segment of existing SIHP Site 50-50-03-08887 (railroad) situated along but outside of the western boundary of the APE. Although the proposed sewer line does not enter the railroad alignment (SIHP Site 50-50-03-08887), it is directly adjacent to the project. The literature review demonstrated that one additional historic property (SIHP Site 50-50-03-08886 [railroad]) is mapped adjacent to the eastern boundary of the APE. The literature review also demonstrated that two existing sites (SIHP Site 50-50-03-09023 [disarticulated human remains] and 50-50-03-00011 [Halulukoakoa Heiau]) are mapped within the APE. SIHP 50-50-03-09023 was identified recently (in June 2024) on Fleming Road and the project (HICRIS Project No. 2024RE04556) reporting for this resource is not yet finalized.

The presence of these historic properties indicates that significant subsurface historic properties, including traditional Hawaiian and/or historic period archaeological deposits and human remains, may be present within the APE that could be adversely affected by the project.

While the construction scope of work includes trenching at depths where archaeological resources would likely be present, subsurface testing as part of an AIS is not recommended, as AIS test excavations could only feasibly sample a small and unrepresentative percentage of the entire APE. Further, the only evidence indicating an elevated potential for additional subsurface historic properties to be present in the APE is the presence of SIHP Site 50-50-03-09023. The human skeletal remains associated with this site were identified within imported sand fill sediments underlying existing sewer infrastructure, and archaeological test excavations to sample these pipe base course layers beneath active sewer infrastructure would not be feasible. The location of SIHP Site 50-50-03-00011 (Halulukoakoa Heiau) may also indicate an elevated potential for subsurface archaeological resources in that portion of the APE; however, significant land alterations were observed in that area during the field inspection.

For these reasons, a program of archaeological monitoring during all ground-disturbing construction activities is recommended for the project. The archaeological monitoring program should be determined in consultation with the SHPD and meet the guidelines of HAR Chapter 13-279, *Rules Governing Standards for Archaeological Monitoring Studies and Reports*.

Alongside archaeological monitoring, a program of cultural monitoring is recommended to be implemented for the project. Project activities should take into consideration and apply the principles as set forth in the Policy Statement on Burial Sites, Human Remains, and Funerary Objects (Advisory Council on Historic Preservation 2023). Temporary preservation methods recommended include installing construction fencing along the border of the APE where it trends near the railroad corridors, and for project construction plans to include annotations of the locations identified historic properties.

7 GLOSSARY OF HAWAIIAN WORDS USED IN THE TEXT

<i>‘ahu‘ula</i>	feather cloak
<i>ahupua‘a</i>	traditional land division usually extending from the mountains to the sea and encompassing a range of environmental zones that were known and used by the land’s early Hawaiian residents. It was “so called because the boundary was marked by a heap (<i>ahu</i>) of stones surmounted by an image of a pig (<i>pua‘a</i>), or because a pig or other tribute was laid on the altar as tax to the chief” (Pukui and Elbert 1971:8).
<i>ali‘i</i>	chief, individual of chiefly blood
<i>apana</i>	awarded land unit
<i>heiau</i>	traditional temple or shrine
<i>iliahi</i>	sandalwood (<i>Santalum</i> sp.)
<i>‘ilima</i>	<i>Sida fallax</i>
<i>inoa</i>	name
<i>kalana</i>	a land division that is nestled within a moku and includes a handful of ahupua‘a
<i>kalo</i>	taro (<i>Colocasia esculenta</i>)
<i>kō</i>	sugar cane (<i>Saccharum officinarum</i>)
<i>kōlea</i>	Pacific golden plover (<i>Pluvialis fulva</i>)
<i>kona</i>	leeward
<i>kula uka</i>	inland plain
<i>lama</i>	<i>Diospyros ferrea</i>
<i>lo‘i</i>	wetlands
<i>luna</i>	overseer
<i>maka‘āinana</i>	common people
<i>moku</i>	district, land section, or island
<i>pili</i>	<i>Heteropogon contortus</i>
<i>pu‘uhonua</i>	a place of refuge
<i>‘uala</i>	sweet potato (<i>Ipomoea batatas</i>)
<i>‘ulu</i>	breadfruit (<i>Artocarpus altilis</i>)
<i>wahi pana</i>	storied place, those places about which there is a story or tradition
<i>wiliwili</i>	<i>Erythrina sandwicensis</i>

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APPENDIX A

Maui County TMKs Forming the APE

Enclosure 1. TMKs within the APE

TMK	Address	Category
245014001	113 FLEMING RD, LAHAINA, HI 96761	Residential
245014002	104 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014003	114 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014004	120 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014005	130 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014006	133 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014007	123 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014008	1506 MALO ST, LAHAINA, HI 96761	Residential
245014009	1518 MALO ST, LAHAINA, HI 96761	Residential
245014010	1526 MALO ST, LAHAINA, HI 96761	Residential
245014011	1536 MALO ST, LAHAINA, HI 96761	Residential
245014012	1548 MALO ST, LAHAINA, HI 96761	Residential
245014013	1558 MALO ST, LAHAINA, HI 96761	Residential
245014014	1564 MALO ST, LAHAINA, HI 96761	Residential
245014015	1576 MALO ST, LAHAINA, HI 96761	Residential
245014016	MALO ST, LAHAINA, HI 96761	Residential
245014017	1594 MALO ST, LAHAINA, HI 96761	Residential
245014018	141 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014019	149 B WAHIKULI RD, LAHAINA, HI 96761	Residential
245014020	155 WAHIKULI, LAHAINA, HI 96761	Residential
245014021	163 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014022	171 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014023	179 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014024	185 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014025	193 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014026	197 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014027	186 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014028	176 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014029	172 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014030	166 A WAHIKULI RD, LAHAINA, HI 96761	Residential
245014031	154 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014032	150 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014033	142 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014035	1462 FLEMING RD, LAHAINA, HI 96761	Residential
245014036	115 FLEMING RD, LAHAINA, HI 96761	Residential
245014037	123 FLEMING RD, LAHAINA, HI 96761	Residential
245014038	1491 AINAKEA RD, LAHAINA, HI 96761	Residential
245014039	1443 AINAKEA RD, LAHAINA, HI 96761	Residential
245014040	124 FLEMING RD, LAHAINA, HI 96761	Residential

TMK	Address	Category
245014041	120 FLEMING RD, LAHAINA, HI 96761	Residential
245014042	1476 MALO ST, LAHAINA, HI 96761	Residential
245014043	1470 MALO ST, LAHAINA, HI 96761	Residential
245014044	1488 AINAKEA RD, LAHAINA, HI 96761	Residential
245014045	149 FLEMING RD, LAHAINA, HI 96761	Residential
245014046	155 FLEMING RD, LAHAINA, HI 96761	Residential
245014047	165 FLEMING, LAHAINA, HI 96761	Residential
245014048	175 FLEMING RD, LAHAINA, HI 96761	Residential
245014049	183 FLEMING RD, LAHAINA, HI 96761	Residential
245014050	193 A FLEMING RD, LAHAINA, HI 96761	Residential
245014051	190 FLEMING RD, LAHAINA, HI 96761	State of Hawaii - Veterans Club
245014052	180 FLEMING RD, LAHAINA, HI 96761	Residential
245014053	174 FLEMING RD, LAHAINA, HI 96761	Residential
245014054	164 FLEMING, LAHAINA, HI 96761	Residential
245014055	154 FLEMING RD, LAHAINA, HI 96761	Residential
245014056	148 FLEMING RD, LAHAINA, HI 96761	Residential
245014057	142 FLEMING RD, LAHAINA, HI 96761	Residential
245014060	115 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014061	1512 MALO ST, LAHAINA, HI 96761	Residential
245014062	111 FLEMING RD, LAHAINA, HI 96761	Residential
245014063	1500 MALO ST, LAHAINA, HI 96761	Residential
245014064	148 A FLEMING RD, LAHAINA, HI 96761	Residential
245014065	129 WAHIKULI, LAHAINA, HI 96761	Residential
245014066	120 A FLEMING RD, LAHAINA, HI 96761	Residential
245014068	137 FLEMING RD, LAHAINA, HI 96761	Residential
245014069	130 FLEMING RD, LAHAINA, HI 96761	Residential
245014070	1530 AINAKEA RD, LAHAINA, HI 96761	Residential
245014071	172 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014072	22 KEKAI RD, LAHAINA, HI 96761	Residential
245014073	18 KEKAI RD, LAHAINA, HI 96761	Residential
245014074	1498 AINAKEA RD, LAHAINA, HI 96761	Residential
245014075	161 FLEMING RD, LAHAINA, HI 96761	Residential
245014076	141 FLEMING RD, LAHAINA, HI 96761	Residential
245014079	25 KEKAI RD, LAHAINA, HI 96761	Residential
245014080	191 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014081	1584 MALO ST, LAHAINA, HI 96761	Residential
245014082	1582 B MALO ST, LAHAINA, HI 96761	Residential
245014083	1582 A MALO ST, LAHAINA, HI 96761	Residential
245014084	1580 MALO ST, LAHAINA, HI 96761	Residential
245014085	1532 MALO ST, LAHAINA, HI 96761	Residential

TMK	Address	Category
245014086	1530 MALO ST, LAHAINA, HI 96761	Residential
245014087	1528 MALO ST, LAHAINA, HI 96761	Residential
245014089	27 KEKAI RD, LAHAINA, HI 96761	Residential
245014090	131 A FLEMING RD, LAHAINA, HI 96761	Residential
245014092	180 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014093	WAHIKULI RD, LAHAINA, HI 96761	Residential
245014094	1560 MALO ST, LAHAINA, HI 96761	Residential
245014095	175 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014096	171 WAHIKULI, LAHAINA, HI 96761 RD	Residential
245014098	1495 AINAKEA RD, LAHAINA, HI 96761	Residential
245014099	186 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014100	186 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014101	186 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014102	120 WAHIKULI RD, LAHAINA, HI 96761	Residential
245014103		Residential
245014104	1518 MALO ST, LAHAINA, HI 96761	Residential
245014999		Road
245027001	AINAKEA RD, LAHAINA, HI 96761	State of Hawaii - Park
245027002	1585 AINAKEA RD, LAHAINA, HI 96761	Residential
245027003	1593 AINAKEA RD, LAHAINA, HI 96761	Residential
245027004	1601 AINAKEA RD, LAHAINA, HI 96761	Residential
245027005	1605 AINAKEA RD, LAHAINA, HI 96761	Residential
245027006	1611 AINAKEA RD, LAHAINA, HI 96761	Residential
245027007	1619 AINAKEA RD, LAHAINA, HI 96761	Residential
245027008	1627 AINAKEA RD, LAHAINA, HI 96761	Residential
245027009	1635 AINAKEA RD, LAHAINA, HI 96761	Residential
245027010	1641 AINAKEA RD, LAHAINA, HI 96761	Residential
245027011	1647 AINAKEA RD, LAHAINA, HI 96761	Residential
245027012	1657 AINAKEA RD, LAHAINA, HI 96761	Residential
245027013	1665 AINAKEA RD, LAHAINA, HI 96761	Residential
245027014	1671 AINAKEA RD, LAHAINA, HI 96761	Residential
245027015	56 KANIAU RD, LAHAINA, HI 96761	Residential
245027016	1664 AINAKEA RD, LAHAINA, HI 96761	Residential
245027017	1656 AINAKEA RD, LAHAINA, HI 96761	Residential
245027018	1648 AINAKEA RD, LAHAINA, HI 96761	Residential
245027019	1640 AINAKEA RD, LAHAINA, HI 96761	Residential
245027020	1634 AINAKEA RD, LAHAINA, HI 96761	Residential
245027021	1626 AINAKEA RD, LAHAINA, HI 96761	Residential
245027022	1620 AINAKEA RD, LAHAINA, HI 96761	Residential
245027023	1612 AINAKEA RD, LAHAINA, HI 96761	Residential

TMK	Address	Category
245027024	1604 AINAKEA RD, LAHAINA, HI 96761	Residential
245027025	1596 AINAKEA RD, LAHAINA, HI 96761	Residential
245027026	1586 AINAKEA RD, LAHAINA, HI 96761	Residential
245027027	1576 AINAKEA RD, LAHAINA, HI 96761	Residential
245027028	1570 AINAKEA RD, LAHAINA, HI 96761	Residential
245027029	1560 AINAKEA RD, LAHAINA, HI 96761	Residential
245027030	1546 AINAKEA RD, LAHAINA, HI 96761	Residential
245027031	152 MALANAI ST, LAHAINA, HI 96761	Residential
245027032	160 MALANAI ST, LAHAINA, HI 96761	Residential
245027033	1565 KUU IPO ST, LAHAINA, HI 96761	Residential
245027034	1575 KUU IPO ST, LAHAINA, HI 96761	Residential
245027035	1581 KUU IPO ST, LAHAINA, HI 96761	Residential
245027036	1587 KUU IPO ST, LAHAINA, HI 96761	Residential
245027037	1595 KUU IPO ST, LAHAINA, HI 96761	Residential
245027038	1601 KUU IPO ST, LAHAINA, HI 96761	Residential
245027039	1611 KUU IPO ST, LAHAINA, HI 96761	Residential
245027040	1617 KUU IPO ST, LAHAINA, HI 96761	Residential
245027041	1625 KUU IPO ST, LAHAINA, HI 96761	Residential
245027042	1631 KUU IPO ST, LAHAINA, HI 96761	Residential
245027043	1639 KUU IPO ST, LAHAINA, HI 96761	Residential
245027044	1647 KUU IPO ST, LAHAINA, HI 96761	Residential
245027045	1653 KUU IPO ST, LAHAINA, HI 96761	Residential
245027046	1661 KUU IPO ST, LAHAINA, HI 96761	Residential
245027047	1667 KUU IPO ST, LAHAINA, HI 96761	Residential
245027048	5 KANIAU RD, LAHAINA, HI 96761	State of Hawaii - Lot
245027049	LAHAINA, HI 96761	State of Hawaii - Railroad
245027050	11 KANIAU RD, LAHAINA, HI 96761	Residential
245027051	19 KANIAU RD, LAHAINA, HI 96761	Residential
245027052	27 KANIAU RD, LAHAINA, HI 96761	Residential
245027053	33 KANIAU RD, LAHAINA, HI 96761	Residential
245027054	41 KANIAU RD, LAHAINA, HI 96761	Residential
245027055	1684 AINAKEA RD, LAHAINA, HI 96761	Residential
245027056	61 KANIAU RD, LAHAINA, HI 96761	Residential
245027057	67 KANIAU RD, LAHAINA, HI 96761	Residential
245027058	75 KANIAU RD, LAHAINA, HI 96761	Residential
245027059	81 KANIAU RD, LAHAINA, HI 96761	Residential
245027999		Road
245028001	181 MALANAI ST, LAHAINA, HI 96761	Residential
245028002	1574 KUU IPO ST, LAHAINA, HI 96761	Residential
245028003	1582 KUU IPO ST, LAHAINA, HI 96761	Residential

TMK	Address	Category
245028004	1584 KUU IPO ST, LAHAINA, HI 96761	Residential
245028005	1600 KUU IPO ST, LAHAINA, HI 96761	Residential
245028006	1610 KUU IPO ST, LAHAINA, HI 96761	Residential
245028007	1618 KUU IPO ST, LAHAINA, HI 96761	Residential
245028008	1624 KUU IPO ST, LAHAINA, HI 96761	Residential
245028009	1632 KUU IPO ST, LAHAINA, HI 96761	Residential
245028010	1640 KUU IPO ST, LAHAINA, HI 96761	Residential
245028011	1648 KUU IPO ST, LAHAINA, HI 96761	Residential
245028012	1656 KUU IPO ST, LAHAINA, HI 96761	Residential
245028013	1664 KUU IPO ST, LAHAINA, HI 96761	Residential
245028014	1670 KUU IPO ST, LAHAINA, HI 96761	Residential
245028015	91 KANIAU RD, LAHAINA, HI 96761	Residential
245028016	106 KANIAU RD, LAHAINA, HI 96761	Residential
245028017	1653 AA ST, LAHAINA, HI 96761	Residential
245028018	1645 AA ST, LAHAINA, HI 96761	Residential
245028019	1639 AA ST, LAHAINA, HI 96761	Residential
245028020	1631 AA ST, LAHAINA, HI 96761	Residential
245028021	1625 AA ST, LAHAINA, HI 96761	Residential
245028022	1617 AA ST, LAHAINA, HI 96761	Residential
245028023	1611 AA ST, LAHAINA, HI 96761	Residential
245028024	1603 AA ST, LAHAINA, HI 96761	Residential
245028025	1597 AA ST, LAHAINA, HI 96761	Residential
245028026	1591 AA ST, LAHAINA, HI 96761	Residential
245028027	1581 AA ST, LAHAINA, HI 96761	Residential
245028028	1575 AA ST, LAHAINA, HI 96761	Residential
245028029	193 MALANAI ST, LAHAINA, HI 96761	Residential
245028030	170 MALANAI ST, LAHAINA, HI 96761	Residential
245028031	176 MALANAI ST, LAHAINA, HI 96761	Residential
245028032	186 MALANAI ST, LAHAINA, HI 96761	Residential
245028033	192 MALANAI ST, LAHAINA, HI 96761	Residential
245028034	200 MALANAI ST, LAHAINA, HI 96761	Residential
245028035	210 MALANAI ST, LAHAINA, HI 96761	Residential
245028036	211 MALANAI ST, LAHAINA, HI 96761	Residential
245028037	216 MALANAI ST, LAHAINA, HI 96761	Residential
245028038	224 MALANAI ST, LAHAINA, HI 96761	Residential
245028039	232 MALANAI ST, LAHAINA, HI 96761	Residential
245028040	242 MALANAI ST, LAHAINA, HI 96761	Residential
245028041	250 MALANAI ST, LAHAINA, HI 96761	Residential
245028042	LAHAINA, HI 96761 - Lot end of Malanai Street	State of Hawaii - Lot
245028043	219 MALANAI ST, LAHAINA, HI 96761	Residential

TMK	Address	Category
245028044	1580 AA ST, LAHAINA, HI 96761	Residential
245028045	1588 AA ST, LAHAINA, HI 96761	Residential
245028046	1594 AA ST, LAHAINA, HI 96761	Residential
245028047	1606 AA ST, LAHAINA, HI 96761	Residential
245028048	1614 AA ST, LAHAINA, HI 96761	Residential
245028049	1620 AA ST, LAHAINA, HI 96761	Residential
245028050	1628 AA ST, LAHAINA, HI 96761	Residential
245028051	1636 AA ST, LAHAINA, HI 96761	Residential
245028052	1644 AA ST, LAHAINA, HI 96761	Residential
245028053	1652 AA ST, LAHAINA, HI 96761	Residential
245028054	1668 AA ST, LAHAINA, HI 96761	Residential
245028055	1659 LOKIA ST, LAHAINA, HI 96761	Residential
245028056	1651 LOKIA ST, LAHAINA, HI 96761	Residential
245028057	1643 LOKIA ST, LAHAINA, HI 96761	Residential
245028058	1635 LOKIA ST, LAHAINA, HI 96761	Residential
245028059	1627 LOKIA ST, LAHAINA, HI 96761	Residential
245028060	1619 LOKIA ST, LAHAINA, HI 96761	Residential
245028061	1613 LOKIA ST, LAHAINA, HI 96761	Residential
245028062	1605 LOKIA ST, LAHAINA, HI 96761	Residential
245028063	1593 LOKIA ST, LAHAINA, HI 96761	Residential
245028064	1587 LOKIA ST, LAHAINA, HI 96761	Residential
245028065	1579 LOKIA ST, LAHAINA, HI 96761	Residential
245028066	1565 LOKIA ST, LAHAINA, HI 96761	Residential
245028067	1574 LOKIA ST, LAHAINA, HI 96761	Residential
245028068	251 MALANAI ST, LAHAINA, HI 96761	Residential
245028069	259 MALANAI ST, LAHAINA, HI 96761	Residential
245028071	1582 LOKIA ST, LAHAINA, HI 96761	Residential
245028072	1590 LOKIA ST, LAHAINA, HI 96761	Residential
245028073	1600 LOKIA ST, LAHAINA, HI 96761	Residential
245028074	1610 LOKIA ST, LAHAINA, HI 96761	Residential
245028075	1618 LOKIA ST, LAHAINA, HI 96761	Residential
245028076	1626 LOKIA ST, LAHAINA, HI 96761	Residential
245028077	1634 LOKIA ST, LAHAINA, HI 96761	Residential
245028078	1640 LOKIA ST, LAHAINA, HI 96761	Residential
245028079	1646 LOKIA ST, LAHAINA, HI 96761	Residential
245028080	160 KANIAU RD, LAHAINA, HI 96761	Residential
245028082	161 KANIAU RD, LAHAINA, HI 96761	Residential
245028083	153 KANIAU RD, LAHAINA, HI 96761	Residential
245028084	145 KANIAU RD, LAHAINA, HI 96761	Residential
245028085	137 KANIAU RD, LAHAINA, HI 96761	Residential

TMK	Address	Category
245028086	131 KANIAU RD, LAHAINA, HI 96761	Residential
245028087	1676 AA ST, LAHAINA, HI 96761	Residential
245028088	1675 AA ST, LAHAINA, HI 96761	Residential
245028089	105 KANIAU RD, LAHAINA, HI 96761	Residential
245028090	97 KANIAU RD, LAHAINA, HI 96761	Residential
245028999		Road
245030015	MALO ST, LAHAINA, HI 96761	County Pump Station
245030016	1357 AINAKEA RD, LAHAINA, HI 96761	County Park
245030137	MALO ST, LAHAINA, HI 96761	County Roadway ROW

APPENDIX B

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Figure B-2. View south along Aa Street from northern APE boundary.



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Figure B-21. View north along Malo Street and western APE boundary near the Lahaina 3 Pump Station.

Appendix C-3

Cultural Impact Assessment (CIA) Report



Cultural Impact Assessment for the Proposed Wahikuli Subdivision Gravity Sewer System Project

Wahikuli Ahupua'a, Lahaina District, Island of Maui

County of Maui Tax Map Key Plats (2) 4-5-014, (2) 4-5-027,
(2) 4-5-028, (2) 4-5-030, and (2) 4-5-036

Project Proponent and/or Funding from: County of Maui,
Federal Emergency Management Agency, and the
Environmental Protection Agency

MARCH 2025

PREPARED FOR

AECOM

PREPARED BY

SWCA Environmental Consultants

**CULTURAL IMPACT ASSESSMENT FOR THE PROPOSED
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
PROJECT**

**Wahikuli Ahupua‘a,
Lahaina District, Island of Maui
County of Maui Tax Map Key Plats
(2) 4-5-014, (2) 4-5-027, (2) 4-5-028, (2) 4-5-030, and (2) 4-5-036**

Project Proponent and/or Funding from:

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SWCA Project No. 89689-000-HON
SWCA Cultural Resources Report No. 25-142

March 2025

EXECUTIVE SUMMARY

At the request of AECOM and on behalf of the Federal Emergency Management Agency (FEMA), SWCA Environmental Consultants completed a cultural impact assessment (CIA) for the Wahikuli Subdivision Gravity Sewer System Project. The planning and design of this project are funded by FEMA through its mission assignment authority and managed by the Environmental Protection Agency (EPA). The FEMA funding is through Robert T. Stafford Disaster Relief and Emergency Assistance Act, or “Stafford Act” (codified as amended at 42 United States Code [USC] 5121 et seq.). The Wahikuli Subdivision was an area affected by the August 8, 2023, Maui wildfires, which caused significant destruction across Lahaina and other parts of Maui.

The project area is located within the *ahupua‘a* (traditional land division) of Wahikuli in the traditional *moku* (district) of Lahaina on the Island of Maui. The project area totals approximately 94 acres and includes County of Maui Tax Map Key (TMK) parcels (2) 4-5-014, (2) 4-5-027, (2) 4-5-028, (2) 4-5-030, and (2) 4-5-036. The project area is bounded to the west by Malo Street, to the north by existing residences, to the south by recently burned residential areas, and to the east by temporary housing developments currently under construction.

The project proposes to install a gravity sewer system within the Wahikuli Subdivision. The ground disturbances associated with the project will require trenching within existing Maui County rights-of-way and easements at depths ranging from 4 to 14 feet below street grades and within new proposed easements to install the sewer mains and associated infrastructure (i.e., sump and/or grinder pumps and piping). Lateral sewer connections for servicing up to 231 private lots will extend up to 2 linear feet on to privately owned lots.

The following report has been prepared to assess the potential cultural impacts of the proposed project in compliance with State of Hawai‘i Revised Statute Chapter 343, which requires project proponents to take into account the potential effects of a proposed project on traditional cultural resources, practices, and beliefs as part of the environmental assessment process. In preparing the CIA for the project, SWCA followed the *Guidelines for Assessing Cultural Impacts* provided by the State of Hawai‘i, Office of Planning and Sustainable Development. Archival research was undertaken into the cultural history of the project area and into the previous archaeological studies conducted in the vicinity in an attempt to determine the traditional cultural use and significance of the project area.

An archaeological literature review and field inspection of the project area (conducted concurrently by SWCA) found two historic properties (State Inventory of Historic Properties Site 50-50-03-09023 [disarticulated human remains] and Site 50-50-03-00011 [Halulukoakoa Heiau]) to be mapped within the project area. Located just outside of the project area are historic railroad segments. The presence of these historic properties suggest that significant subsurface historic properties, including traditional Hawaiian and/or historic period archaeological deposits and human remains, may be present within the project area. These properties, if they exist, could be adversely affected by the proposed project. Therefore, a program of archaeological and cultural monitoring during all ground-disturbing construction activities was recommended for the project. Project activities should take into consideration and apply the principles as set forth in the Policy Statement on Burial Sites, Human Remains, and Funerary Objects (Advisory Council on Historic Preservation 2023).

As part of this CIA, a total of 114 organizations and individuals were contacted to participate in cultural consultations related to the proposed project. Of these, only one responded. There were no responses to a public notice that was posted in the Office of Hawaiian Affairs newsletter *Ka Wai Ola*. The lack of engagement may suggest that the community does not view this project as a significant concern or a threat to cultural resources, practices, and beliefs. Additionally, the absence of comments could indicate

that the community perceives the project as beneficial or neutral, as people are generally more inclined to respond when they believe a project may have negative impacts to cultural resources, practices, and beliefs.

The proposed project is a key infrastructure component that will support the return of residents to the Wahikuli Subdivision, enabling them to continue their cultural practices associated with Wahikuli. Rather than negatively impacting cultural practices, this project will support people in returning to the area and thereby returning to and or continuing to exercise their cultural practices.

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1 INTRODUCTION

At the request of AECOM and on behalf of the Federal Emergency Management Agency (FEMA), SWCA Environmental Consultants (SWCA) completed a cultural impact assessment (CIA) for the Wahikuli Subdivision Gravity Sewer System Project (project). The project area is located within the *ahupua'a* (traditional land division) of Wahikuli in the traditional *moku* (district) of Lahaina on the Island of Maui (Figure 1).

This cultural assessment was conducted by SWCA's Pacific Islands Cultural Resources staff. Dr. Uluwehi Hopkins conducted the historical background research, while Wainani Traub, M.S., led the consultation effort. Relevant findings from the archaeological literature review and field inspection report, prepared by SWCA Archaeology Project Manager Ryan Gross, M.A., RPA, were also incorporated. Rowland Reeve, M.A., provided the quality control review of this report.

1.1 Project Background

A new gravity sewer system is being proposed for the Wahikuli subdivision, located north of Lahaina Town. The planning and design of this project are funded by FEMA through its mission assignment authority and it is managed by the U.S. Environmental Protection Agency (EPA) through its contractor, AECOM. Construction of the project is expected to be funded by both federal and county funds which necessitates compliance with both the National Environmental Policy Act (NEPA) and Hawai'i Environmental Policy Act (HEPA). An environmental assessment (EA) is being prepared to jointly meet the content and procedural requirements of both NEPA and federal cross-cutting authorities and HEPA. The FEMA funding is through Robert T. Stafford Disaster Relief and Emergency Assistance Act, or "Stafford Act" (codified as amended at 42 USC 5121 et seq.).

On the evening of August 8, 2023, winds from Hurricane Dora rapidly spread wildfires, causing devastation that burned 2,170 acres across the island of Maui, including much of the community of Lahaina. Emergency response and recovery efforts supported by the County of Maui, the State of Hawai'i, and federal partners have been ongoing since the fire. On January 13, 2024, the County of Maui requested technical assistance from the EPA for the planning and design of a proposed gravity sewer system to be constructed in the Wahikuli subdivision, which had been impacted by the Lahaina wildfires. This gravity sewer system is proposed to upgrade approximately 231 properties zoned for single-family use and which are currently serviced by cesspools and septic systems (Figure 2).

The repair and enhancement of existing wastewater infrastructure in Lahaina following the August 2023 wildfires, and the proposed EPA technical assistance, would result in a more resilient and sustainable wastewater management system that is better able to withstand climate impacts and disasters. The proposed project aims to improve wastewater management to protect human health, as well as the health of nearshore waters and coral reefs while minimizing the seepage of pollutants from the cesspools into the Class A waters along Wahikuli Wayside Park. It also seeks to safeguard natural and cultural areas that are important to local communities and watersheds. This project would support broader recovery efforts by enhancing resident's quality of life, promoting sustainable economic development, and reducing economic burden on residents returning to their homes in this historically underserved area.

Implementing the proposed gravity sewer system would also facilitate compliance with Act 125, passed by the Hawai'i State Legislature in 2017, which mandates the replacement of all cesspools by January 1, 2050. In 2022, Act 125 was amended by Act 87, expanding the criteria for replacement individual wastewater systems to include any wastewater system approved by the State of Hawai'i Department of Health.

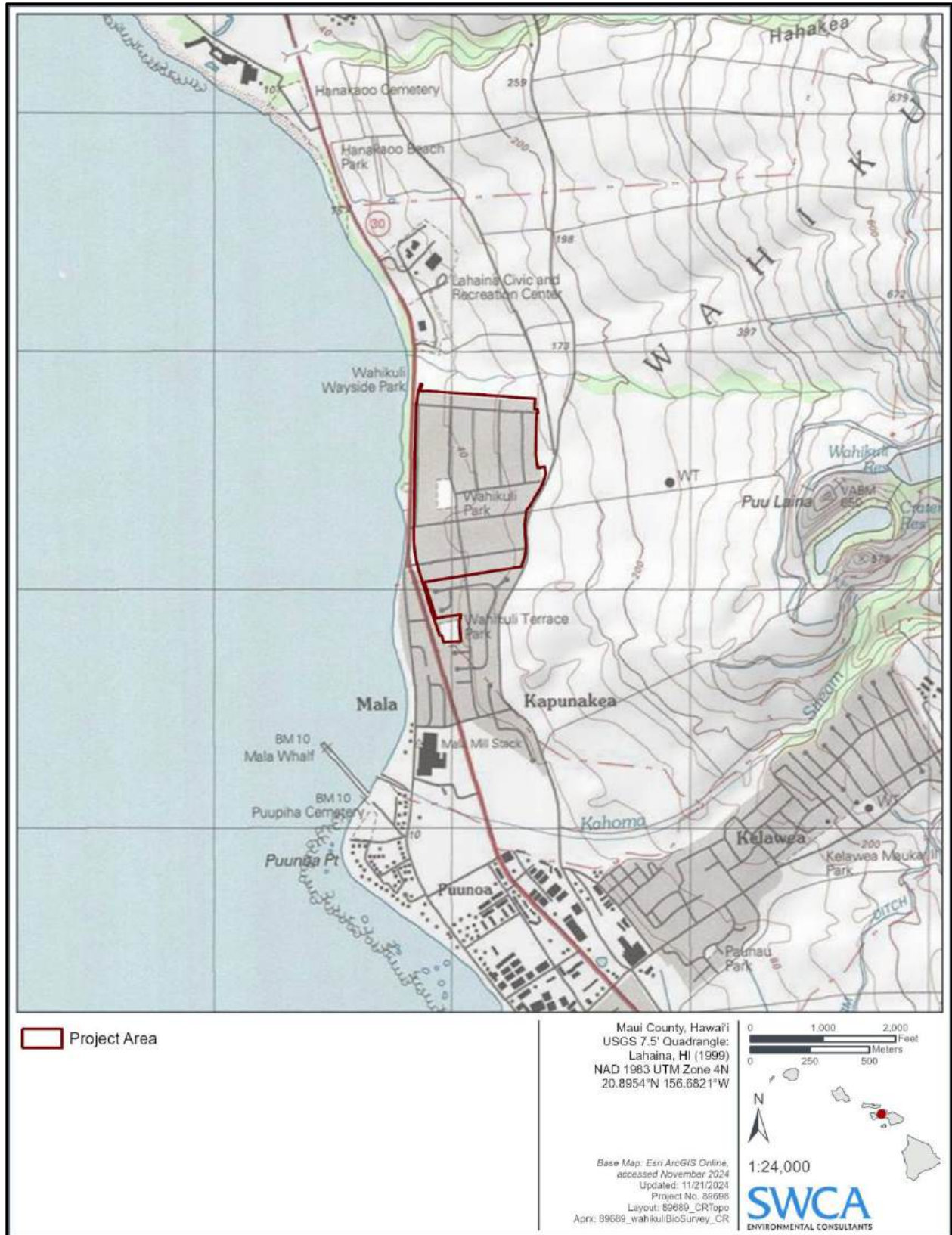


Figure 1. Project area depicted on the U.S. Geological Survey (USGS) 1999 Lahaina, Hawaii, quadrangle.



Figure 2. Satellite imagery showing the project area and Maui County TMK parcel boundaries.

1.2 Project Description

The scope of work for the Wahikuli Subdivision Gravity Sewer System project includes the replacement of existing cesspools and septic systems with a new gravity sewer system within a 94.8-acre project area. The proposed system would be installed within the County-owned right-of-way (ROWs) and connect to the existing Lāhainā gravity sewer system at the Lāhainā No. 3 Pump Station, except those properties along Fleming Road, which will connect to sewer service under the US Army Corps of Engineers (USACE) Fleming Road Sewer Project. The proposed project would involve ground-disturbing work, including trenching to a depth of 4 to 14 feet below grade along the ROWs within the Area of Potential Effects (APE)/project area. The sewer laterals will extend a maximum of 2 feet to the property cleanouts of the serviced house lots. Additionally, sump or grinder pumps may be installed at properties where it is challenging to connect to the sewer system using gravity due to differences in grade. Furthermore, sewer easements may be required to install sewer laterals or potential sewer lines for properties that do not have direct access to a public roadway. These activities would take place on private property. The proposed staging areas are tentatively planned to be located within the Lāhainā No. 3 Pump Station and Wahikuli Terrace Park properties; however, the final location will be decided by the construction team. The staging locations will not impact any of the private lots.

1.3 Regulatory Framework

This CIA has been prepared to assist FEMA in complying with its regulatory responsibilities under the HEPA, the State of Hawai‘i Revised Statute (HRS) Chapter 343 Environmental Impact Statements law, and in accordance with the State of Hawai‘i, Office of Planning and Sustainable Development (formerly the Office of Environmental Quality Control) *Guidelines for Assessing Cultural Impacts* as adopted by the State of Hawai‘i Environmental Council on November 19, 1997.

1.3.1 Hawai‘i State Statutes, Regulations, and Guidelines

Articles IX and XII of the Hawai‘i State Constitution, as well as other state laws and court decisions, impose on government agencies a duty to promote and protect the cultural beliefs, practices, and resources of native Hawaiians, as well as other ethnic groups. One means of ensuring these protections is through the preparation of CIAs as part of the environmental review process.

Under HEPA, the State of Hawai‘i environmental review process, as stipulated under HRS 343 (Environmental Impact Statements—implemented through Hawai‘i Administrative Rule [HAR] 11-200), requires state agencies to take into account the potential effects of a proposed project on traditional cultural resources, practices, and beliefs as part of the EA process. This involves the preparation of a CIA to be included within the EA or environmental impact statement (EIS) for a project under review.

The Hawai‘i State Constitution, Article XII, Section 7 affirms that the state “shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes.” Each state agency has the responsibility to ensure the effective stewardship of any cultural resources that may be affected by their actions. HRS 343 mandates that environmental review be integrated into state and county planning processes, and that state agencies consider the potential effects of a proposed action on cultural practices as part of the environmental review process. Act 50 of the Session Laws of Hawai‘i (A Bill for an Act Relating to Environmental Impact Statements) clarifies that “the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawai‘i’s culture, and traditional and customary rights” and stresses the need to include consideration of cultural resources, customs, practices, and beliefs as part of the EA and EIS process.

To address concerns regarding the potential impacts of state projects on cultural resources, customs, practices, and beliefs, the Office of Environmental Quality Control established *Guidelines for Assessing Cultural Impacts* (State of Hawai‘i Environmental Council 1997) that the State of Hawai‘i Environmental Council adopted in November 1997. These guidelines recommend that preparers of CIAs adopt the following protocols for analyzing potential cultural impacts as part of the EA process.

1. Identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices, and beliefs found within the broad geographical area (e.g., district or ahupua‘a).
2. Identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action.
3. Receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area.
4. Conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research.
5. Identify and describe the cultural resources, practices, and beliefs located within the potentially affected area.
6. Assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures on the cultural resources, practices, and beliefs identified.

The State of Hawai‘i Environmental Council recommends that an assessment of cultural impacts should address, but not necessarily be limited to, the following:

1. A discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations that might have affected the quality of the information obtained.
2. A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.
3. Ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted and any constraints or limitations that might have affected the quality of the information obtained.
4. Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.
5. A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations, or biases.
6. A discussion concerning the cultural resources, practices, and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site.
7. A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project.

8. An explanation of confidential information that has been withheld from public disclosure in the assessment.
9. A discussion concerning any conflicting information in regard to identified cultural resources, practices, and beliefs.
10. An analysis of the potential effect of any proposed physical alteration on cultural resources, practices, or beliefs; the potential of the proposed action to isolate cultural resources, practices, or beliefs from their setting; and the potential of the proposed action to introduce elements that may alter the setting in which cultural practices take place.
11. A bibliography of references and attached records of interviews that were allowed to be disclosed.

2 CULTURAL AND HISTORIC BACKGROUND

The following section provides a review of the cultural and historical background of the project area and its vicinity. This review was undertaken to provide context for understanding Wahikuli's past events, land use, and cultural practices that have shaped its present-day significance to the local community. The cultural and historical background also helps assess the proposed project's potential impacts on cultural resources, practices, and beliefs.

2.1 Research Methods

Archival research addressed both the traditional Hawaiian and post-Contact land use of the project area and its possible cultural significance. During the course of research, a range of documentary sources were consulted. Historic documents and reference volumes consulted were found in the Hawai'i State Archives, the Hawai'i State Library system, the University of Hawai'i Mānoa library, as well as within SWCA's library of Hawaiian reference volumes. Historic maps from the collection of the Hawai'i State Survey Division were obtained through their website, as were maps held at the University of Mānoa Library. Land documents and place name information were obtained from online sources.

2.2 A Brief Historic Context for Traditional Hawaiian Cultural Knowledge

In any sensitive discussion of Native Hawaiian culture, one must understand the role of foreign influence in eroding traditional cultural knowledge systems. Native Hawaiian culture, past and present, exists in close partnership with its natural environment. Changes in the traditional land tenure system and the adoption of western concepts of land ownership in the nineteenth century had significant direct and indirect impacts on traditional cultural practices and beliefs tied to *ʻāina* (land). The privatization of land resulted in the depletion and destruction of many important cultural resources and impeded access for Native Hawaiian cultural practitioners to lands that were previously used for traditional cultural purposes.

The loss of traditional Hawaiian cultural knowledge during the nineteenth and early twentieth centuries was further compounded by the devastating decline in the native population resulting from the introduction of foreign diseases to which the Hawaiian people had no developed immunity. Changes in traditional life ways resulting from the migration of younger people from the country districts to growing economic centers such as the port of Honolulu, as well as the shift from subsistence agriculture to the commercial cultivation of crops such as pineapple and sugar, contributed to a recession of cultural memory. With the passing of the last custodians of specialized cultural knowledge, that knowledge was lost forever.

In 1978, after 200 years of an aggressive decline of indigenous authority, lifestyle, and effective subsistence practices, the Hawai'i constitution was amended to protect and preserve the traditional customary rights of Native Hawaiians. Seventeen years later, in 1995, the Hawai'i Supreme Court confirmed Native Hawaiian rights to access undeveloped and under-developed private lands (State of Hawaii Environmental Council 1997:1). These actions came much too late to prevent irretrievable loss of traditional cultural knowledge.

With such calamitous factors contributing to this *ʻāina* and its people, it is important to note that an absence of evidence is not evidence of absence. The authors of this cultural assessment recognize that the lack of Hawaiian traditional cultural knowledge likely applies to the current project area. It is probable that there are place names whose meaning has been lost or which themselves have been forgotten, and

traditions no longer passed on. We also recognize that, while we have made a good faith effort to address the cultural resources, practices, and beliefs associated with the project area, it is possible that there may be place names missed, traditional history misinterpreted, or *kūpuna* (elder) voices not heard. Despite the enduring legacies of colonialism, there are many individuals who possess cultural knowledge, and efforts to revitalize cultural resources, practices, and beliefs are growing.

2.3 Traditional Environmental Zone

During the traditional Hawaiian period, the project area would have formed part of the *kula kai* (inland plain). This environmental zone would have supported dry shrubs and grassland interspersed with dryland trees such as *wiliwili* (*Erythrina sandwicensis*), *lama* (*Diospyros ferrea*), and *‘iliahi* (sandalwood [*Santalum* sp.]). Native shrubs would have included *‘a‘ali‘i* (*Dodonaea viscosa*) and *‘ilima* (*Sida fallax*). The primary grass present would likely have been *pili* (*Heteropogon contortus*).

These open grasslands would have provided the pre-Contact residents of Wahikuli ahupua‘a with a number of resources, such as the native pili grass, which would have been gathered to provide thatching materials for their house walls and roofs (Neal 1948:72–73), as well as medicinal and decorative native dryland shrubs such as the *‘ilima* (Neal 1948:485). Here also, birds like the *kōlea* (Pacific golden plover [*Pluvialis fulva*]) may have been seasonally hunted for food.

2.4 Traditional Hawaiian Place Names

The *inoa* (names) of *wahi pana* (storied and legendary places [Pukui and Elbert 1986:376]) are an integral part of Hawaiian culture. The traditions related to these places are often preserved within their names. Place names can contain a plethora of information relating to environmental features or characteristics, political history, and mythological origins and often provide valuable cultural insights into the history and significance of an area. Therefore, place names are an appropriate starting point for archival research and investigation into place, having been passed on through language and oral tradition, thus preserving the unique significance of the place.

Maui Komohana (West Maui) is comprised of three moku, and each contains a *kalana* along with several ahupua‘a (Pata 2022:1). A *kalana* is a land division that is nestled within a moku and includes a handful of ahupua‘a within it (Pata 2022:xxiii). This type of land division is most often found on Maui since its geographic shape differs from that of the other islands. In the moku of Lahaina, within the section “that extends from Launiupoko to Wahikuli, the ahupua‘a were divided into various parcels, spanning different elevational zones, and occurring in detached pieces,” and “do not run in contiguous parcels from sea to mountain, as is the normal configuration of lands in Hawai‘i, but appear as ‘lele,’ or detached parcels with portions of other lands between them” (Maly and Maly 2007:ii). Designating a *kalana* within a moku helped to group together some of these detached lands that were administratively connected. The project area falls within the moku of Lahaina, in the *kalana* of Lahaina, and in the ahupua‘a of Wahikuli.

There is no universal agreement on what the name Lahaina means or how it should be pronounced. Published in 1974, the Pukui and Elbert reference *Place Names of Hawaii* spelled this place name as Lāhainā, translating it as “cruel sun” (Pukui and Elbert 1974:127), but there have always been those who did not agree with this pronunciation or translation. In his 2022 book on West Maui place names, Cody Kapueola‘ākeanui Pata summarizes the debate:

Although scholars provide evidence that an older pronunciation for Lahaina was “Lāhainā,” most modern-day scholars choose the spelling that reflects modern-day pronunciation, “Lahaina.” Even in the vast majority of her works, native Hawaiian speaker and renowned scholar Mary Kawena Pukui chose to represent this place name without diacritical markings, as have other

contemporary scholars. This is likewise reflected in the pronunciation of residents, kūpuna, and in recordings of *manaleo* [native speakers of the Hawaiian language]. (Pata 2022:57)

Based on its pronunciation, Lahaina could refer to a variety of sugar cane, a variety of sweet potato, or to the acts of poisoning or leaping. Additionally, Pata goes on to cite an 1871 newspaper article that says Lahaina is a new name, and that the older names are Lele and Nāhonoapiʻilani (Pata 2022:57–58).

The kalana of Lahaina is located in the moku of Lahaina, and also contains a place named Lahaina. This was something that was understood by the *aliʻi* (chiefs) who documented it in the 1848 Mahele, but can confuse researchers who are far removed from that knowledge. Indeed, it confused Kingdom era cartographers who were not descendants of West Maui lineages, so historical maps vary in their depictions of this area. Boundaries also tend to change with political regimes: Maui is nicknamed “the valley isle” because of the isthmus between Haleakalā and the west Maui mountains and at times, this flat area has been included in the moku of Wailuku but at others, some of it has been assigned to the moku of Lahaina, Kaʻanapali, and even Hāmākuapoko.

Lahaina, as the name of a specific residential site along the shore, was the seat of power for many Maui aliʻi, and was the early capital of the Kingdom of Hawaii, so it is mentioned often in historical accounts. It can be a challenge to discern when “Lahaina” is being referred to as a moku, as a kalana, and as a site.

The landscape above the Lahaina coast consists of many hills, which was regarded as one of Lahaina’s unique beauties:

he maikai ke kauwahi o ko Maui kuahiwi; he waiho ka moe aku koʻahu kuahiwi, a he paapu no hoi. He kiekie loa paha o Lihau a me Eke, ko Maui komohana mau kuahiwi (Napela 1837:49–50)

the place of Maui’s mountains is good; the mountains are situated as a blanket that covers the upper region, and they are also numerous. Lihau and Eke are perhaps the tallest of west Maui’s mountains. (Translation by Uluwehi Hopkins)

Those hills created upland valleys which have been referred to as ahupuaʻa in the historical record, yet some of the names of these valleys do not extend to the seashore, defying the commonly understood geographic range of an ahupuaʻa (see Figure 3).

The project area is situated in Wahikuli, in the kalana (district) of Lahaina (Figure 3). Although Wahikuli is currently regarded as an ahupuaʻa that runs from the mountain to the shore, historical accounts suggest that in earlier times it was an upland region rather than a place that extended to the coast. In a *moʻolelo* (history) related by D. Kamaha in the Fornander Collection of *Hawaiian Antiquities*, Wahikuli was directly upland of Kaʻanapali, and the actors in the story climbed up to it from the shore at Lahaina (Kamaha 1919:528–529).

Wahikuli can be translated as “noisy place”. The name appears to have its origins when the volcano goddess, Pele, traveled through the area. As she arrived on Maui, Pele began to dig there with her *ʻōʻō* (digging stick), and the noise of that act was remembered in the place name (Pata 2022:100).



Figure 3. Project area and nearby ahupua'a boundaries.

2.5 Traditional Hawaiian Period

Lahaina is situated on the leeward (*kona*) side of West Maui, where settlement is estimated to have taken place at some time between 800 and 1000 AD (Maly and Maly 2007:7–8). The area is well-situated to take advantage of many types of subsistence resources. There are excellent fishing grounds, flat plains and ample sunlight for growing ‘ulu (breadfruit, *Artocarpus altilis*), and streams from the West Maui mountains to irrigate wetland *kalo* (taro, *Colocasia esculenta*) fields. Since the fishing was so abundant, house lots were generally located closer to the shore with *lo‘i* (irrigated agricultural terraces) situated inland (Handy and Handy 1991:272). Although the overall cultivation capacity of Maui seemed lower than the other large islands, West Maui, and Lahaina in particular, stood out as areas of that could sustain higher populations:

Of the four larger islands...Maui produced the least taro. In sweet-potato production it probably equaled Hawaii and outproduced Oahu and Kauai. Of breadfruit, Hawaii probably produced most, Kauai came second, Maui third, and Oahu fourth. Taken altogether in terms of areas cultivated and number of communities, Maui certainly ranked last...There were two areas, however, in which population was concentrated. One was in “The Four Wai” (Streams)—Waikapu, Wailuku, Waiehu, Waihe‘e—the four largest streams and *lo‘i* areas on windward West Maui, which were contiguous. The other was on the southwest and west coast of West Maui, with Lahaina at its center. No doubt this factor of concentration of population was what enabled Maui’s courageous and ambitious chiefs to conquer and dominate great neighboring island areas as they did. (Handy and Handy 1991:488).

Throughout its history, Maui has periodically been divided and ruled over by two different *ali‘i* with the boundary dividing their lands varying based on the political dynamic at the time. On the western side of the island, the seat of power was most often situated at or close to Lahaina.

2.5.1 Political History

One of the most noted and revered Maui rulers was Kaka‘alaneo, who reigned over the island in partnership with his brother, Kakae, in the early 1500s. Lahaina, referring to the populous area along the shoreline, was then known as Lele. After Kaka‘alaneo planted ‘ulu trees there, the place was poetically referred to as “Malu ulu o Lele,” “the shady breadfruit grove of Lele” (Nakuina 1904:55). At that time in history

...breadfruit trees were a very valuable possession, and to plant one was a meritorious act, worthy of commendation by one’s superior. To plant a grove, even if only a small one, was an act worthy of the gods. (Nakuina 1904:56)

To destroy even one tree was punishable by death, but to destroy several trees was a declaration of war. Kaka‘alaneo was forced to penalize his own son, Kaululā‘au, for doing just that. The boy, at only 10 years old, destroyed several trees to clear a field for sport. The community complained, and Kaka‘alaneo banished his son to the island of Lāna‘i, then the home of only ghosts and wild spirits. In a story of redemption and responsible leadership, Kaululā‘au eventually conquered or tamed all the supernatural troublemakers, built a fishpond and planted food patches, then kindly and generously greeted fishermen that arrived from other islands. Soon, word of his generosity spread, and people came to live on Lāna‘i with him. He ruled over the island as an *ali‘i*, choosing to stay there instead of going back and taking his place as the ruler of Maui. This is how Lāna‘i became part of the Maui kingdom (Nakuina 1904:55–58). Kaka‘alaneo is also the first *ali‘i* to have possessed an ‘*ahu‘ula* (feather cloak), establishing it as a tradition for future chiefs (Nakuina 1907:147–155).

As evidenced above, Kaka‘alaneo has been memorialized more than his brother, Kakae, although they ruled jointly. They and their descendants were successful in cultivating communities, establishing seats of power, and giving names to sites of wealth that would persist into the present day. During his time

Kekaa was the capital of Maui when Kakaalaneo was reigning over West Maui. It is said that there were many people there. Many houses were constructed and people cultivated a great deal of potatoes, bananas, sugar cane, and things of a like nature...that country from above Kekaa to Hahakea and Wahikuli...was all cultivated; Kekaa became a city populated by a great many. (Kaha 1919: 540–541)

Keka‘a is currently situated in the ahupua‘a of Hanaka‘ō‘ō (the northernmost ahupua‘a in the Lahaina kalana), although it is generally thought of as being in Ka‘anapali since the recreational area called Ka‘anapali Beach is at Keka‘a Point.

The great-grandson of Kakae was Pi‘ilani, who managed to surpass the fame of his predecessors. Rather than ruling jointly as had his ancestors, Pi‘ilani (c. 1600) unified the island under one rule. He married a chiefess of O‘ahu, Laielohelohe, then their daughter, Pi‘ikea, married the famous chief ‘Umi of Hawai‘i Island. From that time on the O‘ahu, Maui, and Hawai‘i island chiefly lines became intertwined (Kamakau 1992:19).

There are six bays along the Ka‘anapali coastline that became renowned during Pi‘ilani’s lifetime: Honokōwai, Honokeana, Honokahua, Honolua, Honokōhau, and Hononana (Pukui and Elbert 1974:48). Collectively, they became known as Nā Hono a Pi‘ilani, which has been used since that time as a descriptor for the island of Maui. These bays offer a view of Kaho‘olawe, Moloka‘i, and Lāna‘i, all of which were taken and ruled over by Pi‘ilani during his reign.

He also established Lahaina as the royal center and maintained his residence at Moku‘ula, a small island in the center of a lake that once existed in the center of Lahaina town. This continued to be the seat of power for rulers until the time of Kamehameha III, the Mō‘ī (Ruling Chief) of the Kingdom of Hawai‘i. Lahaina’s importance is evidenced by the fact that Kamehameha III’s mother, Keōpūolani, is buried in the cemetery there.

2.5.2 Halulukoakoa Heiau

Heiau, temples built to harness the power of akua for ceremonies, range from large structures for high-level political activities to small mounds for everyday activities that sustain life. In the Lahaina area, there were several. According to noted historian, Samuel Kamakau,

He nui na heiau mai Hawaii a Kauai, a he mau heiau poo kanaka, a he mau heiau waihau ka nui, a he mau heiau nuu, ua nalowale ka nui, a o kekahi mau heiau ke waiho nei no ke kahua, a me na nini pohaku. Pela o Halulukoakoa, o Wailehua, o Luakona me Apahua ma Lahaina (Kamakau 1870).

Many are the heiau from Hawai‘i to Kaua‘i, and some are sacrificial heiau, and numerous are waihau [agricultural], and some are heiau nu‘u [with altars], the number [of those] have disappeared, and some of the platforms remain of these heiau, and the pavement stones. In that state are Halulukoakoa, Wailehua, Luakona, and Apahua at Lahaina (translated by Uluwehi Hopkins).

The *Hawaiian Almanac and Annual* for 1909 lists five heiau in Lahaina: Laukona, Waiie, Apahua, Wailehua, and Halulukoakoa. The listing for the latter states, “Lahaina, corner of coconut grove and ahupua‘a of Wahikuli, of coral construction” (Thrum 1908:38). The building of heiau on Maui are first

attributed to Hua, a king that reigned before 1100 AD, but Halulukoakoa was built sometime after his reign (Thrum 1908:44). There are reports that it was already in use by the time of Pi'ilani's grandson, Kamalalawalu. When his contemporary on Hawai'i Island, Lonoikamakahiki, sailed to Maui, they landed at Lahaina then began walking,

...o ke alanui a hiki i kahi e ulu nei o ka ulu niu i Mala, oia hoi na niu a "Kaleikoa" aia i laila ka Heiau o Halulukoakoa, a ku keia mawaho o ka Heiau, iloko o laila ke alii Kamalalawalu, me kana kahuna a me kana keiki oia o Kauhiaimokuakama, a me Maka ku me na koa (Thrum, ed. 1887).

...along the path until arriving at the place where the 'ulu grove of Mala was growing, also the coconut trees of "Kaleikoa" [were] there at the Heiau of Halulukoakoa standing outside of the Heiau, inside there the ali'i Kamalalawalu, with his kahuna and which his children Kauhiaimokuakama and with Maka standing with the warriors (translated by Uluwehi Hopkins).

While its origin is obscure, there are many stories relating to Halulukoakoa. Thrum states that a caretaker for Wailehua heiau was interviewed about the nearby constructions and stated that,

Halulukoakoa, a coral structure, is famed traditionally as having given shelter to Wahine-o-Manua, a very beautiful young woman who fled from her husband in consequence of constant ill treatment. Regardless of the rigid kapu of the heiaus against women being allowed within its sacred walls, she hid herself therein and watched those searching for her. On their departure she ventured forth and on reaching the road an owl god appeared to her as guardian and guide, and by the clapping of its wings led the pursued girl through the brush till she reached the large stone mauka of Kekaa, Kaanapali, where it left her and she lay down and slept till morn, when she arose and departed. The stone is known as Pohaku o Wahine o Manua (Thrum 1908:45).

In a similar telling, the demi-god, Maui, was once taken to Halulukoakoa to be sacrificed. Although Maui was known for getting himself into trouble, in this instance, he was in the wrong place at the wrong time.

[Maui's] favorite mode of fishing was pole fishing at night; one night he went out and while he was idling away a canoe came along looking for a man to be offered in sacrifice by the king; Maui was taken prisoner and brought to the chief at Halulukoakoa. This place is at Moalii, Maui, in a westerly direction from Lahainaluna. He was to be placed on the altar the following day (Papa 1918:538-540).

His mother, Hina, accompanied by an owl, followed them and stayed at Pohakuawahinemauna, described as being "between Keawaawa and Kakonamoku." The owl freed Maui and led him to the stone where Hina was waiting, then she hid him under it and spread out her mat as she waited for the guards to arrive. When they did, she diverted them and once they were gone, she and the owl led Maui home (Papa 1918:540).

Reminiscent of this same story is another that tells of a boy named Kaili and his sister, Nailima, who rescues him.

At one time a temple was located [at Lahaina] known as Halulukoakoa. The story goes that a Hawaiian youth, Kaili, was seized by warriors of a west Maui chieftain at Kahakuloa, another village on the east side of the island.

Kaili was taken in a canoe around the western end of the Island for the sacrifice at the temple. His sister Nailima saw the capture, and skirted the cliffs of the island, keeping her eyes on the canoes which were in the open sea. She arrived at Lahaina and learned her brother had been taken to the

temple. She withdrew to the outskirts of the settlement, sat down upon a stone and commenced to weep.

Pueo the owl-god appeared suddenly and learned the cause of her grief. He told her to pray to all the gods for her brother's deliverance while he went to the sacrifice. Here the owl-god unbound the victim from the sacrificial stone and bade him walk backwards from the temple. At first the youth did not understand, but the owl-god circled and beat his wings, finally conveying his meaning to the youth. After walking backwards for several miles under the owl-god's guidance, he found the sister.

He immediately heard warriors approaching and hid under the stone upon which Nailima was sitting. When the warriors arrived they asked if a man had been seen passing that way, saying they were searching for Kaili. The sister said she had seen no one. The warriors then fell upon the footprints of Kaili and followed them, little knowing they would be led back to the temple (*Honolulu Advertiser* 1934:5).

The heiau remained in use into the time of the Kamehameha dynasty. Thrum states that, "Halulukoakoa and Wailehua are distinguished as receiving Liholiho's first public duty, at his consecration of them in 1802, after he had been sanctified to that service as the heir of Kamehameha I., at the early age of five years" (Thrum 1908:44–45). Kamakau provides more details.

Six years had gone by since the battle with Namakeha at Kaipalaoa when the fleet called the Peleleu set sail, touching first at Kipahulu where Kamehameha erected the god house called Ma'ulili, then at Kaupo where Kane-malo-homo [*sic*, Kane-malo-hema], Pau-maka [*sic*, Puu-maka], and Loaloa were set up and their tabu declared by Liholiho. The party then went on to Lahaina where they remained about a year feeding and clothing themselves with the wealth of Maui, Molokai, Lanai, and Kahoolawe, and worshipping the gods. Liholiho, heir to the kingdom, rededicated as dwellings for the gods (*ho'ola'a aku la i na heiau i mau hale no ke akua*) the heiaus of Haluluko'ako'a and Wailehua, Pihana, Ka-uli, Malumaluakua, Ke-ahuku, and Olopio at Wailuku, Ke-alaka'i-honua at Waihe'e; and place a tabu over them (Kamakau 1992:188).

2.6 Historic Period

Kamehameha I, the founder of the Kingdom of Hawaii, was a Hawai'i Island chief who conquered all the islands with the backing of powerful Maui Island ali'i, thus making the chiefly areas on these islands important in the newly-unified government. Two ancient capitals, Kailua-Kona on Hawai'i and Lahaina on Maui, continued to be active sites of politics and commerce into the new regime.

Lahaina's value lay in its strategic location and cultural significance: Kaho'olawe, Moloka'i, and Lāna'i could be seen from this coast, the famous 'ulu grove and 'uala (sweet potato, *Ipomoea batatas*) fields made it capable of producing an abundance of food, and Lele (later known as Lahaina town) was a *pu'uhonua*, a place of refuge, where lawbreakers could receive pardons for their infractions if they reached the area before being caught. Moku'ula, a small island in the middle of Loko Mokuhinia (one of Lahaina's two lakes), was also the seat of royalty for generations. Lahaina could be regarded as the birthplace of the Constitutional Monarchy, as the "Lua'ehu Constitution," the first constitution of the Kingdom, was promulgated at Lua'ehu in Lahaina (Kamakau 2001:197).

Once foreign ships began to frequent Hawaiian waters, Lahaina's port soon became one of the most accessible for these larger, deep-draft vessels, making it a center of commerce across the archipelago. Hawai'i's earliest commercial value was as a waystation between continents; it was the place to stop, rest, and restock supplies. This made it a bustling center of activity for foreign sailors, many of whom spent

the time indulging in vices. The first two laws, issued in 1822, were printed in English because their express intent was to manage the unruly behavior of drunk and lascivious sailors during their stays in Hawai‘i:

NOTICE. Whereas disturbances have arisen of late on shore, the peace broken, and the inhabitants annoyed, by the crews of different vessels having liberty granted them on shore, it is hereby ordered by His Majesty the King, that in future, should any seamen of whatever vessel, be found riotous or disturbing the peace in any manner, he or they shall be immediately secured in the Fort, where he or they shall be detained until thirty dollars is paid for the release of each offender.

Masters of vessels are informed that all deserters shall be returned to their respective commanders. No seamen shall be left on shore without permission from the King.

NOTICE. His Majesty the King, desirous of preserving the peace and tranquility of his dominions, has ordered that any foreigner residing on his Islands, who shall be guilty of molesting strangers, or in any way disturbing the peace, shall on complaint be confined in the Fort, and thence sent from the Islands by the first conveyance (as reprinted in Kuykendall and Gregory 1926:128).

Soon thereafter, Hawai‘i became a supplier of commercial resources on a global scale, primarily sandalwood, whale oil, and sugar. All of these commodities flowed through the bustling seaport of Lahaina. As more sailors arrived on ships of various nations, conflict ignited between them and the pious Calvinist missionaries who had come to the Islands to convert the Hawaiians to Christianity. In 1825, the ali‘i began to prohibit Hawaiian women from visiting the ships in port, and the sailors believed this new regulation was due to the influence of the missionaries (Arista 2019:132–133). This left the Hawaiian elite with the challenging task of mitigating discord between these two groups while negotiating for the welfare of native Hawaiians. The government of Hawai‘i had to maintain a balance, giving in to some demands while denying others, and always being mindful of the Kingdom’s precarious sovereign status in the international arena. Thus, from the 1820s onward, politics, commerce, religion, and education all shaped the landscape of Lahaina, taking it from a well-watered royal center to a dry plantation desert.

2.6.1 Whaling Era (1819–1870s)

With the gradual wane in the trade in sandalwood to China due to the overharvesting of the native *‘iliahi* forests, resupply of the Pacific whaling fleet became the major commercial pursuit in Lahaina. After the discovery of sperm whaling grounds near Japan, ships began stopping at Hawaiian ports in 1819 and the number of vessels significantly multiplied each successive year. West Maui farmers actively supplied ships with food and firewood, making Lahaina a bustling market town. Some of the earliest bridges over deep river gullies were built in West Maui to allow producers to bring their food crops to the Lahaina markets (MacLennan 2014:107–108).

Whaling seasons were concentrated to 2 or 3 months in the spring and again in the fall, when sailors were on their way to or coming back from the hunting grounds. Lahaina became Maui’s most populated port, serving whalers’ needs for supplies, relaxation, and entertainment.

At such seasons Honolulu harbor and Lahaina “roads” were crowded with vessels and the dusty or muddy streets and byways of the towns were filled with sailors cruising about in search of recreation, which to many of them meant only drunkenness and debauchery. Street brawls were frequent and there were some serious clashes between sailors and local authorities. (Kuykendall 1938:93)

The ever-present indulgence in vices stoked the tensions between whalers and missionaries, erupting in conflicts and riots. In 1825, the governor of Maui, Hoapili, proclaimed that women would no longer be allowed to go to foreign ships. Judging this to be the work of the missionaries, “twenty sailors from the English ship *Daniel the 4th* surrounded the mission house...threatening to kill the ministers and their families if they did not consent to allow Native females on board their ship” (Kashay 2008:374). This situation would emerge again over the next several years in both Lahaina and Honolulu, culminating in the need to construct the earliest forts and prisons in these highly volatile locales.

Small-scale whaling hunts off the coast of Maui and O‘ahu began in the 1840s (Lebo 2022:73), but the whaling industry started to decline after the discovery of petroleum oil in 1859 and the American Civil War in 1861, leading to a shift from whale oil to petroleum as a primary energy source (Jones and Osgood 2015:13).

2.6.2 Missionaries and the Lahainaluna Seminary

Keōpūolani was the highest-ranking wife of Kamehameha I and mother to the heirs of the Kingdom, Liholiho (Kamehameha II) and Kamehameha III. She was from Maui and chose to reside at Lahaina after the death of her husband. Missionaries from the American Board of Commissioners for Foreign Missions (ABCFM) attached themselves to her, realizing that the *maka‘āinana* (commoners) would follow the examples of their ali‘i. If she became a Protestant, they believed, the rest would follow. Keōpūolani allowed them to stay, thus securing their livelihoods in the islands. Other ali‘i who followed her example eventually gave the second cohort from ABCFM permission to build a school, which would later become known as Lahainaluna.

In an 1831 meeting, the missionaries decided that they needed an institution to train teachers, and the small school huts in upper Lahaina were repurposed to meet that directive. Named Lahainaluna, the school’s first class consisted of 25 adult males. In 1836, it became a boarding school for boys, converting it to a high school, and the next year changing it to a “Mission Seminary.” Most of the graduates of Lahainaluna became teachers or government officials (Kuykendall 1938:111–112). According to the Lahaina Restoration Foundation, Lahainaluna was the first secondary school founded west of the Rockies, and likewise, published the first newspaper west of the Rocky Mountains (Lahaina Restoration Foundation 2024).

In 1835, Reverend Dwight Baldwin was granted 2,675 acres of land in northwest Maui. This land formed the foundation for ventures in West Maui undertaken by his son, Henry Perrine Baldwin. Henry Perrine Baldwin, known for his academic excellence at Oahu College (Punahou School) originally had plans to go into medical school before working in the commercial sugar industry at Lahaina. He became the *luna* (overseer) at the Waihee Plantation and eventually ran other sugar operations in Lahaina.

2.6.3 Early Sugarcane Ventures

Kō (sugar cane, *Saccharum officinarum*) was brought to the island by the earliest Pacific settlers, and Hawaiians had been growing it throughout the generations (Jones and Osgood 2015:1). It was not until the arrival of westerners, however, that growing the crop for profit was a consideration. The first known experiment in the commercial cultivation of sugar on Maui started in Wailuku in the early 1820s and by the 1840s, other small cane growing ventures were emerging in West Maui and along the leeward coast of the island (Jones and Osgood 2015:26–27). Hawaiians and foreigners alike engaged in the industry, with the result that “Lahaina exported the largest portion of sugar and molasses produced in the islands during this decade” (MacLennan 2014:108). At the same time, cattle were already becoming a problem in the area, destroying cane crops and denuding the hills above Lahaina, creating a dust problem in the town below.

2.6.4 The Mahele

In 1848, as part of the process that ushered in land ownership in the Kingdom of Hawaii, all the ali‘i serving under Kamehameha III signed the *Buke Mahele*. Each listed an inventory of the lands they oversaw, then divided that same list into two: the lands they would keep, and the lands they would give to their king, Kauikeaouli. After everyone had completed their divisions, Kauikeaouli then listed all of the lands under his supervision, then also divided these into two lists: those he would keep, and those he would give to the government. Through this process, islands were divided into three broad categories: Konohiki, lands retained by individual chiefs; Crown, lands considered the personal holding of the king; and Government, lands to be used for the good of the public.

Wahikuli was allocated as Crown Lands, belonging to Kauikeaouli, which he would then pass on to his heir, Alexander Liholiho, who reigned as Kamehameha IV. Since Crown Lands were considered the private property of the reigning monarch, each of these men had the authority to rent, lease, or sell portions of Wahikuli at will. In 1865, the Board of Commissioners of Crown Lands was formed to manage the lands. Although the revenue was used to support the person of the monarch, the ability to transact those lands was now out of the ruler’s hands (Van Dyke 2008:90). After the 1898 annexation, both Crown and Government lands were combined into what is today called “ceded lands.”

No Land Claim Awards (LCA) were awarded within the project area; however three LCAs in Wahikuli are located near the project area. *Helu* (number) 7724:2 (‘āpana [parcel] 2) to Poholapu is a 12-acre lot (LCA Volume 9:35) situated along Kahoma Stream more than 1 kilometer (km) southeast of the project area. Closer to the project area are Helu 5483 (‘āpana 2), described as a 6-acre coconut grove *mauka* (inland) of the government road claimed by Kaeo, and Helu 477F (‘āpana 2), a 1-acre coastal house lot claimed by P. Keliipio situated *makai* (toward the sea) of the government road (LCA Volume 2:1528) (Figure 4). Both these LCAs are situated west of and outside the southwestern portion of the project area.

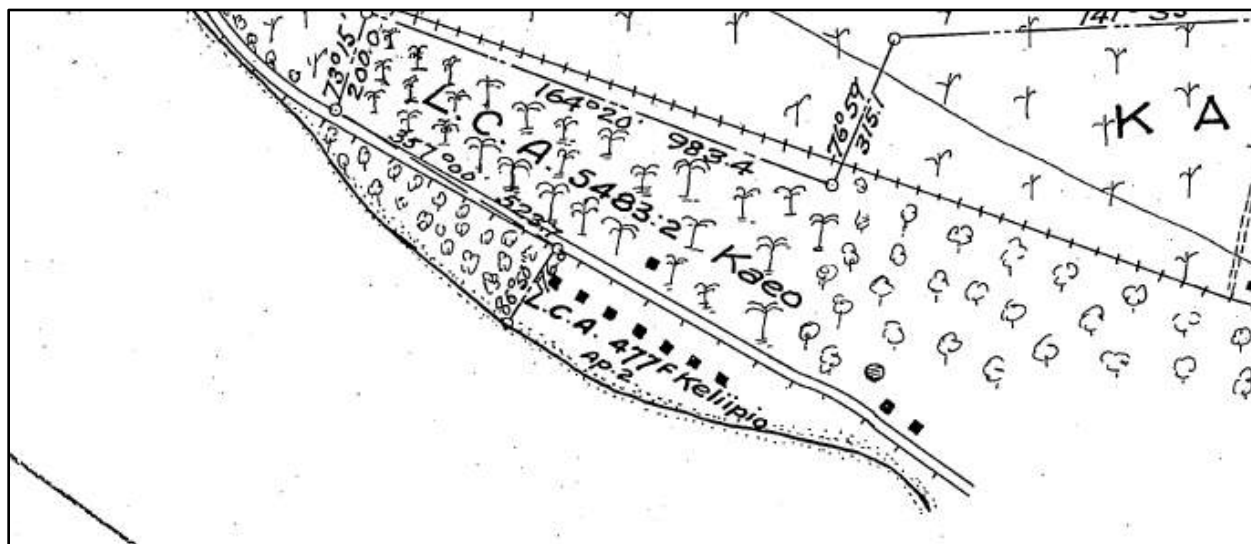


Figure 4. Detail of Hawaii Registered Map 2569 (Kanakanui and Lutz 1914) depicting LCAs 5483:2 and 477F, located outside the project area.

2.6.5 The West Maui Sugar Company (1864–1870s)

With the advent of the first steam mill and the development of the railroad line, Lahaina’s sugar economy boomed. While the West Maui Sugar Company effectively cultivated Lahaina cane, it relied on the

Pioneer Mill Company for sugar processing (Madeus et al. 2022). Together, these two companies dominated the sugar industry in the Lahaina District (Madeus et al. 2022).

The West Maui Sugar Company was created by King Kamehameha V from Crown Lands in 1864. He combined several tracts of land and established leases to form the West Maui Sugar Company (1864) (Madeus et al. 2022). Before the end of the 1870s, the West Maui Sugar Company was incorporated into the Pioneer Mill's monopoly, which dominated the sugar industry on the western side of the West Maui mountains for the next century.

2.6.6 The Pioneer Mills Company (1860s–1990s)

The history of Pioneer Mill is intimately tied with Honolua Ranch, which became Baldwin Packers, then Maui Pineapple Company, and later, the Maui Land and Pineapple Company. It is commonly known today as Maui Land & Pine (Wilcox 1997:126).

In the 1860s, James Campbell, Henry Turton, and James Dunbar started Lahaina Mill, originally processing sugar cane from independent planters (Wilcox 1997:126). A few years later, they established Campbell & Turton, which soon evolved into the Pioneer Mill Company. This sugar plantation operation came to dominate the Lahaina area for over a century until it finally shut down in 1999 (Jones and Osgood 2015:185). It used a railway system starting in 1882, and when the railway shut down in 1952, plantation railroading came to an end on Maui (Ramsay 1966:16, 26).

In 1898, the Pioneer Mill began taking larger amounts of water to irrigate its cultivated lands by constructing flumes deep in the valleys that siphoned water from the Honokōhau and Honolua streams, reducing the volume that traveled down to the residents of Lahaina. In 1904, Honolua Ranch constructed the Honokōhau Ditch. An agreement was made that the ranch would own and build the ditch while the mill would finance it and use its water (Wilcox 1997:126). In 1914, this first ditch was replaced by the Honolua Ditch and the agreement remained the same.

In 1918, Pioneer Mill built the Honokōwai Ditch to replace the earlier flumes, and continued to construct Kahoma, Kanaha, Kauaula, Launiupoko, Olowalu, and Ukumehame Ditches (Wilcox 1997:66–67, 134). The company grew, and “by 1931, Pioneer Mill received from 50 to 60 mgd [million gallons per day] from these sources and an additional 40 mgd was supplied by pumping groundwater” (Wilcox 1997:126). Whenever their water needs had been fulfilled, Pioneer Mill sold any “surplus water” to the county, which was then diverted into the Lahainaluna Ditch (Wilcox 1997:136–137).

Pioneer Mill continued to dominate Lahaina, absorbing smaller plantations throughout its lifespan. After over a century of operations, its downturn occurred by the early 1980s when it no longer received all of the Honokōhau Ditch water. Having outlasted most sugar plantations around the islands, due to foreign competition, Pioneer Mill closed in 1996 (Wilcox 1996:137).

2.7 Historic Maps and Aerial Photographs

Historic land use activities, such as commercial sugar cane cultivation and the subsequent establishment of residential developments, significantly altered the natural landscape of the entire project area and much of the surrounding region. The changes in land use since the 1920s can be traced through a series of historical maps and aerial photographs of the area.

By the 1920s, the sugar plantations established in West Maui during the preceding decades were flourishing. A 1924 Territory of Hawaii U.S. Geologic Survey map of the Mala quadrangle (USGS 1924) depicts the project area flanked on its eastern and western boundaries by two railway lines. One rail line is

shown running along the coastline, while the other can be seen trending along a contour immediately inland of the project area. Paralleling the railway line via a road. Both rail lines are labeled as “PIONEER MILL RR [Railroad] (NARROW GAGE)” (Figure 5). Most commercial sugar plantation railroads in Hawai‘i were narrow gage, meaning that the width between the rails was narrower than that of a normal railroad. The railway engineers and cars were therefore smaller and built to run on these narrow gage tracks.

Four structures, possibly representing residences, appear to dot the coastal road north of Wahikuli Street, which cuts through the project area from west to east and was used to access the reservoirs near Pu‘u Laina. Toward the southern end of the project area, but west of it along the coast, are a number of structures labeled as “Mala Camp” (see Figure 5). This is likely the location of a sugar plantation workers’ camp.

A map of Pioneer Mill Co.’s landholdings in 1939 (State of Hawaii Department of Accounting and General Services 1939) depicts the northern half of the project area surrounded by sugar cane lands with individual fields marked by their alphanumeric designations (Figure 6). Areas labeled “HOMESTEAD LOTS” are shown on the 1939 map trending along the coast from Kaniau Road to Wahikuli Road where the lots extend east to the railroad. Individual structures are depicted in other areas of this map, suggesting that the homesteads had not yet been developed (see Figure 6). Much of the remainder of the project area appears to have been uncultivated (with the exception of a sliver along its northern edge that forms part of field I-5). The structures located along the coast to the west of the southernmost portion of the project area likely represent Mala Camp, as noted on the 1924 topographic map.

Aerial photographs indicate that by the early 1950s, most of the areas designated as homestead lots on the earlier maps had been developed. A close examination reveals that the majority of the remaining portions of the project area appear to be in natural ground cover rather than under sugar cane cultivation (Figure 7 and Figure 8). In 1965, residential areas were expanding to the north and south of Wahikuli Road between the railroad corridors (Figure 9). Just more than a decade later, in 1976, the entire project area was developed as housing (Figure 10). The project area continued to serve as a residential area, eventually expanding to Leialii Parkway to the north in the early 2000s (Figure 11).

In August 2023, a series of wildfires burned the vast majority of single-family homes within the project area. Remediation efforts in the project area following the wildfires have been completed, with hazardous debris and ash being removed from all of the individual lots.

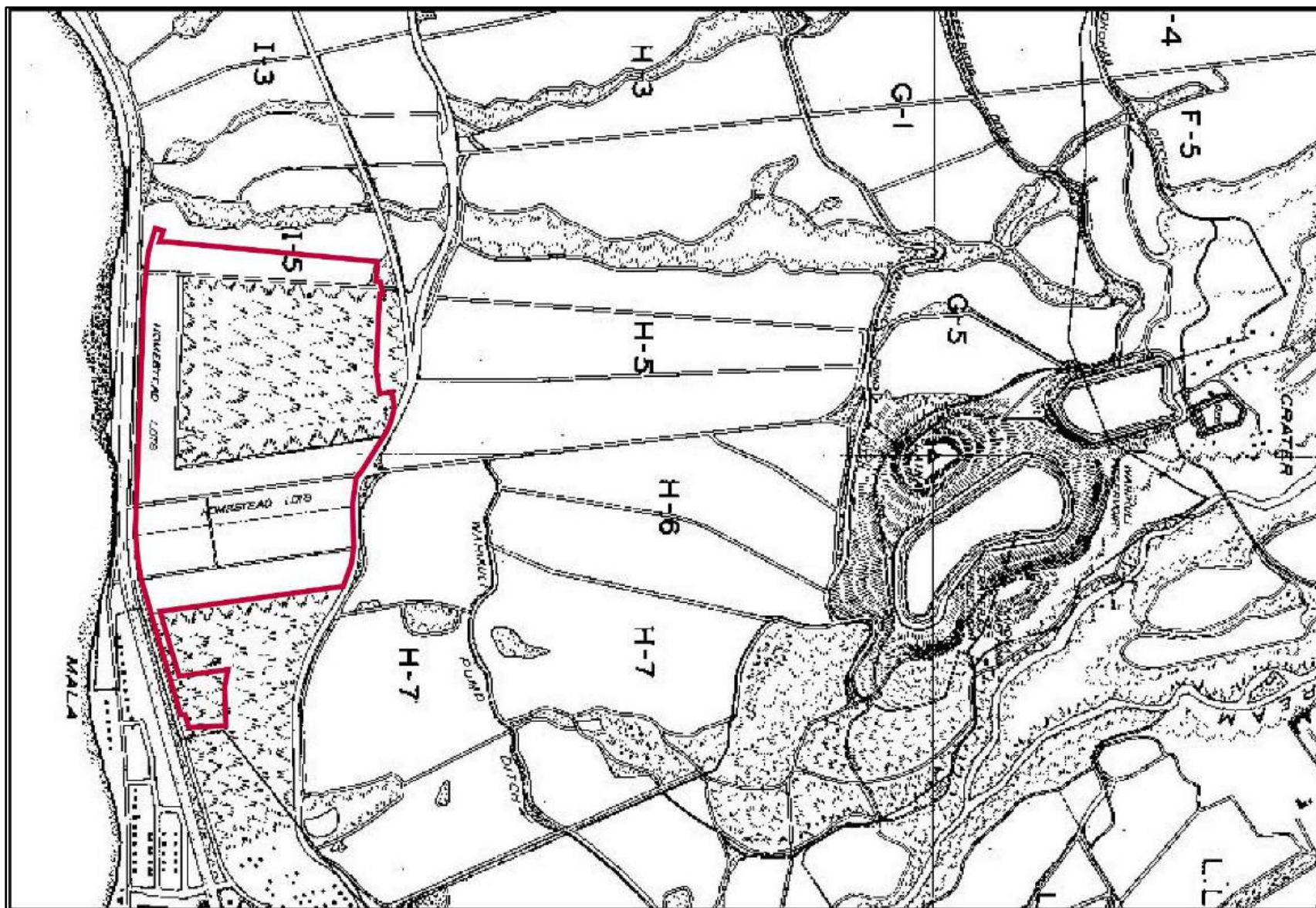


Figure 6. Detail of 1939 Pioneer Mill Co. map (State of Hawaii Department of Accounting and General Services 1939) depicting “HOMESTEAD LOTS” mapped within the project area along the coastline and Wahikuli Road (not labeled).



Figure 7. Historic aerial photograph (USGS 1950) showing development of homestead lots surrounded by commercial agricultural fields within the project area in 1950.



Figure 8. Historic oblique aerial photograph showing developed homestead lots and commercial agricultural areas in 1952 (USGS 1952).



Figure 9. Historic aerial photograph showing expansion of residential development in the project area in 1965 (U.S. Department of Agriculture 1965).



Figure 10. Historic aerial photograph showing the project area nearly encompassed in residential development in 1976 (USGS 1976).



Figure 11. Aerial photograph showing continued expansion of residential development to the north of the project area in 2000 (National Oceanic and Atmospheric Administration 2000).

3 ARCHAEOLOGICAL FINDINGS

An archaeological literature review and field inspection report (Gross and Hopkins 2024), conducted by SWCA in support of the historic preservation review of the proposed project, identified one surface historic property, a newly identified segment of existing State Inventory of Historic Properties (SIHP) Site 50-50-03-08887 (railroad), situated just outside the western boundary of the project area. The literature review demonstrated that one other historic property (SIHP Site 50-50-03-08886 [railroad]) is mapped just outside the eastern boundary of the project area. Both of these former railroad alignments, which are shown on the 1924 USGS map (Figure 5), appear to have been abandoned for some time. The literature review also indicated that two previously identified historic properties (SIHP Site 50-50-03-09023 [disarticulated human remains] and Site 50-50-03-00011 [Halulukoakoa Heiau]) are mapped within the limits of the project area. The presence of these historic properties indicates that significant subsurface historic properties, including traditional Hawaiian and/or historic period archaeological deposits and human remains, may be present within the project area. The site of Halulukoakoa Heiau (SIHP Site 50-50-03-00011) was reported to have been largely destroyed at the time of its original recording by Winslow Walker sometime between 1929 and 1930 (Walker 1931:114) (Figure 12).



Figure 12. The mapped location of Halulukoakoa Heiau (SIHP Site 50-50-03-00011), taken from the top of a slope-cut along the eastern boundary of TMK (2) 4-5-030:016, view to the north.

4 COMMUNITY CONSULTATION

To initiate the consultation process, SWCA compiled a list of cultural consultation contacts that included Native Hawaiian Organizations (NHOs), community groups, government agencies, and individuals identified as having a potential interest in the project and how it may impact cultural resources, practices, and beliefs.

In compiling this list, SWCA included all NHOs listed on the U.S. Department of the Interior's *Native Hawaiian Organization Notification List* whose geographical purview is West Maui and whose stated mission relates to environment and/or culture. The list also included select NHOs with a statewide purview whose stated mission relates to the environment and/or culture. SWCA prepared a request for information letter, a copy of which was sent to each of the contacts on the cultural consultation contact list. The request for information letter described the project, delineated the project area, and requested assistance in:

- Identifying *kama 'āina* (local residents), kūpuna, and other individuals who might be willing to share their cultural knowledge of the project area.
- Information on present and past land use of the project area.
- Information on place names and cultural traditions associated with the project area.
- Information on cultural sites within or in the vicinity of the project area.
- Knowledge of traditional gathering practices within the project area, both past and ongoing.
- Any other cultural concerns the community might have related to cultural practices within or in the vicinity of the project area.

The text of the request for information letter is provided in Appendix A of this report.

To solicit additional community input and inform the broader public, SWCA published a notice of the project in the January 2025 issue of *Ka Wai Ola* (see Appendix C). *Ka Wai Ola* is a monthly news publication sponsored by the Office of Hawaiian Affairs, dedicated to covering the people, issues and events important to the Native Hawaiian community.

4.1.1 **Limitations to Community Consultation**

CIA reports require consultation with the community, and SWCA takes pride in approaching these consultations with cultural sensitivity and awareness. However, the most effective way to engage with a community is through personal connections and familiarity, which our team lacked as none of the SWCA staff are local to West Maui. This absence of local ties meant our ethnographers did not have the advantage of personal relationships with community members or cultural practitioners.

Furthermore, the West Maui community has endured significant trauma and hardship since the August 8, 2023 fire, with their focus understandably on survival and daily needs. Attempting to engage this community in the consultation process for this project was difficult and asking an already burdened community to discuss cultural traditions for this assessment required careful consideration and sensitivity to avoid exacerbating their distress and adding to their emotional and mental burden. While cultural consultation outreach followed the standard approach for a CIA report, we deliberately avoided pressuring individuals who did not respond to our initial outreach.

4.2 Individuals and Organizations Contacted

An attempt was made to contact a total of 114 organizations and individuals. The individuals contacted had been identified through background research either as potential cultural informants or as persons who might provide the names of local kūpuna, cultural practitioners, and other potential informants. Contact information was found for these individuals and their participation was solicited. Inquiries were made by email. Appendix B provides a listing of all the organizations and individuals contacted and whether they responded to the inquiry.

4.3 Consultation Results

Of the 114 organizations and individuals contacted, only one responded, and there were no responses to the notice in *Ka Wai Ola*. The lack of responses to the consultation letter and public notice could indicate that this project does not rank highly among the community's concerns and may suggest that the community does not view this project as a significant concern or a threat to cultural resources, practices, and beliefs. Additionally, the absence of comments could indicate that the community perceives the project as beneficial or neutral, as people are generally more inclined to respond when they believe a project poses risks to cultural resources, practices, or beliefs.

The one respondent, Ikaika Nakahashi, a cultural historian with the State Historic Preservation Department, replied to the consultation request letter via email. Nakahashi recommended that SWCA use media to solicit additional information for the CIA and consult with Ke‘eaumoku Kapu and the County of Maui Department of ‘Ōiwi Resources. Nakahashi also suggested meeting with native tenants and people who currently live or previously lived in Wahikuli ahupua‘a to gather information about cultural resources and practices.

SWCA advertised the CIA through a public notice in *Ka Wai Ola*. Efforts were made to contact Ke‘eaumoku Kapu and the County of Maui Department of ‘Ōiwi Resources, but they did not respond to the consultation request.

5 CULTURAL RESOURCES, PRACTICES, AND BELIEFS

The information gathered through this assessment has been used to identify and describe the cultural resources, customs, practices, and beliefs associated with the area of the proposed gravity sewer system project. In the Wahikuli ahupua‘a, current cultural practices include agriculture, fishing, limu gathering, plant harvesting, burial practices, and others. No ongoing cultural activities have, however, been identified within the project area itself. This assessment found that the project area is not currently used by any specific cultural or ethnic group for ongoing cultural activities.

Given the dramatic land use changes and history of private ownership of the project area, it is not surprising that no contemporary cultural customs or practices were identified as taking place within the project area. Additionally, the current state of the vegetation within the project area, which consists primarily of introduced plant species, does not lend itself to performing cultural customs or practices.

5.1 Natural Resources

The natural resources once present within Wahikuli ahupua‘a were severely impacted during the post-Contact period first by the predation of introduced ungulates and later by plantation activities. While some native plants may survive within the project area, it is now very much a modified landscape of introduced plant communities offering little in the way of traditional natural resources. There is no indication that the project area is currently being used by any cultural or ethnic group to gather natural resources for customary uses.

The natural vegetation patterns within the project area have been severely altered by residential development over the last 60 years. Vegetation observed within the project area during the archaeological field inspection conducted for this project on November 8, 2024, consisted of ruderal species of non-native grasses and small shrubs beginning to grow back following the August 2023 wildfires that burned through the area. Some larger landscaped trees and decorative shrubs on private parcels also survived the fires and were growing back.

5.2 Coastal Resources, Practices, and Beliefs

The project area is located near the Wahikuli coastline but does not encompass the coastline itself. The coastal Wahikuli area is deeply connected to cultural resources, practices, and beliefs, including various forms of fishing and other subsistence activities, and cultural and religious practices tied to shoreline, nearshore, and open-ocean resource gathering. The proposed project is not anticipated to impact these natural and cultural resources. On the contrary, the proposed project is expected to contribute positively to the health and vitality of the environment by reducing impacts from cesspools and leaking septic systems.

5.2.1 *Wahikuli Wayside Park*

Wahikuli Wayside Park, located just outside the project area, remains an important recreational and cultural site where community members gather to fish, collect marine resources, swim, snorkel, and connect with one another. The proposed project is not expected to impact cultural activities that take place at Wahikuli Wayside Park.

5.2.2 Pūnāwai Shoreline Freshwater Springs

A Lahaina cultural informant interviewed for a previous SWCA study spent their childhood playing in the waterways of Lahaina and Ka‘ānapali and learned traditional gathering practices from their kūpuna. This informant first started to notice environmental impacts to shoreline and stream cultural resources when they were a teenager in the 1970s. The informant described the various shoreline places where freshwater springs are found, including in Wahikuli. They recalled that the water gushed out of these springs so forcefully in the past that you could easily collect fresh water from them, but today there is no longer sufficient flow to allow for this kind of freshwater gathering:

There were a couple of places. In Pakala it’s actually right in front of Moku‘ula and Mokuhinia pond. So we know in that area there were underground springs where people could gather fresh water. And then in Wahikuli on the Lahaina side of the beach there was freshwater underground springs. Polanui also in Lahaina closer to the Launiupoko side there was a couple of them that you could go gather water from. It permeates out of the sand so forcefully that you could actually gather fresh water out of those areas. So we know there’s underground springs but—we also know that the amount of water that was coming out of the ground was way less than what was when we were kids. If the ‘āina doesn’t have the ability to capture water to recharge—that’s what will happen. To be honest with you people have asked many times if there’s any underground freshwater springs along the shoreline and we would tell them no not anymore. So those of us that know—like I haven’t gathered any kind of freshwater from those areas for about 20 years now. But I know about 3 or 4 of the families that continue to do so. And they maintain the confidentiality of that place.

5.3 Halulukoakoa Heiau

The site of Halulukoakoa Heiau (SIHP Site 50-50-03-00011) was reported to have been largely destroyed when originally recorded by Walker between 1929 and 1930 (Walker 1931:114). This CIA found no evidence of any group actively using the heiau site for traditional or customary practices.

5.4 Intangible Cultural Practices

Given that the project area is a residential neighborhood, it is likely that various intangible cultural practices and beliefs are carried out in people’s homes. These may include activities such as holding or practicing hula classes, crafting cultural items for various purposes, or using homes as spaces to sustain and pass on cultural traditions. Examples include preparing food in culturally significant ways, learning and sharing cultural knowledge, and speaking native languages within families and among friends. The proposed gravity sewer system project would allow people to return to the area and continue engaging in these meaningful cultural practices, preserving and revitalizing their traditions.

6 SUMMARY AND RECOMMENDATIONS

At the request of AECOM and on behalf of FEMA, SWCA Environmental Consultants conducted this CIA for the Wahikuli Subdivision Gravity Sewer System Project. The CIA examined the potential cultural impacts of the proposed project in accordance with State of Hawai'i Revised Statute Chapter 343. This statute requires project proponents to consider the potential effects of a proposed project on traditional cultural resources, practices, and beliefs as part of the EA process.

In preparing the CIA, SWCA followed the *Guidelines for Assessing Cultural Impacts* provided by the Office of Planning and Sustainable Development (formerly the Office of Environmental Quality Control). Archival research was undertaken into the cultural history of the area surrounding the project area as well as into the previous archaeological studies conducted in the vicinity to help determine the traditional cultural land use and significance of the proposed project site. While an attempt was made to consult with the community regarding this assessment, only one person responded to the request for consultation. The lack of responses to the consultation letter and public notice could reflect the community's trauma and hardship since the August 8, 2023 fire and may indicate that this project does not rank highly among the community's concerns. Additionally, the community may perceive this project as beneficial and non-threatening, as people are generally more likely to provide comments when they feel a project poses risks to cultural resources, practices, or beliefs.

The CIA results indicate that significant environmental changes in the project area have permanently altered its traditional landscape. Additionally, long-term private ownership has restricted contemporary cultural practices, limiting them to those conducted within private homes. The proposed construction of a gravity sewer system will therefore have little direct effect on current cultural practices or on known traditionally significant cultural places, resources, or beliefs.

An archaeological literature review and field inspection of the project area found two historic properties (SIHP Site 50-50-03-09023 [disarticulated human remains] and Site 50-50-03-00011 [Halulukoakoa Heiau]) are mapped within the project area and that just outside of the project area there are historic railroad segments. The presence of these historic properties indicates that significant subsurface historic properties, including traditional Hawaiian and/or historic period archaeological deposits and human remains, may be present within the project area that could be adversely affected by the proposed project. Therefore, a program of archaeological and cultural monitoring during all ground-disturbing construction activities has been recommended for the project as part of the archaeological literature review and field inspection conducted for it. The archaeological literature review and field inspection report (Gross and Hopkins 2024) recommended that project activities should take into consideration and apply the principles as set forth in the Policy Statement on Burial Sites, Human Remains, and Funerary Objects (Advisory Council on Historic Preservation 2023). Temporary preservation methods recommended included installing construction fencing along the border of the project area where it trends near historic railroad corridors located just outside of the project area, and for project construction plans to include annotations of the locations of the railroads, inadvertent discovery, and former heiau site. With implementation of these mitigation measures, the proposed project is not anticipated to have significant adverse impact on cultural resources, practices, and beliefs.

7 GLOSSARY OF HAWAIIAN WORDS USED IN THE TEXT

<i>'a'ali'i</i>	<i>Dodonaea viscosa</i>
<i>ahupua'a</i>	traditional land division usually extending from the mountains to the sea and encompassing a range of environmental zones that were known and used by the land's early Hawaiian residents. It was "so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua'a), or because a pig or other tribute was laid on the altar as tax to the chief" (Pukui and Elbert 1971:8).
<i>'ahu'ula</i>	feather cloak
<i>'āina</i>	land
<i>ali'i</i>	chief
<i>'āpana</i>	parcel
<i>heiau</i>	place of worship, shrine, temple
<i>helu</i>	number
<i>'iliahi</i>	sandalwood (<i>Santalum</i> sp.)
<i>'ilima</i>	<i>Sida fallax</i>
<i>inoa</i>	name
<i>kalana</i>	traditional land division
<i>kalo</i>	taro (<i>Colocasia esculenta</i>)
<i>kama'āina</i>	native-born, local resident
<i>kō</i>	sugar cane (<i>Saccharum officinarum</i>)
<i>kōleā</i>	Pacific golden plover (<i>Pluvialis fulva</i>)
<i>kona</i>	leeward
<i>kula uka</i>	inland plain
<i>kūpuna</i>	elders, ancestors
<i>lama</i>	<i>Diospyros ferrea</i>
<i>lo'i</i>	irrigated terrace usually planted in wetland <i>kalo</i>
<i>luna</i>	overseer
<i>maka'āinana</i>	commoners
<i>makai</i>	toward the sea
<i>manaleo</i>	native speaker of the Hawaiian language
<i>mauka</i>	inland
<i>mō'ī</i>	ruling chief
<i>moku</i>	district, land section, or island
<i>mo'olelo</i>	history, story, account, legend
<i>'ō'ō</i>	digging stick
<i>pili</i>	<i>Heteropogon contortus</i>

<i>pu 'uhonua</i>	place of refuge
<i>'uala</i>	sweet potato (<i>Ipomoea batatas</i>)
<i>'ulu</i>	breadfruit (<i>Artocarpus altilis</i>)
<i>wahi pana</i>	storied and legendary places
<i>wiliwili</i>	<i>Erythrina sandwicensis</i>

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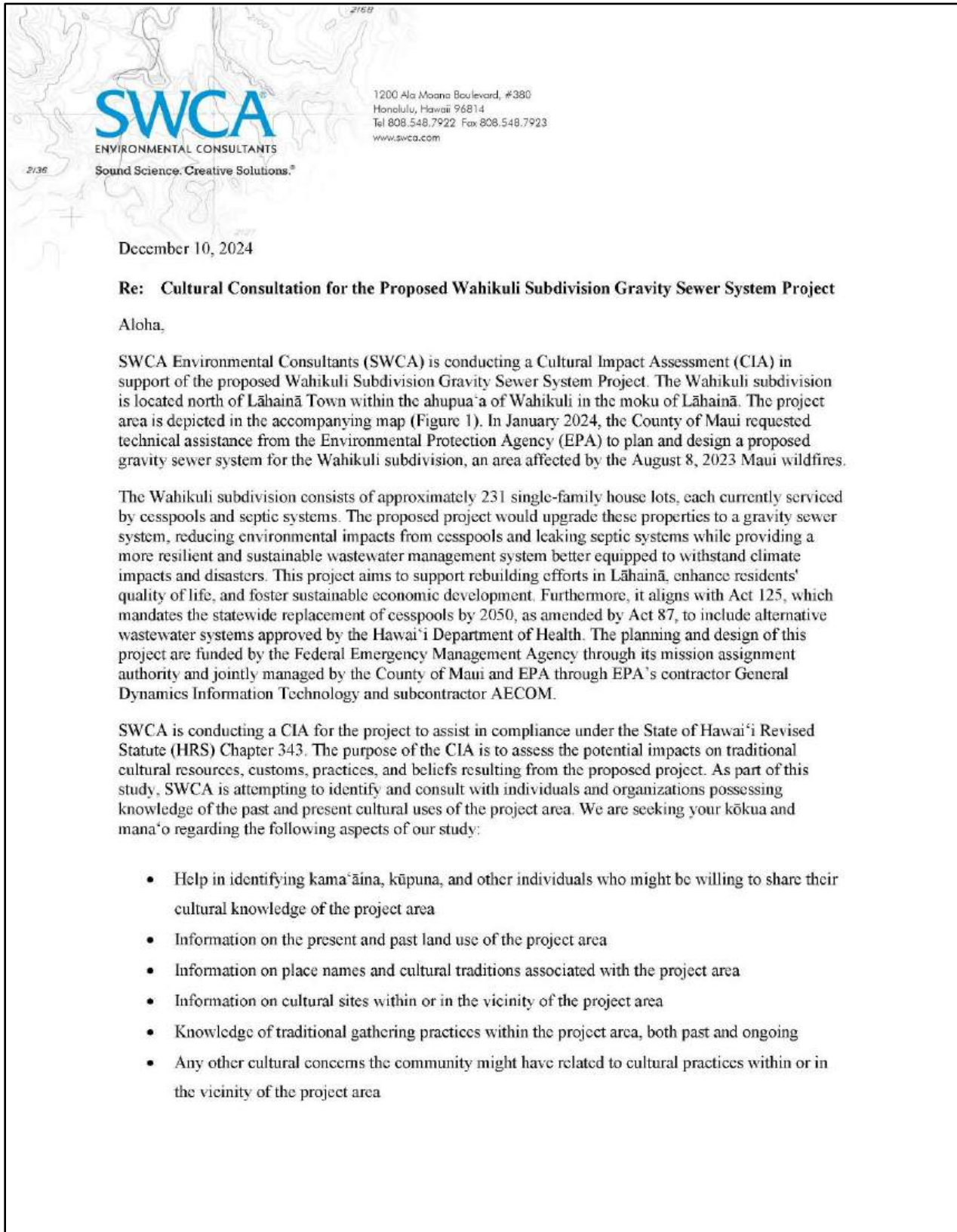
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APPENDIX A

Request for Information Letter



December 10, 2024

Re: Cultural Consultation for the Proposed Wahikuli Subdivision Gravity Sewer System Project

Aloha,

SWCA Environmental Consultants (SWCA) is conducting a Cultural Impact Assessment (CIA) in support of the proposed Wahikuli Subdivision Gravity Sewer System Project. The Wahikuli subdivision is located north of Lāhainā Town within the ahupuaʻa of Wahikuli in the moku of Lāhainā. The project area is depicted in the accompanying map (Figure 1). In January 2024, the County of Maui requested technical assistance from the Environmental Protection Agency (EPA) to plan and design a proposed gravity sewer system for the Wahikuli subdivision, an area affected by the August 8, 2023 Maui wildfires.

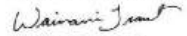
The Wahikuli subdivision consists of approximately 231 single-family house lots, each currently serviced by cesspools and septic systems. The proposed project would upgrade these properties to a gravity sewer system, reducing environmental impacts from cesspools and leaking septic systems while providing a more resilient and sustainable wastewater management system better equipped to withstand climate impacts and disasters. This project aims to support rebuilding efforts in Lāhainā, enhance residents' quality of life, and foster sustainable economic development. Furthermore, it aligns with Act 125, which mandates the statewide replacement of cesspools by 2050, as amended by Act 87, to include alternative wastewater systems approved by the Hawai'i Department of Health. The planning and design of this project are funded by the Federal Emergency Management Agency through its mission assignment authority and jointly managed by the County of Maui and EPA through EPA's contractor General Dynamics Information Technology and subcontractor AECOM.

SWCA is conducting a CIA for the project to assist in compliance under the State of Hawai'i Revised Statute (HRS) Chapter 343. The purpose of the CIA is to assess the potential impacts on traditional cultural resources, customs, practices, and beliefs resulting from the proposed project. As part of this study, SWCA is attempting to identify and consult with individuals and organizations possessing knowledge of the past and present cultural uses of the project area. We are seeking your kōkua and manaʻo regarding the following aspects of our study:

- Help in identifying kamaʻāina, kūpuna, and other individuals who might be willing to share their cultural knowledge of the project area
- Information on the present and past land use of the project area
- Information on place names and cultural traditions associated with the project area
- Information on cultural sites within or in the vicinity of the project area
- Knowledge of traditional gathering practices within the project area, both past and ongoing
- Any other cultural concerns the community might have related to cultural practices within or in the vicinity of the project area

We appreciate any information you would be willing to share regarding the project area and those individuals knowledgeable about its past and present cultural uses. Please contact us at Wainani.Traub@swca.com or by phone at (808) 646-6309 by January 31, 2025. We look forward to hearing from you.

Mahalo no kou kōkua ʻana mai,



Wainani Traub
Associate Project Anthropologist



Figure 1. Location of the project area.

APPENDIX B

Table of Individuals and Organizations Contacted

Contact	Agency, Organization, or Affiliation	DOI Listed NHO	Method of Contact	Response
	Ala Kukui	No	email on 12/10/2024	No response
	'Ao'ao o Na Loko I'a o Maui	Yes	email on 12/10/2024	No response
	Association of Hawaiian Civic Clubs	Yes	email on 12/10/2024	No response
	County of Maui Department of 'Ōiwi Resources	No	email on 12/10/2024	No response
	Department of Hawaiian Home Lands	No	email on 12/10/2024	No response
	Hale Mua Cultural Group	Yes	email on 12/10/2024	No response
	Historic Hawai'i Foundation	Yes	email on 12/10/2024	No response
	Kamehameha Schools	Yes	email on 12/10/2024	No response
	Kipuka Otowatu	Yes	email on 12/10/2024	No response
	Kulotoi'a Lineage - I ke Kai 'o Kulotoi'a	Yes	email on 12/10/2024	No response
	Lahaina Hawaiian Civic Club	No	email on 12/10/2024	No response
	Office of Hawaiian Affairs	Yes	email on 12/10/2024	No response
	Pii Koko	Yes	email on 12/10/2024	No response
	Save Honolulu Coalition	No	email on 12/10/2024	No response
	Sustainable Coastlines Hawaii	No	email on 12/10/2024	No response
	West Maui Soil & Water Conservation Districts (SWCD)	No	email on 12/10/2024	No response
'Ānela Jackson	'Aha Mālama, Corp.	Yes	email on 12/10/2024	No response
Blossom Feiteira		No	email on 12/10/2024	No response
Brian Kaniela Nae'ote Naauao		Yes	email on 12/10/2024	No response
Carmela Noneza	Hanona	Yes	email on 12/10/2024	No response
Carolyn Keala Norman	'Ohana Keaweamahī	Yes	email on 12/10/2024	No response
Chelsie Evans	Hawaiian Community Assets, Inc.	Yes	email on 12/10/2024	No response
Consuelo Apoto-Gonsalves	Associated with 'Aha Moku o Maui, Lahaina	Yes	email on 12/10/2024	No response
Dane Maxwell	Former Maui Lāna'i Island Burlat Council chair	No	email on 12/10/2024	No response
Daniel L. Ornellas	Waiehu Kou Phase 3 Association	Yes	email on 12/10/2024	No response
Dennis W. Ragsdale	Kingdom of Hawai'i	Yes	email on 12/10/2024	No response
Dennis W. Ragsdale	Order of Kamehameha I	Yes	email on 12/10/2024	No response
Derek J. Sakaguchi	Native Hawaiian Community Development Corporation	Yes	email on 12/10/2024	No response
Donna D. Sterling	Aha Moku o Kahi'kinui	No	email on 12/10/2024	No response

Dre Kalili	Association of Hawaiian Civic Clubs	Yes	email on 12/10/2024	No response
Dreanalee Kalili	Imua Hawaii	Yes	email on 12/10/2024	No response
East Maui Watershed Partnership		No	email on 12/10/2024	No response
Edwin Ekolu Lindsey	Maui Cultural Lands	No	email on 12/10/2024	No response
Elena Farden	Native Hawaiian Education Council	Yes	email on 12/10/2024	No response
Emma Emalia Keohokālole	‘Ohana Keohokālole	Yes	email on 12/10/2024	No response
Felimon Sadang	Associated with ‘Aha Moku o Maui/Ke‘eaumoku Kapu	No	email on 12/10/2024	No response
H. Kanoeokalani Cheek	Na Ku‘auhau‘o Kahiwakaneikopolei	Yes	email on 12/10/2024	No response
Hōkūāo Pellegrino	Hui o Na Wai Eha	No	email on 12/10/2024	No response
Hōkūlani Holt Padilla		No	email on 12/10/2024	No response
Hōkūlani Holt Padilla	Ka‘ehu nonprofit	No	email on 12/10/2024	No response
Ikaika Nakahashi	State Historic Preservation Division	No	email on 12/10/2024	Email reply on December 17, 2024
Isaac Moriwake	Earth Justice	No	email on 12/10/2024	No response
J. Kepe‘o Keli‘ipa‘akaua	‘Ohana Keaweama‘ahi	Yes	email on 12/10/2024	No response
Janet Six, PhD	Maui County, PI, Sixth Sense Archaeological Consultants LLC	No	email on 12/10/2024	No response
Jordan Catpito	SHPD	No	email on 12/10/2024	No response
Joseph Kūhiō Lewis	Council for Native Hawaiian Advancement	Yes	email on 12/10/2024	No response
Joseph N Donaghy	UH Maui Hawaiian studies instructor	No	email on 12/10/2024	No response
Joylynn Paman	‘Ao‘ao O Nā Loko Fa O Maui	Yes	email on 12/10/2024	No response
Joylynn Paman	Kimo‘eko Foundation	Yes	email on 12/10/2024	No response
Kai‘noa MacDonald	Association of Hawaiians for Homestead Lands	Yes	email on 12/10/2024	No response
Kaipō Kekona	‘Aha Moku o Maui	No	email on 12/10/2024	No response
Kaipō Kekona	‘Aha Moku o Maui, Kā‘anapali Moku representative	No	email on 12/10/2024	No response
Kāko‘o o Haleakala		No	email on 12/10/2024	No response
Kapali Keahi		No	email on 12/10/2024	No response
Kapono‘ai Molitau	County of Maui Department of ‘Ōiwi Resources	No	email on 12/10/2024	No response
Karen Wright	Kalapuni Director - Kalama Intermediate School	No	email on 12/10/2024	No response
Karin Osuga	Kipuka Olowalu	Yes	email on 12/10/2024	No response
Kealana Phillips	State Historic Preservation Division	No	email on 12/10/2024	No response
Ke‘eaumoku Kapu	‘Aha Moku o Maui Inc.	Yes	email on 12/10/2024	No response

Kekai Keahi		No	email on 12/10/2024	No response
Kekai Robinson	Maui County Department of O'wi Resources	No	email on 12/10/2024	No response
Kelea Levy	Kanaka Economic Development Alliance	Yes	email on 12/10/2024	No response
Keola Brown		No	email on 12/10/2024	No response
Kevin Chang	Kua'āina Ulu 'Auamo	Yes	email on 12/10/2024	No response
Kia'i Cottier		No	email on 12/10/2024	No response
Kimokeo Kapahulehua	Hui o Wa'a Kautua	Yes	email on 12/16/2024	No response
Kipuka Kua'i	Sovereign Council of Hawaiian Homestead Associations	Yes	email on 12/10/2024	No response
Kipuka Kua'i	Sovereign Council of Hawaiian Homestead Associations	Yes	email on 12/10/2024	No response
Ku'uteinani Maunupau	Ka'ehu	Yes	email on 12/10/2024	No response
Kyle Nakanelua	'Aha Moku o Maui	No	email on 12/10/2024	No response
L. La'akea Suganuma	Royal Hawaiian Academy of Traditional Arts	Yes	email on 12/10/2024	No response
La'akea Suganuma	The Mary Kawena Pōku'i Cultural Preservation Society	Yes	email on 12/10/2024	No response
Lee Cataluna		No	email on 12/10/2024	No response
Leinā'ala Kutoloio Vedder	Kutoloio'a Lineage - I ke Kai 'o Kutoloio'a	Yes	email on 12/10/2024	No response
Leinoa M Kong	UH Maui Hawaiian studies instructor	No	email on 12/10/2024	No response
Leona Nomura		No	email on 12/10/2024	No response
M. Tonga Hopoi	Kamehameha Schools - Community Relations and Communications Group, Government Relations	Yes	email on 12/10/2024	No response
Mahealani Cypher	George K. Cypher Ohana	Yes	email on 12/10/2024	No response
Makali'ka Naholowaa	Native Hawaiian Legal Corporation	Yes	email on 12/10/2024	No response
Malia Purdy	Hui No Ke Ota Pono	Yes	email on 12/10/2024	No response
Manuel Kutoloio	Kutoloio'a Lineage - I ke Kai 'o Kutoloio'a	Yes	email on 12/10/2024	No response
Manuel Kutoloio	Kutoloio'a Lineage - I ke Kai 'o Kutoloio'a	Yes	email on 12/10/2024	No response
Mauna Kāhālawai Watershed Partnership		No	email on 12/10/2024	No response
Melvin Soong	The Imua Group	Yes	email on 12/10/2024	No response
Michelle Hitzemam	DHHL - Pili'ani Mai Ke Kai Project Team, Hale Procurement	No	email on 12/10/2024	No response
Mik'ala Makanamaikalani Pua'a-Freitas	Kapuna Farms, Waihe'e	No	email on 12/10/2024	No response
Militani Trask	Na Koa Ikaika Ka Lahui Hawaii	Yes	email on 12/10/2024	No response
Militani Trask	Na Koa Ikaika Ka Lahui Hawaii	Yes	email on 12/10/2024	No response
Nā Mamo Aloha 'Āina O Honokōhau		No	email unsuccessful 12/10/2024	Email unsuccessful

Na'unani Kiniau Kamali'i	Kawaileo Law A Limited Liability Law Company	Yes	email on 12/10/2024	No response
Nicole A. I. Dudoit	Alepa Hou Foundation	No	email on 12/10/2024	No response
Noho'ana Farm		No	email on 12/10/2024	No response
'Olu Campbell	Hawaiian Islands Land Trust	Yes	email on 12/10/2024	No response
Patricia (Patty) Kahanamoku-Teruya	Hawaiian Homes Commission	No	email on 12/10/2024	No response
Pomaika'i Kaniupio-Crozier	Pu'u Kukui Watershed	No	email on 12/10/2024	No response
Pomaika'i Kaniupio-Crozier	Pu'u Kukui Watershed Preserve; Deacon, Ekalesia o Kupainaha Church in Wailuku	No	email unsuccessful 12/10/2024	Email unsuccessful
Possibly Linda Nahina Magalanes, "Aha Kupuna"	Associated with 'Aha Moku o Maui/Lahaina area	No	email on 12/10/2024	No response
Pitama Cottler PhD		No	email on 12/10/2024	No response
Renson Madarang	Hale Mua Cultural Group	Yes	email on 12/10/2024	No response
Roxane Keli'ikipikaneokohaka	Kia'i Kanaloa	Yes	email on 12/10/2024	No response
Roy Oliveira	Waiehu Kou Phase 3 Association	Yes	email on 12/10/2024	No response
Samson L. Brown	Au Puni O Hawai'i	Yes	email on 12/10/2024	No response
Scott Fisher	Maui Lana'i Island Burial Council	No	email on 12/10/2024	No response
Sesame Shim	Nā Leo Kāko'o	No	email on 12/10/2024	No response
Shawn Kana'iaupuni, PhD	Partners In Development Foundation	Yes	email on 12/10/2024	No response
Sheri-Ann Daniels Ed.D.	Papa Ota Lokahi	Yes	email on 12/10/2024	No response
Silla Kaina	Associated with 'Aha Moku o Maui, Lahaina	No	email unsuccessful 12/10/2024	Email unsuccessful
Tamara Paltin	Maui County Council member	No	email on 12/10/2024	No response
Theo Morrison	Lahaina Restoration Foundation	No	email on 12/10/2024	No response
Tiare Lawrence		No	email on 12/10/2024	No response
Uitani Kapu	Na Aikane O Maui	Yes	email on 12/10/2024	No response
Walter J. Kelly	Protect Keopuka Ohana	Yes	email on 12/10/2024	No response
Walter Ritte	'Āina Momona	Yes	email on 12/10/2024	No response
Walter Ritte	'Āina Momona	Yes	email on 12/10/2024	No response

APPENDIX C

Ka Wai Ola Public Notice

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Cultural Impact Assessment; Proposed Wahikuli Subdivision Gravity Sewer System

SWCA Environmental Consultants (SWCA) is conducting a Cultural Impact Assessment (CIA) for the proposed Wahikuli Subdivision Gravity Sewer System Project. The Wahikuli subdivision is located north of Lahaina Town within the ahupua'a of Wahikuli in the moku of Lahaina. This is a joint project between the Environmental Protection Agency and the County of Maui. Funding is through the Federal Emergency Management Agency's mission authority.

The project seeks to replace existing cesspools and septic systems with a gravity sewer system in the subdivision's approximately 231 single-family lots. This upgrade will reduce environmental impacts from cesspools and leaking septic systems while providing a more resilient and sustainable wastewater management system, better equipped to withstand climate impacts and disasters, supporting Lahaina's rebuilding efforts. The project aligns with Act 125, as amended by Act 87, requiring statewide cesspool replacement by 2050.

SWCA is seeking community input regarding cultural knowledge of the area, including past and present land use, place names, cultural traditions, gathering practices, and any concerns the community might have related to cultural practices within or in the vicinity of the project area. You can contact SWCA at Wainani.Traub@swca.com or (808) 646-6309 for more information or to share insights. Please respond by Jan. 31, 2025. Mahalo nui loa for your assistance.

Kukui Family Burials, Kalama 5 Ahupua'a, South Kona, Island Of Hawai'i

All persons having information concerning Kukui family burials within TMK: (3) 8-2-006:011, a .23-acre parcel in Kalama 5 Ahupua'a, South Kona District, Island of Hawai'i are hereby requested to contact Christian Omerod, Cultural Historian, State Historic Preservation Division (SHPD), (808) 294-9573, 40 Po'okela Street, Hilo, HI 96720; or Kaulana Eli, (808) 630-5619, P.O. Box 381, Mountain View, HI 96771. The land is associated with L.C.A. 8538 to Kukui (k). Treatment of the burial will occur in accordance with HRS, Chapter 6E. The applicant, T. M. Kaulana Eli Jr., proposes to preserve the burial in place in accordance with a burial treatment plan prepared in consultation with any identified descendants and with the approval of the Hawai'i Island Burial Council. All interested parties should respond within thirty (30) days of this notice and provide information to SHPD adequately demonstrating lineal descent from the Native Hawaiian remains, or cultural descent from ancestors once residing or buried in the same ahupua'a. Historical document research shows families associated with Kalama 5 Ahupua'a include: Kalua, Luahine, Kekuapuhi, Nahuanoni, Manu, and Kualau.

TAOS art awa award beach burial community county fish funding harbor Hawai'i Hawai'i Island Hawaiian hula Honolulu 'Iliia infrastructure island Kaula Kaula Kaula land lua mail mana Maui mountain Native Hawaiian office sha oil program public Rail research state STEM tmk traditional uala ulu wahi pana waimea war water work

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Appendix C-4

ACHP Policy Statement on Burial Sites, Human Remains, and Funerary Objects



ADVISORY COUNCIL ON HISTORIC PRESERVATION POLICY STATEMENT ON BURIAL SITES, HUMAN REMAINS, AND FUNERARY OBJECTS

March 1, 2023

Preamble. The Advisory Council on Historic Preservation (ACHP) developed this policy statement to establish a set of principles and rules that the ACHP will encourage federal agencies to adopt as they carry out their day-to-day responsibilities under Section 106 of the National Historic Preservation Act (NHPA). This statement also establishes a set of standards and guidelines that federal and state agencies, local entities, Indian Tribes, industry applicants, and other relevant entities should, at a minimum, seek to implement in order to provide burial sites, human remains, and funerary objects the consideration and protection they deserve.

This policy statement is not bound by geography, ethnicity, political or socioeconomic status, or a system of belief and recognizes that the respectful consideration for burial sites, human remains, and funerary objects is a human rights concern shared by all. However, the burial sites, human remains, and funerary objects of certain groups of people, including but not limited to Indian Tribes, Native Hawaiians, enslaved Africans and their descendants, and other Indigenous Peoples, have a higher probability of being unmarked and undocumented and thus more likely to be affected by development projects. As such, this policy statement emphasizes the need for consultation and coordination with those communities, including seeking consensus in decision making and providing deference to their practices, protocols, and preferences, where feasible.

Section 106 requires agencies to consult and seek agreement with consulting parties on measures to avoid, minimize, or mitigate adverse effects to historic properties. Accordingly, and consistent with Section 106, this policy does not recommend a specific outcome from the consultation process. Rather, it focuses on issues and perspectives that federal agencies should consider while carrying out their consultation and decision-making responsibilities. The ACHP will incorporate these principles in its work and encourages federal agencies and other entities to apply the principles in this policy any time there is potential to encounter burial sites, human remains, or funerary objects.

In many cases, burial sites, human remains, and funerary objects are subject to other applicable federal, Tribal, state, or local laws or protocols that may prescribe a specific outcome, such as the Native American Graves Protection and Repatriation Act (NAGPRA). In those scenarios, the federal agency should identify and follow all applicable laws or protocols and implement any prescribed outcomes. NHPA and NAGPRA are separate and distinct laws, with separate and distinct implementing regulations and categories of parties that must be consulted.¹ Compliance with one of these laws does not equate to or fulfill the compliance requirements of the other. Implementation of this policy and its principles does not, in any way, change, modify, or detract from NAGPRA or other applicable laws.

Authority: The authority for this policy stems from the ACHP's statutory responsibility to advise on matters relating to historic preservation (which includes the role of Indian Tribes, Tribal Historic

¹ The ACHP's publication [Consultation with Indian Tribes in the Section 106 Process: The Handbook](#) (2021) and the National Association of Tribal Historic Preservation Officers' publication [Tribal Consultation: Best Practices in Historic Preservation](#) (2005) provide additional guidance.

Preservation Officers [THPOs], and Native Hawaiian organizations [NHOs] in that process), to advise the President and Congress regarding historic preservation matters, and to recommend methods to federal agencies to improve the effectiveness, coordination, and consistency of their historic preservation policies. While the ACHP recognizes that not all burial sites, human remains, and funerary objects may constitute or be associated with historic properties eligible for or listed in the National Register of Historic Places, the consideration and treatment of such places fall within the concerns of the historic preservation community.²

This policy statement recognizes the unique legal and political relationship between the federal government and federally recognized Indian Tribes as set forth in the Constitution of the United States, treaties, statutes, and court decisions, and acknowledges that the federal Indian trust responsibility is a legal obligation under which the United States “has charged itself with moral obligations of the highest responsibility and trust” toward Indian Tribes.³ Part of the ACHP’s trust responsibility is to ensure that the regulations implementing Section 106 incorporate the procedural requirement that federal agencies consult with Indian Tribes and NHOs that attach religious and cultural significance to historic properties that may be affected by undertakings the federal agency proposes to carry out, license, permit, or assist.⁴ In general, the trust responsibility establishes fiduciary obligations on the part of federal agencies to Tribes, including a duty to protect Tribal lands and cultural and natural resources for the benefit of Tribes and individual Tribal members.

The ACHP views its trust responsibility as encompassing all aspects of historic resources including intangible values.⁵ As part of that trust responsibility, the ACHP offers this policy statement to inform how the Section 106 consultation process should consider burial sites, human remains, and funerary objects.

Principles. The care for and consideration of burial sites, human remains, and funerary objects is of significant social and moral consequence in the United States and U.S. territories. When burial sites, human remains, or funerary objects are or have the potential to be encountered during the planning or implementation of a proposed federal undertaking, the following principles should be adhered to:

Principle 1: Burial sites, human remains, and funerary objects should be treated with dignity and respect in all circumstances regardless of National Register eligibility or the circumstances of the action. This includes, but is not limited to, all times prior to and during consultation, during field surveys, when handling must occur, in documenting and/or reporting, if treatment actions occur, and in all other forms of interaction.

Principle 2: Disturbing or disinterring burial sites, human remains, or funerary objects, when not requested by descendants, associated Indian Tribes or NHOs, or required by applicable law or regulation, should not be pursued unless there are no other alternatives available and only after consultation with descendants or associated communities and fully considered avoidance of impact and preservation in place.

Principle 3: Only through consultation, which includes the early and meaningful exchange of information and a concerted effort to reach consensus, can informed decisions be made about the identification, documentation, National Register eligibility, and treatment of burial sites, human remains, and funerary objects.

² 54 U.S.C. §§ 304102 and 304108

³ *Seminole Nation v. United States*, 316 U.S. 286 (1942)

⁴ [“The Advisory Council on Historic Preservation’s Statement on Its Trust Responsibility”](#) (Advisory Council on Historic Preservation, 2004)

⁵ [“Policy Statement Regarding the Council’s Relationship with Indian Tribes”](#) (Advisory Council on Historic Preservation, 2000)

Principle 4: To the maximum extent possible, decision making should give deference to the treatment requests of descendants or associated communities. Where known, and in accordance with applicable law, cultural practices of the descendants or associated communities should be followed if burial sites, human remains, or funerary objects may be encountered, are inadvertently identified, impacted, or must be disinterred.

Principle 5: The Indigenous Knowledge held by an Indian Tribe, NHO, or other Indigenous Peoples is a valid and self-supporting source of information. To the fullest extent possible, deference should be provided to the Indigenous Knowledge and expertise of Indian Tribes, NHOs, and Indigenous Peoples in the identification, documentation, evaluation, assessment, and treatment of their burial sites, human remains, and funerary objects.

Principle 6: Burial sites, human remains, and funerary objects are important in and of their own right. They may also constitute or be part of a sacred site and may include or incorporate several possible elements of historic significance including religious and cultural significance. The integrity of burial sites, human remains, and funerary objects is best informed by those who ascribe significance to them.

Principle 7: Burial sites, human remains, and funerary objects are frequently associated with cultural practices, sacred sites, Indigenous Knowledge, and other forms of culturally sensitive actions and/or information unique to a people. Maximum effort should be taken to limit the disclosure of confidential or sensitive information through all available mechanisms including, but not limited to, the proper handling and labeling of records, limiting documentation to necessary information, and through the application of existing law.

Principle 8: The federal Indian boarding school system directly targeted American Indian, Alaska Native, and Native Hawaiian children in the pursuit of a policy of cultural assimilation that coincided with territorial dispossession. In partnership with the historic preservation community, federal agencies should seek to implement the recommendations identified in the Department of the Interior's *Federal Indian Boarding School Investigative Report* by supporting community-driven identification, documentation, interpretation, protection, preservation, reclamation, and co-management of burial sites, human remains, and funerary objects across that system, including marked and unmarked burial areas, and supporting repatriation where appropriate.

Principle 9: The legacies of colonization, including cultural assimilation, forced relocation, and slavery, have led to an uneven awareness of where and why practitioners are likely to encounter burial sites, human remains, and funerary objects across the United States and its territories. The historic preservation community has a key role in expanding public education to support greater awareness of and consideration for the histories and lifeways of Indian Tribes, Native Hawaiians, enslaved Africans and their descendants, and Indigenous Peoples including recognizing and respecting the historical trauma that these groups and individuals may experience.

Principle 10: Access to and/or repatriation of burial sites, human remains, and funerary objects should be enabled through fair, transparent, and effective mechanisms developed in conjunction with descendant communities to the fullest extent of the law.

Principle 11: Human remains and funerary objects may be relocated or removed from a location by or at the request of descendant communities for a variety of reasons. The continued presence of human remains or funerary objects may not be essential to the ongoing significance and integrity of a site or its relevance to a broad theme in history. The historic significance and integrity of such sites are best determined in consultation with lineal descendants and/or associated communities.

Principle 12: Climate change can impact the burial sites, sacred sites, cemeteries, and associated cultural practices significant to Indian Tribes, NHOs, and other groups of people. Climate plans should be developed in consultation and should include mechanisms to support the advanced identification and protection or treatment of these locations.

Principle 13: Respectful consideration of burial sites, human remains or funerary objects may require additional assistance from consulting parties to properly identify, document, evaluate for National Register eligibility, and/or conduct treatment actions. If a federal agency requests or relies on an Indian Tribe, NHO, or other party to carry out activities that are the federal agency's responsibility under the NHPA, the Indian Tribe, NHO, or other consulting party should be reimbursed or compensated.⁶

Implementation of the Policy. Implementation of this policy statement is the responsibility of the ACHP's leadership and staff; however, the ACHP recognizes that appropriate expertise and experience to ensure effective implementation may also reside in other parties. Accordingly, the ACHP commits to advancing consideration of burial sites, human remains, and funerary objects in the Section 106 process with its preservation partners through the following:

- A. Train ACHP staff regarding the implementation of this policy statement.
- B. Development of informational resources that address the NHPA, Section 106, and the following:
 - i. The Federal Indian Boarding School Initiative
 - ii. The intersection of NAGPRA
 - iii. Acquiring and managing sensitive information
 - iv. Climate change and burial sites, human remains, and funerary objects
 - v. Best practices in the treatment of marked and unmarked burial sites, human remains, and funerary objects.
- C. ACHP staff will seek opportunities to implement the policy principles into Section 106 agreement documents and program alternatives to advance consideration of burial sites, human remains, and funerary objects.
- D. The ACHP will advise federal agencies, Indian Tribes, Tribal and State Historic Preservation Officers, and NHOs in their development of historic preservation protocols for appropriate consideration of burial sites, human remains, and funerary objects.
- E. Encourage federal agencies and other relevant parties to give full and meaningful consideration to burial sites, human remains, and funerary objects consistent with this policy statement.

Policy Review Period. The ACHP commits to reviewing this policy statement approximately every five years from the date of its adoption to ensure its continued applicability. The ACHP executive director will seek input regarding the need to update this policy statement through appropriate ACHP committees, including Federal Agency Programs and Native American Affairs. Amendments shall be pursued when the executive director or ACHP members determine that such action is required and/or would significantly improve the policy statement. This policy statement shall be in effect until rescinded by ACHP members.

Definitions. The definitions provided below are meant to inform the application of this policy statement. However, terms such as burial site, intact, disturbance, and human remains, among others, often require the input of associated parties to more fully understand how to interpret or apply each term. The

⁶ Consistent with ACHP's [Guidance on Assistance to Consulting Parties in the Section 106 Review Process](#), when the federal agency (or in some cases the applicant) seeks the views and advice of any consulting party in fulfilling its legal obligation to consult with them, the agency or applicant is not required to pay that party for providing its views.

definitions provided below are intended to be inclusive and to advance the preservation and protection of burial sites, human remains, and funerary items, as appropriate.

- **Burial Site:** Any location, whether originally below, on, or above the surface of the earth, where human remains are or have been located.
- **Confidential:** Information that is protected by law, regulation, or federal policy. Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information
- **Consultation:** The process of seeking, discussing, and considering the views of other participants and, where feasible, seeking agreement with them. A foundational activity in the Section 106 review process.
- **Consulting parties:** Persons or groups the federal agency consults with during the Section 106 process. They may include the State Historic Preservation Officer; Tribal Historic Preservation Officer; Indian Tribes and Native Hawaiian organizations; representatives of local governments; applicants for federal assistance, permits, licenses, and other approvals; and/or any additional consulting parties.⁷ Additional consulting parties may include individuals and organizations with a demonstrated interest in the undertaking due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties.⁸
- **Culturally sensitive:** Tangible and intangible property and knowledge which pertains to the distinct values, beliefs, and ways of living for a culture. It often includes property and knowledge that is not intended to be shared outside the community of origin or outside of specific groups within a community.⁹
- **Disturbance:** Disturbance of burial sites that are listed in or eligible for listing in the National Register of Historic Places likely would constitute an adverse effect under Section 106. An adverse effect occurs when "an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, setting, materials, workmanship, feeling, or association".¹⁰ Determination of what constitutes a "disturbance" should be defined in consultation with proper deference provided to the views and opinions of descendant individuals and/or communities.
- **Funerary objects:** Objects that, as part of the death rite or ceremony of a culture, are reasonably believed to be associated with human remains.
- **Historic property:** Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. It includes artifacts, records, and remains that are related to and located within such properties, and it includes properties of traditional religious and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register of Historic Places criteria.¹¹
- **Human remains:** The physical remains of a human body including cremains, fragmented human remains, hair, and fluid, among other components. When human remains are believed to be comingled with other material (such as soil or faunal), the entire admixture should be treated as human remains.
- **Indian Tribe:** An Indian Tribe, band, nation, or other organized group or community, including a Native village, Regional Corporation or Village Corporation, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act¹², which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.¹³
- **Indigenous Knowledge (IK):** Information provided by an Indian Tribe, Tribal member, Native Hawaiian, or other Indigenous person uniquely reflective of their knowledge, experience, understanding, or observation relating to cultural resources, practices, or actions. Indigenous Knowledge often constitutes sensitive information.

⁷ Based on 36 CFR § 800.2(c)

⁸ 36 CFR § 800.2(c)(6)

⁹ "[Native American Archival Materials](#)," (First Archivist Circle, 2007)

¹⁰ 36 CFR § 800.5(a)(1)

¹¹ 36 CFR § 800.16(1)

¹² 43 U.S.C. § 1602

¹³ 36 CFR § 800.16(m)

- **Native Hawaiian:** Any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the state of Hawaii.¹⁴
- **Native Hawaiian organization (NHO):** Any organization which serves and represents the interests of Native Hawaiians; has as a primary and stated purpose the provision of services to Native Hawaiians; and has demonstrated expertise in aspects of historic preservation that are significant to Native Hawaiians.¹⁵
- **Preservation in place:** Taking active steps to avoid disturbing a burial site, human remains, or funerary objects including, to the maximum extent practical, any access, viewsheds, setting, and/or ongoing cultural activity that may be associated with the location.
- **Section 106:** That part of the NHPA which establishes a federal responsibility to take into account the effects of undertakings on historic properties and to provide the ACHP a reasonable opportunity to comment with regard to such action.
- **Sensitive:** Information that may be protected by law, regulation, or federal policy; information that may be identified as sensitive by the sponsoring entity/original source.
- **State Historic Preservation Officer (SHPO):** The official appointed to administer a state's historic preservation program.¹⁶
- **Tribal Historic Preservation Officer (THPO):** The official appointed or designated to administer the Tribe's historic preservation program.¹⁷
- **Treatment:** Measures developed and implemented to avoid, minimize, or mitigate adverse effects to historic properties.

¹⁴ 36 CFR § 800.16(s)(2)

¹⁵ 36 CFR § 800.16(s)(1)

¹⁶ 54 U.S.C. § 302301

¹⁷ 54 U.S.C. § 302702

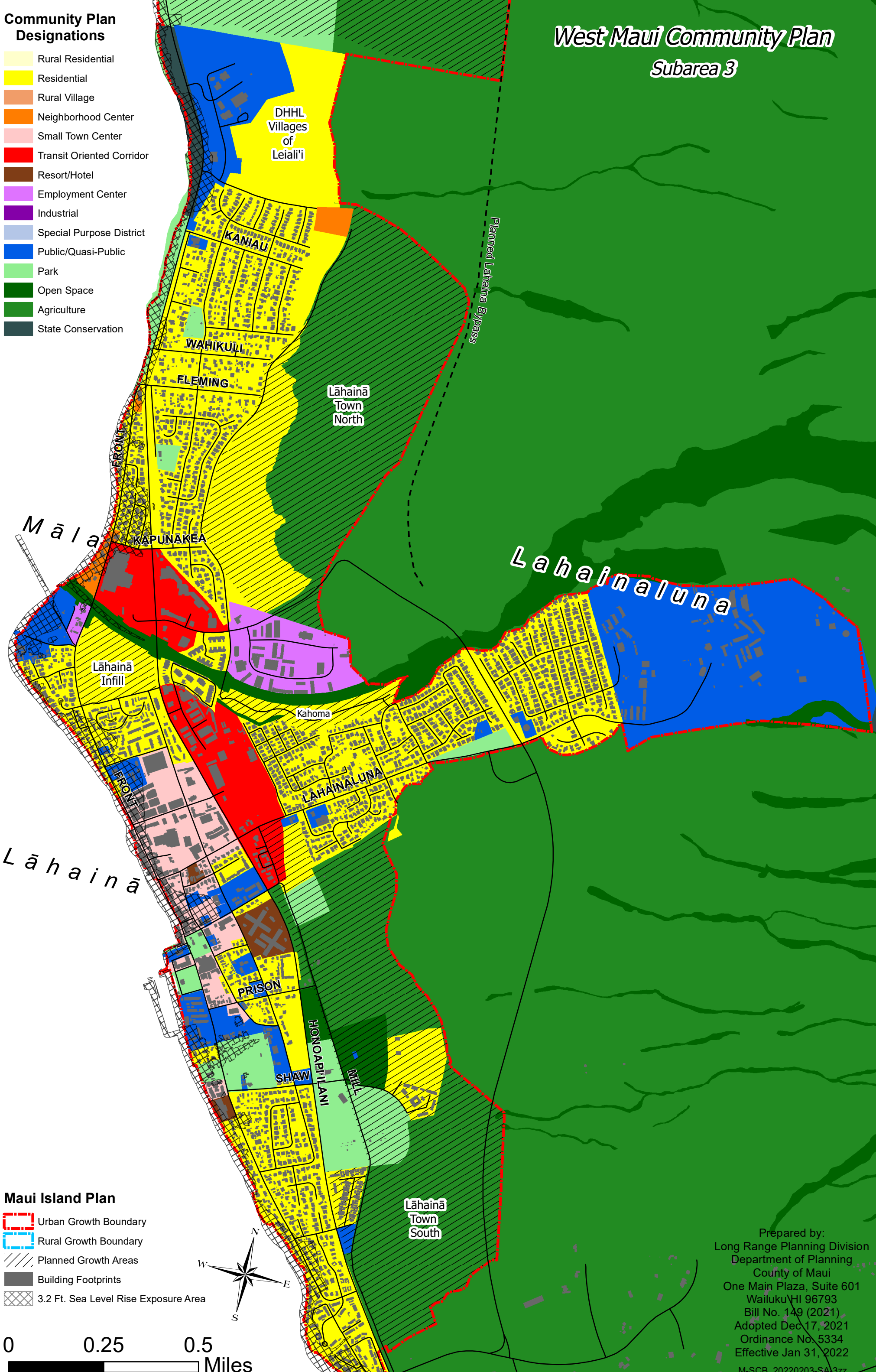
Appendix D

West Maui Community Plan Land Use Designation Map

West Maui Community Plan Subarea 3

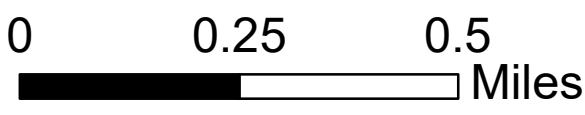
Community Plan Designations

- Rural Residential
- Residential
- Rural Village
- Neighborhood Center
- Small Town Center
- Transit Oriented Corridor
- Resort/Hotel
- Employment Center
- Industrial
- Special Purpose District
- Public/Quasi-Public
- Park
- Open Space
- Agriculture
- State Conservation



Maui Island Plan

- Urban Growth Boundary
- Rural Growth Boundary
- Planned Growth Areas
- Building Footprints
- 3.2 Ft. Sea Level Rise Exposure Area



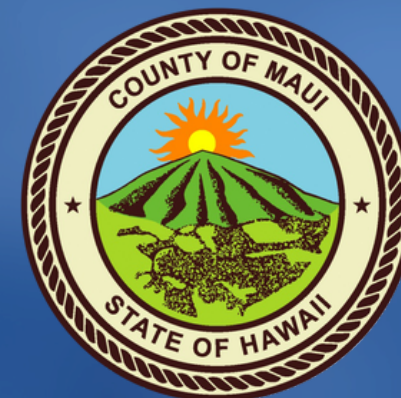
Prepared by:
 Long Range Planning Division
 Department of Planning
 County of Maui
 One Main Plaza, Suite 601
 Wailuku HI 96793
 Bill No. 149 (2021)
 Adopted Dec 17, 2021
 Ordinance No. 5334
 Effective Jan 31, 2022
 M-SCB_20220203-SA_3zz

Appendix E-1

Public Participation

SHAYNE AGAWA

Director, Department of
Environmental Management



WAHIKULI GRAVITY SEWER DESIGN

*DESIGN PHASE UPDATE:

- EPA is providing Technical Assistance to the County through their Recovery Support Function and will provide a “shovel-ready” Wahikuli Gravity Sewer Design to DEM for construction implementation
- EPA is continuing to make progress on the Environmental Assessment and NHPA Section 106 consultation with the Hawaii State Historic Preservation Division

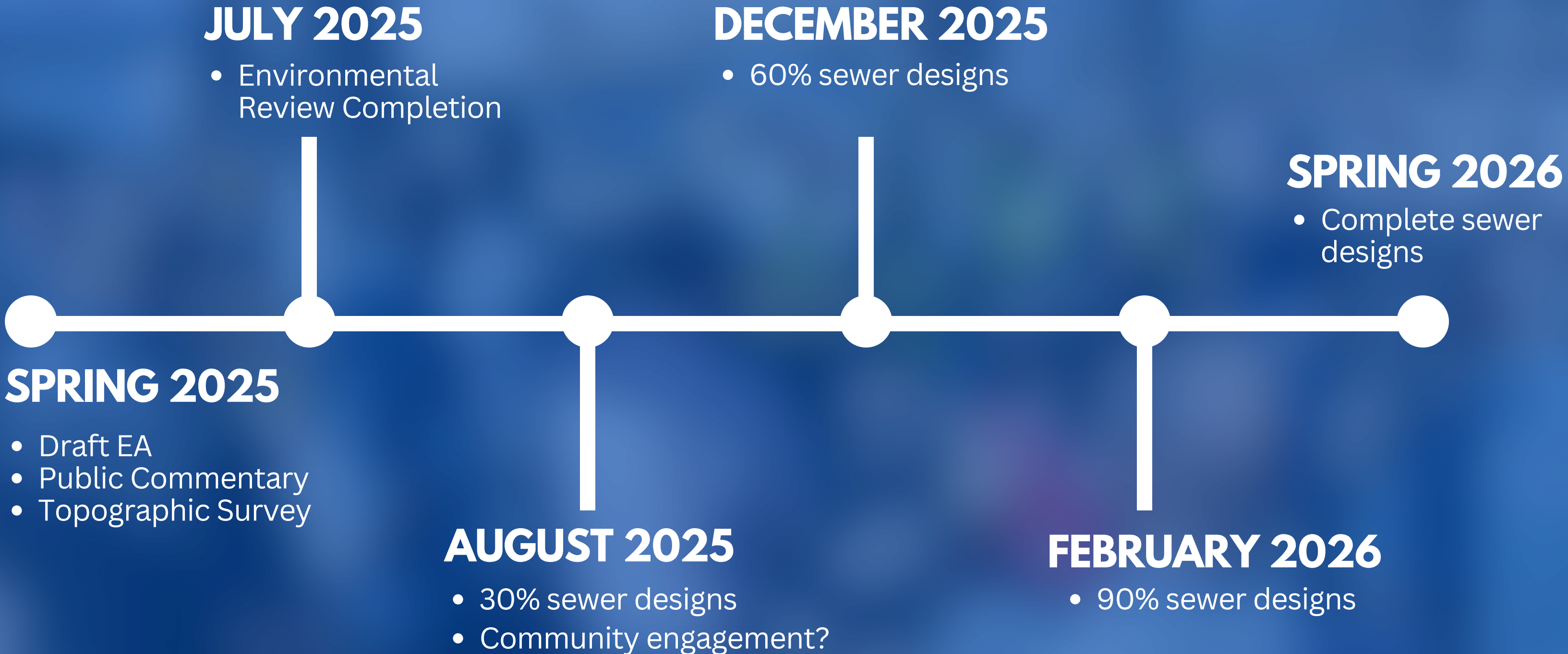
WAHIKULI GRAVITY SEWER DESIGN

*DESIGN PHASE UPDATE (cont.):

- EPA has identified 19 properties in Wahikuli whom the agency will contact to request an ROE (March 2025). The ROE will provide access for a Topographic Survey
- As the project progresses, EPA will inform the public when community engagement opportunities are available
- Reminder: Cesspools will need to be abandoned once County Sewer is available, please keep this in mind during the rebuild process

WAHIKULI GRAVITY SEWER DESIGN

*TENTATIVE DESIGN TIMELINE:

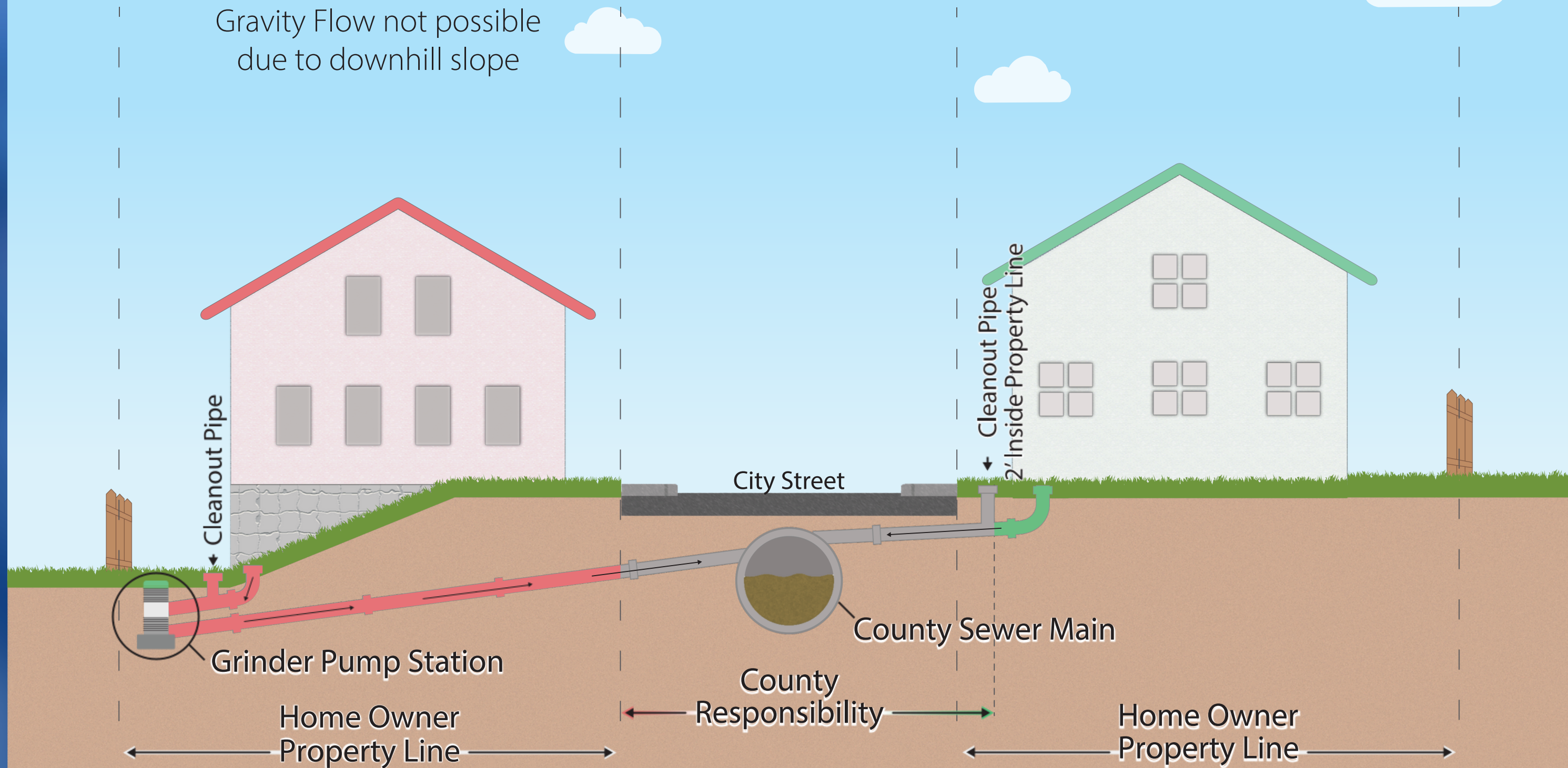


WAHIKULI GRAVITY SEWER DESIGN

Last Updated:
Dec 12, 2024

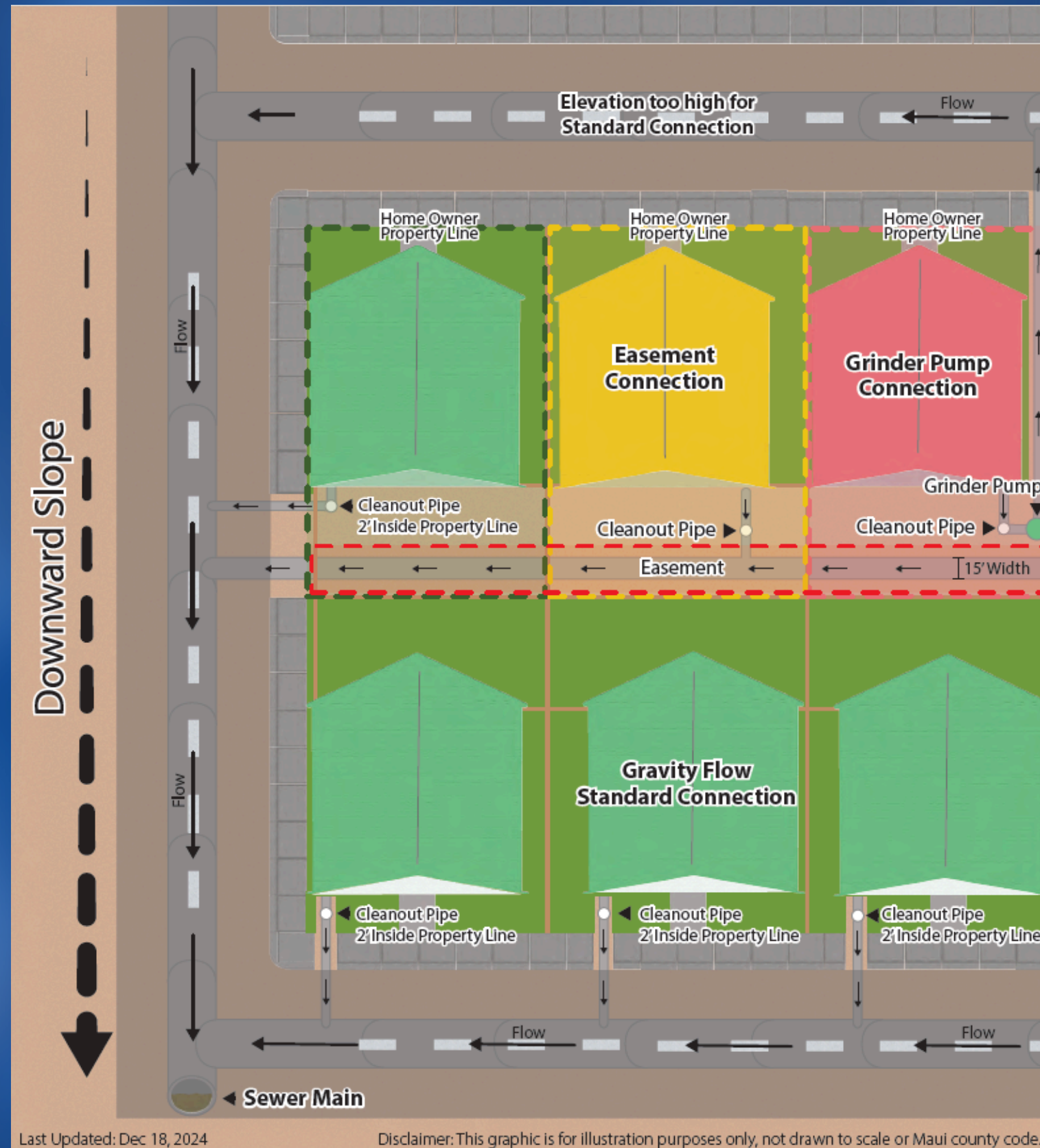
Grinder Pump Connection

Gravity Flow not possible
due to downhill slope



Gravity Flow Standard Connection

WAHIKULI GRAVITY SEWER DESIGN



Last Updated: Dec 18, 2024

Disclaimer: This graphic is for illustration purposes only, not drawn to scale or Maui county code.

WAHIKULI GRAVITY SEWER

CONSTRUCTION PHASE:

- At this time, no funding has been secured for the construction phase of the Project
- **However**, the County is seeking potential funding for construction and individual connections through:
 - USDA-RD
 - DEM sent a letter of request on January 10th, 2025
- Other potential funding sources:
 - HUD CDBG-DR
 - FEMA HMGP

Appendix E-2

Pre-Assessment Consultation

RICHARD T. BISSEN, JR.
Mayor

SHAYNE R. AGAWA, P.E.
Director

ROBERT SCHMIDT
Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation Division

Environmental Protection &
Sustainability Division



**COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT**
2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAI'I 96793

November 6, 2024

Dear Wahikuli Resident:

**SUBJECT: PRE-ASSESSMENT CONSULTATION FOR THE WAHIKULI
SUBDIVISION GRAVITY SEWER SYSTEM ENVIRONMENTAL
ASSESSMENT**

Sewer System Planning in Wahikuli

A new gravity sewer system is being proposed for the Wahikuli subdivision, north of Lahaina Town. Approximately 231 properties zoned for single-family use and currently serviced by cesspools and septic systems are proposed to be upgraded to this sewer system. The planning and design of this project is funded by the Federal Emergency Management Agency through their mission assignment authority and managed by the United States Environmental Protection Agency (EPA) through its contractor, AECOM. Providing a sewer system for this subdivision will eliminate environmental impacts from cesspools and leaking septic systems and will provide a system resilient to natural disasters.

Request for Early Input into the Environmental Review for the Proposed Project

The County of Maui and the EPA are preparing a joint Environmental Assessment (EA) for this proposed project that will comply with the National Environmental Policy Act (NEPA) and the Hawai'i Environmental Policy Act (HEPA). With this letter the County of Maui and the EPA are seeking input from residents and other interested parties as we develop the EA. We are interested in any information about the Wahikuli subdivision you believe would be useful in the environmental, cultural, and design aspects of this project.

Formal Comments Will Also Be Requested

This early outreach does not supersede the formal notification process mandated by provisions of Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Chapter 11-200.1. Formal notification will occur in the coming months and will accompany the publication of the Draft EA for your review in the Environmental Review Program's *The Environmental Notice*. The Draft EA will also be posted on EPA's website for review and public comment.

Enclosed for your review is a project description and project location map. *We encourage you to submit any comments regarding the project by letter or email within 21 days of the date of this letter to the addresses provided below:*

Mailing Address: Jarrett Brown
AECOM Technical Services, Inc.
1001 Bishop Street, Suite 1600
Honolulu, HI 96813

Email Address: WahikuliSewerEA@aecom.com

AECOM will receive, collect, and manage all comments received on behalf of the County of Maui and the EPA. The comments will be considered as the scope of the analysis for the Draft EA is developed, and responses to comments will be included in the Draft EA that is published in *The Environmental Notice* and on EPA's website.

The project team will periodically attend County of Maui Weekly Disaster Recovery Community Update Meetings to provide updates on the project and answer questions. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecovers.org/>.

If you have any questions, please feel free to reach out using the email address provided above. Please also use the email address above if needed to provide a more appropriate mailing address for the project team to use for future correspondence.

Thank you for your attention to this important matter.

Sincerely,



cn=Robert Schmidt, o=Environmental Management, ou=Deputy Director, email=Robert.Schmidt@co.maui.hi.us, c=US 2024.11.04 12:41:45 -10'00'

for Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

Project Description

Environmental Assessment for the Wahikuli Subdivision Gravity Sewer System

Introduction and Background

A new gravity sewer system is being proposed for the Wahikuli subdivision, located north of Lahaina Town. The planning and design of this project are funded by the Federal Emergency Management Agency (FEMA) through its mission assignment authority and it is managed by the United States Environmental Protection Agency (EPA) through its contractor, AECOM. Construction of the project is expected to be funded by both federal and county funds which necessitates compliance with both the National Environmental Policy Act (NEPA) and Hawai'i Environmental Policy Act (HEPA). An Environmental Assessment (EA) is being prepared to jointly meet the content and procedural requirements of both NEPA and federal cross-cutting authorities and HEPA.

The project builds on a 2013 Preliminary Engineering Report (PER) that evaluated the feasibility of a gravity sewer system for the Wahikuli subdivision. The EA will largely rely on design information included in the 2013 PER, and the final design of the project will occur after the completion of the EA. Additional details about the proposed project, including its purpose, and need, proposed action description, and the alternative options considered, are provided below. A project location map is also attached to illustrate the proposed project's location.

Purpose and Need

On the evening of August 8, 2023, winds from Hurricane Dora rapidly spread wildfires, causing devastation in the westernmost area that burned 2,170 acres across the island of Maui, Hawai'i, including much of the community of Lahaina. Emergency response and recovery efforts have been ongoing between local government, County of Maui, State of Hawai'i, and Federal partners since that time. On January 13, 2024, the County of Maui requested technical assistance from the EPA for the planning and design of a proposed gravity sewer system to be constructed in the Wahikuli subdivision, which was impacted by the wildfires. This gravity sewer system is proposed to upgrade approximately 231 properties zoned for single-family use and which are currently serviced by cesspools and septic systems.

The construction of a gravity sewer system in the Wahikuli subdivision would create a more resilient and sustainable wastewater management system, better equipped to withstand climate impacts and disasters. The proposed project aims to improve wastewater management to protect human health, nearshore waters, and coral reefs while minimizing the seepage of pollutants from the cesspools into the Class A waters along Wahikuli Wayside Park. It also seeks to safeguard natural and cultural areas that are important to local communities and watersheds. Furthermore, this project would support broader recovery efforts by enhancing resident's quality of life, promoting sustainable economic development, and increasing property values in a historically underserved area.

Implementing the proposed gravity sewer system would also facilitate compliance with Act 125, passed by the Hawai'i State Legislature in 2017, which mandates the replacement of all cesspools by January 1, 2050. In 2022, Act 125 was amended by Act 87, expanding the criteria for replacement individual

Enclosure: Pre-Assessment Consultation for the Wahikuli Subdivision Gravity Sewer System Environmental Assessment
November 6, 2024

wastewater systems (IWSs) to include any wastewater system approved by the State of Hawai'i Department of Health (DOH).

Proposed Action

The proposed action involves designing and constructing a gravity sewer system for the Wahikuli subdivision at Wahikuli in Lahaina, Maui, Hawai'i. The Wahikuli subdivision consists of approximately 231 single-family house lots, each currently serviced by a cesspool or IWS (septic tank). Nearby areas are already connected to an existing sewer system. The new sewer system would connect to the operational Lahaina No. 3 Pump Station located approximately 975 feet south of Fleming Road. The proposed connection is to the existing sanitary manhole (SMH) #10 directly in front of the wet well for the Lahaina No. 3 Pump Station on the mauka (eastern) side of the Honoapiilani Highway. Please refer to the attached graphic for more details.

The proposed action may involve installing sump or grinder pumps for certain properties where connecting to the sewer system (within the roadways) via gravity is challenging due to grade differences. Additionally, easements might be necessary for constructing sewer laterals for properties that do not have direct access to the public roadway. Both activities would take place on private property. The need for sump/grinder pumps and easements will be assessed in the EA and confirmed during the subsequent design phase of the proposed action.

Alternatives Considered

Alternative Connection to the Existing Sewer System: An alternative tie-in to the Lahaina No. 3 Pump Station was identified in the 2013 PER. This alternative involves tying in to the existing SMH #1A immediately south of the abandoned original Lahaina No. 3 Pump Station on the makai (western) side of the Honoapiilani Highway. SMA #1A connects to an existing 18-inch PVC gravity sewer line that flows south toward Lahaina Town, then crosses Honoapiilani Highway eastward to SMH #10 in front of the operational Lahaina No. 3 Pump Station. However, this alternative was not preferred and has been eliminated from further consideration due to greater associated impacts, including additional dewatering needs, the need to obtain an easement from property owned by the State of Hawai'i, crossing the four-lane Honoapiilani Highway, and additional permitting requirements.

No Action Alternative: Under this alternative, a gravity sewer system for the Wahikuli subdivision would not be implemented. All property owners would need to upgrade or convert to an IWS approved by the DOH by January 1, 2050, to comply with Act 125, as amended by Act 87, unless granted an exemption.

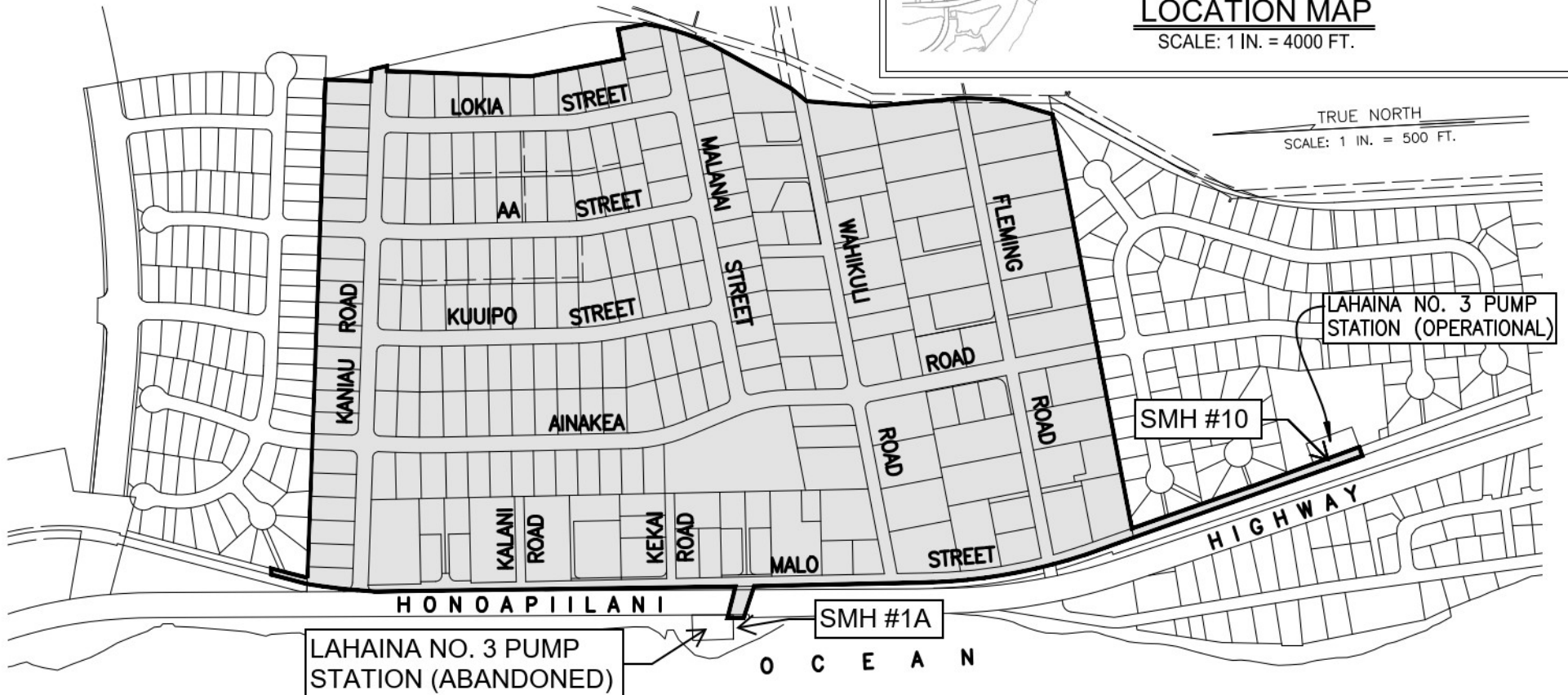
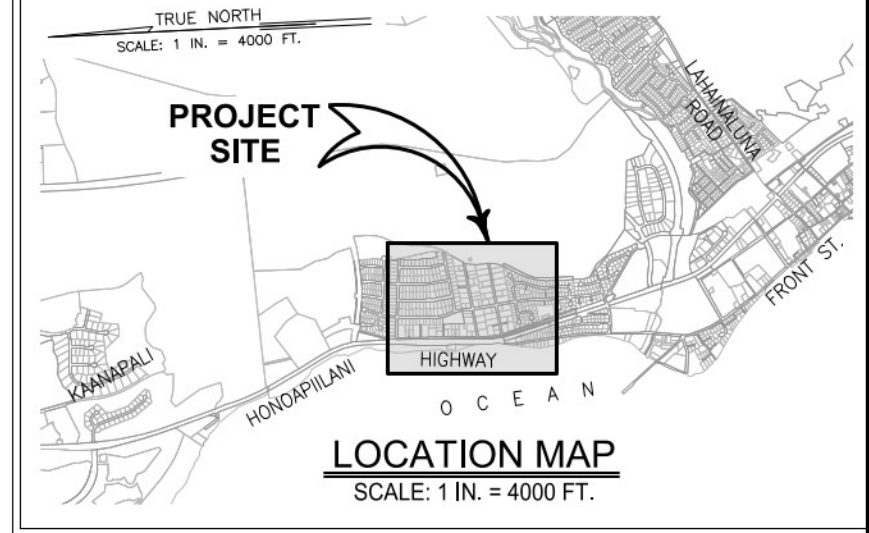
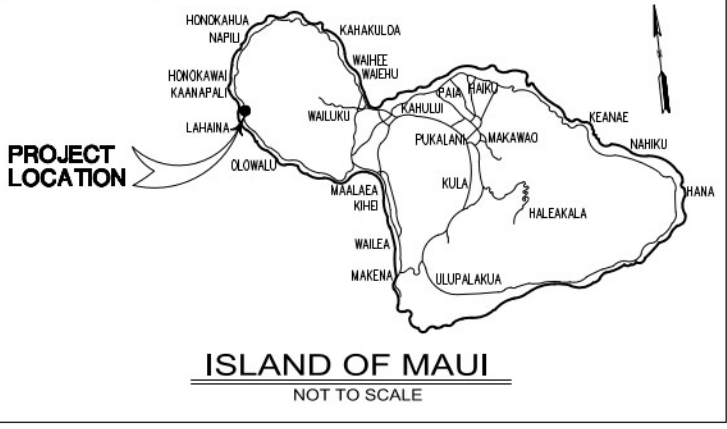
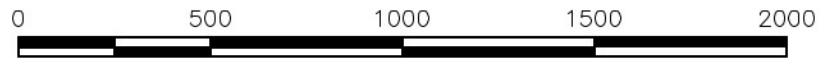


FIGURE 1 - PROJECT LOCATION MAP



SCALE: 1 IN. = 500 FT.



June 3, 2013

RICHARD T. BISSEN, JR.
Mayor

SHAYNE R. AGAWA, P.E.
Director

ROBERT SCHMIDT
Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation Division

Environmental Protection &
Sustainability Division



COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAI'I 96793

November 6, 2024

Dear Interested Party:

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SUBDIVISION GRAVITY SEWER SYSTEM ENVIRONMENTAL
ASSESSMENT**

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Thank you for your attention to this important matter.

Sincerely,



cn=Robert Schmidt, o=Environmental Management, ou=Deputy Director, email=Robert.Schmidt@co.maui.hi.us, c=US
2024.11.04 12:41:58 -10'00'

for Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

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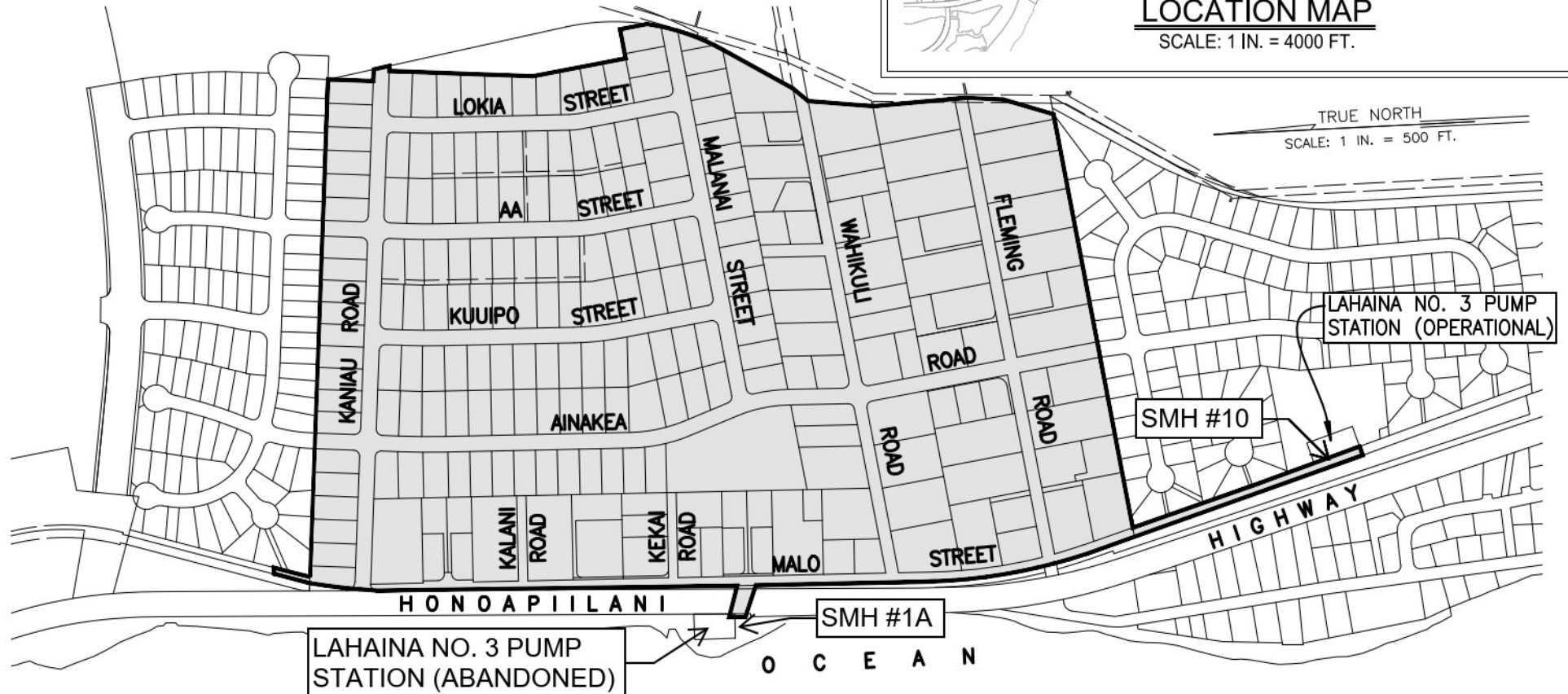
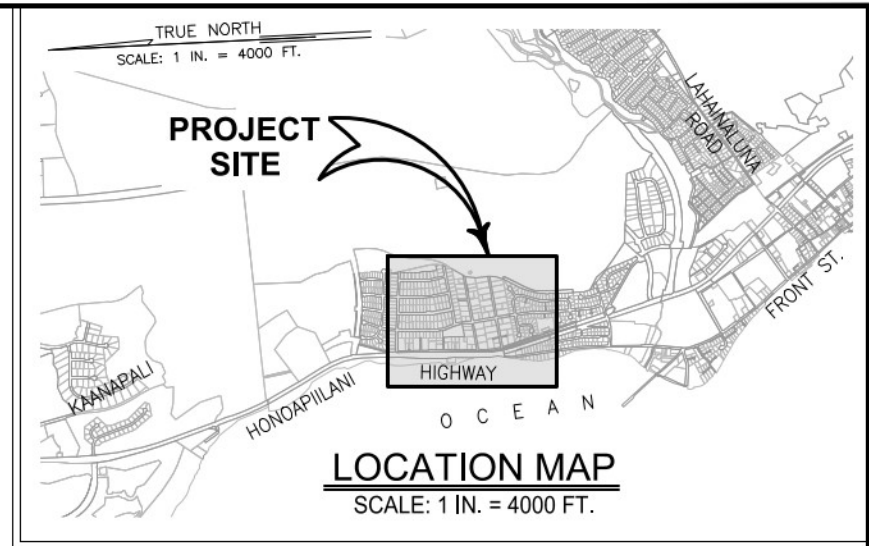
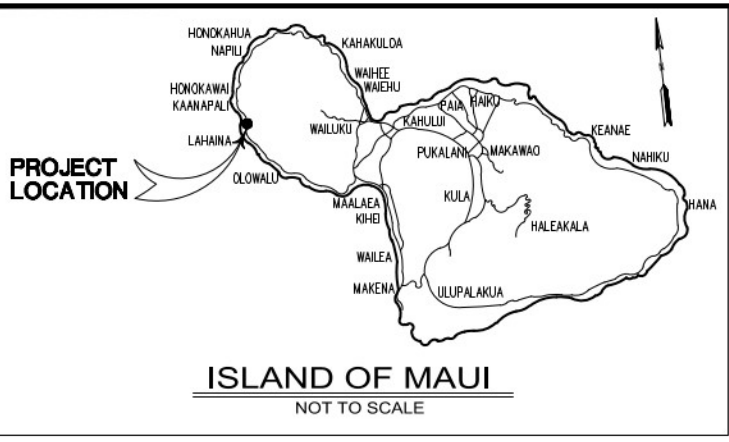
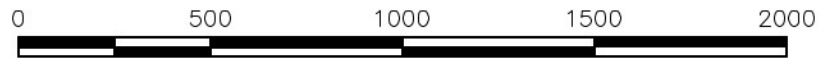


FIGURE 1 - PROJECT LOCATION MAP



SCALE: 1 IN. = 500 FT.



June 3, 2013

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

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



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

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

P.O. BOX 621
HONOLULU, HAWAII 96809

November 12, 2024

MEMORANDUM

FROM: ~~TO:~~

DLNR Agencies:

- Div. of Aquatic Resources (kendall.l.tucker@hawaii.gov)
- Div. of Boating & Ocean Recreation
- Engineering Division** (DLNR.ENGR@hawaii.gov)
- Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
- Div. of State Parks
- Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
- Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
- Land Division – Maui District (dlnr.land.maui@hawaii.gov)
- Aha Moku Advisory Committee (leimana.k.damate@hawaii.gov)

TO: ~~FROM:~~

Russell Y. Tsuji, Land Administrator

Russell Tsuji

SUBJECT:

Pre-Assessment Consultation for the **Wahikuli Subdivision Gravity Sewer System** Environmental Assessment

LOCATION:

Wahikuli, Lahaina, Island of Maui; TMKs: (2) 4-5-014:Various; (2) 4-5-027:Various; and (2) 4-5-028:Various

APPLICANT:

County of Maui, Department of Environmental Management

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **November 27, 2024**.

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.

BRIEF COMMENTS:

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

Signed:

Dawn

Print Name:

Carty S. Chang, Chief Engineer

Division:

Engineering Division

Date:

Nov 26, 2024

Attachments

cc: Central File

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

LD/Russell Y. Tsuji

Ref: Pre-Assessment Consultation for the Wahikuli Subdivision Gravity Sewer System Environmental Assessment

Location: Wahikuli, Lahaina, Island of Maui

TMK(s): (2) 4-5-014:Various; (2) 4-5-027:Various; and (2) 4-5-028:Various

Applicant: County of Maui, Department of Environmental Management

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). Be advised that 44CFR, Chapter 1, Subchapter B, Part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible for researching the Flood Hazard Zone designation for the project. Flood zones subject to NFIP requirements are identified on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center (msc.fema.gov). Our Flood Hazard Assessment Tool (FHAT) (fhat.hawaii.gov) could also be used to research flood hazard information.

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

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7139.
- Kauai: County of Kauai, Department of Public Works (808) 241-4849.

Signed: 
CARTY S. CHANG, CHIEF ENGINEER

Date: Nov 26, 2024

RICHARD T. BISSEN, JR.
Mayor

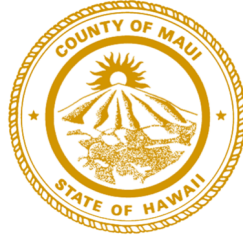
SHAYNE R. AGAWA, P.E.
Director

Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation
Division

Environmental Protection &
Sustainability Division



COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

April 11, 2025

Carty S. Chang
Chief Engineer
Engineering Division
State of Hawai'i Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809
Email: DLNR.ENGR@hawaii.gov

Dear Mr. Chang:

**SUBJECT: RESPONSE TO COMMENTS ON PRE-ASSESSMENT CONSULTATION
FOR DRAFT ENVIRONMENTAL ASSESSMENT
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
WAHIKULI, LAHAINA, ISLAND OF MAUI**


Thank you for your response dated November 26, 2024, regarding the pre-assessment consultation for the Draft Environmental Assessment (EA) for the subject project.

The Draft EA will evaluate NFIP flood hazard zone designations and will state that the Proposed Action will be constructed and operated in accordance with NFIP regulations and standards, as well as local community flood ordinances. According to the FHAT, a narrow strip of the Project Area, at the intersection of Malo Street and Kekai Road, is located in the AE zone, which includes areas subject to inundation by the 1-percent-annual-chance flood event.

We appreciate your participation in the EA review process. We will notify you when the Draft EA is published for comment in *The Environmental Notice* and on EPA's website. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecovers.org/>. Should you have any questions please contact the design consultant (AECOM) by email at WahikuliSewerEA@aecom.com.

Carty S. Chang
April 11, 2025
Page 2

Sincerely,



DN: cn=Shayne R. Agawa, o=Director of Dept. of
Environmental Management, ou=County of Maui,
email=shayne.agawa@co.maui.hi.us, c=US
Date: 2025.04.11 13:32:03 -10'00'

Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

Frankenthaler, Victor

From: Kevin I. Dunn <Kevin.Dunn@mpd.net>
Sent: Thursday, November 14, 2024 1:54 PM
To: WahikuliSewerEA
Subject: Pre-assessment Wahikuli Sewer System

This Message Is From an Untrusted Sender

You have not previously corresponded with this sender.

[Report Suspicious](#)

Aloha,

I am Officer Kevin Dunn with the Maui Police Department. I am assigned to the Visitor Oriented Police Officer position and I work closely with the Community Police Officers in the Lahaina District. I was assigned to review the Pre-assessment regarding the subject matter.

There are no problems expected, nor are there any expectations of traffic being affected at this time. Police operations should not be affected as the entire area is a construction zone. The duration of this project is unknown at this time. Recommend grated drainage and manhole covers to prevent any potential hazards of person(s) being pulled into any drainage areas.

Mahalo,

*Officer Kevin DUNN
Lahaina Patrol Division
Visitor Oriented Police Officer
Maui Police Department
1850 Honoapiilani Highway, Lahaina, Hawaii 96761*



RICHARD T. BISSEN, JR.
Mayor

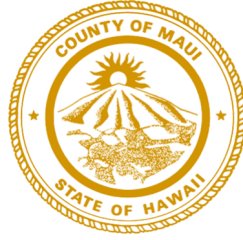
SHAYNE R. AGAWA, P.E.
Director

Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation
Division

Environmental Protection &
Sustainability Division



COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

April 11, 2025

Officer Kevin Dunn
Visitor Oriented Police Officer
Lahaina Patrol Division
Maui Police Department
1850 Honoapi'ilani Highway
Lahaina, HI 96761
Email: Kevin.Dunn@mpd.net

Dear Officer Dunn:

**SUBJECT: RESPONSE TO COMMENTS ON PRE-ASSESSMENT CONSULTATION
FOR DRAFT ENVIRONMENTAL ASSESSMENT
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
WAHIKULI, LAHAINA, ISLAND OF MAUI**

Thank you for your response dated November 14, 2024 regarding the pre-assessment consultation for the Draft Environmental Assessment (EA) for the subject project.

A traffic control plan will be submitted, and if any revisions are needed, they must be approved at least seven days before implementation in the field.

While the manholes already have covers, it may also be beneficial to include stormwater management (sanitary manhole) inserts to reduce water intrusion. Drainage inlets are typically designed with grated tops.

We appreciate your participation in the EA review process. We will notify you when the Draft EA is published for comment in *The Environmental Notice* and on EPA's website. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecovers.org/>. Should you have any questions please contact the design consultant (AECOM) by email at WahikuliSewerEA@aecom.com.

Officer Kevin Dunn
April 11, 2025
Page 2

Sincerely,



DN: cn=Shayne R. Agawa, o=Director of Dept. of
Environmental Management, ou=County of Maui,
email=shayne.agawa@co.maui.hi.us, c=US
Date: 2025.04.11 13:33:57 -10'00'

Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

Frankenthaler, Victor

From: ohsdoc <ohsdoc@librarieshawaii.org>
Sent: Tuesday, November 19, 2024 8:33 PM
To: WahikuliSewerEA
Subject: Pre-consultation/Wahikuli Subdivision Gravity Sewer System

This Message Is From an External Sender

This message came from outside your organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Report Suspicious

Aloha e Jarrett Brown,

Thank you for including the Hawaii Documents Center at Hawaii State Library in the pre-assessment consultation for the Wahikuli Subdivision Gravity Sewer System prior to preparing the project's environmental assessment.

This comment is in regard to the requirements outlined in the Hawaii Administrative Rules (HAR) §11-200.1-5 - *Filing Requirements for Publication and Withdrawal*. It has been our experience that many applicants and consultants are unaware that the HAR directs that a paper copy of a draft environmental assessment be deposited with both the library nearest the project location and the Hawaii Documents Center, concurrent with filing the document with the Office of Environmental Quality Control for publication in *The Environmental Notice*. We appreciate having this opportunity to send a reminder about this requirement.

A list of library locations can be found at the Hawaii State Public Library System website:
<https://www.librarieshawaii.org/visit/branches/all-branches>

The mailing/delivery address for the Hawaii Documents Center: 478 S. King Street, Honolulu, HI 96813.

Thank you for your attention to this matter.

Best regards,
Kristin Laitila
Library Technician

Hawaii Documents Center
Hawaii State Library - Hawaii & Pacific Section
Hawaii State Public Library System
478 South King Street, Honolulu, HI 96813 | (808) 586-3544
Email: ohsdoc@librarieshawaii.org | Web: librarieshawaii.org

RICHARD T. BISSEN, JR.
Mayor

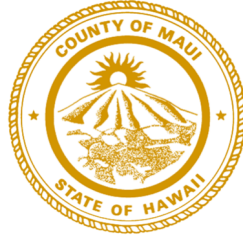
SHAYNE R. AGAWA, P.E.
Director

Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation
Division

Environmental Protection &
Sustainability Division



**COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT**

2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

April 11, 2025

Kristin Laitila
Library Technician
Hawai'i Documents Center
Hawai'i State Library – Hawai'i & Pacific Section
Hawai'i Stat Public Library system
478 South King Street
Honolulu, HI 96813
Email: ohsdoc@librarieshawaii.org

Dear Ms. Laitila:

**SUBJECT: RESPONSE TO COMMENTS ON PRE-ASSESSMENT CONSULTATION
FOR DRAFT ENVIRONMENTAL ASSESSMENT
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
WAHIKULI, LAHAINA, ISLAND OF MAUI**

Thank you for your response dated November 19, 2024 regarding the pre-assessment consultation for the Draft Environmental Assessment (EA) for the subject project.

Thank you for the link to the list of library locations on the Hawai'i State Public Library System website.

Per HAR §11-200.1-5(e)(1)(B), paper copies of the draft environmental assessment will be sent to both the Wailuku Public Library (the nearest *operating* state library to the Project Area, as the Lahaina Public Library is closed until further notice) and the Hawai'i Documents Center, concurrent with filing the document with the Environmental Review Program (formerly the Office of Environmental Quality Control).

We appreciate your participation in the EA review process. We will notify you when the Draft EA is published for comment in *The Environmental Notice* and on EPA's website. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecovers.org/>. Should you have any questions please contact the design consultant (AECOM) by email at WahikuliSewerEA@aecom.com.

Kristin Laitila
April 11, 2025
Page 2

Sincerely,



Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

DN: cn=Shayne R. Agawa, o=Director of Dept. of
Environmental Management, ou=County of Maui,
email=shayne.agawa@co.mauai.hi.us, c=US
Date: 2025.04.11 13:35:26 -10'00'




STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII'
DEPARTMENT OF LAND AND NATURAL RESOURCES | KA 'OIHANA KUMUWAIWAI 'ĀINA
COMMISSION ON WATER RESOURCE MANAGEMENT | KE KAHUWAI PONO
P.O. BOX 621
HONOLULU, HAWAII 96809

Nov 22, 2024

REF: RFD.6346.6

TO: Mr. Russell Tsuji, Administrator
Land Division

FROM: Ciara W.K. Kahahane, Deputy Director 
Commission on Water Resource Management

SUBJECT: Wahikuli Subdivision Gravity Sewer System Environmental
Assessment

FILE NO.:
TMK NO.: RFD.6346.6
245014, 245027, 245028

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at <http://dlnr.hawaii.gov/cwrw>.

Our comments related to water resources are checked off below.

1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at <http://www.usgbc.org/leed>. A listing of fixtures certified by the EPA as having high water efficiency can be found at <http://www.epa.gov/watersense>.
5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at <http://planning.hawaii.gov/czm/initiatives/low-impact-development/>
6. We recommend the use of alternative water sources, wherever practicable.
7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at <http://energy.hawaii.gov/green-business-program>.
8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

- 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.
- 11. The Hawaii Water Plan is directed toward the achievement of the utilization of reclaimed water for uses other than drinking and for potable water needs in one hundred per cent of State and County facilities by December 31, 2045 (§174C-31(g)(6), Hawaii Revised Statutes). We strongly recommend that this project consider using reclaimed water for its non-potable water needs, such as irrigation. Reclaimed water may include, but is not limited to, recycled wastewater, gray water, and captured rainwater/stormwater. Please contact the Hawaii Department of Health, Wastewater Branch, for more information on their reuse guidelines and the availability of reclaimed water in the project area.
- 12. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.
- 13. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.
- 14. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
- 15. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- 16. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.
- 17. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.
- 18. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
- 19. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.
- OTHER:

If you have any questions, please contact Ryan Imata of the Groundwater Regulation Branch at (808) 587-0225 or Katie Roth of the Planning Branch (808) 587-0216.

RICHARD T. BISSEN, JR.
Mayor

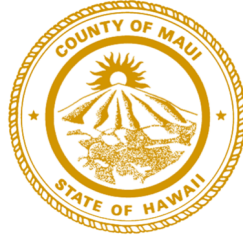
SHAYNE R. AGAWA, P.E.
Director

Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation
Division

Environmental Protection &
Sustainability Division



COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

April 11, 2025

Ciara W.K. Kahahane
Deputy Director
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

Dear Ms. Kahahane:

**SUBJECT: RESPONSE TO COMMENTS ON PRE-ASSESSMENT CONSULTATION
FOR DRAFT ENVIRONMENTAL ASSESSMENT
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
WAHIKULI, LAHAINA, ISLAND OF MAUI**

Thank you for your response dated November 22, 2024 regarding the pre-assessment consultation for the Draft Environmental Assessment (EA) for the subject project.

Thank you for the link to the Low Impact Development webpage and the *2023 Low Impact Development Practitioner's Guide for Hawai'i*.

The Draft EA will evaluate mitigation strategies and stormwater management BMPs to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. BMPs will be finalized and included in the construction plans after the legends and site plan sheets.

We appreciate your participation in the EA review process. We will notify you when the Draft EA is published for comment in *The Environmental Notice* and on EPA's website. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecovers.org/>. Should you have any questions please contact the design consultant (AECOM) by email at WahikuliSewerEA@aecom.com.

Ciara W.K. Kahahane
April 11, 2025
Page 2

Sincerely,



DN: cn=Shayne R. Agawa, o=Director of Dept. of
Environmental Management, ou=County of Maui,
email=shayne.agawa@co.maui.hi.us, c=US
Date: 2025.04.11 13:36:17 -10'00'

Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

Frankenthaler, Victor

From: Tom DeLacy <tomdelacy@gmail.com>
Sent: Friday, November 22, 2024 12:28 PM
To: WahikuliSewerEA
Subject: 211 Malanai sewer

This Message Is From an Untrusted Sender

You have not previously corresponded with this sender.

Report Suspicious

Aloha Jarrett

Our home is at 211 Malanai in the Wahikuli neighborhood of Lahaina. It is a two story, 3bed/2bath with a 1bed/1bath ohana studio below. It luckily survived the fire.

We are beginning the process of building another unit on the property, adding 3 more bedrooms and potentially 4 bathrooms, in the form of two 710ft ohanas.

Although our address is on Malanai, the majority of our land borders A'a Street to the west, and this is the downslope direction. We request sewer service hookup to be on this A'a Street side. We are currently on an approved cesspool, and building the lateral from the cesspool to A'a will be least disruptive to our property.

Additionally we are requesting a second sewer hookup for the new ohanas we will construct, also on A'a. Maui postal and other agencies have recognized this plot as 1570 A'a Street to date.

I have attached a photo. Ideally one hookup near/at the large split in the wall, the other hookup near the short beige staircase (which is 30ft straight down from our current cesspool).

Thank you, excited to see sewer come to the neighborhood! It may not be the right forum, but we'd also greatly appreciate sidewalks in front of our property (current sidewalks stop above, and two houses beside us) as well as speed bumps on Malanai, as traffic drives excessive fast up and down Malanai and much of Wahikuli has added speed bumps on many streets to control and protect pedestrians.

Mahalo,
Tom DeLacy
415-877-7100

RICHARD T. BISSEN, JR.
Mayor

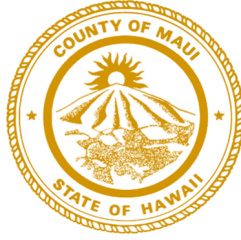
SHAYNE R. AGAWA, P.E.
Director

Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation
Division

Environmental Protection &
Sustainability Division



**COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT**

2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

April 11, 2025

Tom DeLacy
211 Malanai Street
Lahaina, HI 96761
Email: tomdeLacy@gmail.com

Dear Mr. DeLacy:

**SUBJECT: RESPONSE TO COMMENTS ON PRE-ASSESSMENT CONSULTATION
FOR DRAFT ENVIRONMENTAL ASSESSMENT
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
WAHIKULI, LAHAINA, ISLAND OF MAUI**

Thank you for your response dated November 22, 2024 regarding the pre-assessment consultation for the Draft Environmental Assessment (EA) for the subject project.

Ultimately, during the topographic survey, we (the Consultant and the County of Maui Wastewater Reclamation Division) will determine the most suitable locations for the cleanouts that will provide access to the sewer lines. While hookup along A'a Street may be the least disruptive to your property, we must consider whether it works effectively given the soil and grading conditions.

Regarding your request, this might extend the County right-of-way and could encroach on your property, potentially leading to a County easement. Please note that you would not be allowed to build on this easement, and the County must have unobstructed access to it in the event of a spill.

All sewer work to be dedicated to the County or that connects to existing County-owned sewer systems must be coordinated with the Department of Environmental Management, Wastewater Reclamation Division.

Thank you for the information regarding recognition of the plot as 1570 A'a Street.

You can connect to your property's private sewer system if the flow does not exceed the expected capacity of 1,500 gallons per day (gpd). If flow exceeds this capacity, you should install a property sewer manhole. Additionally, you are permitted only a single connection to the sewer main.

Tom DeLacy
April 11, 2025
Page 2

Regarding roadway development, your suggestions can be presented to the County of Maui Department of Public Works.

We appreciate your participation in the EA review process. We will notify you when the Draft EA is published for comment in *The Environmental Notice* and on EPA's website. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecovers.org/>. Should you have any questions please contact the design consultant (AECOM) by email at WahikuliSewerEA@aecom.com.

Sincerely,



DN: cn=Shayne R. Agawa, o=Director of Dept. of
Environmental Management, ou=County of Maui,
email=shayne.agawa@co.maui.hi.us, c=US
Date: 2025.04.11 13:38:03 -10'00'

Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui



STATE OF HAWAII
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LT. GOVERNOR

MARY ALICE EVANS
DIRECTOR

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

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

DTS202411151048NA

Coastal Zone
Management
Program

November 26, 2024

Environmental Review
Program

Land Use Commission

Land Use Division

Special Plans Branch

State Transit-Oriented
Development

Statewide Geographic
Information System

Statewide
Sustainability Program

Mr. Jarrett Brown
AECOM Technical Services, Inc.
1001 Bishop Street, Suite 1600
Honolulu, Hawai'i 96813

Dear Mr. Brown:

**Subject: Pre-Assessment Consultation for the Wahikuli
Subdivision Gravity Sewer System Environmental
Assessment; Lahaina, Maui**

We are in receipt of your early consultation request, dated November 6, 2024. This request is for the preparation of a National Environmental Policy Act (NEPA) and Hawai'i Revised Statutes (HRS) Chapter 343 compatible Environmental Assessment.

The project area is located within the 2,170 acre burn zone of the August 2023 West Maui wildfires and most of the homes that were once there have been destroyed. We understand that the proposed action calls for the installation of a new sewer system for the Wahikuli subdivision, north of Lahaina Town. The single-family zoned area, previously serviced by cesspools and septic systems, will be upgraded to a new gravity fed sewer system.

The Wahikuli subdivision once consisted of 231 single-family house lots. The new sewer system will connect the housing sewer infrastructure to the Lahaina No. 3 Pump Station. This project may include the installation of sump or grinder pumps to properties which may have difficulties connecting to the gravity fed sewer system due to grading differences and land elevation. More importantly, the sewer system will facilitate a modern waste treatment system and replace the outdated cesspool and septic waste systems.

The Office of Planning and Sustainable Development (OPSD) has reviewed the submitted material and have the following comments to offer:

1. Coastal Zone Management Act (CZMA), Federal Consistency
We note that the planning and design of the proposed project is funded through disaster assistance from the Federal Emergency Management

Agency, area management by the U.S. Environmental Protection Agency, and in collaboration with the County of Maui, Department of Environmental Management (DEM). The involvement of these two federal agencies may subject this proposed action to a CZMA federal consistency review.

OPSD is the lead state agency with the authority to conduct CZMA federal consistency determinations. We recommend DEM consult with our office on the applicable regulations and regulatory process associated with CZMA federal consistency.

2. Hawai'i Coastal Zone Management (CZM) Program

The CZM area is defined as "all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" under HRS § 205A-1. Therefore, the entire State is considered within the Coastal Zone. Pursuant to HRS § 205A-4, in implementing the objectives of the CZM program, agencies shall consider ecological, cultural, historic, esthetic, recreational, scenic, open space values, coastal hazards, and economic development.

As this proposed development involves governmental agencies, the Draft Environmental Assessment (Draft EA) should include an evaluation on how the proposed project conforms to the Hawai'i CZM Program's objectives and supporting policies, listed in HRS § 205A-2, as amended.

Furthermore, the objectives and supporting policies of the Hawai'i CZM Program serve as the foundation of the enforceable policies of the State of Hawai'i. Disclosure of impacts on CZM objectives and supporting policies as it relates to HRS Chapter 343 requirements, will aid the State in determining impacts to the resources of the coastal zone and in our evaluation involved in a federal consistency review.

3. Special Management Area (SMA) Use Permitting

The Draft EA shall provide a list of all required permits and approvals (federal, state, and county) pursuant to Hawai'i Administrative Rules (HAR) Chapter 11-200.1. If any portion of the proposed sewer system project is located within the county designated SMA, the County of Maui Planning Department should be consulted for the potential requirement of SMA permitting.

4. Stormwater Runoff, Erosion, and Water Resources

Pursuant to HAR § 11-200.1-18(d)(7) – identification and analysis of impacts and alternatives considered; to ensure that the nearshore marine resources of West Maui remain protected, the negative effects of stormwater runoff and sediment ensuing from the development and operational use of the new sewer system construction and operation should be examined.

Issues that must be examined include, but are not limited to, land characteristics of the project site in relation to flood and erosion prone areas, as well the vulnerability of the

Mr. Jarrett Brown
November 26, 2024
Page 3

nearshore environment to polluted stormwater runoff. Developing mitigation strategies to preserve surface water quality and limit impacts to the downslope coastal ecosystem from polluted runoff should be examined, pursuant to HAR § 11-200.1-18(d)(8).

We acknowledge that this proposed action calls for the installation of underground sewer line, and once operational will not result in additional impervious surfaces. However, as the entire project area will require the complete rehabilitation of the urban environment, nature-based stormwater management solutions would be ideal. Low Impact Development (LID) design features strategies should be considered in any future stormwater strategy. LID best management practices (BMPs) are a proven method in protecting the coastal environment. Lahaina redevelopment would benefit from reviewing our newly updated LID Practitioners Guide. The 2023 LID Practitioners Guide includes recommendations and guidance on the best LID BMPs options that may be employed.

The 2023 LID Practitioners Guide can be accessed via our website at:
https://files.hawaii.gov/dbedt/op/czm/ormp/ormp_implementation/2023LIDPractitionersGuide.pdf

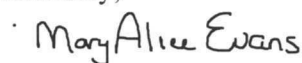
5. Climate Change Adaptation/Sea Level Rise (SLR)

As HRS Chapter 343 Significance Criteria rules require analysis on climate change and SLR impacts, the Draft EA should include an examination of the property's vulnerability to SLR. The Draft EA should evaluate the vulnerability of the entire project site to SLR threats. To assess potential environmental impacts and SLR vulnerability, we suggest the Draft EA refer to the findings of the Hawai'i Sea Level Rise Vulnerability and Adaptation Report 2017, accepted by the Hawai'i Climate Change Mitigation and Adaptation Commission.

The Report and the Hawai'i SLR Viewer at <https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/> identify a 3.2-foot SLR exposure area across the main Hawaiian Islands, as a starting evaluation point. The Draft EA should provide a map of at least 3.2-foot SLR exposure area in relation to the project area, evaluate potential SLR adaptation measures and safeguards when feasible.

If you have any questions or concerns, please contact Joshua Hekekoa at (808) 587-2845 or by email to Joshua.K.Hekekoa@hawaii.gov. If you wish to respond to this comment letter, please include DTS 202411151048NA in the subject line.

Sincerely,



Mary Alice Evans,
Director

RICHARD T. BISSEN, JR.
Mayor

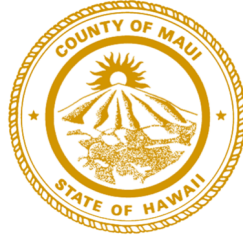
SHAYNE R. AGAWA, P.E.
Director

Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation
Division

Environmental Protection &
Sustainability Division



COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

April 11, 2025

Mary Alice Evans
Director
State of Hawai'i Office of Planning & Sustainable Development
P.O. Box 2359
Honolulu, HI 96813
Email: Joshua.K.Hekekia@hawaii.gov

Dear Ms. Evans:

**SUBJECT: RESPONSE TO COMMENTS ON PRE-ASSESSMENT CONSULTATION
FOR DRAFT ENVIRONMENTAL ASSESSMENT
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
WAHIKULI, LAHAINA, ISLAND OF MAUI**

Thank you for your response dated November 26, 2024 regarding the pre-assessment consultation for the Draft Environmental Assessment (EA) for the subject project.

Any federal actions that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone should be consistent with the enforceable policies of a coastal state's federally approved coastal management program (CMP). If coastal effects are reasonably foreseeable, then the federal agency submits a consistency determination to a state CMP at least 90 days before the activity starts. FEMA anticipates providing a CZMA federal consistency negative determination per 15 CFR 930.35 for the Proposed Action.

DEM will consult with OPSD on the applicable regulations and regulatory process associated with CZMA federal consistency. The Draft EA will evaluate how the Proposed Action conforms to the objectives and supporting policies of the Hawai'i CZM Program.

The Draft EA will provide a list of all federal, state, and county required permits and approvals.

A portion of the Proposed Action is located within the County designated SMA. The County of Maui Planning Department will be consulted to confirm the SMA boundary and regarding the potential requirement of SMA permitting.

Mary Alice Evans
April 11, 2025
Page 2

The Draft EA will evaluate the negative effects on nearshore marine resources of stormwater runoff and sediment from construction and operation of the proposed gravity sewer system. The EA likewise will evaluate the positive effects of minimizing the seepage of pollutants from the existing cesspools into nearshore waters.

The Draft EA will evaluate mitigation strategies and best management practices (BMPs) to preserve surface water quality and limit impacts to the downslope coastal ecosystem from polluted runoff. BMPs will be finalized and included in the construction plans after the legends and site plan sheets.

Thank you for the link to the *2023 LID Practitioner's Guide*. During preparation of the Draft EA and as design of the gravity sewer system progresses, we will evaluate how LID BMPs can be employed in the project stormwater management strategy.

The Draft EA will evaluate the Project Area's vulnerability to SLR and will reference the findings of the 2017 *Hawai'i Sea Level Rise Vulnerability and Adaptation Report*.

Thank you for the link to the State of Hawai'i Sea Level Rise Viewer. The Draft EA will provide a map of the 3.2-foot SLR exposure area at the Project Area, and will evaluate, as applicable, potential SLR adaptation measures and safeguards.

Review of the State of Hawai'i Sea Level Rise Viewer indicates that only a narrow strip of the Project Area, at the intersection of Malo Street and Wahikuli Road, is within the extent of 3.2 feet of sea level rise, which is the level that the Hawai'i Climate Change Adaptation and Mitigation Commission recommends planning for now. However, it is noted that the 3.2 feet of global mean sea level rise by 2100 is based on the upper end projection in the 2013 *Intergovernmental Panel on Climate Change Fifth Assessment Report*, and as science on sea level rise observations and forecasts advance, more recent climate science literature increases the high-end projection.

We appreciate your participation in the EA review process. We will notify you when the Draft EA is published for comment in *The Environmental Notice* and on EPA's website. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecover.org/>. Should you have any questions please contact the design consultant (AECOM) by email at WahikuliSewerEA@aecom.com.

Sincerely,



DN: cn=Shayne R. Agawa, o=Director of Dept. of
Environmental Management, ou=County of Maui,
email=shayne.agawa@co.maui.hi.us, c=US
Date: 2025.04.11 14:45:16 -10'00'

Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

Frankenthaler, Victor

From: Krueger, Joseph K <joseph.k.krueger@hawaii.gov>
Sent: Thursday, December 12, 2024 12:48 PM
To: WahikuliSewerEA
Cc: Fukuroku, Ty H
Subject: WAHIKULI SUBDIVISION SEWER SYSTEM - PRE-ASSESSMENT CONSULTATION

This Message Is From an External Sender

This message came from outside your organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

[Report Suspicious](#)

Dear Mr. Jarrett.

It appears all the construction work is being done on County or private property. If any work is done on State Highways (Honoapiilani Highway), a permit is required.

Thank you,
Joe Krueger

RICHARD T. BISSEN, JR.
Mayor

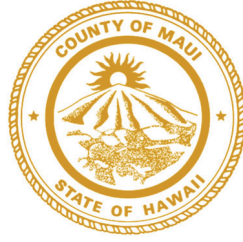
SHAYNE R. AGAWA, P.E.
Director

Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation
Division

Environmental Protection &
Sustainability Division



COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

April 11, 2025

Joseph K. Krueger
Highways Division – Maui District
Hawai‘i Department of Transportation
650 Palapala Drive
Kahului, HI 96732
Email: joseph.k.krueger@hawaii.gov

Dear Mr. Krueger:

**SUBJECT: RESPONSE TO COMMENTS ON PRE-ASSESSMENT CONSULTATION
FOR DRAFT ENVIRONMENTAL ASSESSMENT
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
WAHIKULI, LAHAINA, ISLAND OF MAUI**

Thank you for your response dated December 12, 2024 regarding the pre-assessment consultation for the Draft Environmental Assessment (EA) for the subject project.

The Project Area is located mauka, east, of Honoapi‘ilani Highway, State Route 30. No work is planned on State Highways.

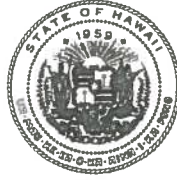
We appreciate your participation in the EA review process. We will notify you when the Draft EA is published for comment in *The Environmental Notice* and on EPA’s website. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecovers.org/>. Should you have any questions please contact the design consultant (AECOM) by email at WahikuliSewerEA@aecom.com.

Sincerely,

DN: cn=Shayne R. Agawa, o=Director of Dept.
of Environmental Management, ou=County of
Maui, email=shayne.agawa@co.maui.hi.us,
c=US
Date: 2025.04.11 13:39:23 -10'00'

Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA



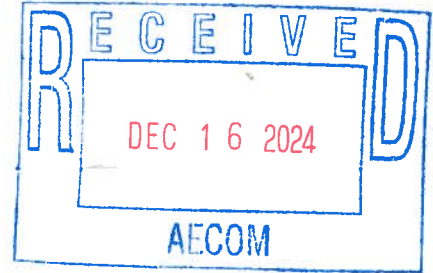
KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

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

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

(P)24.244

DEC 13 2024



Jarrett Brown
AECOM
1001 Bishop Street, Suite 1600
Honolulu, Hawaii 96813

Dear Jarrett Brown:

Subject: Pre-Assessment Consultation
Wahikuli Subdivision Gravity Sewer System Environmental Assessment
Lahaina, Maui, Hawaii

Thank you for the opportunity to comment on the subject project. We have no comments to offer at this time as the proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities.

If you have any questions, your staff may call Dora Choy-Johnson of the Planning Branch at (808) 586-0488.

Sincerely,

A blue ink signature of Gordon S. Wood.

GORDON S. WOOD
Public Works Administrator

DC:sn

RICHARD T. BISSEN, JR.
Mayor

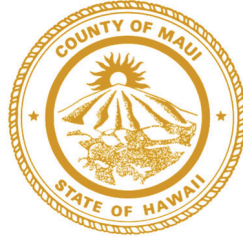
SHAYNE R. AGAWA, P.E.
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Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation
Division

Environmental Protection &
Sustainability Division



COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

April 11, 2025

Gordon S. Wood
Public Works Administrator
State of Hawai'i Department of Accounting and General Services
P.O. Box 119
Honolulu, HI 96810-0119

Dear Mr. Wood:

**SUBJECT: RESPONSE TO COMMENTS ON PRE-ASSESSMENT CONSULTATION
FOR DRAFT ENVIRONMENTAL ASSESSMENT
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
WAHIKULI, LAHAINA, ISLAND OF MAUI**

Thank you for your response dated December 13, 2024 regarding the pre-assessment consultation for the Draft Environmental Assessment (EA) for the subject project.

Acknowledged.

We appreciate your participation in the EA review process. We will notify you when the Draft EA is published for comment in *The Environmental Notice* and on EPA's website. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecovers.org/>. Should you have any questions please contact the design consultant (AECOM) by email at WahikuliSewerEA@aecom.com.

Sincerely,

DN: cn=Shayne R. Agawa, o=Director of Dept. of
Environmental Management, ou=County of Maui,
email=shayne.agawa@co.maui.hi.us, c=US
Date: 2025.04.11 15:52:39 -10'00'

Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

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

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



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

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

P.O. BOX 621
HONOLULU, HAWAII 96809

November 12, 2024

MEMORANDUM

FROM: **DLNR Agencies:**
 Div. of Aquatic Resources (kendall.l.tucker@hawaii.gov)
 Div. of Boating & Ocean Recreation
 Engineering Division (DLNR.ENGR@hawaii.gov)
 Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
 Div. of State Parks
 Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
 Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
 Land Division – Maui District (dlnr.land.maui@hawaii.gov)
 Aha Moku Advisory Committee (leimana.k.damate@hawaii.gov)

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

SUBJECT: Pre-Assessment Consultation for the **Wahikuli Subdivision Gravity Sewer System** Environmental Assessment

LOCATION: Wahikuli, Lahaina, Island of Maui; TMKs: (2) 4-5-014:Various; (2) 4-5-027:Various; and (2) 4-5-028:Various

APPLICANT: County of Maui, Department of Environmental Management

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **November 27, 2024**.

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.

BRIEF COMMENTS:

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

Signed: *JDO*
 Print Name: Jason D. Omick, Wildlife Program Manager
 Division: Forestry and Wildlife
 Date: Jan 8, 2025

Attachments
cc: Central File

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

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA ĀINA



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

RYAN K.P. KANAKA'OLE
FIRST DEPUTY

CIARA W.K. KAHANE
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 | KA MOKU'ĀINA 'O HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA

DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

January 8, 2025

Log no. 4819

MEMORANDUM

TO: RUSSELL Y. TSUJI, Administrator
Land Division

FROM: JASON D. OMICK, Wildlife Program Manager
Division of Forestry and Wildlife

SUBJECT: Pre-Assessment Consultation for the Wahikuli Subdivision Gravity Sewer System Environmental Assessment; Wahikuli, Lahaina, Island of Maui.

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your pre-assessment consultation request for the proposed Wahikuli Subdivision Gravity Sewer System project in Wahikuli, Lahaina, on the island of Maui, within TMKs (2) 4-5-014: Various, (2) 4-5-027: Various, and (2) 4-5-028: Various. The County of Maui and EPA are preparing a joint Environmental Assessment for this project which proposes a new gravity sewer system for the Wahikuli subdivision, north of Lahaina Town, on approximately 231 properties zoned for single-family use and currently serviced by cesspools and septic systems. Providing a sewer system for this subdivision will eliminate environmental impacts from cesspools and leaking septic systems and will provide a system resilient to natural disasters. DOFAW provides the following comments regarding the potential for the proposed work to affect listed species in the vicinity of the project area.

The State listed 'ōpe'ape'a or Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) could potentially occur at or in the vicinity of the project and may roost in nearby trees. Any required site clearing should be timed to avoid disturbance to bats during their birthing and pup rearing season (June 1 through September 15). During this period woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed. Barbed wire should also be avoided for any construction because bats can become ensnared and killed by such fencing material during flight.

Artificial lighting can adversely impact seabirds that may pass through the area at night by causing them to become disoriented. This disorientation can result in their collision with manmade structures or the grounding of birds. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season, from September 15 through December 15, when young seabirds make their maiden voyage to sea. If nighttime construction is required during the seabird fledging season, we recommend lights used be fully shielded to minimize the attraction of seabirds and a qualified biologist be present at the project site to monitor and assess the risk of seabirds being attracted or grounded due to the lighting. If seabirds are seen circling around the area, lights should then be turned off. If a downed seabird is detected, please follow DOFAW's recommended response protocol by visiting <https://dlnr.hawaii.gov/wildlife/seabird-fallout-season/>

Permanent lighting also poses a risk of seabird attraction, and as such should be minimized or eliminated to protect seabird flyways and preserve the night sky. For illustrations and guidance related to seabird-friendly light styles that also protect seabirds and the dark starry skies of Hawai'i please visit <https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf>.

The State endangered 'Īlio holo i ka uaua or Hawaiian monk seal (*Monachus schauinslandi*), threatened honu or green sea turtle (*Chelonia mydas*), and state endangered honu'ea or Hawksbill sea turtle (*Eretmochelys imbricata*) could potentially nest or haul out onshore within the vicinity of the proposed project site. Nesting season for honu is April through December, nesting season for honu'ea is May through December, and 'Īlio holo i ka uaua can give birth to pups all year round. If any of these species is detected within 100 feet (30 meters) of the project area, all nearby construction operations should cease and not continue until the focal animal has departed the area on its own accord.

The endemic pueo or Hawaiian short-eared owl (*Asio flammeus sandwichensis*) could potentially nest in the project area. Pueo nest on the ground and active nests have been found year-round. Before any potential vegetative alteration, especially ground-based disturbance, we recommend that line transect surveys are conducted during crepuscular hours through the project area. If a pueo nest is discovered, a minimum buffer distance of 100 meters from the nest should be established until chicks are capable of flight.

The project area is within the range of the State listed Blackburn's Sphinx Moth (*Manduca blackburni*) or BSM. Larvae of BSM feed on many nonnative hostplants, which includes tree tobacco (*Nicotiana glauca*), that grow in disturbed soil. We recommend contacting the Maui DOFAW office at (808) 984-8100 for further information about where BSM may be present and whether a vegetation survey should be conducted to determine the presence of plants preferred by BSM. DOFAW recommends removing plants less than one meter in height or during the dry season to avoid harm to BSM. If you intend to either remove tree tobacco over one meter in height or to disturb the ground around or within several meters of these plants, they must be

thoroughly inspected by a qualified entomologist for the presence of BSM eggs and larvae.

We recommend that Best Management Practices are employed during and after construction to contain any soils and sediment with the purpose of preventing damage to near-shore waters and marine ecosystems.

Avoid importing soil or other plant material from off-island. Soil and plant material may contain fungi (e.g., Rapid 'Ōhi'a Death) and other pathogens that could harm our native species and ecosystems. We recommend consulting the Hawai'i Interagency Biosecurity Plan at <http://dlnr.hawaii.gov/hisc/plans/hibp/> in planning, design, and construction of the project.

DOFAW recommends using native plant species for landscaping that are appropriate for the area, i.e., plants for which climate conditions are suitable for them to thrive, plants that historically occurred there, etc. Do not plant invasive species. DOFAW recommends referring to www.plantpono.org for guidance on the selection and evaluation of landscaping plants and to determine the potential invasiveness of plants proposed for use in the project.

DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain detrimental fungal pathogens (e.g., Rapid 'Ōhi'a Death), vertebrate and invertebrate pests (e.g., coqui frogs, little fire ants, etc.), or invasive plant parts (e.g., miconia, mullein, etc.) that could harm our native species and ecosystems. We recommend consulting the Maui Invasive Species Committee (MISC) at (808) 573-6472 to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

The invasive coconut rhinoceros beetle (CRB) or *Oryctes rhinoceros* is found on the islands of O'ahu, Hawai'i Island, Maui and Kaua'i. On July 1, 2022, the Hawai'i Department of Agriculture (HDOA) approved Plant Quarantine Interim Rule 22-1. This rule restricts the movement of CRB-host material within or to and from the island of O'ahu, which is defined as the Quarantine Area. Regulated material (host material or host plants) is considered a risk for potential CRB infestation. Host material for the beetle specifically includes (a) entire dead trees, (b) mulch, compost, trimmings, fruit and vegetative scraps, and (c) decaying stumps. CRB host plants include the live palm plants in the following genera: *Washingtonia*, *Livistona*, and *Pritchardia* (all commonly known as fan palms), *Cocos* (coconut palms), *Phoenix* (date palms), and *Roystonea* (royal palms). When such material or these specific plants are moved there is a risk of spreading CRB because they may contain CRB in any life stage. For more information regarding CRB, please visit <https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/coconut-rhinoceros-beetle/>.

DOFAW is concerned about impacts to vulnerable birds from nonnative predators such as cats, rodents, and mongooses. Cats prey on native birds, including State-listed endangered waterbirds, seabirds, and forest birds. Predation is instinctive and means that even well-fed cats will hunt and kill wildlife. We recommend taking action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles. No feeding of feral cats should occur within the project area.

Due to the risk of wildfire to listed species, we recommend coordinating with the Hawai'i Wildlife Management Organization at (808) 850-0900 or admin@hawaiiwildfire.org, on how wildfire prevention can be addressed in the project area. When engaging in activities that have a high risk of starting a wildfire (i.e. welding in grass), it is recommended that you:

- Wet down the area before starting your task,
- Continuously wet down the area as needed,
- Have a fire extinguisher on hand, and
- In the event that your vision is impaired, (i.e. welding goggles) have a spotter to watch for fire starts.

We appreciate your efforts to work with our office for the conservation of our native species. These comments are general guidelines and should not be considered comprehensive for this site or project. It is the responsibility of the applicant to do their own due diligence to avoid any negative environmental impacts. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Kelli Yamaguchi, Protected Species Habitat Conservation Planning Associate via email at kelli.yamaguchi.researcher@hawaii.gov.

Sincerely,



JASON D. OMICK
Wildlife Program Manager

RICHARD T. BISSEN, JR.
Mayor

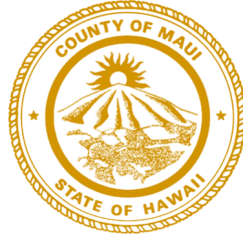
SHAYNE R. AGAWA, P.E.
Director

Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation
Division

Environmental Protection &
Sustainability Division



**COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT**

2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

April 11, 2025

Jason D. Omick
Wildlife Program Manager
Division of Forestry and Wildlife
State of Hawai'i Department of Land and Natural Resources
1151 Punchbowl Street, Room 325
Honolulu, HI 96813

Dear Mr. Omick:

**SUBJECT: RESPONSE TO COMMENTS ON PRE-ASSESSMENT CONSULTATION
FOR DRAFT ENVIRONMENTAL ASSESSMENT
WAHIKULI SUBDIVISION GRAVITY SEWER SYSTEM
WAHIKULI, LAHAINA, ISLAND OF MAUI**

Thank you for your response dated January 8, 2025 (Log No. 4819) regarding the pre-assessment consultation for the Draft Environmental Assessment (EA) for the subject project.

Your recommended measures for the avoidance and minimization of potential impacts to the State listed Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*), Hawaiian seabirds, State endangered 'īlio holo i ka uaua or Hawaiian monk seal (*Monachus schauinslandi*), threatened honu or green sea turtle (*Chelonia mydas*), and state endangered honu'ea or Hawksbill sea turtle (*Eretmochelys imbricata*), the endemic pueo or Hawaiian short-eared owl (*Asio flammeus sandwichensis*), and the State listed Blackburn's Sphinx Moth (*Manduca blackburni*), as well as your guidance regarding invasive species and employment of Best Management Practices during and after construction to contain any soils and sediment, will be incorporated into the Draft EA. Your letter and this response will be reproduced and included in the forthcoming Draft and Final EA.

We appreciate your participation in the EA review process. We will notify you when the Draft EA is published for comment in *The Environmental Notice* and on EPA's website. Also, project updates will be posted on the Maui Recovers website: <https://www.mauirecovers.org/>. Should you have any questions please contact the design consultant (AECOM) by email at WahikuliSewerEA@aecom.com.

Jason D. Omick
April 11, 2025
Page 2

Sincerely,



DN: cn=Shayne R. Agawa, o=Director of Dept.
of Environmental Management, ou=County of
Maui, email=shayne.agawa@co.maui.hi.us,
c=US
Date: 2025.04.11 13:40:09 -10'00'

Shayne R. Agawa, P.E.
Director of Environmental Management
County of Maui

aecom.com