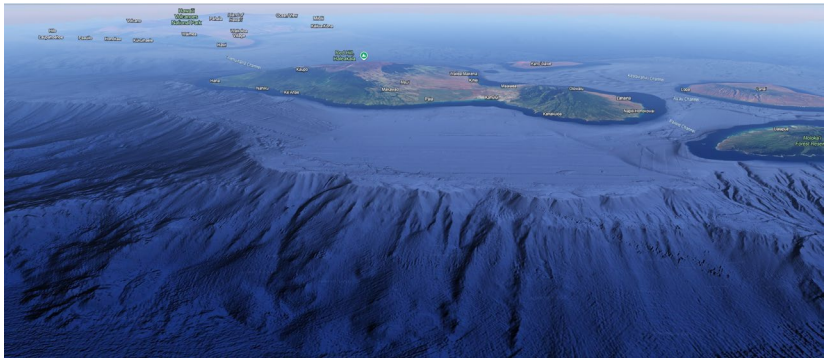
County of Maui Department of Water Supply

Petition to Set Instream Flow Standards

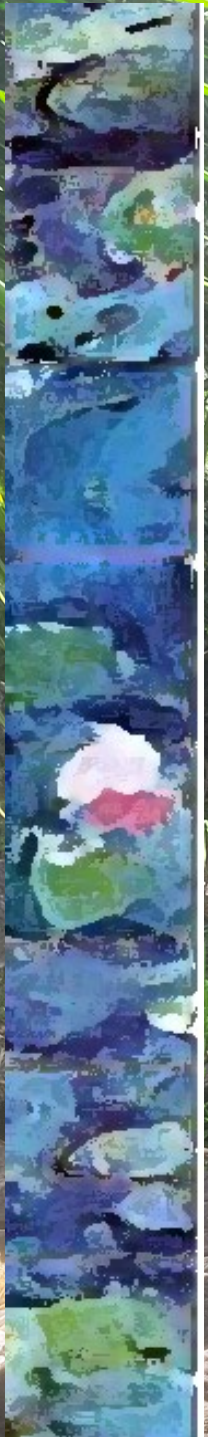
Dated January 10, 2025

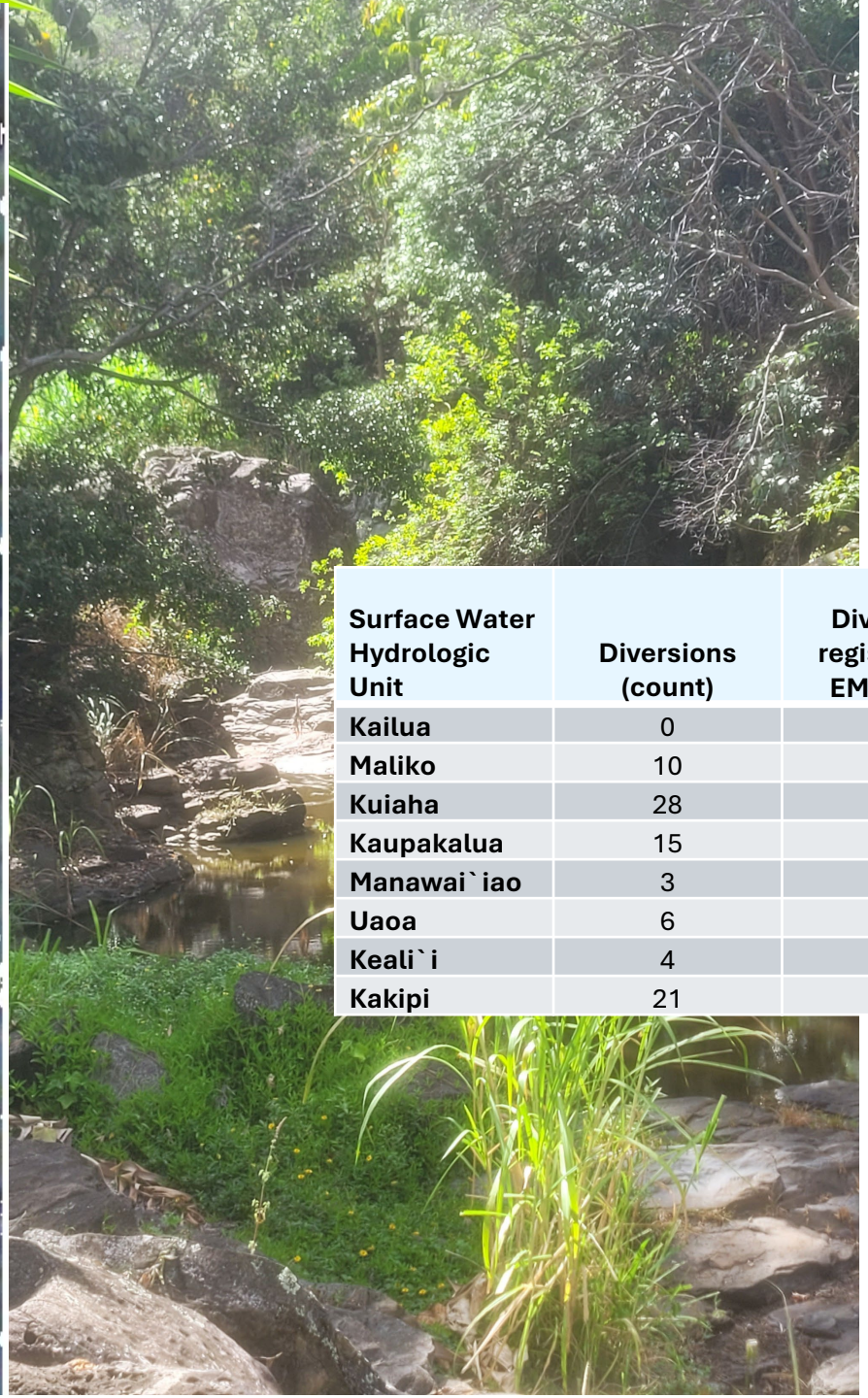


Presented to Haiku Community Association

August 13, 2025

Criteria Considered in Setting Instream Flow Standards



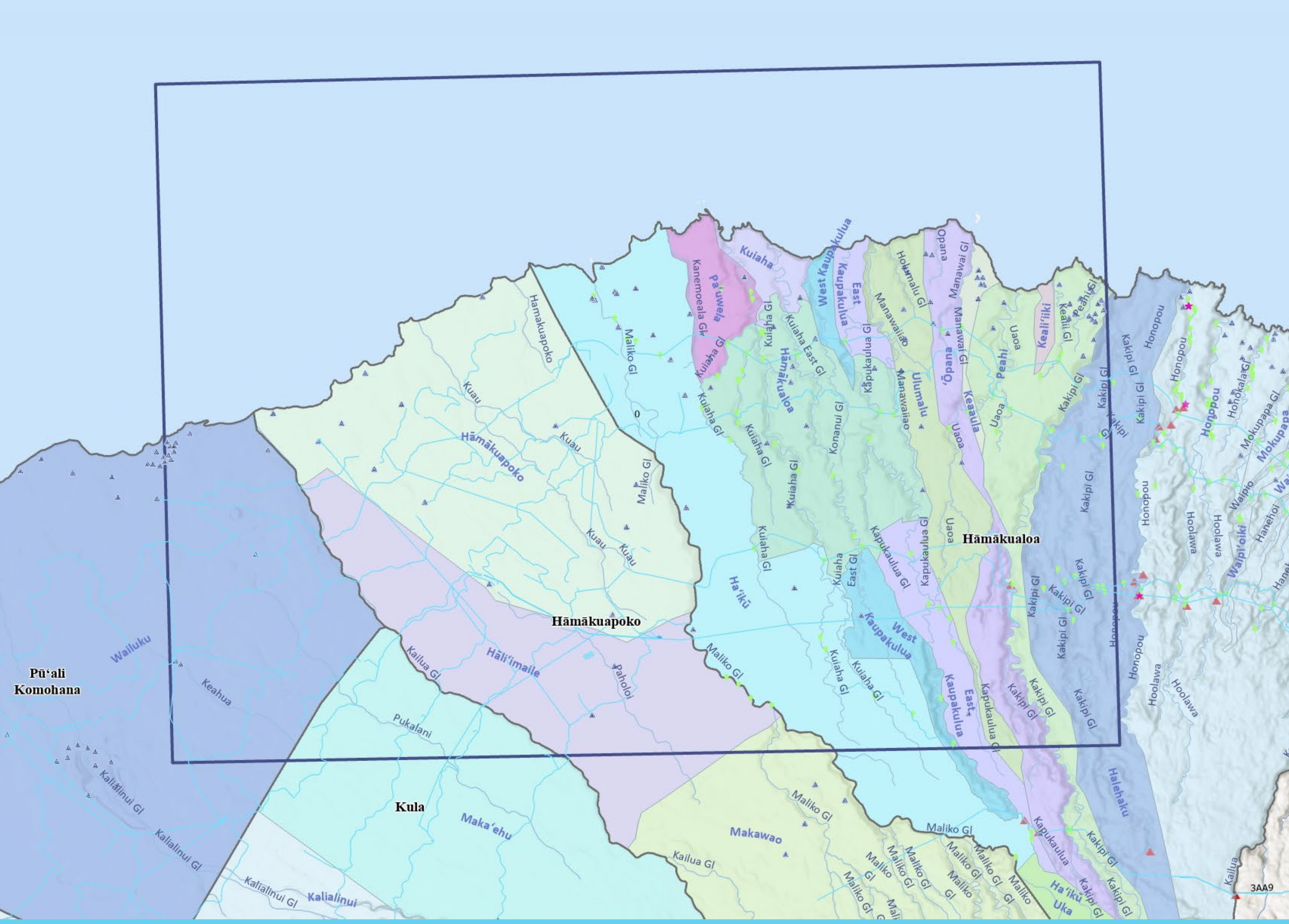


8 Hydrologic Units
43 Streams and tributaries
87 Diversions collectively

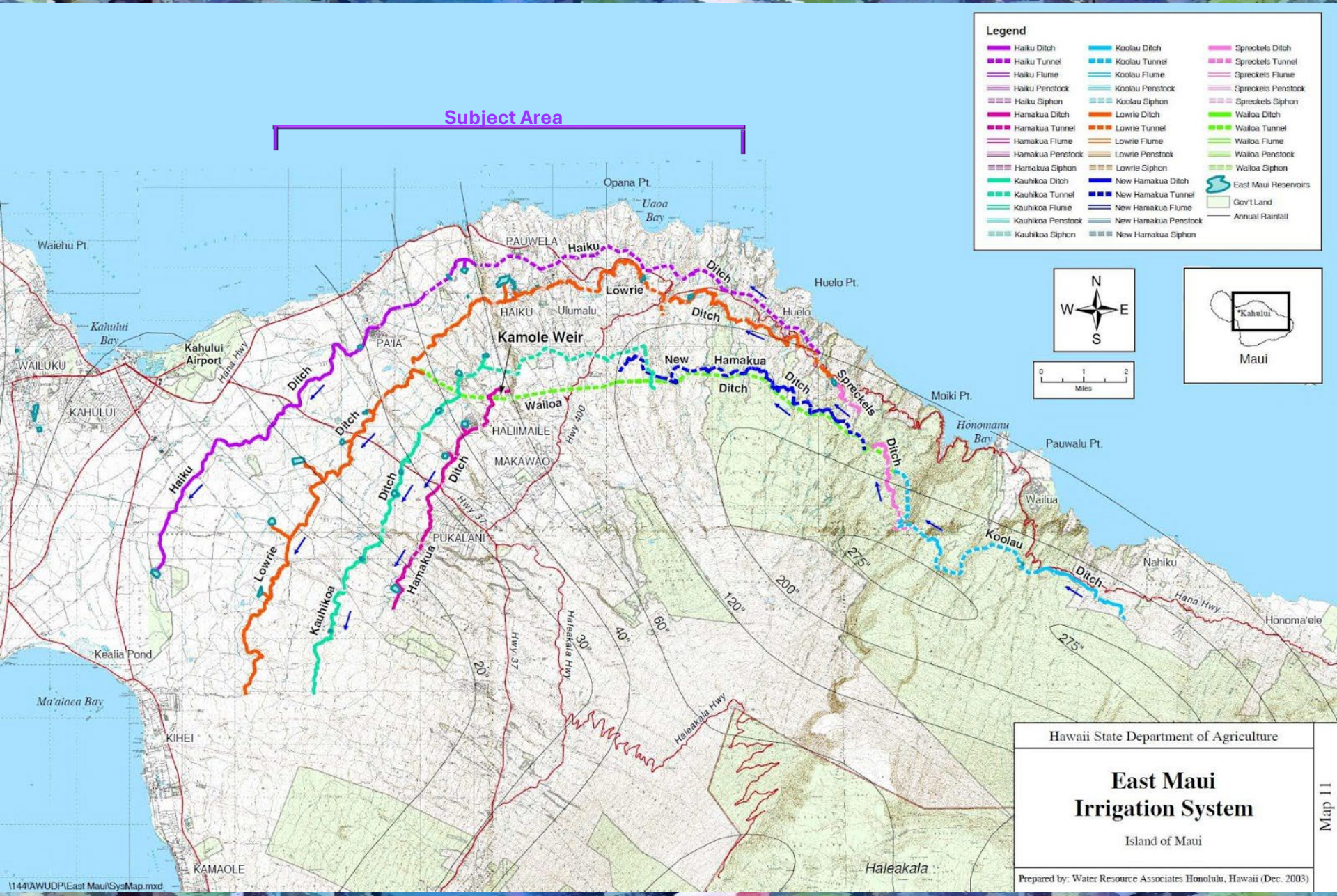
Surface Water Hydrologic Unit	Diversions (count)	Diversions registered to EMI or A&B	Notes
Kailua	0	0	
Maliko	10	3	
Kuiaha	28	11	
Kaupakalua	15	8	Plus 1 to Maui Land & Pine
Manawai`iao	3	3	
Uaoa	6	3	1 registration (private) formally relinquished
Keali`i	4	1	
Kakipi	21	20	Plus 1 to Maui Land & Pine

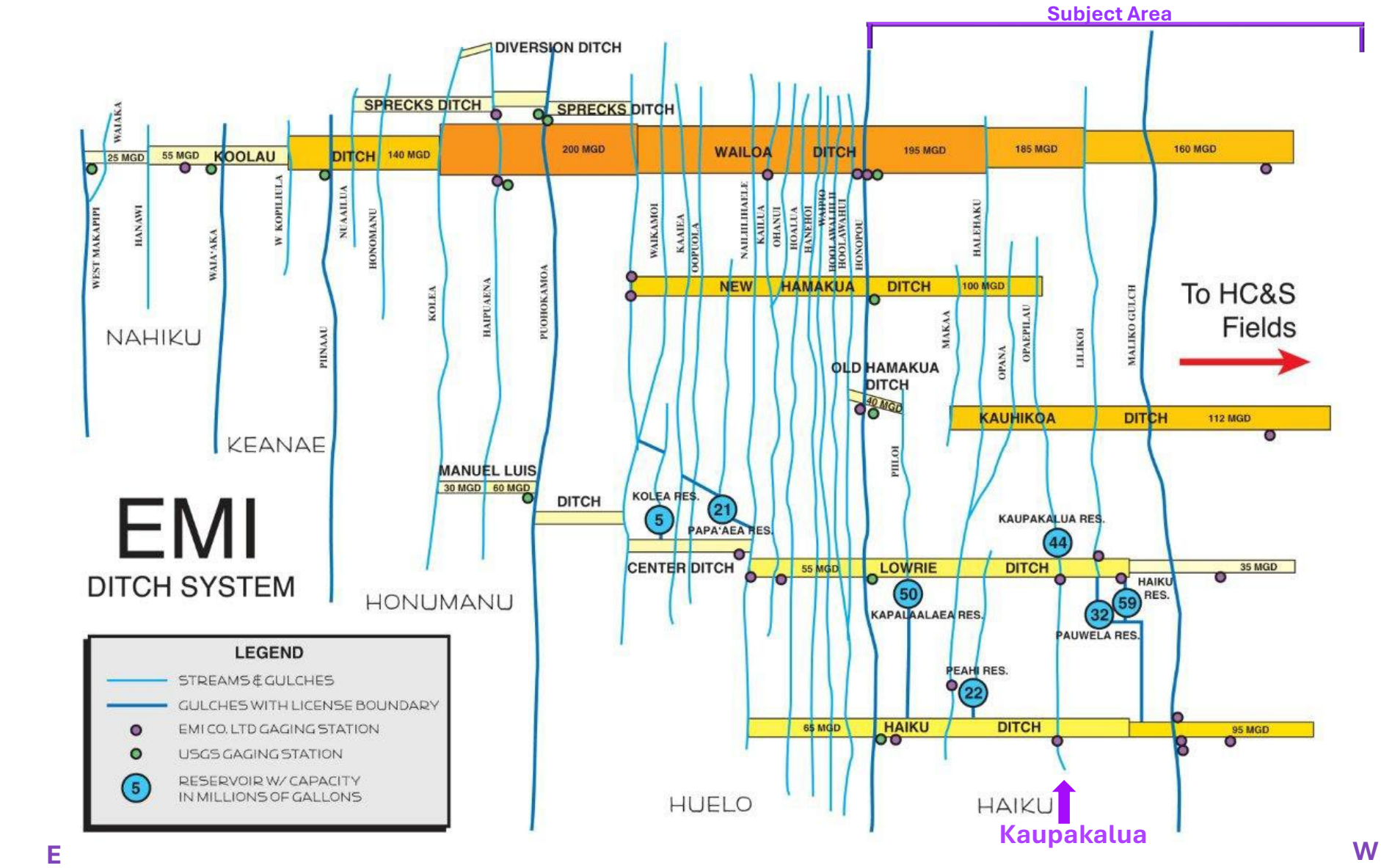
GW Aquifer Sector	Surface Water Hyd Unit Code	Surface Water Hydrologic Unit Name	Streams & Tributaries within Unit
Central	6026	Kailua Gulch	Kailua, Keahua, Pukalani
Ko`olau	6027	Maliko	Maliko, Kahakapao, Waiohiwi, `Alelele, Hāmākuapoko, Kanemoeala, Kuau, Paholoi
Ko`olau	6028	Kuiaha	(West) Kuiaha, East Kuiaha, Lilikoi, Pauwela, Ohia Huluhulunui, Kapua`aho`ohui
Ko`olau	6029	Kaupakulua	Kaupakalua, Awalau, `Ōpaepilau, Kalākohi, Kolealea, Konanui
Ko`olau	6030	Manawaiiao	Manawai`iao, Holumalu, Manawai, `Ōpāna, Ulumalu
Ko`olau	6031	Uaoa	Uaoa
Ko`olau	6032	Keali'I	Keali`i
Ko`olau	6033	Kakipi	Peahi, Kakipi, `Ōpāna, Koale, Palama, Halehaku, Maka`a, Kaulu, Waihe`e, Pi`iloi, Papalua, Kapala`alaea

Keokea
Waihou Spring Trail
Kahakapao Loop Trail
Maui Alpaca
NeverDry Divers
Kihei
Surfing Goat Dairy
Pukalani
Sacred Garden of Maliko
NorthShore Zipline - Maui
Halimaile
Fourth Marine Division Memorial Park
Road To Hana Mile Marker Zero (Route 360)
Haiku-Pauwela
Pe'ahi Jaws Surf Break
Wiliama Ka'uhane Ka'aimoku-Ah Chan...
Holomalu Gulch
Kapuaraaka
East Kulaha Gulch
Kapukaulua Point
Kuiaha Bay
Pauwela Point
Kanemoeala Gulch
Puhala Bay
Papanui O Kane
Eleilei Bay
Kealii
Uaoa
Manawai
Opana
Ulumalu
Holomalu
Manawailao
Kaupakalua
Konanui
East Kuiaha
Kuiaha
Kanemoeala
Maliko



Hāmākuapoko
Hāmākualoa
Pū'ali Komohana
Kula
Wailuku
Hāli'imaile
Ha'ikū
Kuiaha
Pa'uwela
West Kaupakulua
East Kaupakulua
Hāmākualoa
Ulumalu
Ōpana
Keaaula
Peahi
Keali'iiki
Honopou
Waipi'oiki
Mokupapa
Halehaku
Ha'ikū Uka
Makawao
Maka'ehu
Kalialinui
Hāmākuapoko
Kuau
Hamakuapoko
Maliko Gl
Kanemoeala Gl
Kuiaha Gl
Kuiaha East Gl
Manawaiiao
Konanui Gl
Kapukaulua Gl
Kakipi Gl
Uaoa
Manawai Gl
Hoolawa
Honopou
Kailua Gl
Pukalani
Keahua
Paholoi
Kalialinui Gl
3AA9


Subject Area
Legend
Haiku Ditch
Haiku Tunnel
Haiku Flume
Haiku Penstock
Haiku Siphon
Hamakua Ditch
Hamakua Tunnel
Hamakua Flume
Hamakua Penstock
Hamakua Siphon
Kauhikoa Ditch
Kauhikoa Tunnel
Kauhikoa Flume
Kauhikoa Penstock
Kauhikoa Siphon
Koolau Ditch
Koolau Tunnel
Koolau Flume
Koolau Penstock
Koolau Siphon
Lowrie Ditch
Lowrie Tunnel
Lowrie Flume
Lowrie Penstock
Lowrie Siphon
New Hamakua Ditch
New Hamakua Tunnel
New Hamakua Flume
New Hamakua Penstock
New Hamakua Siphon
Spreckels Ditch
Spreckels Tunnel
Spreckels Flume
Spreckels Penstock
Spreckels Siphon
Wailoa Ditch
Wailoa Tunnel
Wailoa Flume
Wailoa Penstock
Wailoa Siphon
East Maui Reservoirs
Gov't Land
Annual Rainfall
N
W
E
S
0 1 2 Miles
Kahului
Maui
Opana Pt.
Uaoa Bay
Waiehu Pt.
PAUWELA
Haiku
Ditch
Lowrie
Huelo Pt.
Huelo
HAIKU
Ulumalu
Kahului Bay
Kahului Airport
Hana Hwy
PA'IA
Kamole Weir
WAILUKU
KAHULUI
New Hamakua Ditch
Spreckels Ditch
Moiki Pt.
Wailoa
HALIIMAILE
Hwy 400
Honomanu Bay
Pauwalu Pt.
MAKAWAO
Wailua
Koolau Ditch
PUKALANI
Hwy 37
Nahiku
Hana Hwy
Honoma'ele
Kealia Pond
Ma'alaea Bay
KIHEI
Haleakala Hwy
KAMAOLE
Haleakala
\144\AWUDP\East Maui\SysMap.mxd
Hawaii State Department of Agriculture
East Maui Irrigation System
Island of Maui
Prepared by: Water Resource Associates Honolulu, Hawaii (Dec. 2003)
Map 11


Subject Area
DIVERSION DITCH
SPRECKS DITCH
SPRECKS DITCH
25 MGD
55 MGD
KOOLAU
DITCH
140 MGD
200 MGD
WAILOA
DITCH
195 MGD
185 MGD
160 MGD
WAIAKA
WEST MAKAPIPI
HANAWI
WAIA'AKA
W KOPILILULA
NUAAILUA
HONOMANU
KOLEA
HAIPUAENA
PUOHOKAMOA
WAIKAMOI
KAAIEA
OOPUOLA
NAILILIHAELE
KAILUA
OHANUI
HOALUA
HANEHOI
WAIPIKO
HOOLAWAHUI
HOOLAWAHUI
HONOPOU
HALEHAKU
NEW
HAMAKUA
DITCH
100 MGD
To HC&S
Fields
NAHIKU
PINAAU
MAKAA
OPANA
OPAEPILAU
LILIKOI
MALIKO GULCH
OLD HAMAKUA
DITCH
40 MGD
KAUHIKOA
DITCH
112 MGD
KEANAE
PILOI
MANUEL LUIS
30 MGD
60 MGD
DITCH
KOLEA RES.
5
21
PAPA'AEA RES.
KAUPAKALUA RES.
44
CENTER DITCH
55 MGD
LOWRIE
DITCH
35 MGD
HAIKU
RES.
50
KAPALAALAEA RES.
32
59
PAUWELA RES.
PEAHI RES.
22
EMI
DITCH SYSTEM
HONUMANU
65 MGD
HAIKU
DITCH
95 MGD
LEGEND
STREAMS & GULCHES
GULCHES WITH LICENSE BOUNDARY
EMI CO. LTD GAGING STATION
USGS GAGING STATION
5
RESERVOIR W/ CAPACITY
IN MILLIONS OF GALLONS
HUELO
HAIKU
Kaupakalua
E
W

Community Concerns

- Habitat of streams, near-shore waters, and land traversed by the streams
  - Changes to flows (climate change &/or increased use)
  - Feral animal damage
  - Mosquitos, invasive weeds, etc.
  - Drought
  - Degraded conditions
- Impacts on both T&C & Other Uses
  - Kalo
  - Herbs
  - `opae, `opihi, limu, other aquatic species
  - Crops, farming and permaculture
  - Recreation – swimming, hiking fishing, surfing, diving
  - Traditional practices & gathering
- Agriculture - Lack of water for irrigation, introduction of pests
- Impacts to Historic Sites
- Interaction of ground water withdrawals with streams &/or near-shore ecosystems

Maui Island Water Use and Development Plan

DRAFT

MARCH 2019

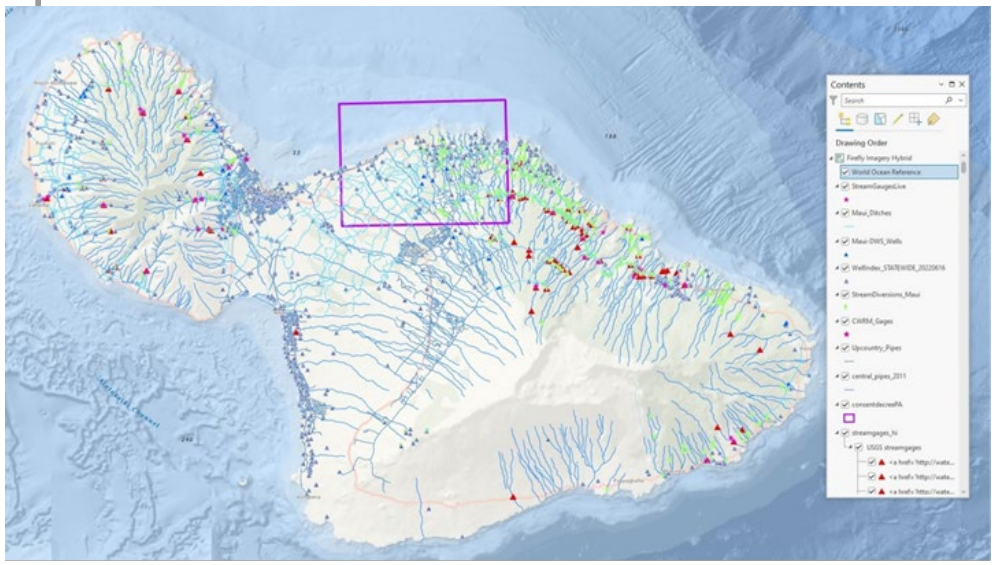
OLA NĀ MEA A PAU I KA WAI

By Water All Things Find Life

Prepared By:

Maui County Department of Water Supply

Water Use & Development Plan, Old Consent Decree, Etc.



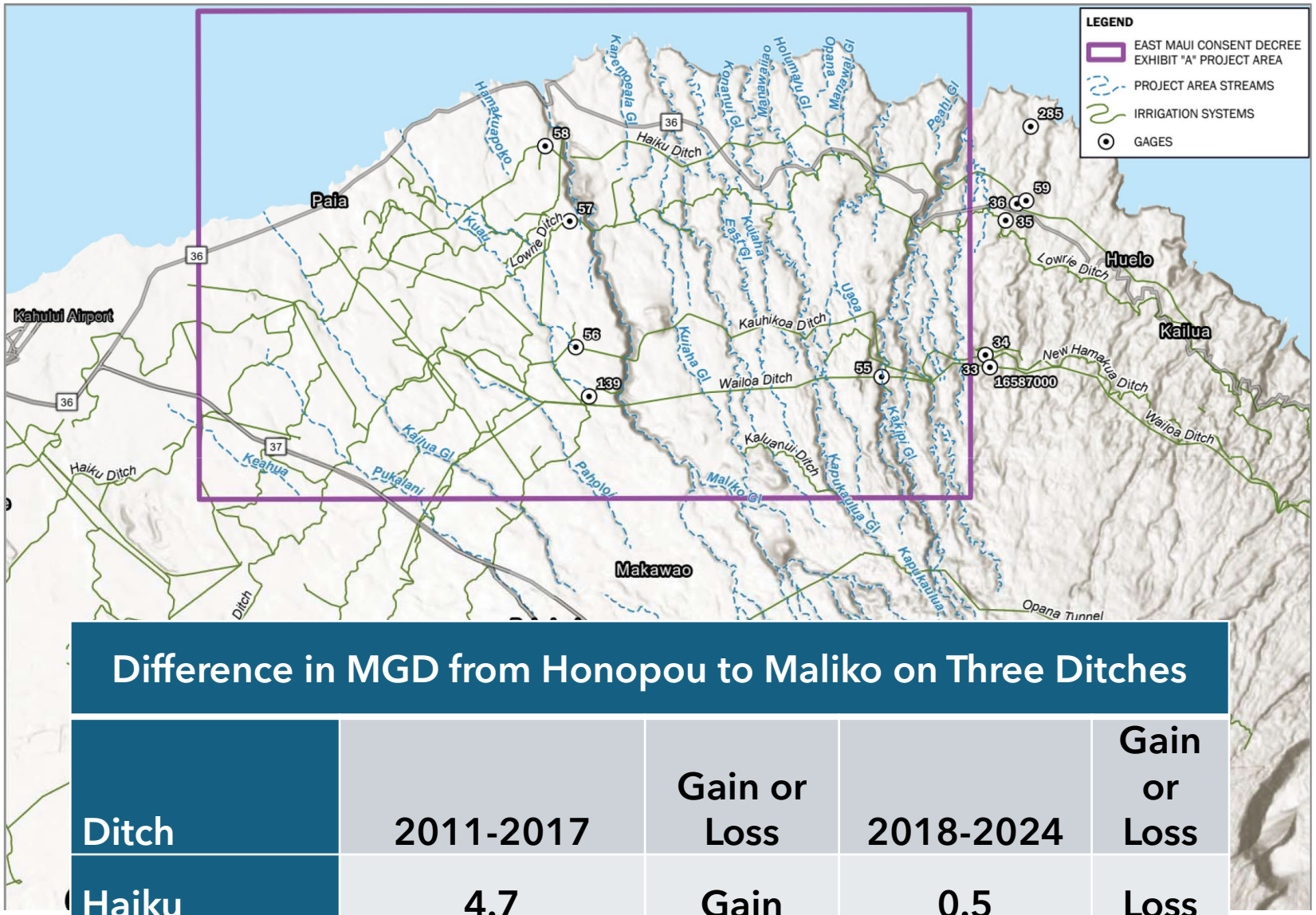
Consent Decree Area

Immediate Need – Adequate Information

The current interim instream flow standard (IFS) for these streams was established by way of Hawaii Administrative Rules (HAR) §13-169-44, which, in pertinent part, reads as follows:

Interim instream flow standard for East Maui. The Interim Instream Flow Standard for all streams on East Maui, as adopted by the commission on water resource management on June 15, 1988, shall be that amount of water flowing in each stream on the effective date of this standard, and as that flow may naturally vary throughout the year and from year to year without further amounts of water being diverted offstream through new or expanded diversions, and under the stream conditions existing on the effective date of the standard.

No studies were conducted. No flow estimates were attached.



Difference in MGD from Honopou to Maliko on Three Ditches

Ditch	2011-2017	Gain or Loss	2018-2024	Gain or Loss
Haiku	4.7	Gain	0.5	Loss
Lowrie	0.3	Loss	0.25	Gain
Kauhikoa	1.41	Gain	2.33	Loss

Haiku Ditch between Honopou & Maliko

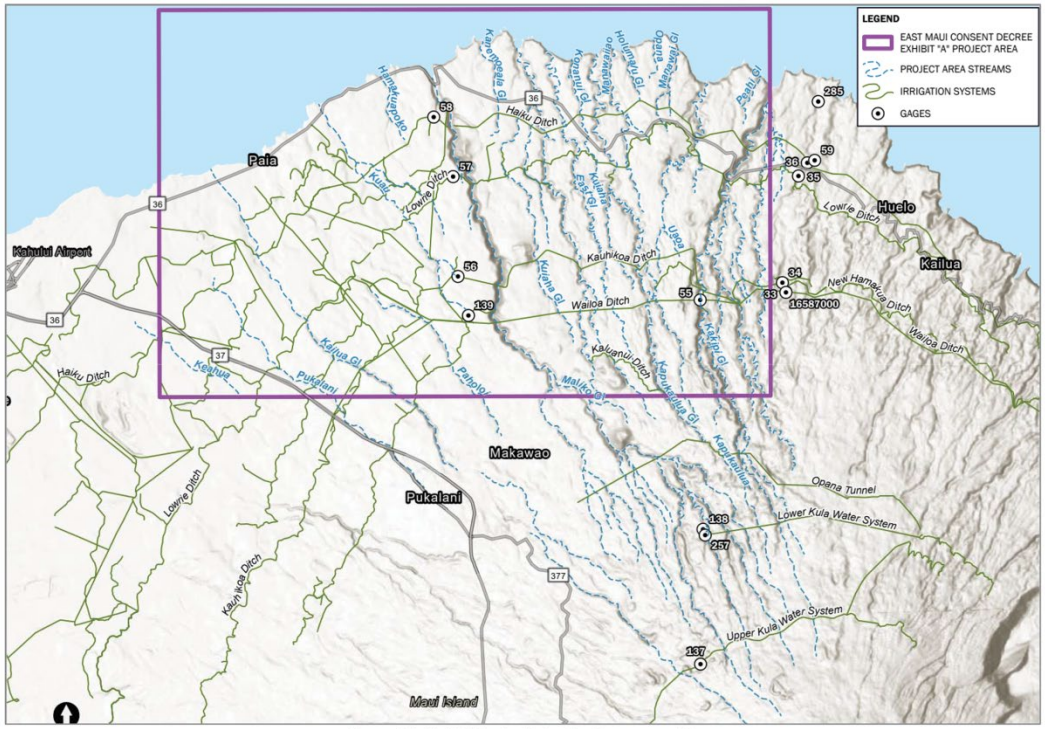


Figure 11. Ha'ikū Region Irrigation System and Gages

1.8.1 Ha'ikū Ditch flow analysis

Figure 12 shows monthly average flow volumes in Ha'ikū Ditch at Honopou and Māliko. From 2011 through 2017, Ha'ikū Ditch flows averaged 4.55 mgd at Honopou and 9.56 mgd at Māliko. After 2017, very little water has been recorded in Ha'ikū Ditch.

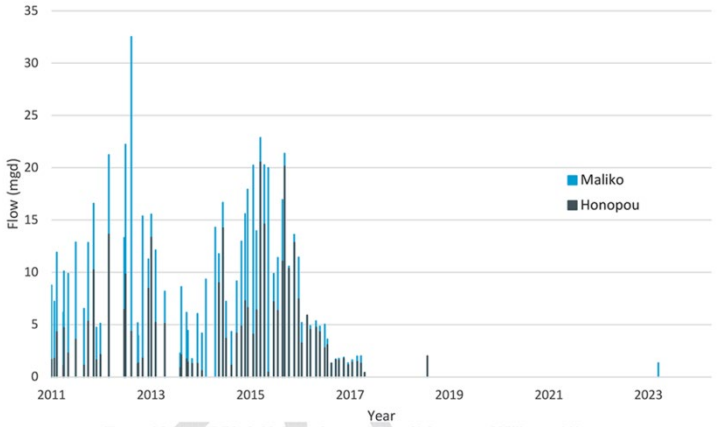


Figure 12. Ha'ikū Ditch Monthly Average Flow Volumes at Māliko and Honopou

Figure 12 shows the difference in Ha'ikū Ditch flow between Honopou and Māliko from 2011 to 2024. The difference in volume of Ha'ikū Ditch flow between the Honopou and Māliko gage locations is one indicator of how much water is being diverted from streams. From 2011 through 2017, the Ha'ikū Ditch gained an average of 4.7 mgd of surface water as it crossed the Ha'ikū region. From 2018 through the first half of 2024, Ha'ikū Ditch lost an average of 0.05 mgd as it crossed the Ha'ikū region. Notable are a 1.74 mgd monthly average loss in September 2018 and a monthly 1.34 mgd average gain in April 2023.

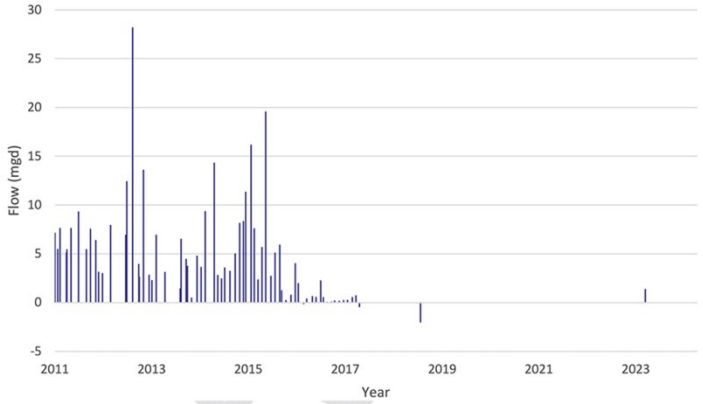


Figure 13. Difference in Ha'ikū Ditch flow from Honopou to Māliko

Lowrie Ditch between Honopou & Maliko

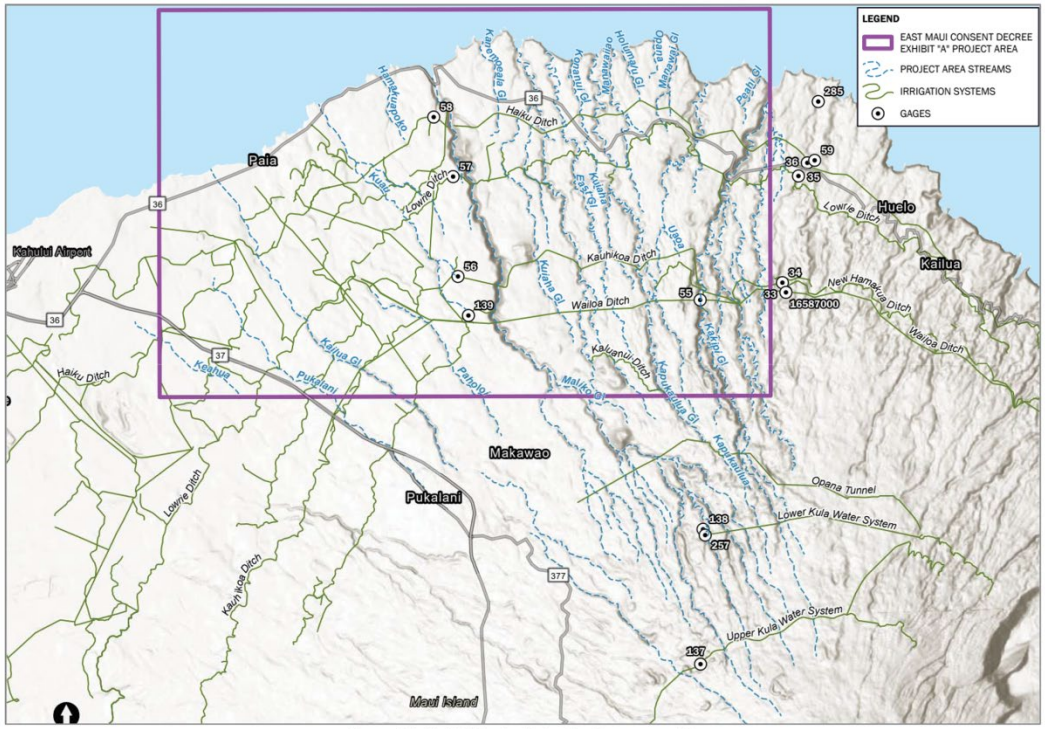


Figure 11. Ha'ikū Region Irrigation System and Gages

1.8.2 Lowrie Ditch flow analysis

Figure 14 shows Lowrie Ditch monthly average flow volumes at Honopou and Māliko from 2011 to 2024. From 2011 through 2017, an average of the monthly average volumes were 9.11 mgd at Honopou and 8.81 mgd at Māliko. From 2018 through the first half of 2024, average volumes were 1.26 at Honopou and 1.51 mgd at Māliko, representing a reduction in ditch flow of 82 to 86 percent as it crossed the Ha'ikū region.

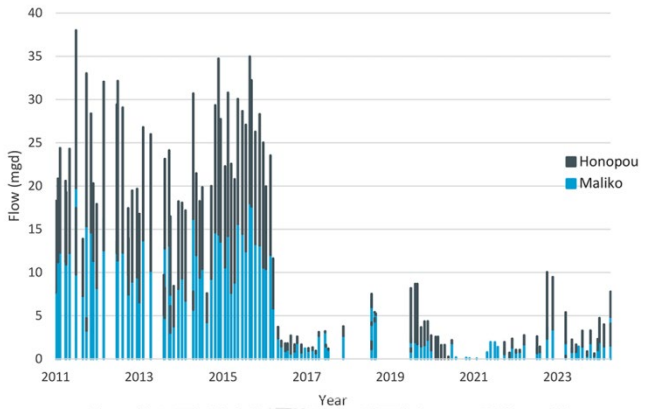


Figure 14. Lowrie Ditch Monthly Average Flow Volumes at Māliko and Honopou

Figure 15 shows the difference in monthly average Lowrie Ditch Flow between Honopou and Māliko from 2011 to 2023, calculated by subtracting the ditch flow volume at Honopou from the volume at Māliko. From 2011 through 2017, Lowrie Ditch lost an average of 0.3 mgd as it crossed the Ha'ikū region. From 2018 through the first half of 2024, Lowrie Ditch gained an average of 0.25 mgd as it crossed the Ha'ikū region.

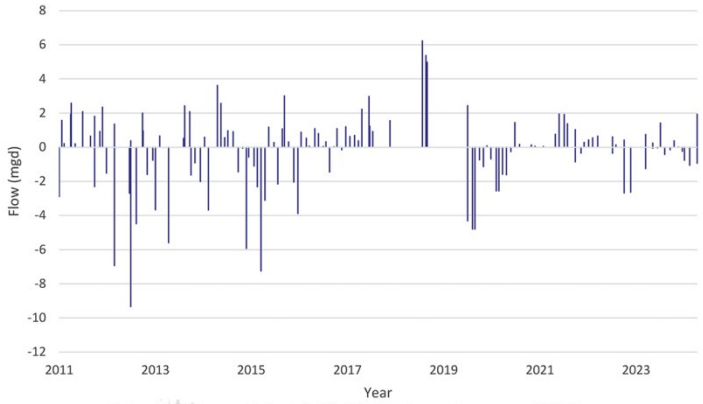


Figure 15. Difference in Lowrie Ditch Flow between Honopou and Māliko

Kauhikoa Ditch between Honopou & Maliko

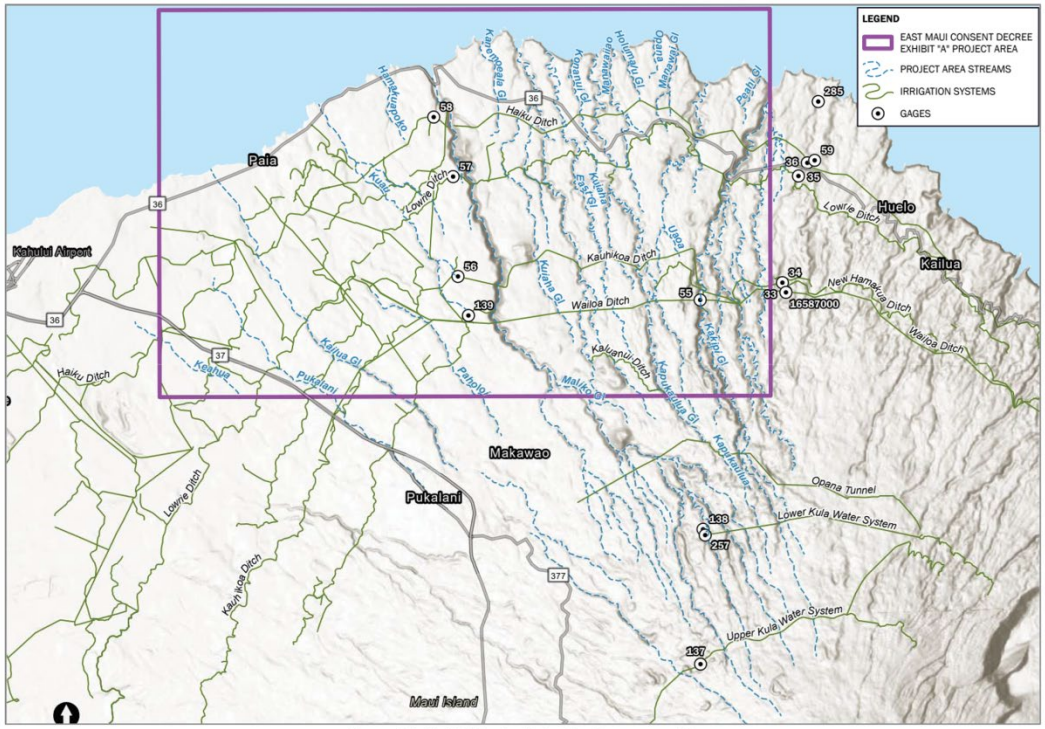


Figure 11. Ha'ikū Region Irrigation System and Gages

1.8.3 Kauhikoa Ditch flow analysis

Figure 16 shows monthly average flow volumes in Kauhikoa Ditch at Māliko and Honopou. From 2011 through 2017, an average of the monthly average volumes were 10.82 mgd at Honopou and 11.96 mgd at Māliko. From 2018 through the first half of 2024, average volumes were 2.58 mgd at Honopou and 0.24 mgd at Māliko, representing a reduction of 76 to 98 percent.

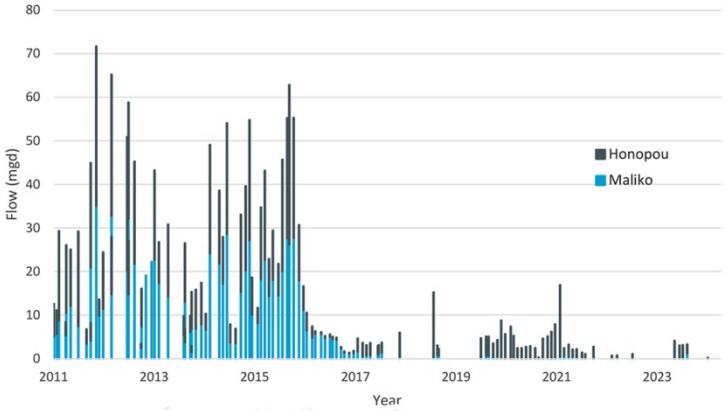


Figure 16. Kauhikoa Ditch Monthly Average Flow Volumes at Māliko and Honopou

Figure 17 shows the shows the difference in monthly average Kauhikoa Ditch Flow between Honopou and Māliko from 2011 to 2023, calculated by subtracting the ditch flow volume at Honopou from the volume at Māliko. From 2011 through 2017, Kauhikoa Ditch gained an average of 1.41 mgd as it crossed the Ha'ikū region. From 2018 through the first half of 2024, Kauhikoa Ditch lost an average of 2.33 mgd as it crossed the Ha'ikū region.

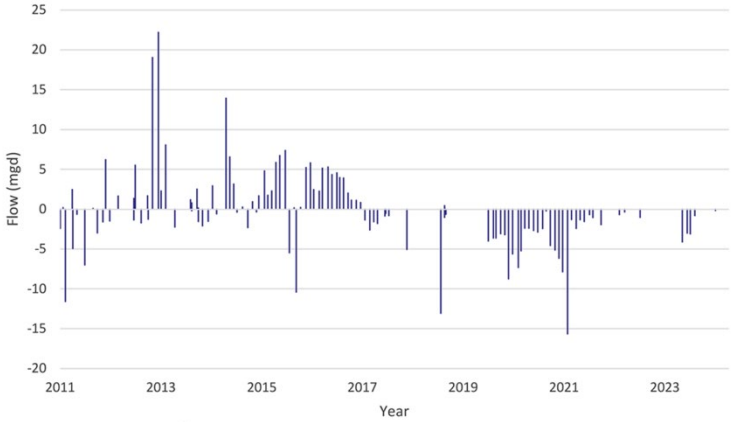


Figure 17. Difference in Kauhikoa Ditch Flow between Honopou and Māliko


Paia
Makawao
Pukalani
Kihei
Maui
Upper Nahiku
36
37
360
311
377

Table 4. Previous Sites in the vicinity of the project area.

Site Number	Name	Location	Condition	Source
50-50-06-60	-	Coastal bluff in E Kuiaha	Exists	Walker 1931
50-50-06-61	Heiau Kapulai O Menehune	Reportedly located inland at Kuoli in Opana	Destroyed	Statewide Inventory
50-50-06-62	Pahoa Heiau	Coast at Opana Point	Destroyed during pineapple cultivation	Statewide Inventory
50-50-06-63	Pu`uokaniau Heiau	C. 1 mile inland in Peahi	Destroyed during pineapple cultivation	Statewide Inventory
50-50-6-64	Mokahio Heiau	Keali'inui Gulch	Destroyed	Statewide Inventory
50-50-06-65	Ka`apahu Heiau	Kapiki Gulch, one-half mile inland	destroyed	Statewide Inventory
50-50-06-66	-	Inland of Pilale Bay in Halehaku	Reported this was partially destroyed	Statewide Inventory
50-50-06-67	Pi`ilani Heiau	Beach at Pilale Bay	Exists	Walker 1931 Statewide Inventory
50-50-06-68	Po`oho`olewa Heiau	Approximately 1/2 mile inland from Ho'olawa Bay	Partially destroyed by pineapple cultivation.	Walker 1931 Statewide Inventory
50-50-06-1221	Kaupakalua Agricultural Complex	East Kaupakalua Gulch approximately 1/2 miles inland.	Exists	Statewide Inventory
50-50-06-1223	Honopou Burial State Reserve	approximately 1/3 mile inland of Ho'olawa Bay	Exists	Statewide Inventory

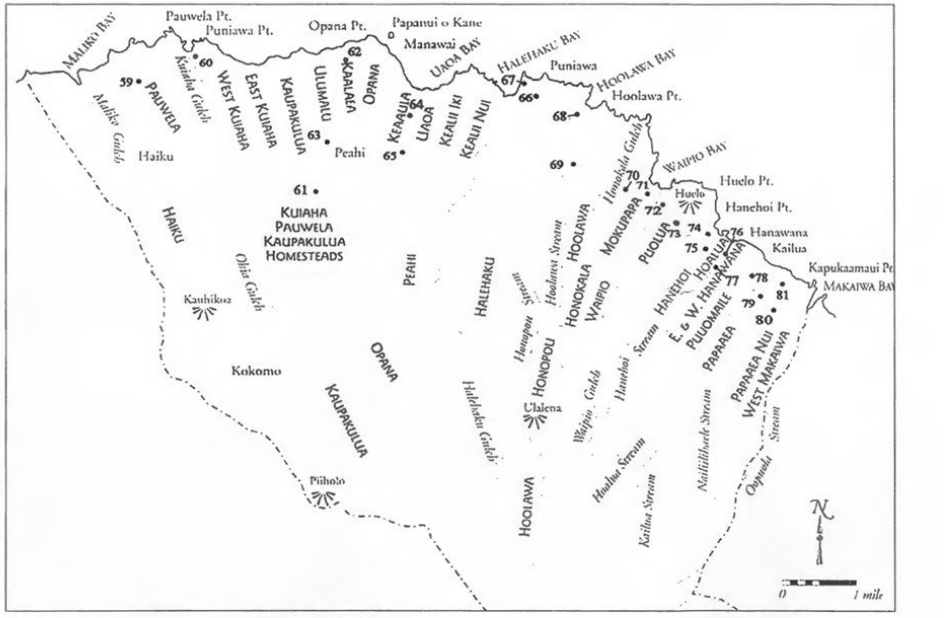


Figure 7. Heiau sites recorded by Walker in Hamakualoa (from Haun and Henry 2002 on a basemap from Sterling 1998).

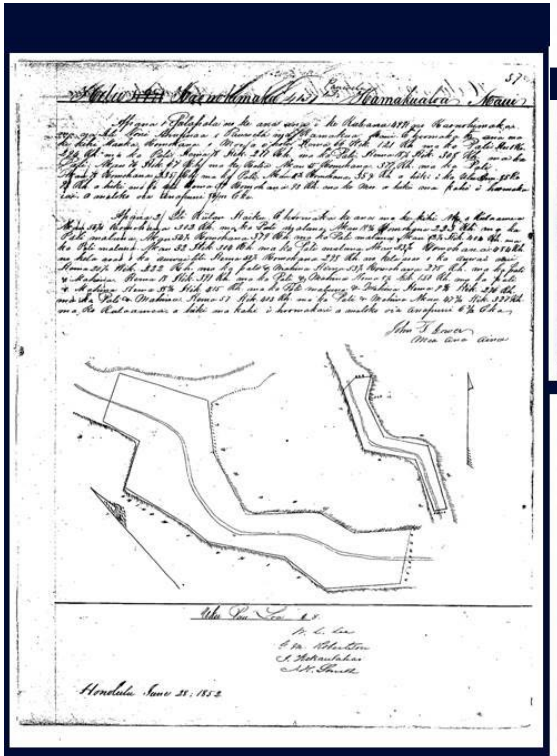


Figure 9. Heiau o Kepaa: aerial imagery shows a rectangular enclosure in the same location as the "Heiau o Kepaa" depicted on Dodge's 1879 Survey Map.

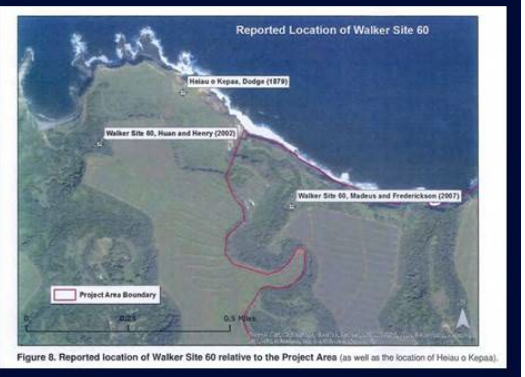
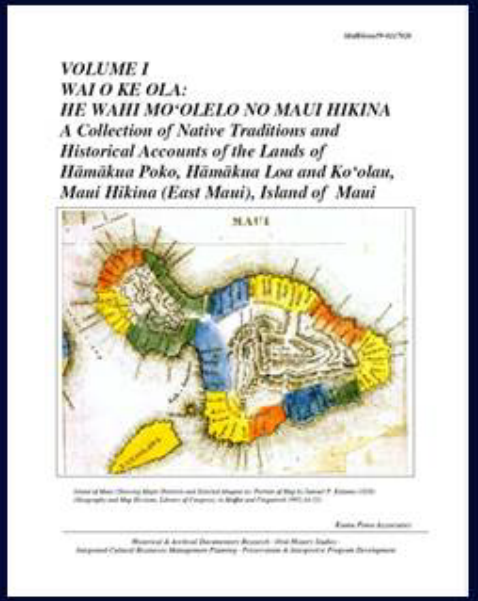


Figure 8. Reported location of Walker Site 60 relative to the Project Area (as well as the location of Heiau o Kepaa).

Claimant & Helu	Ahupuaa	Register Book And Page	Claim & Identified Uses	Disposition
Kapaa Helu 5419	Haiku	5:55	Claim: My claim is 12 uala patches, 7 loi kalo, and 1wauke patch. My claim is at Maliko, My residence is there also. Identified: Uala, Lo`i Kalo, Wauke	N/A = Not Awarded
Kapohaku Helu 4120	Maliko, Haiku	6:146	Claim: January 12, 1848 My kuleana is at Haiku, gotten from Kanohimaka. There are: 8 kihapai uala 2 kihapai wauke and 6 loi kalo at Haiku of Kahaleohu Identified: Uala, Wauke, Lo`I Kalo	See Testimony
Naeo Helu				
Kalin Helu				
Naala Helu5494B (seealso Helu6510YY)	Keaaulua	6:305	My kuleana is Keaula, Maliko isthe name of the ilii There are 15 lo`i kalo, several ulu trees, and one niu (coconut tree) 15 Lo`i Kalo, Ulu, Niu	See Testimony



Nome ka la i ka pohu o Maliko. The sun nibbles away at the calm of Maliko.
Nome na bipi ai weuweu o Kalanikahua. The cattle munch on the grasses of Kalanikahua.
He kahua holo nome na ke lio o Kaupakulua. Kaupakulua is the plain upon which the horses nibble.
Lua ole ka ua noho nome iluna o ka laau. There is nothing like the rains which seem to sit upon and nibble on the forest.
Hoolaau ka manu noho nome i ke kula o Haili. The birds continuously sit and nibble on the plain of Haili.
Ili iho la ke ao noho nome i ke kuahiwi. The clouds nudge up against, and settle as if nibbling away at the mountain.

We departed from Maliko, and ascended in the falling rains, and were met by Mr. Castle, the chief mill supervisor at Haiku...and then reached— Haiku.

Maliko 1868

We request CWRM to conduct an IFS assessment to

- Verify and ground-truth the current status of streams & diversions
- Characterize flows and habitat
- Initiate monitoring
- Establish IFS for streams in Haiku
- Provide guidance on restoration potential, ideally on a stream-by-stream prioritized basis, so that we can better direct resource protection & recovery investments
- What measures including and other than removal of diversions are necessary to restore flows?
- Impacts from stream restoration on off-stream users
- Guidance on ways to optimize withdrawals (ground and surface) so as to minimize adverse impacts
- Where streams are fed by perched water, would basal withdrawals be less likely to affect streams & near-shore waters?
- Consider Gingerich's 4 recommended measures to improve understanding
    - Continuous monitoring of selected streams & springs
    - Aquifer test in Honomanu basalt with observation wells parallel & perpendicular to volcanic dike orientation to determine conductivity of dike complex
    - Exploratory wells to confirm existence of unsaturated layer between upper and lower water tables
    - Geologic logging of all additional wells drilled

Koai`e Gulch

Ahupua'a:	Makaehu
Feature:	Stream
Comments:	Courses 10-15 of the Makaehu/Makawao boundary run mauka along Koaie ravine "to great spring of Kawaihou" (q.v.). Called "Kailua Gulch" (q.v.) on USGS Kilohana 1957 quad.
Lexicology:	Koai'e. PEM: koai'e (Acacia koaia) tree.
Source:	BC 27 (1:88); TM 2306.
Quadrangle:	50-11
North:	173,000
East:	628,300
Coordinates:	20.806109 / -156.288270
Catalog No.:	223.15.004

Kailua Stream

Ahupua'a:	Puu o Maile
Feature:	Stream
Comments:	Stream rises at 4140 ft. elevation, flows to sea.
Lexicology:	Kailua. PEM: two seas.
Source*:	USGS 1957.
Quadrangle:	50-06
North:	202,750
East:	653,800
Coordinates:	20.887830 / -156.213364
Catalog No.:	229.23.001

Kailua Heiau

Island:	Maui
Ahupua'a:	Kailua
Feature:	Heiau
Comments:	"Kailua Heiau, Walker Site 58. Near Kailua Gulch half a mile west of the Paia Road. Said to have been a platform 50 x 80 feet. Probably destroyed in cane." (Sterling) "Makawao, one-half mile west of Makawao-Wailuku road, about 80 x 50 ft., in size; its ruins yet to be seen." (Thrum)
Lexicology:	Kailua. PEM: two seas.
Source*:	Thrum 1908a:39; Sterling 1998:97.
Quadrangle:	50-05
Catalog No.:	223.20.001

* Information via UluKau.org

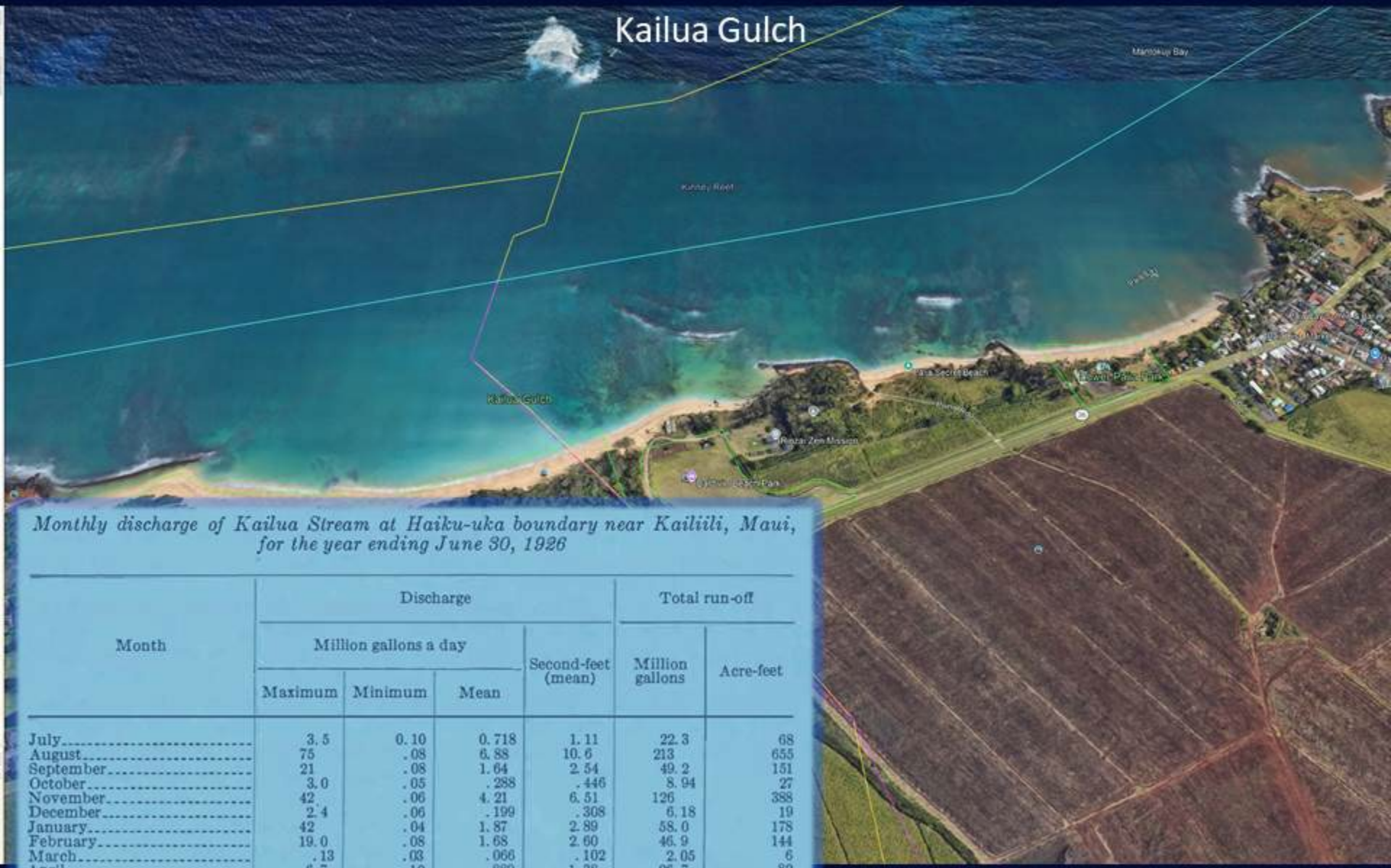
Kailua

Kailua Gulch	
Ahupua‘a:	Puu o Maile
Feature:	Stream
Comments:	Stream rises at 4140 ft. elevation, flows to sea.
Lexicology:	Kailua. PEM: two seas.
Source*:	USGS 1957.
Quadrangle:	50-06
	202,750
East:	653,800
Coordinates:	20.887830 / -156.213364
Catalog No.:	229.23.001

Koai` e Gulch	
Ahupua‘a:	Makaehu
Feature:	Stream
Comments:	Courses 10-15 of the Makaehu/Makawao boundary run mauka along Koai` e ravine "to great spring of Kawaihou" (q.v.). Called "Kailua Gulch" (q.v.) on USGS Kilohana 1957 quad.
Lexicology:	Koai‘e. PEM: koai‘e (Acacia koaia) tree.
Source:	BC 27 (1:88); TM 2306.
Quadrangle:	50-11
North:	173,000
East:	628,300
Coordinates:	20.806109 / -156.288270
Catalog No.:	223.15.004

Puu Nianiau	
Ahupua‘a:	Kalialinui
Feature:	Cone, boundary point
Comments:	Cinder cone in the Kula Volcanic Series. Elevation 6849 ft. North corner of Haleakala National Park.
Lexicology:	Pu` u Nianiau PEM: Peaceful Hill
Source*:	USGS 1957. Stearns & MacDonald 1942b.
Quadrangle:	50-06
	202,750
East:	653,800
Coordinates:	20.887830 / -156.213364
Catalog No.:	229.23.001

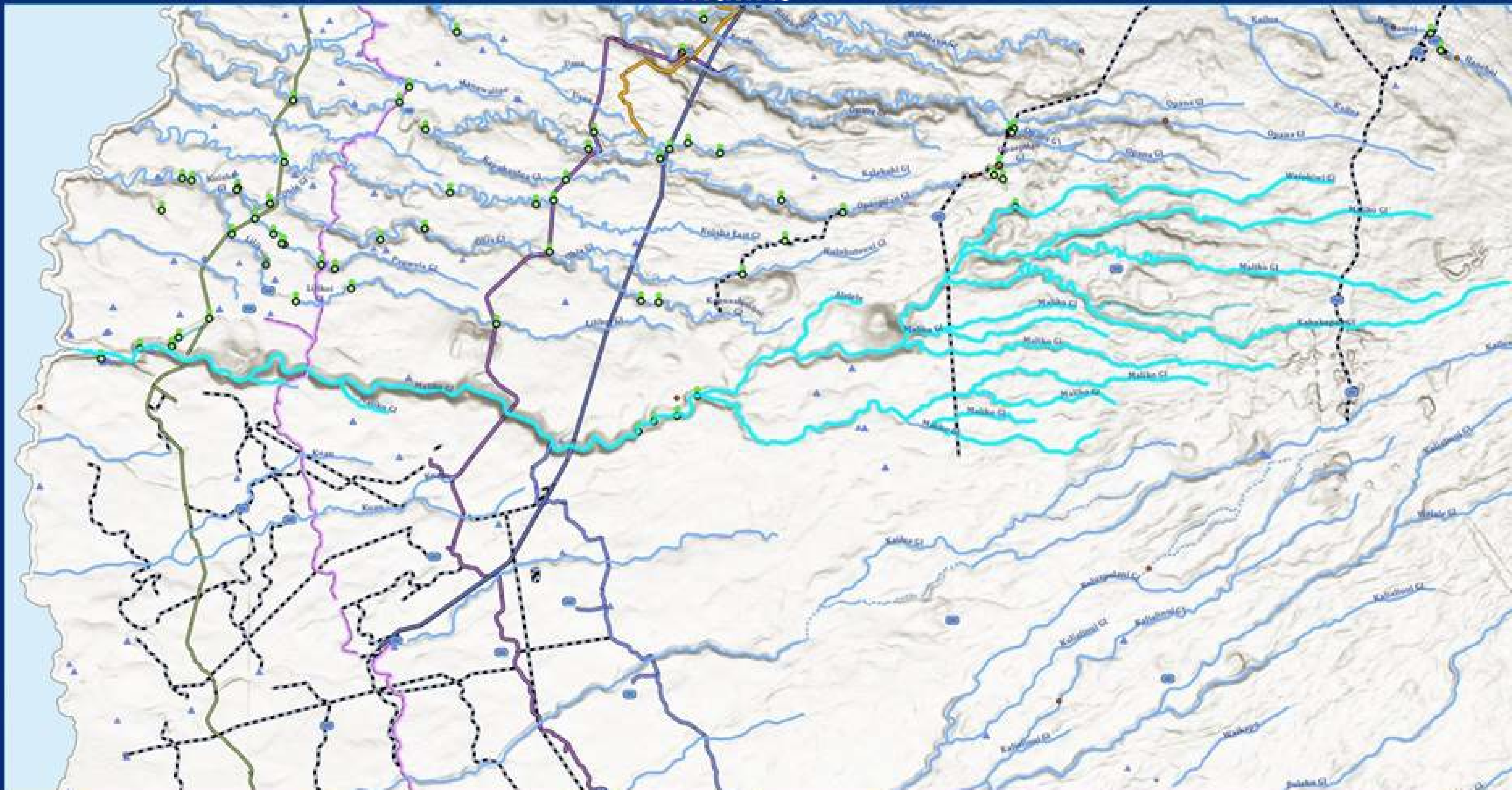
Kailua Gulch



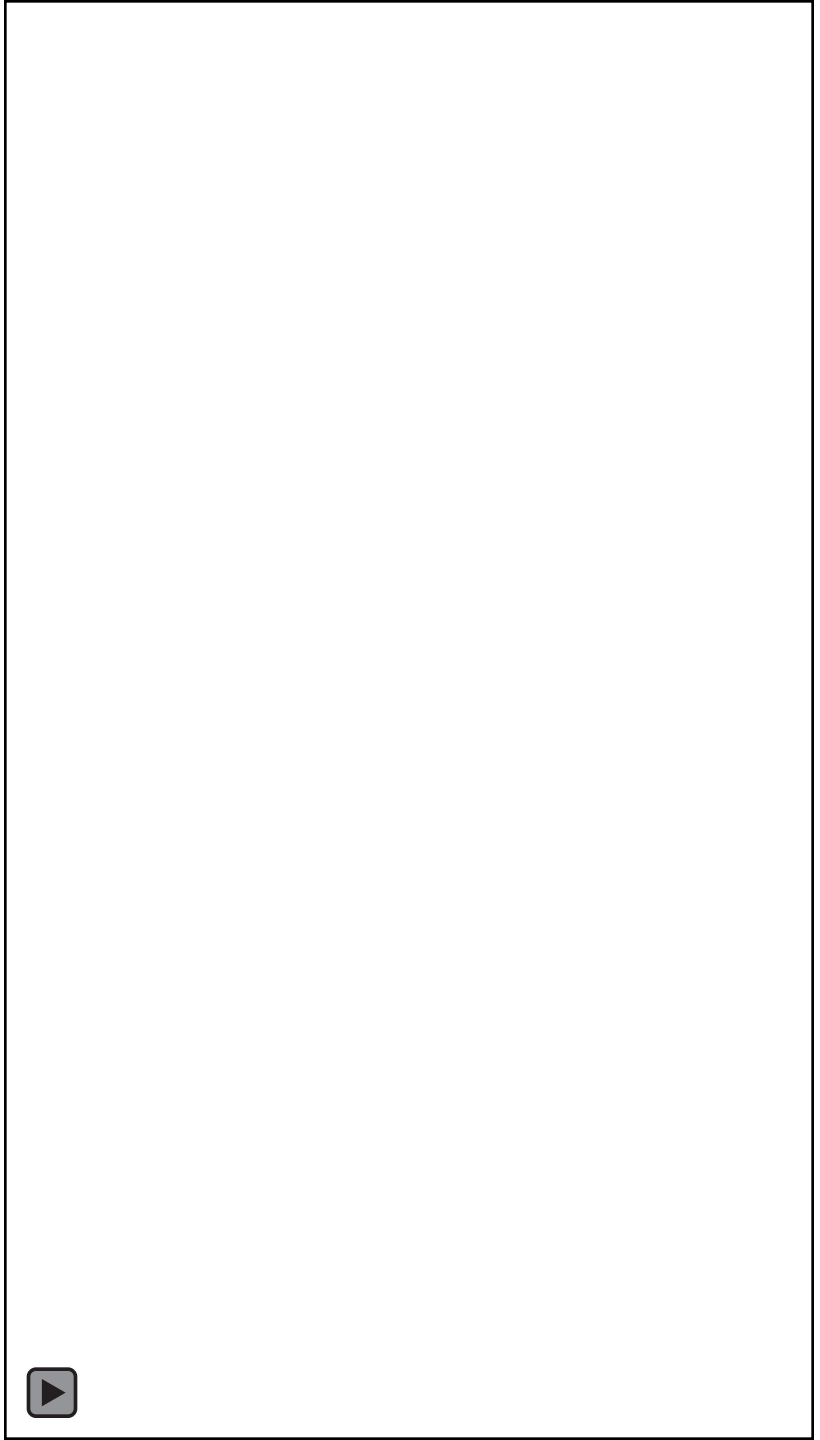
Monthly discharge of Kailua Stream at Haiku-uka boundary near Kailiili, Maui, for the year ending June 30, 1926

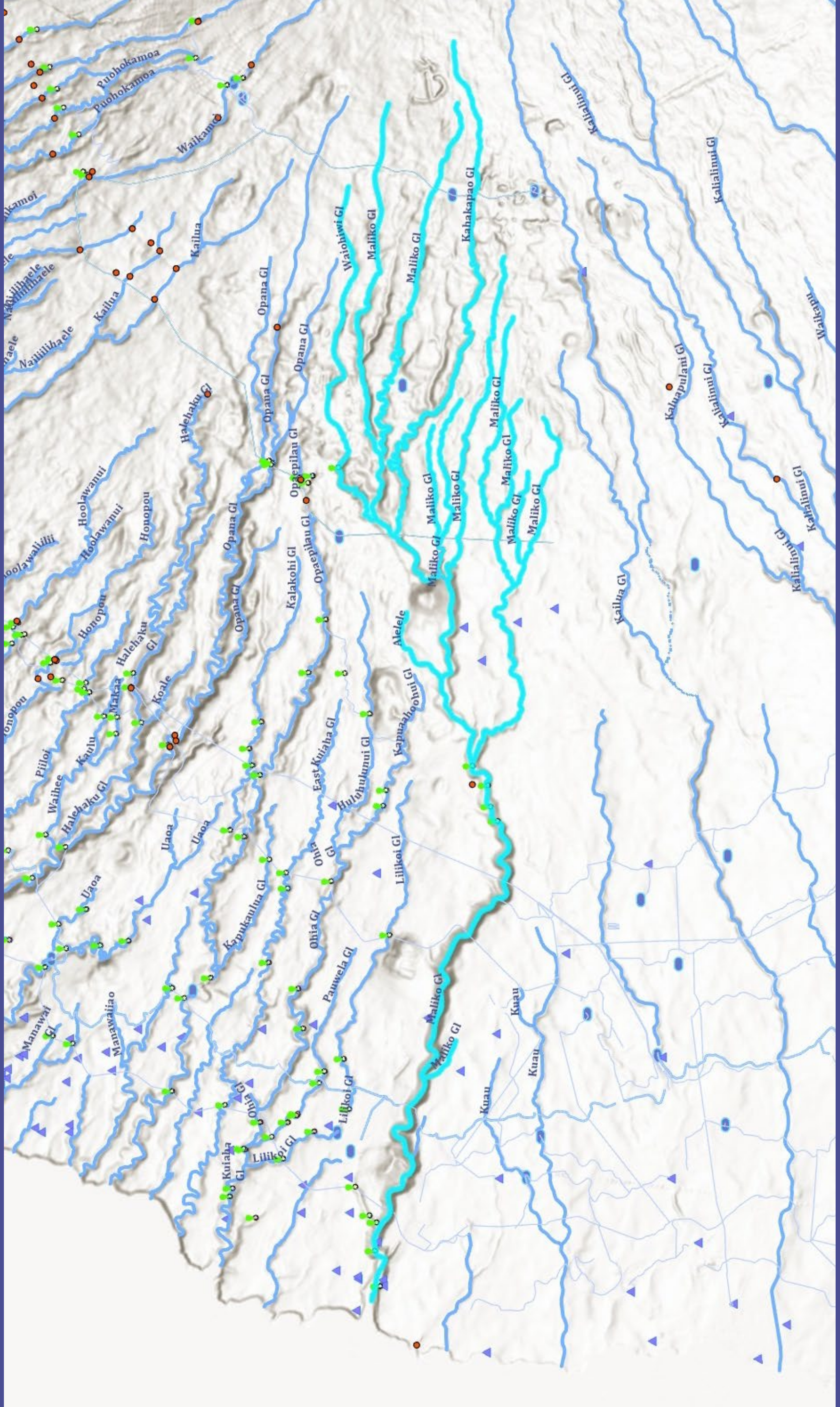
Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	3.5	0.10	0.718	1.11	22.3	68
August	75	.08	6.88	10.6	213	655
September	21	.08	1.64	2.54	49.2	151
October	3.0	.05	.288	.446	8.94	27
November	42	.06	4.21	6.51	126	388
December	2.4	.06	.199	.308	6.18	19
January	42	.04	1.87	2.89	58.0	178
February	19.0	.08	1.68	2.60	46.9	144
March	.13	.03	.066	.102	2.05	6
April	6.7	.10	.889	1.38	26.7	82
May	1.0	.03	.165	.255	5.12	16
June	28	.02	1.61	2.49	48.2	148
The year	75	.02	1.68	2.60	613	1,880

Maliko



	FID	Shape *	FILEREF	ISLAND	QUAD	NOTES	File_ID	LatDD	LongDD	TMK	StreamName	DIV_ID
1	5	Point	A&B OTHERS	6	Paia	Stream diversion, ditch from Maliko Stream. Referred to as Maeda's Diversion on declaration form.		20.929722	-156.336111	2-7-004:031	Maliko Gulch	1
2	6	Point	A&B OTHERS	6	Paia	Stream diversion, pipe from Maliko East Tributary. Referred to as Maeda's Diversion on declaration form.		20.926389	-156.334167	2-7-004:031	Unmapped Tributary to Maliko Gul...	2
3	7	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake H-19 from Maliko Tributary. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).		20.923889	-156.328889	2-7-003:	Unmapped Tributary to Maliko Gul.	178
4	8	Point	HUNTER J	6	Haiku	Stream diversion, pipe from Waiohiwi Stream.		20.843889	-156.272222	2-4-013:154	Waiohiwi Gulch	526
5	9	Point	JOHNS KT	6	Haiku	Stream diversion, pump from Maliko Stream (new entry). Declared Q was estimated from pump capacity and the total Q of 1.260 MG includes both diversions #...		20.869167	-156.314444	2-7-002:015	Maliko Gulch	531
6	10	Point	JOHNS KT	6	Haiku	Stream diversion, pump from Maliko Stream (new entry). Declared Q was estimated from pump capacity and the total Q of 1.260 MG includes both diversions #...		20.868056	-156.311111	2-7-002:015	Maliko Gulch	530
7	11	Point	MALIKO GARDEN	6	Paia	Spring diversion, pipe from Unnamed stream and rights claim.		20.933333	-156.339444	2-5-004:037	Unmapped Spring	748
8	12	Point	MALIKO GARDEN	6	Paia	Stream diversion, pipe from Maliko Stream.		20.926111	-156.332778	2-7-003:059	Unmapped Tributary to Maliko Gul...	749
9	13	Point	SMITH ML	6	Haiku	Stream diversion, pipe #1 from Maliko Stream.		20.8725	-156.318333	2-7-002:001	Maliko Gulch	1029
10	14	Point	SMITH ML	6	Haiku	Stream diversion, pipe #2 from Maliko Stream.		20.871389	-156.316389	2-7-002:001	Maliko Gulch	1030





Maliko

Kahakapao Gulch

Ahupuaʻa: Haiku
Feature: Stream
Comments: The west fork of Maliko Gulch rises at about 5400 ft. elevation, joins Waiohiwi stream at about 1990 ft. to form Maliko stream.
Lexicology:
Source: USGS 1957.
Quadrangle: 50-06
North: 185,550
East: 630,700
Coordinates: 20.840644 / -156.281155
Catalog No.: 227.01.034

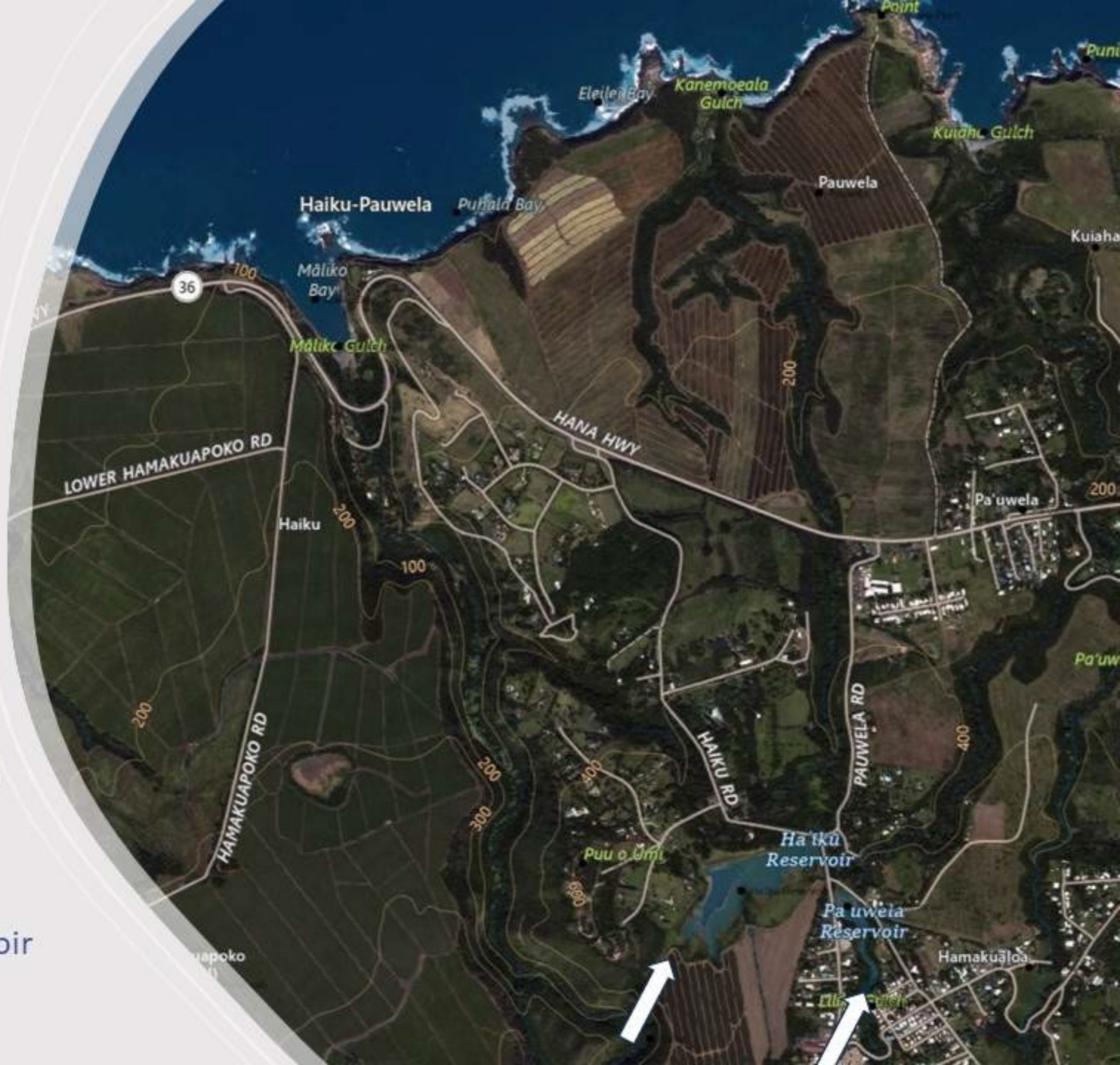
Waiohiwi Gulch

Ahupuaʻa: Haiku
Feature: stream
Comments: The east fork of Maliko Gulch rises at about 4300 ft. elevation, joins Kahakapao stream at about 1990 ft. to form Maliko stream.
Lexicology: Wai-o-hiwi. PE: Hiwi's water.
Source: USGS 1957.
Quadrangle: 50-06
North: 187,300
East: 632,600
Coordinates: 20.845449 / -156.275578
Catalog No.: 227.01.035

Maliko Gulch

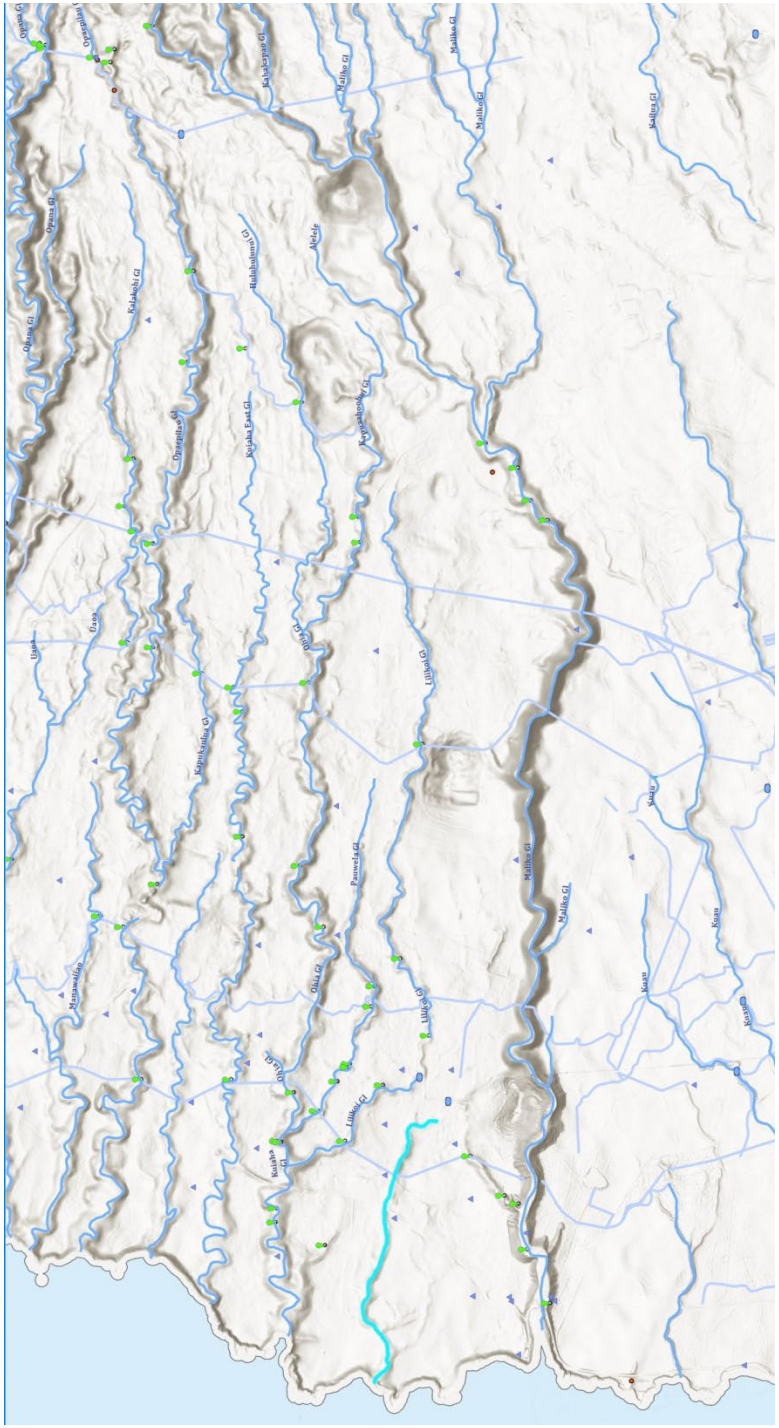
Ahupuaʻa: Haiku
Feature: Stream
Comments: Stream begins at the junction of Kahakapao and Waiohiwi streams at about 1990 ft. elevation, flows to sea. Maliko Gulch is the boundary between Hāmākuapoko and Hāmākualoa districts, between Haliʻimaile and Haʻikū ahupuaʻa.
Lexicology: Māliko. PEM: budding.
Source: USGS 1954.
Quadrangle: 50-05
North: 218,950
East: 611,050
Coordinates: 20.932715 / -156.338501
Catalog No.: 227.01.033

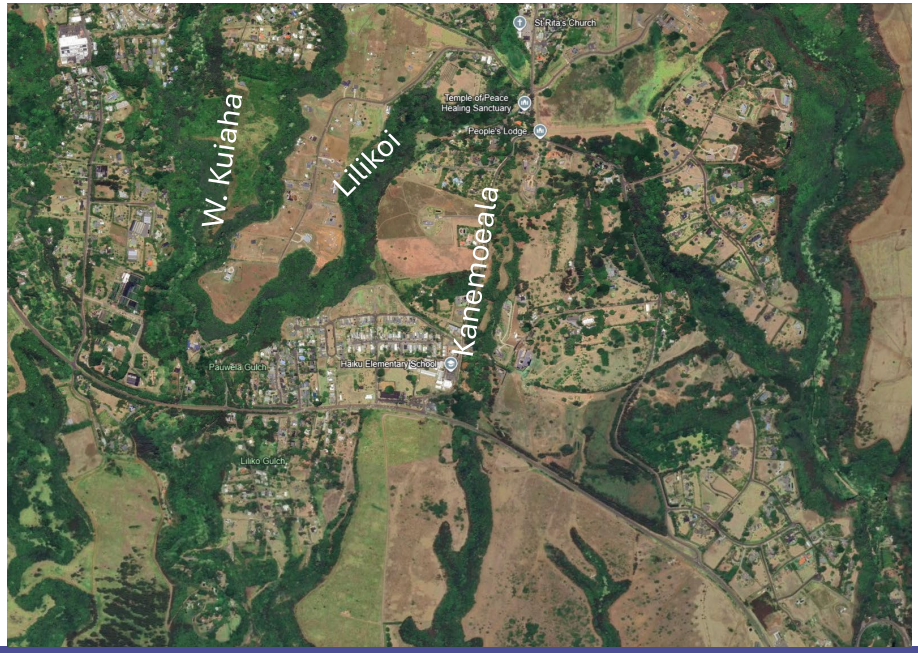
Information via Ulu Kau.
Other streams/gulches noted: `Alelele
Hamakuapoko, Kuau, and Paholoi shown to west of Maliko.



Kanemoeala Gulch
Showing
Haiku Reservoir

(& Pauwela Reservoir
on Liklikoi Gulch)

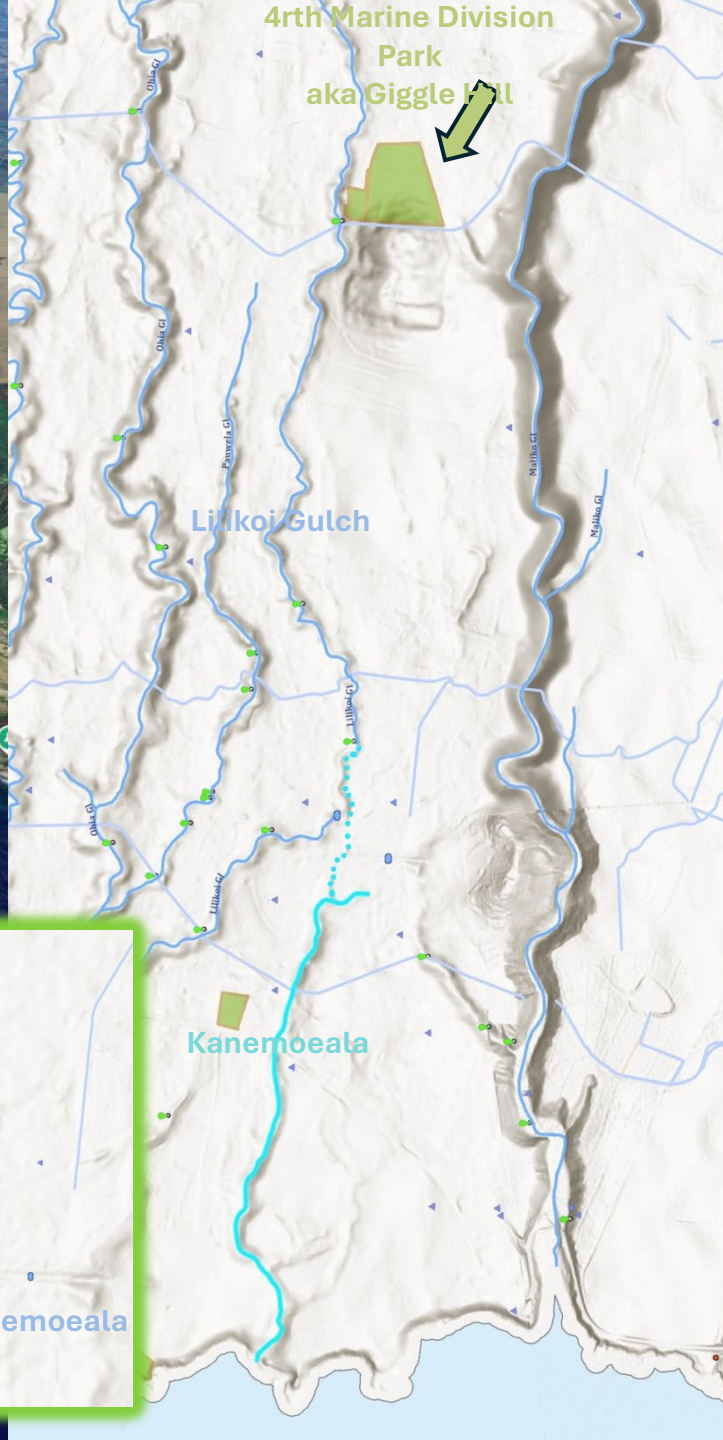




Kanemoeala Gulch

Ahupua‘a: Pauwela
Feature: stream
Comments: Stream rises at about 480 ft. elevation, flows to sea.
Lexicology:
Source: USGS 1957.
Quadrangle: 50-06
North: 218.050
East: 616,250
Coordinates: 20.330491 / -156.324612
Catalog No.: 227.02.029 *Information from Ulu Kau

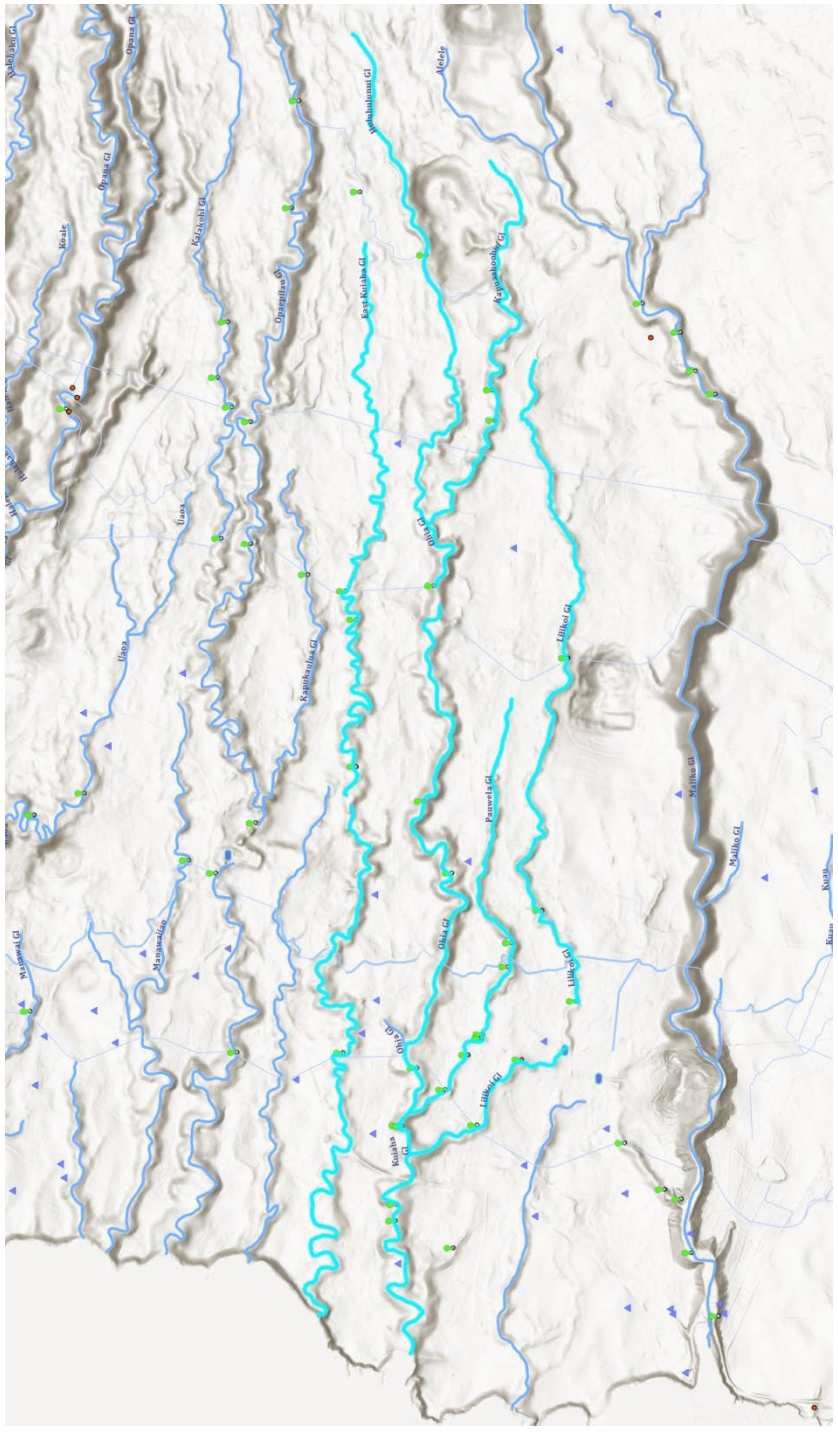
Note:
Although Kanemoeala is in a SWHU with Maliko, Lilikoi Gulch, a tributary to Kuiaha, is very close, and continues up by the “back” (Hana) side of Giggle Hill Park/4th Marine Division Park directly mauka. Based on examination of aerial photos and hillshades at large scale, it seems possible that present-day Kanemoeala and Lilikoi “tributary” to Kuiaha could have been related at one time.)



Although Kanemoeala is included here with Maliko, it seems like it might be more closely related to Kuiaha, specifically Lilikoi Gulch.

Streams East of Maliko Gulch

Kanemoeala, Kuiaha W & E, Konanui, Kaupakalua, Manawaiiao, Holumalu, Opana, Manawai…



Kuiaha

West Kuiaha
collectively has 21 diversions

Huluhulunui Gulch
Stream rises at 2,000' elevation. "Many rootlets"
Joins Kapuaahoohui stream at about 1,080' elevation to form Ohia Stream.

Kapuaahoohui Gulch
Stream rises at 1,680' elevation. "The pig band"
Joins Huluhulunui Stream at about 1,080' Elevation to form Ohia Stream

`Ōhi`a Gulch
Begins at junction of Huluhulunui and Kapuaahoohui streams at about 1,080'
Joins Pauwela stream at about 240' elevation "Ōhi`a tree"
Two holes in the gulch are said to have been made by the god Kāne, who thrust in his spear to get water for himself and for Kanaloa" (PEM 168)

Lilikoi Gulch
Stream rises at 1,400' elevation. "Liliko`i – passion fruit"
It is interrupted by a dam forming Pauwela Reservoir at 460' elevation.
Joins Pauwela Stream at about 195' to form Kuiaha Stream.

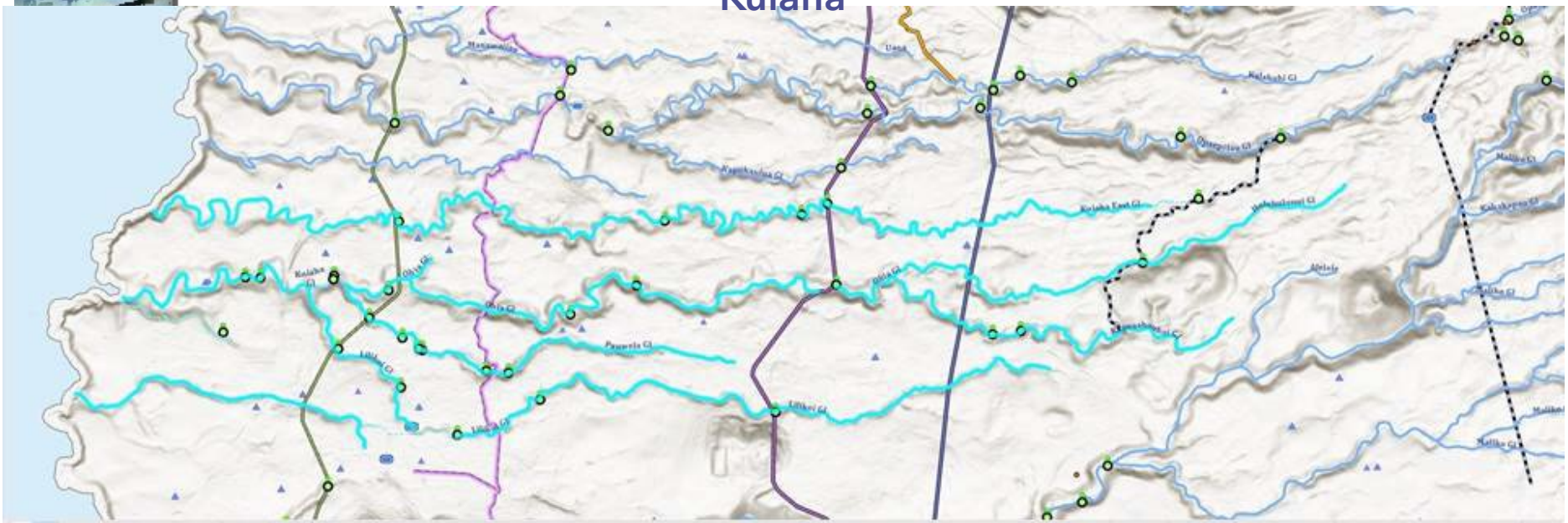
Pauwela Gulch
Stream rises at 900' elevation. "Hot soot"
Joins Lilikoi Stream at about 195' elevation to form Kuiaha Stream

Kuiaha Gulch (aka **West** Kuiaha Gulch)
Stream begins at junction of Lilikoi and Pauwela Streams at 200' elevation.
Flows to the sea (per USGS 1957)

East Kuiaha
has 5 diversions

East Kuiaha
Stream rises at 1,600' elevation; flows to sea. (per USGS 1957

Kuiaha



FID	Shape *	FILEREF	ISLAND	QUAD	NOTES	LatDD	LongDD	TMK	StreamName	DIV_ID
1	156	Point	ATAY A	6	Haiku	Stream diversion, pipe from West Kuiaha and Pauwela Streams.	20.9275	-156.3125	2-7-008:053	Kuiaha Gulch	26
2	157	Point	BRITTAIN K	6	Haiku	Stream diversion, pump from Kapuaahoohui Stream. Broken.	20.876944	-156.3025	2-7-027:013	Kapuaahoohui Gulch	62
3	158	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake L-27 from Lilikoi Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.910278	-156.317778	2-7-008:	Lilikoi Gulch	223
4	159	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake KH-7 from West Kuiaha Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.891111	-156.302778	2-7-012:	Ohia Gulch	154
5	160	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake KH-8 from Lilikoi Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.893056	-156.313889	2-7-002:	Lilikoi Gulch	241
6	161	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Pauwela Reservoir from Lilikoi Gulch. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.915556	-156.322222	2-7-003:	Lilikoi Gulch	192
7	162	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake H-18 Lilikoi Gulch. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.925833	-156.318056	2-7-008:	Lilikoi Gulch	176
8	163	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake KD-2 from East Kuiaha Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.866667	-156.288611	2-7-015:	Tributary to Huluhulunui Gulch	227
9	164	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake L-26 from West Kuiaha Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.909722	-156.310556	2-7-008:	Ohia Gulch	233
10	165	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake KD-3 from Huluhulunui Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.869444	-156.294722	2-7-015:	Huluhulunui Gulch	226
11	166	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake KH-6 from East Kuiaha Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.893333	-156.296667	2-7-012:	E. Kuiaha Gulch	317
12	167	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake H-16 from East Kuiaha Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.923889	-156.306944	2-7-007:	E. Kuiaha Gulch	175
13	168	Point	EAST MAUI IRR	6	Haiku	Stream diversion, intake H-17 from Pauwela Gulch. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.924167	-156.315	2-7-008:	Pauwela Gulch	166
14	169	Point	GARCIA F ETAL	6	Haiku	Stream diversion, from Kuiaha Stream.	20.933889	-156.314444	2-7-005:006	Kuiaha Gulch	360
15	170	Point	HOKOANA BK	6	Haiku	Spring diversion, from Kikoopaoa Spring and rights claim.	20.934444	-156.319167	2-7-005:015	Unmapped Spring	500
16	171	Point	KONG J	6	Haiku	Stream diversion, from Pauwela Stream.	20.913056	-156.316389	2-7-008:065	Pauwela Gulch	642
17	172	Point	KRAFTSOW GS	6	Haiku	Stream diversion, ditch from East Kuiaha Stream. 1993 field verification notes no diversion but correspondence from declarant describes use. Assume that diver...	20.895	-156.298056	2-7-012:151	E. Kuiaha Gulch	646
18	173	Point	KRAUSS SF	6	Haiku	Stream diversion, pipe from Pauwela Gulch and rights claim.	20.919722	-156.316389	2-7-008:066	Pauwela Gulch	648
19	174	Point	KRAUSS SF	6	Haiku	Stream diversion, from Pauwela Stream and rights claim.	20.921389	-156.315833	2-7-008:068	Pauwela Gulch	649
20	175	Point	KRAUSS SF	6	Haiku	Stream diversion, from Pauwela Stream and rights claim (see also new entries).	20.923333	-156.3125	2-7-008:051	Kuiaha Gulch	650
21	176	Point	KRAUSS SF	6	Haiku	Stream diversin, from West Kuiaha Stream and rights claim.	20.92	-156.316389	2-7-008:115	Pauwela Gulch	651
22	178	Point	LANDMARK PROP	6	Haiku	Stream diversion, pipe from Kuiaha Stream. Inoperable.	20.904722	-156.301389	2-7-012:172	Kuiaha Gulch	660
23	234	Point	PASSAFUNA M	6	Haiku	Stream diversion, from Pauwela Stream and rights claim.	20.92	-156.316389	2-7-010:014	Pauwela Gulch	937
24	235	Point	PEREIRA RJ SR	6	Haiku	Stream diversion, pipe from West Kuiaha Stream and rights claim.	20.905556	-156.306944	2-7-012:025	Ohia Gulch	941
25	236	Point	PITT SJ	6	Haiku	Stream diversion, livestock at Kiilau Stream. Coordinates taken at location based on field verification map.	20.920556	-156.319722	2-7-008:036	Lilikoi Gulch	962
26	237	Point	REZENTS EH	6	Haiku	Stream diversion, dam on Pauwela Stream and rights claim.	20.914722	-156.316667	2-7-010:047	Pauwela Gulch	981
27	238	Point	RICHARDSON R	6	Haiku	Stream diversion, portable pump from Waikina Stream and rights claim. No flow in the stream at time of visit. Wells have been field verified.	20.932778	-156.314167	2-7-006:043	Kuiaha Gulch	984
28	240	Point	YOUNG A	6	Haiku	Stream diversion, pipe from Kapuaahoohui Gulch.	20.878889	-156.303333	2-7-027:001	Kapuaahoohui Gulch	1237

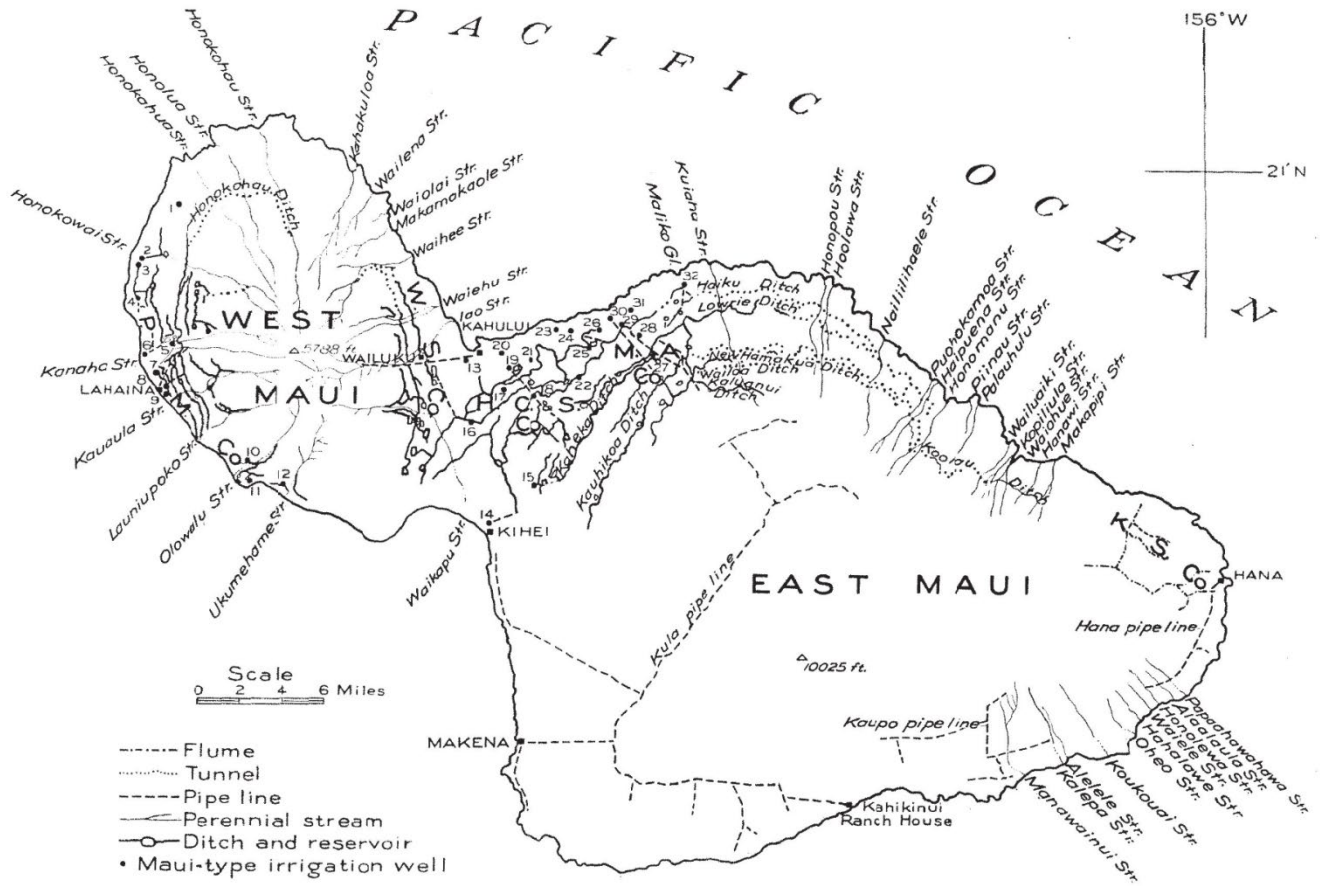
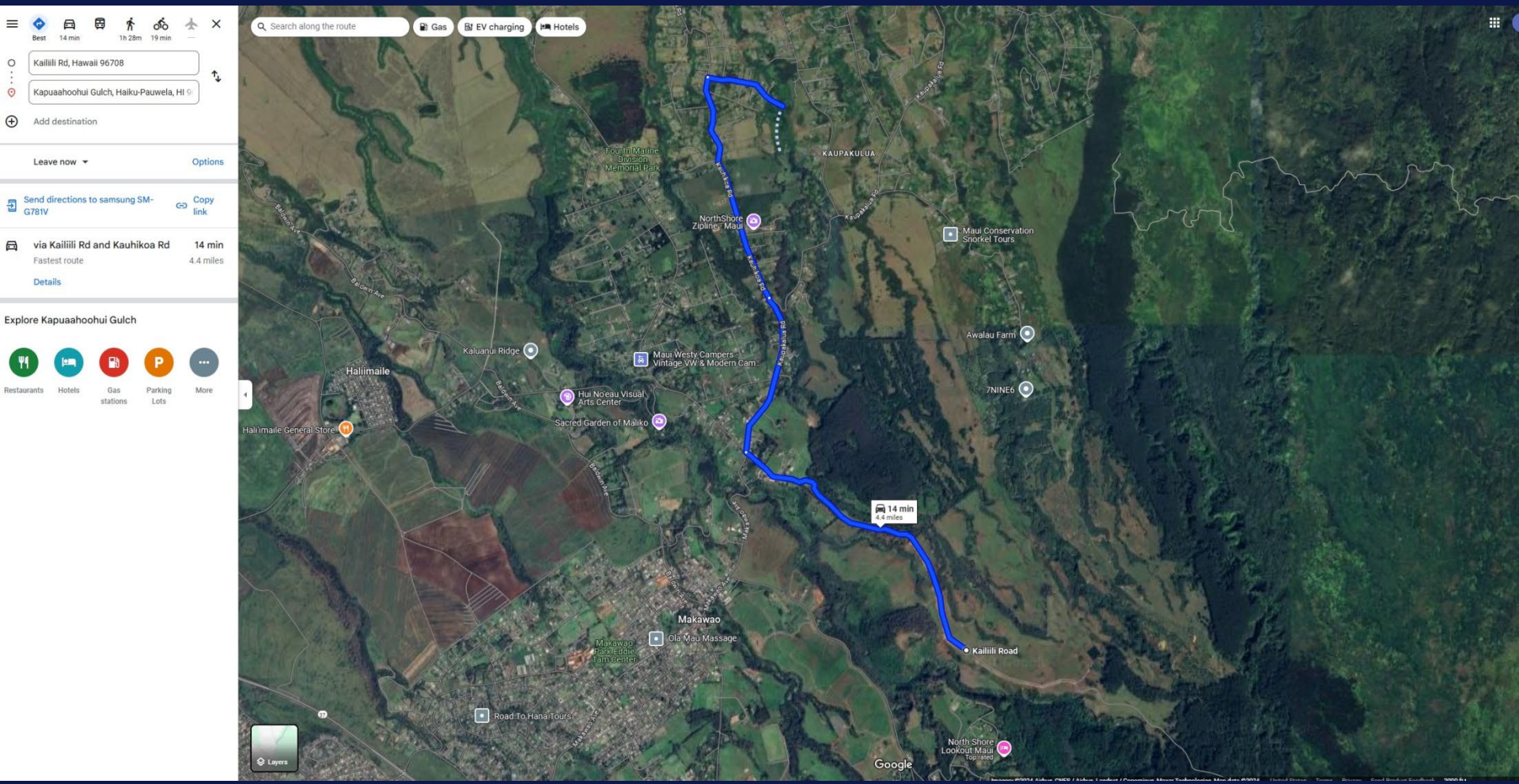


Figure 9. Map of Maui showing perennial streams, pipe lines, and irrigation ditches and wells.

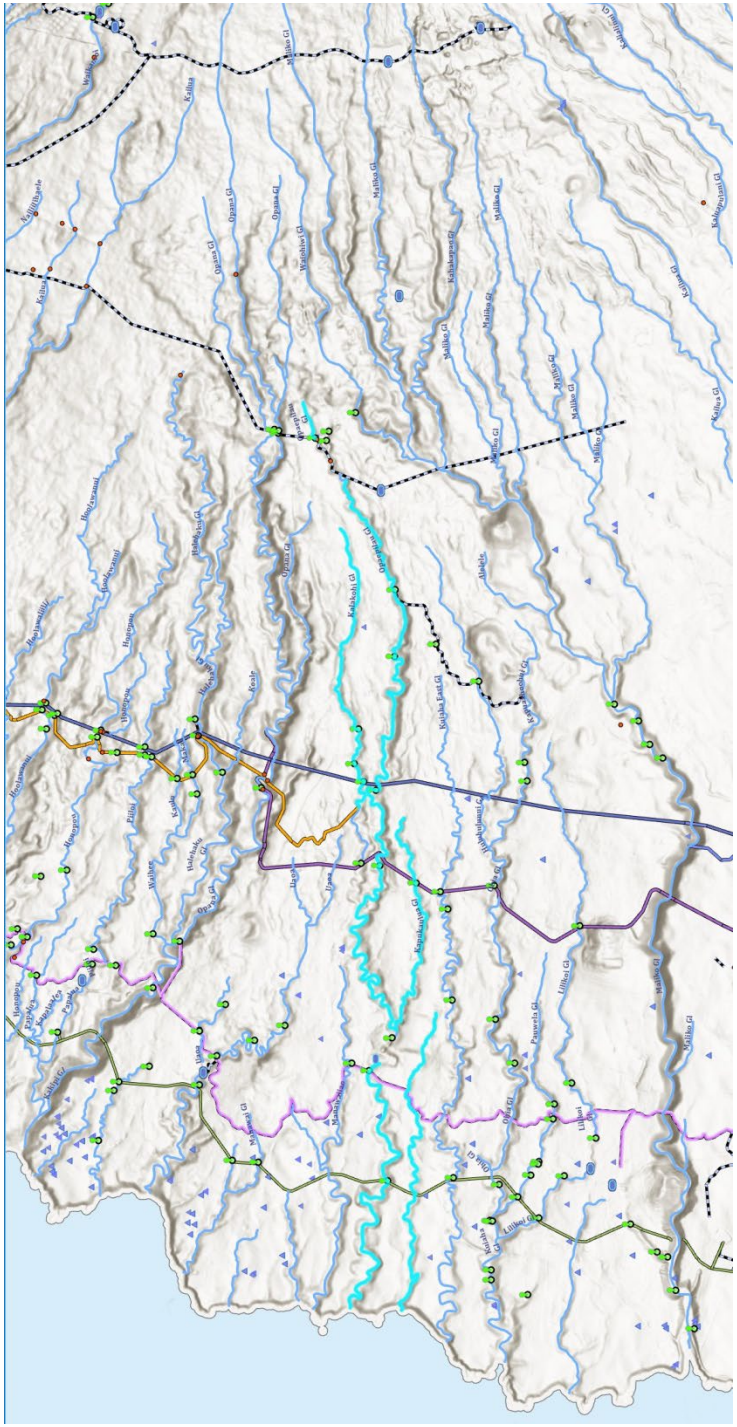
Stearns & MacDonald identified Maliko and Kuiaha as perennial streams



A Hydro-powered saw mill used to exist on Kaili`ili,
somewhere above Kapuaahoohui, roughly in this area or above,
(which would be toward the bottom of this picture)
(source Maui Hikina 59 Vol IIc)

Kaupakalua

	FID	Shape *	FILEREF	IS								DIV_I
1	241	Point	AWALAU FARM	6	Haiku	Stream diversion, pump from Awalau Stream.	20.869167	-156.284167	2-7-015:017	Awalau Gulch		2
2	242	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake KD-1 from Awalau Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.861944	-156.282222	2-7-015:	Awalau Gulch		21
3	243	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake H-15 from Kaupakalua Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.926111	-156.299444	2-7-007:	Kaupakulua Gulch		29
4	244	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake L-25 from Kaupakulua Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.914722	-156.293889	2-7-013:	Kaupakulua Gulch		29
5	245	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Kaupakulua Reservoir from Opaepilau Gulch. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.910556	-156.295556	2-7-013:	Opaepilau Gulch		29
6	246	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake O-3 from Awalau Stream.	20.847778	-156.268333	2-7-015:	Awalau Gulch		27
7	247	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake KH-4 from Opaepilau Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.8925	-156.286667	2-7-014:	Kalakohi Gulch		32
8	248	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake O-4 from West Awalau Stream.	20.847778	-156.269722	2-7-015:004	Unmapped Tributary to Awalau Gu...		29
9	249	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake KH-5 from West Kaupakulua Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439....	20.893056	-156.293611	2-7-013:	Kaupakulua Gulch		28
10	250	Point	FINLAND J	6	Haiku	Stream diversion, pump from Awalau Stream.	20.892222	-156.288889	2-7-014:043	Awalau Gulch		35
11	251	Point	HARABIN J	6	Haiku	Stream diversion, pump from Kauakohi Stream.	20.881944	-156.282778	2-7-030:015	Kalakohi Gulch		44
12	252	Point	HONUA-HOKU INC	6	Haiku	Stream diversion, pump from Awalau Stream. See also new entry to same applicant; div #6-5317-003D.	20.884167	-156.286111	2-7-014:054	Awalau Gulch		51
13	253	Point	HONUA-HOKU INC	6	Haiku	Stream diversion, pump from Kalakohi Stream (new entry). See declarant's other div #6-5317-002D.	20.883611	-156.284444	2-7-014:054	Kalakohi Gulch		51
14	254	Point	KAUPAKULUA COM	6	Haiku	Stream diversion, pump from Kalakohi Stream. Declared Q was estimated from gauge on storage tank.	20.878056	-156.282222	2-7-030:016	Kalakohi Gulch		58
15	255	Point	MAUI PINE 3	6	Haiku	Stream diversion, from West Awalau Stream.	20.846667	-156.269722	2-7-015:002	Awalau Gulch		77



Kaupakalua & Konanu

Awalau

Stream rises at 2,720’ elevation
Joins Kalakohi Stream at 885’ elevation to form `Ōpaepilau
“Young kava plant or many branches”

Kalakohi

Stream rises at 2,080’ elevation
Joins Awalau Stream at 885’ to form `Ōpaepilau

`Ōpaepilau

Stream begins at the junction of Awalau and Kalakohi streams at 885
Joins Kaupakalua Stream at 640’
“Rotten shrimp”

Kaupakalua

Begins at Kaupakalua Reservoir, at about 630’ elevation*
Flows to sea
Kaupakalua Reservoir formed by dam at 630’ elevation
on Kaupakalua Stream
“Two ridgepoles”

Konanui

(Stream between Kaupakalua and East Kuiaha)
Stream rises at about 760’ elevation
Flows to Sea

Information from UluKau.org, but source is USGS 1957. Note that Kaupakalua Reservoir is described as Formed by a dam on Kaupakalua Stream, but Kaupakalua Stream is described as starting from the reservoir

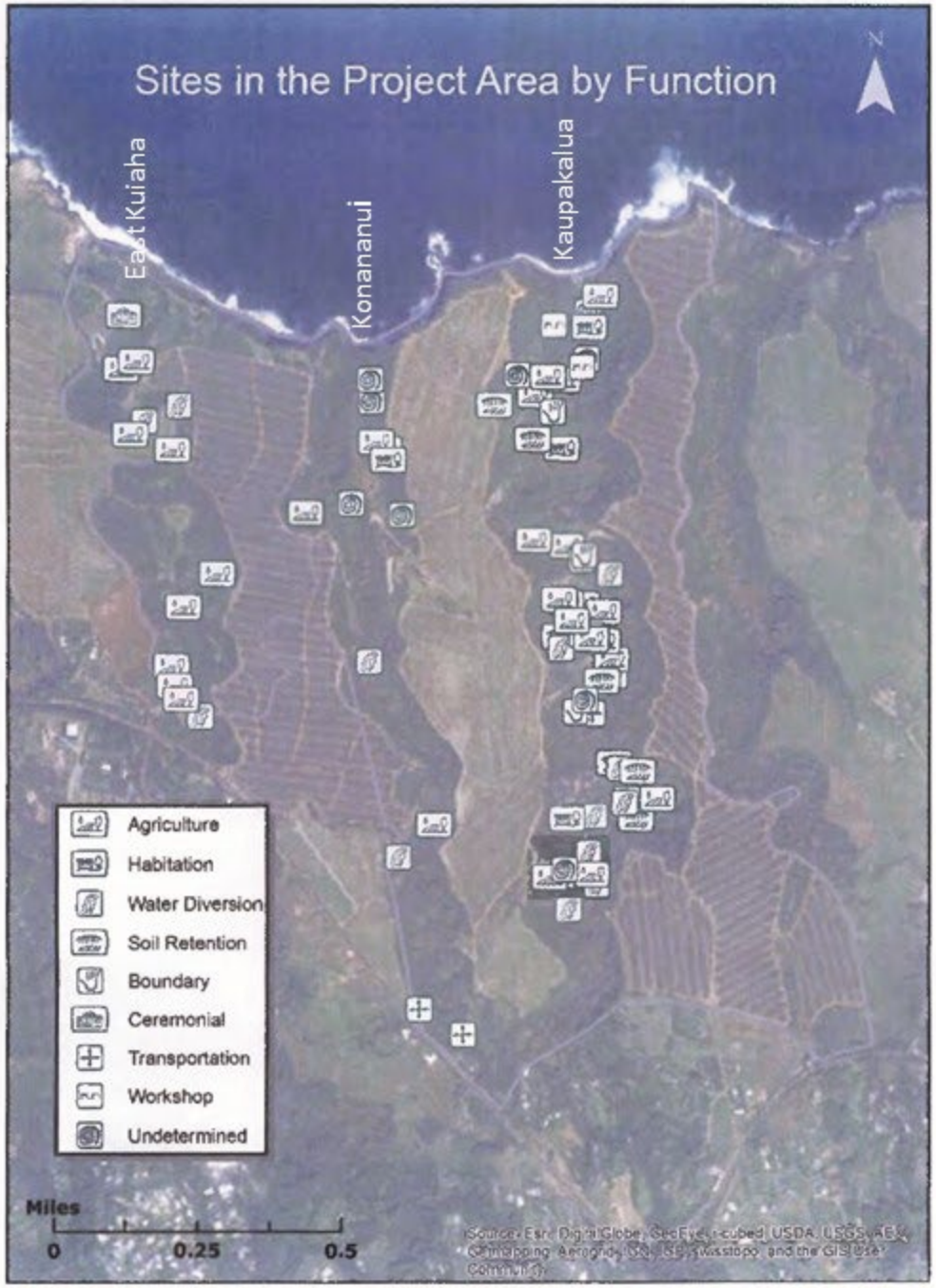
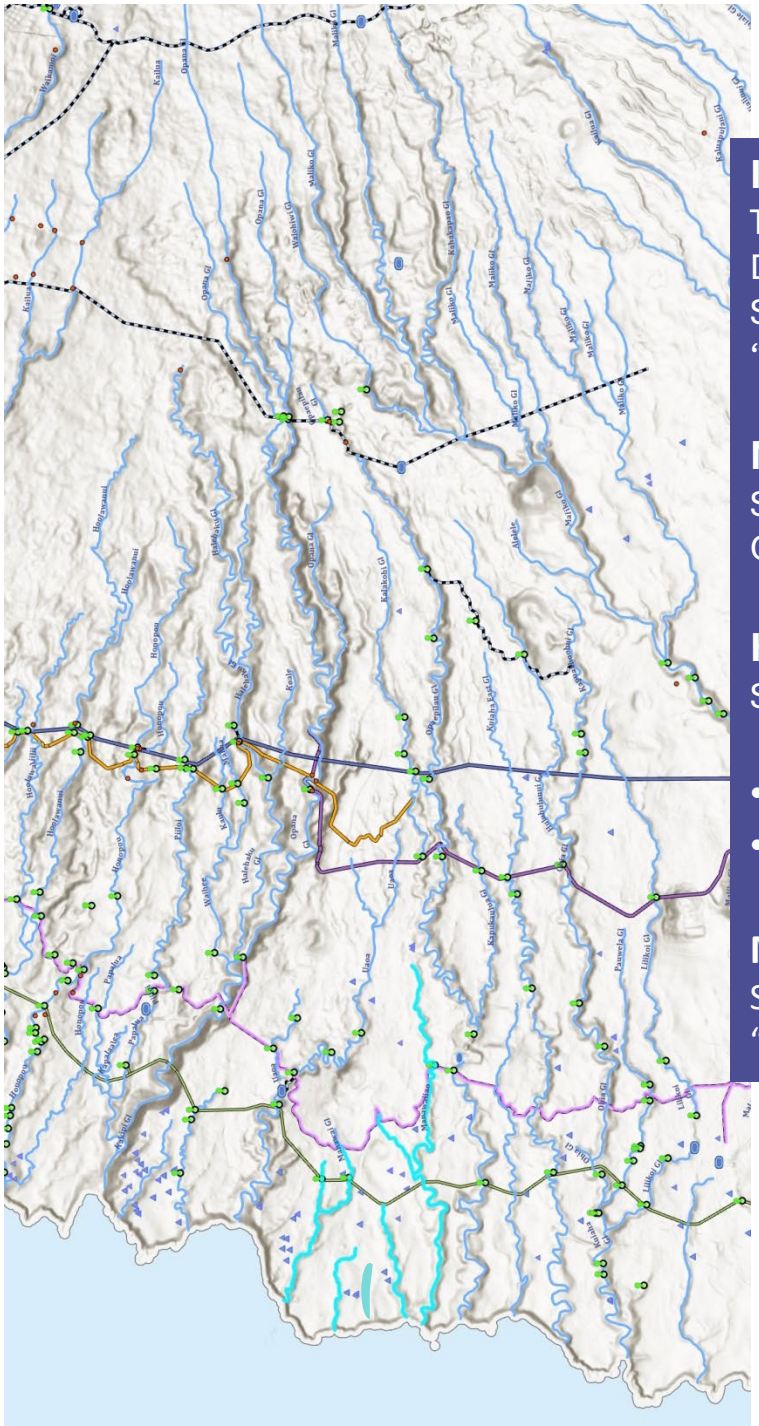


Figure 189. Archaeological Sites in the Project Area by Function.

Source:
An Archaeological Inventory Survey of Approximately 600 Acres in the Ahupua`a of Kuiaha, Kaupakalua, and Ulumalu, Hamakualoa District, Maui Island, Hawaii
[TMK: (2) 2-7-007:004; 005, 017-020, 028-031]



Manawai`iao

Kauoha

The portion of Manawai`iao Stream above Hana Highway is or was Diverted into Lowrie Ditch above its former junction with Manawai`iao Stream at about 540’ elevation
“Order, command, etc.”

Manawai`iao

Stream rises at 800’ elevation, flows to sea.
Called Kauoha above Highway.

Holumalu

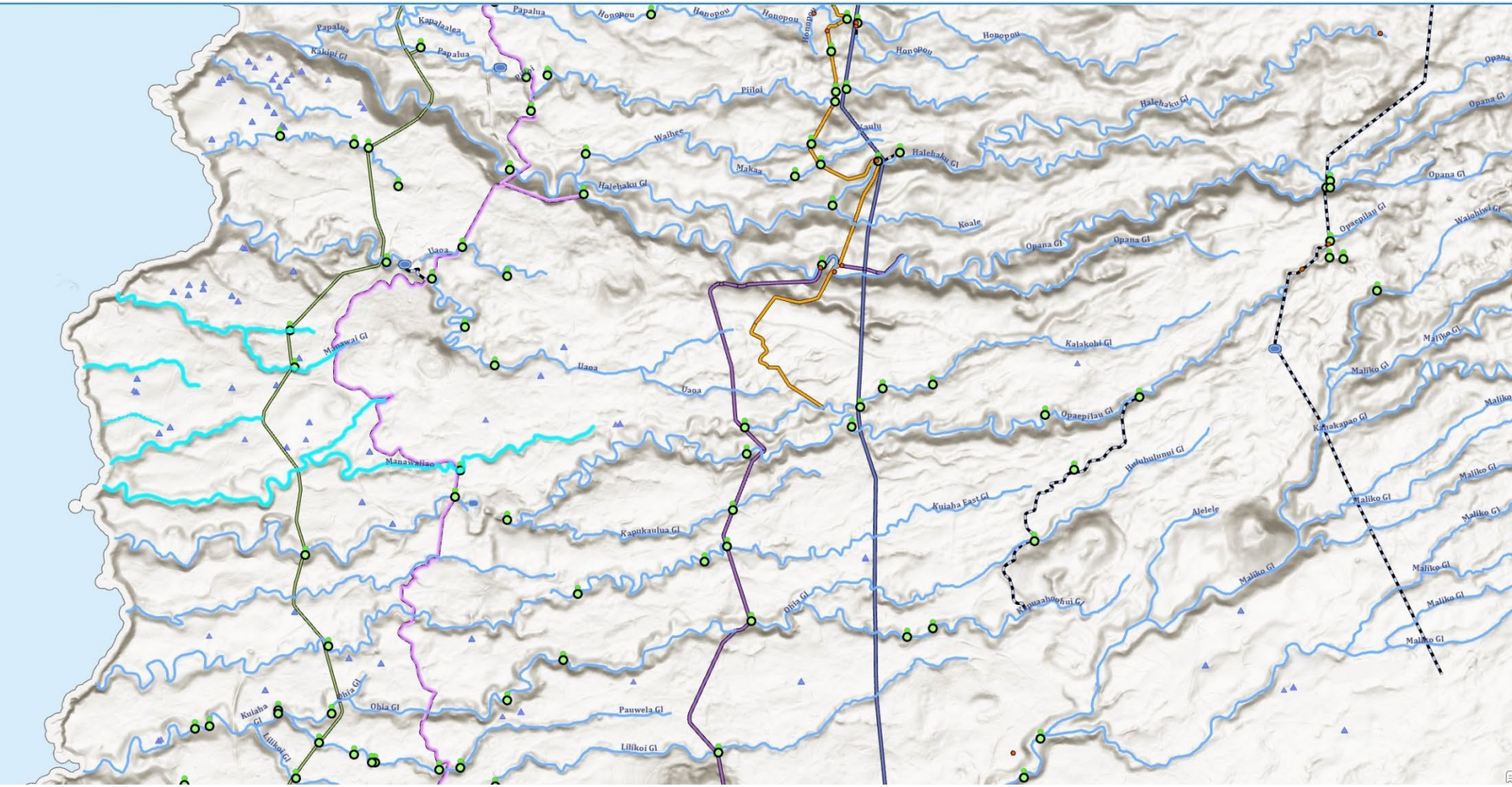
Stream rises at 400’ elevation & flows to sea.

- **Ulumalu and**
- **Ōpāna (at this location) are not listed in Ulu Kau**

Manawai

Stream rises at 480’ elevation, flows to sea.
“Water branch”

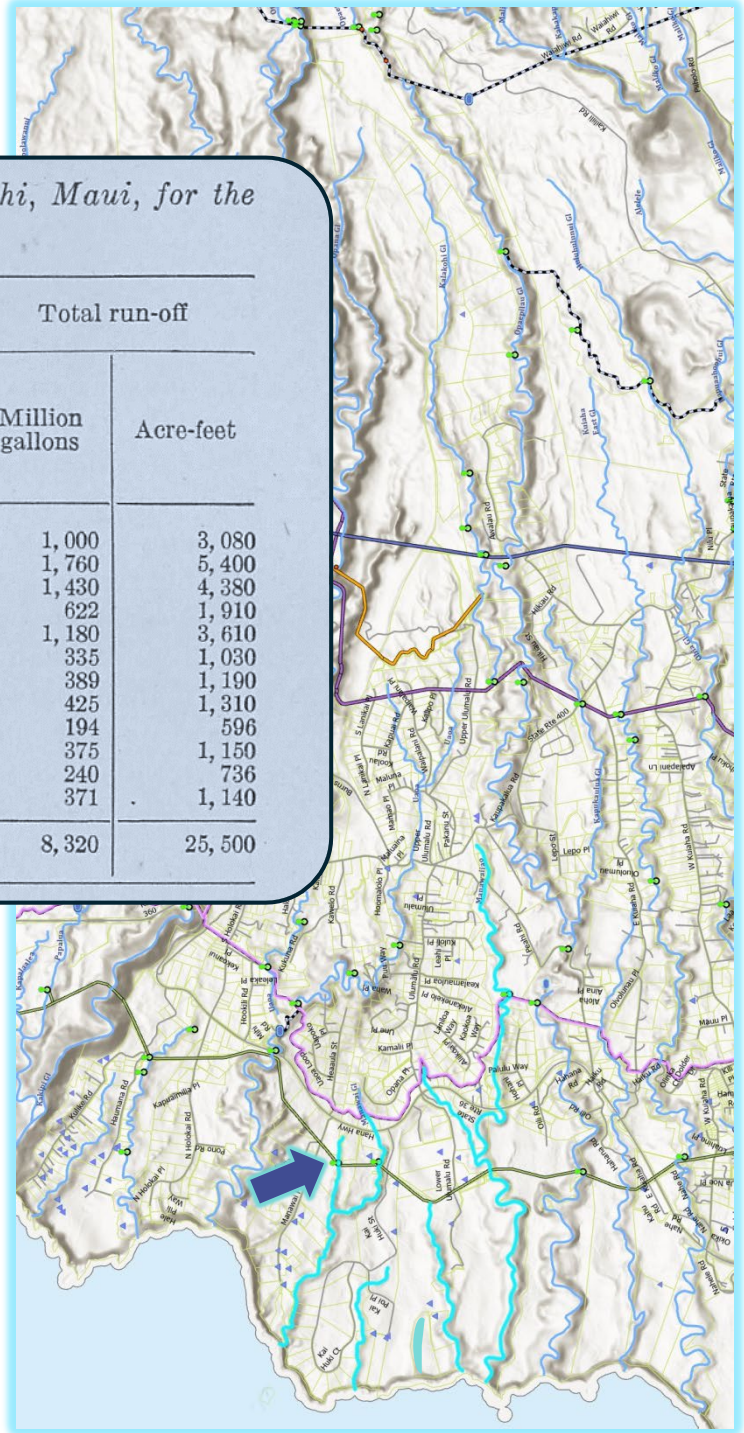
Manawai`iao



	FID	Shape *	FILEREF	ISLAND	QUAD	NOTES	LatDD	LongDD	TMK	StreamName	DIV_ID
1	30	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake H-13 from East Manawai Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.928333	-156.280833	2-9-003:	Manawai Gulch	229
2	256	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake L-24 from Manawaiiao Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.914444	-156.291667	2-7-013:	Manawaiiao	265
3	257	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake H-14 from West Manawai Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.927778	-156.283889	2-9-003:	Manawai Gulch	197

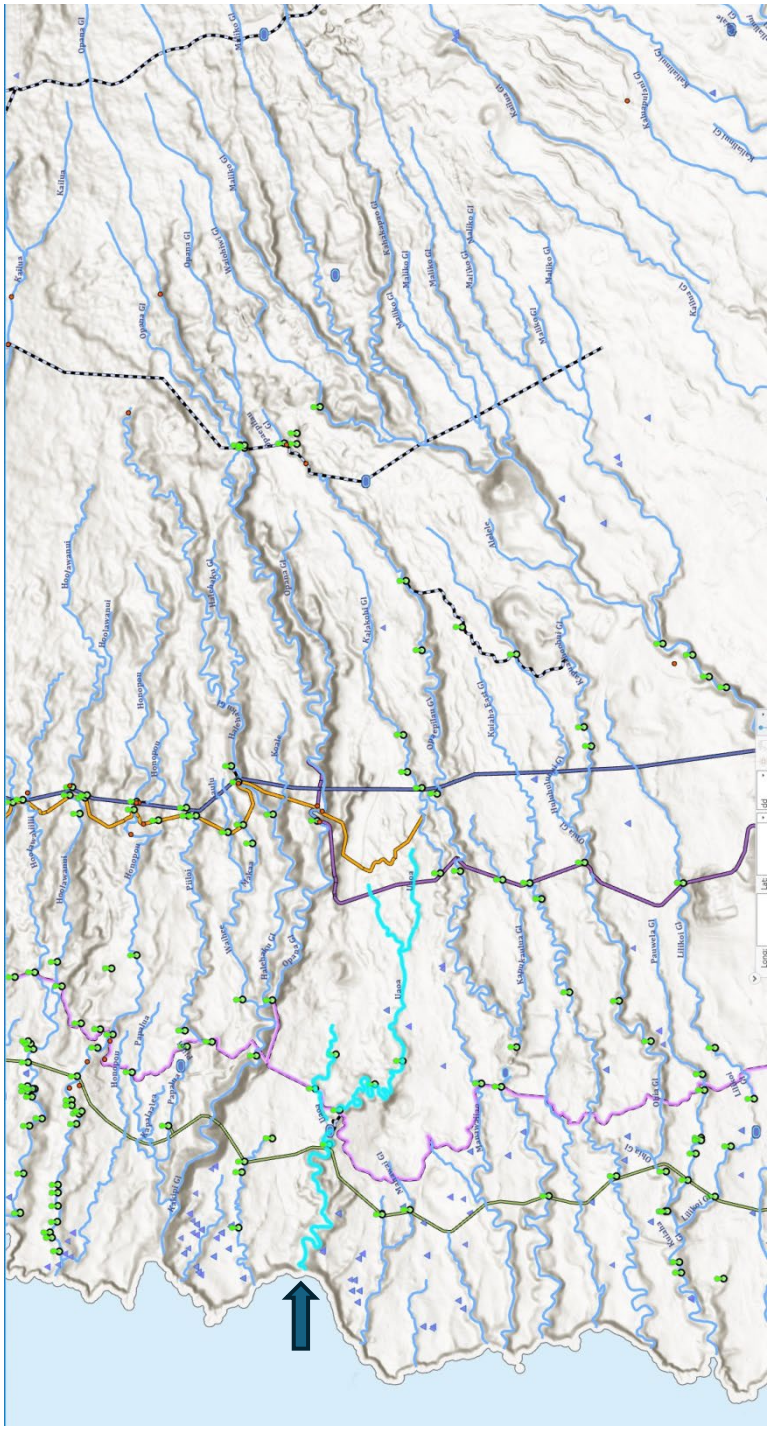
Monthly discharge of Haiku ditch at Manawai Gulch, near Peahi, Maui, for the year ending June 30, 1926

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	88	3.7	32.4	50.1	1,000	3,080
August	100	9.2	56.8	87.9	1,760	5,400
September	100	9.0	47.6	73.6	1,430	4,380
October	57	7.8	20.1	31.1	622	1,910
November	90	8.7	39.2	60.7	1,180	3,610
December	32	4.3	10.8	16.7	335	1,030
January	78	4.3	12.5	19.3	389	1,190
February	73	4.4	15.2	23.5	425	1,310
March	17.1	2.6	6.27	9.70	194	596
April	37	3.4	12.5	19.3	375	1,150
May	30	3.1	7.74	12.0	240	736
June	67	1.5	12.4	19.2	371	1,140
The year	100	1.5	22.8	35.3	8,320	25,500



Maui Hikina Table 1-a- Claims Registered for Hāmākua Poko, Hāmākua Loa and Ko'olau

Claimant & Helu	Ahupua'a	Register Book & Page	Summary of Claim Documentation	Hale	Lo'i Kalo	Auwai	Kihapai Kula Mahiai Mahina Mala Moo Opu Pa	Crops, Activities, and Resources Identified	Disposition N/A=Not Awarded Mahele Award Book & Royal Patent
Claims Registered for Kauoha = Manawaiiao									
Kanehoalani Helu 5123	Kaupakalua Kauoha=Manawai`iao Kuiaha more?	6:240	January 18, 1848 My kuleana are in the Ahupua'a of Kaupakalua, Maumau is my kuleana, gotten from Kamehameha I, when my kupuna lived on it. There are kuleana at Ulukaa and Pohakii and in the forest at Kapuku, Kauoha and Poaiwi. These are my own kuleana. There are also some below, that I cultivate from Makale, there is one lo'i, and at Kuiaha, there are 10 lo'i kalo. At Kaupakalua first, Pohoiki is the name of my Kuleana. There is a dry land uala patch, a Pali with wauke, maia are also planted, and all the things needed for my living and for my wife, children, and loved ones. Here also is something that I forgot, an uala field at Kapahi, gotten from Kamealoha.	-	11	-	3+	Loi Kalo Uala Wauke Maia	See Testimony
Naala Helu 5494 B See also Helu 6510 YY)	Keaaula	6:305	My kuleana is at Keaula. Maliko is the name of the ili. There are 15 lo'i kalo, several ulu trees, and one niu (coconut tree)	-	15	-	-	-	See Testimony
Momona Helu 5494 C	Keaaula	6:305	At Keaula I, the ili is named Kipapa There are 5 lo'i, and section of kula That is my claim	-	5	-	1	-	See Testimony
Napokoa Helu 5494 D	Keaaula	6:305	At Keaula I in the ili of Kapu, there are 10 lo'i, several ulu trees, several slopes planted with uala, also a kula That is my claim at Keaula	-	10	-	4+	-	See Testimony
Kilauea Helu 6411	Keaaula	6:369	My kuleana is a Kihapai in Kipapa, at Keaaula. Within it are some lo'i and uala patches. Keonepahu is the Konohiki. At Hamakualoa.	—	3 +	—	2 +	Loi Kalo Uala	See Testimony

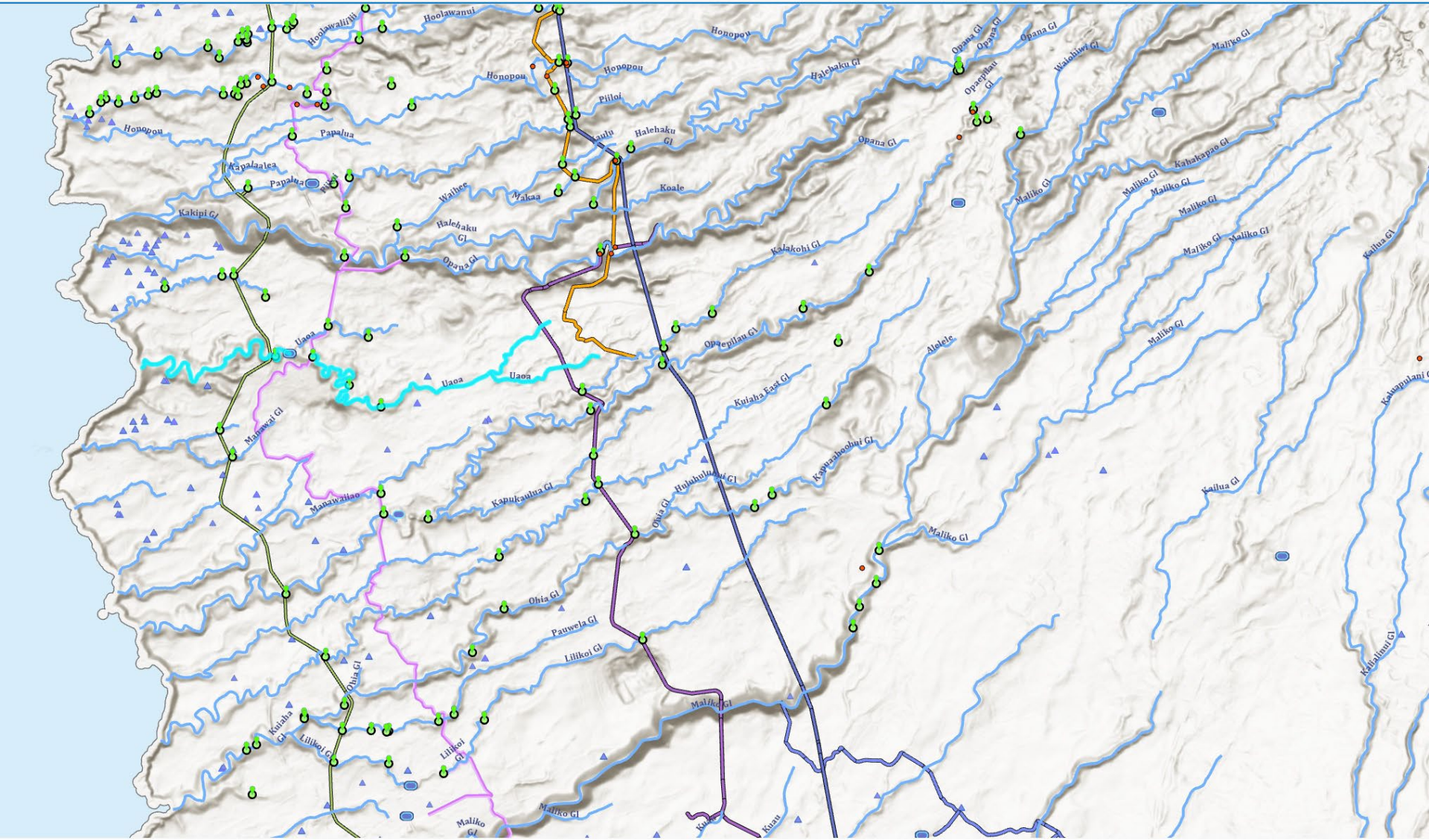


Uaoa Stream

Island	Maui
Ahupua'a	Uaoa
Feature	stream
Comments	Stream rises at 1080 ft. elevation, flows to sea.
Lexicology	
Source	USGS 1957.
Quadrangle	50-06
North	214,900
East	632,850
Coordinates	20.921431 / -156.274649
Catalog No.	228.09.009

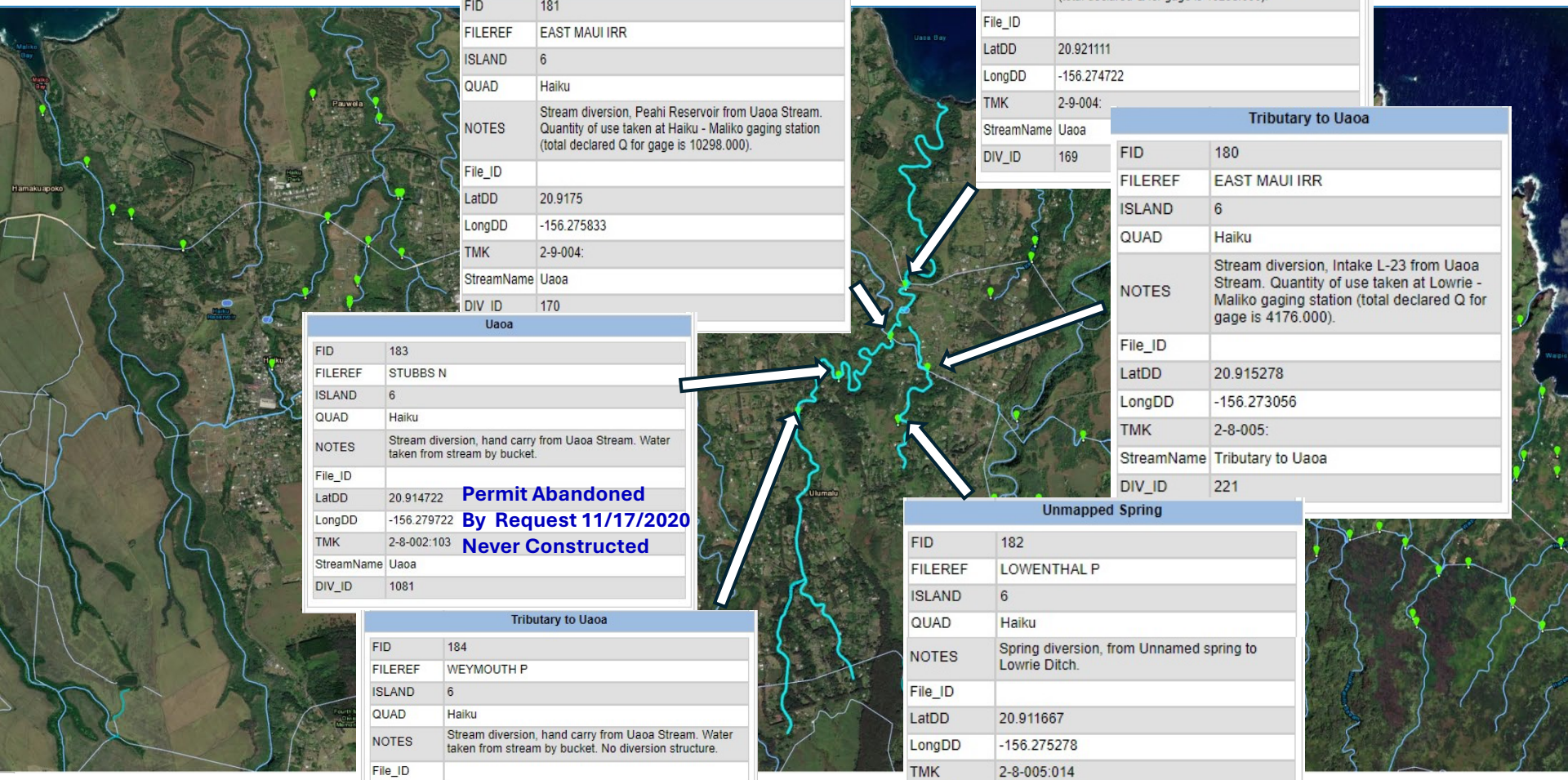
Uaoa
Bay, fishing site, landing, Kaupakalua, Maui.
Noted site for surround-netting *akule*.
A former canoe landing was in a cove on the shore of the bay.
Also known as Keone. *Lit.,* light rain, mist.

Uaoa



	FID	Shape *	FILEREF	ISLAND	QUAD	NOTES	LatDD	LongDD	TMK	StreamName	DIV_ID
1	179	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake H-12 from Uaoa Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.921111	-156.274722	2-9-004:	Uaoa	169
2	180	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake L-23 from Uaoa Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.915278	-156.273056	2-8-005:	Tributary to Uaoa	221
3	181	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Peahi Reservoir from Uaoa Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.9175	-156.275833	2-9-004:	Uaoa	170
4	182	Point	LOWENTHAL P	6	Haiku	Spring diversion, from Unnamed spring to Lowrie Ditch.	20.911667	-156.275278	2-8-005:014	Unmapped Spring	729
5	183	Point	STUBBS N	6	Haiku	Stream diversion, hand carry from Uaoa Stream. Water taken from stream by bucket.	20.914722	-156.279722	2-8-002:103	Uaoa	1081
6	184	Point	WEYMOUTH P	6	Haiku	Stream diversion, hand carry from Uaoa Stream. Water taken from stream by bucket. No diversion structure.	20.912222	-156.282778	2-8-002:064	Tributary to Uaoa	1209

Uaoa Stream Diversions



Uaoa	
FID	179
FILEREF	EAST MAUI IRR
ISLAND	6
QUAD	Haiku
NOTES	Stream diversion, Intake H-12 from Uaoa Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).
File_ID	
LatDD	20.921111
LongDD	-156.274722
TMK	2-9-004:
StreamName	Uaoa
DIV_ID	169

Uaoa	
FID	181
FILEREF	EAST MAUI IRR
ISLAND	6
QUAD	Haiku
NOTES	Stream diversion, Peahi Reservoir from Uaoa Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).
File_ID	
LatDD	20.9175
LongDD	-156.275833
TMK	2-9-004:
StreamName	Uaoa
DIV_ID	170

Tributary to Uaoa	
FID	180
FILEREF	EAST MAUI IRR
ISLAND	6
QUAD	Haiku
NOTES	Stream diversion, Intake L-23 from Uaoa Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).
File_ID	
LatDD	20.915278
LongDD	-156.273056
TMK	2-8-005:
StreamName	Tributary to Uaoa
DIV_ID	221

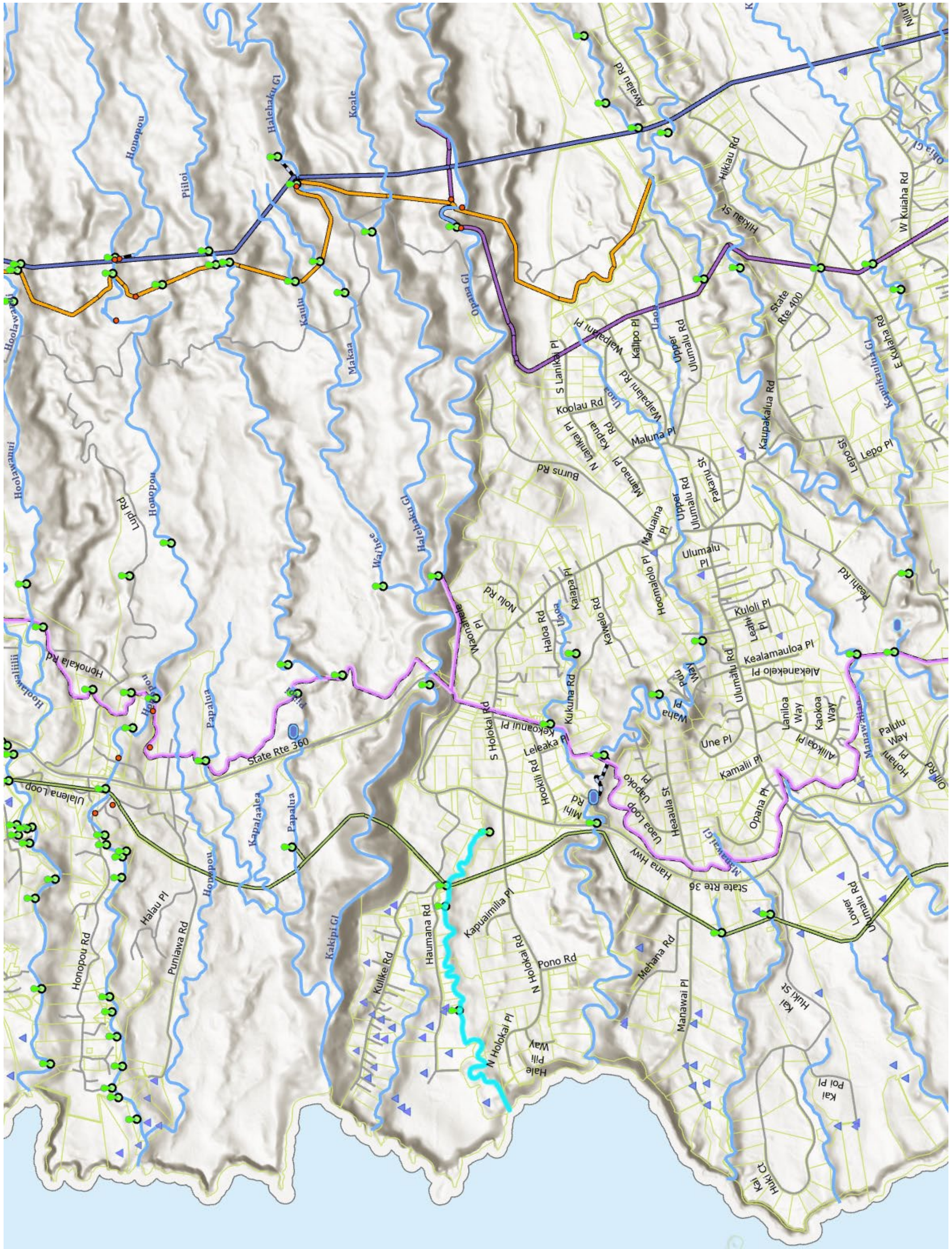
Uaoa	
FID	183
FILEREF	STUBBS N
ISLAND	6
QUAD	Haiku
NOTES	Stream diversion, hand carry from Uaoa Stream. Water taken from stream by bucket.
File_ID	
LatDD	20.914722
LongDD	-156.279722
TMK	2-8-002:103
StreamName	Uaoa
DIV_ID	1081

Permit Abandoned
By Request 11/17/2020
Never Constructed

Tributary to Uaoa	
FID	184
FILEREF	WEYMOUTH P
ISLAND	6
QUAD	Haiku
NOTES	Stream diversion, hand carry from Uaoa Stream. Water taken from stream by bucket. No diversion structure.
File_ID	
LatDD	20.912222
LongDD	-156.282778
TMK	2-8-002:064
StreamName	Tributary to Uaoa
DIV_ID	1209

Unmapped Spring	
FID	182
FILEREF	LOWENTHAL P
ISLAND	6
QUAD	Haiku
NOTES	Spring diversion, from Unnamed spring to Lowrie Ditch.
File_ID	
LatDD	20.911667
LongDD	-156.275278
TMK	2-8-005:014
StreamName	Unmapped Spring
DIV_ID	729

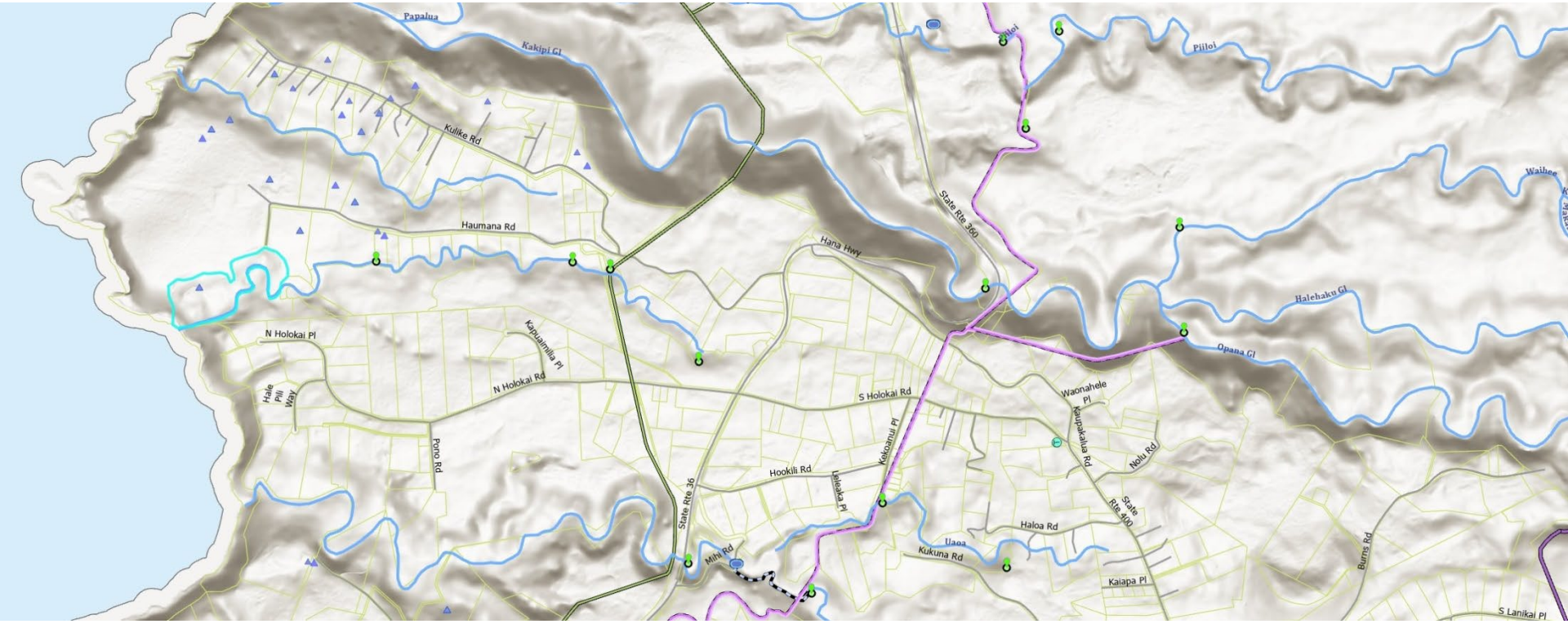
Uaoa Bay Fishing Spots



Keali`i

Island	**Maui**
Ahupua'a	Keaali`i
Feature	stream
Comments	Stream rises at about 500 ft. elevation in Keali`inui, flows to sea. Called "Kealii Nui Gulch" on TM 2804.
Lexicology	ke-ali'i. PEM: the chief.
Source	USGS 1957.
Quadrangle	50-06
North	215,500
East	636,000
Coordinates	20.923061 / -156.265415
Catalog No.	228.11.008

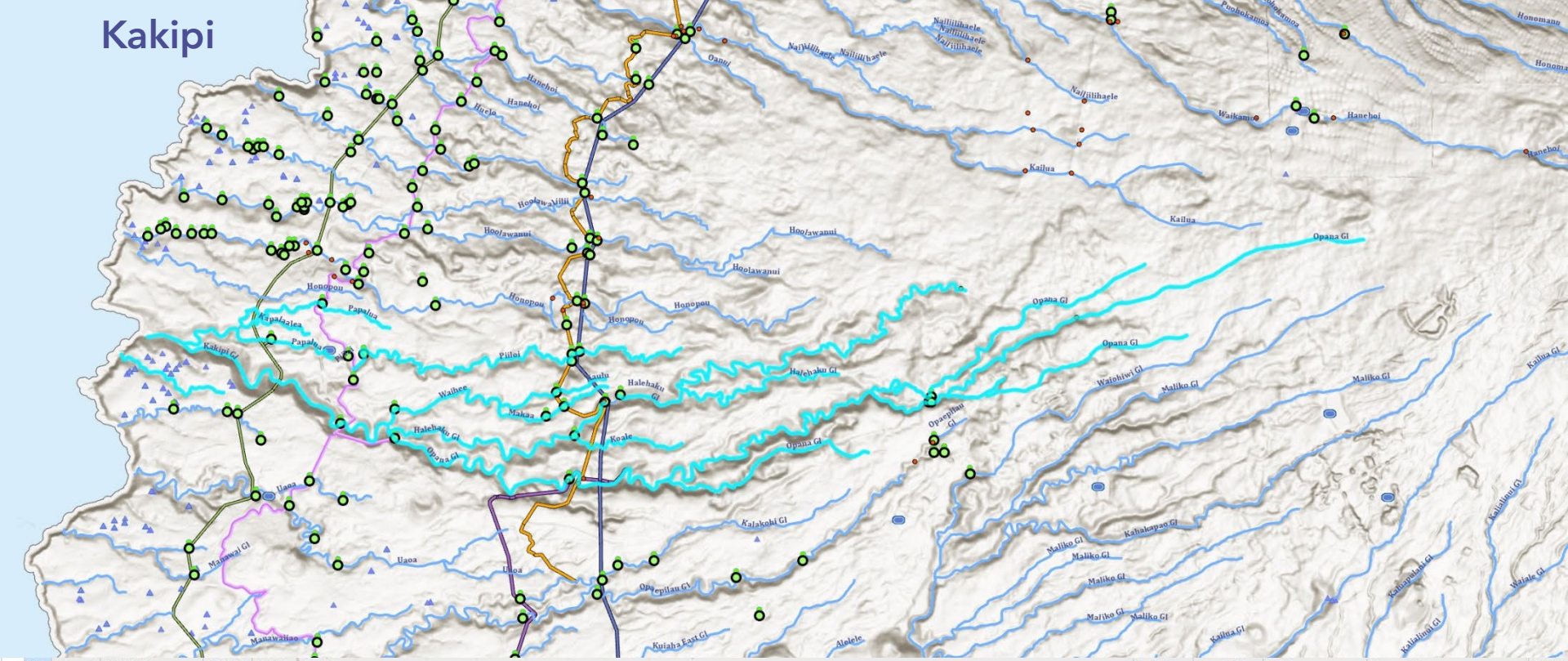
Kealiʻi



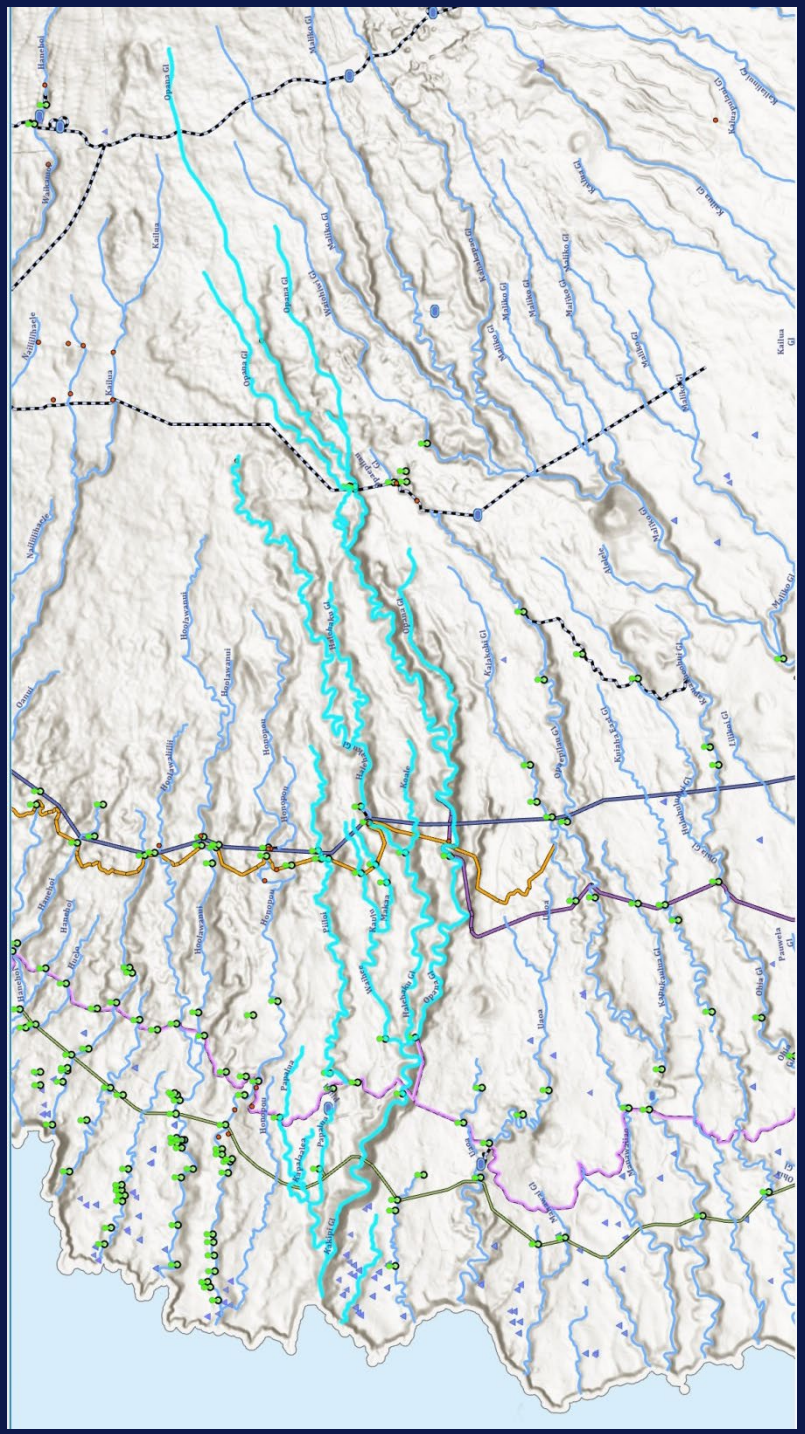
	FID	Shape *	FILEREF	ISLAND	QUAD	NOTES	LatDD	LongDD	TMK	StreamName	DIV_ID
1	185	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake H-11 from Kealii Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.923056	-156.265278	2-9-006:	Kealii	172
2	186	Point	FRIAS BE	6	Haiku	Stream diversion, pipe and ditch from Kealii Stream and rights claim.	20.920556	-156.268333	2-8-006:013	Kealii	354
3	187	Point	GIESE R	6	Haiku	Stream diversion, pipe from Kealii Stream and rights claim.	20.93	-156.264722	2-8-006:022	Kealii	391
4	188	Point	GIESE R	6	Haiku	Stream diversion, pipe from Kealii Stream and rights claim.	20.924167	-156.265	2-8-006:038	Kealii	390

Keali`I Nui Archaeological Sites → Helu 5511

50-50-06-5757 – Terrace Complex
50-50-06-5758 – Burial Crypt
50-50-06-5759 – Pre-Contact Terrace Complex
50-50-06-5760 – Pre-Contact Water Control Channel Walls



	FID	Shape *	FILEREF	ISLAND	QUAD	NOTES	LatDD	LongDD	TMK	StreamName	DIV_ID
1	189	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake KH-2 from Halehaku Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.886667	-156.267778	2-8-008:	Halehaku Gulch	315
2	190	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake W-24 from Halehaku Stream. Quantity of use taken at Wailoa Ditch - Opana gaging station (total declared Q for gage is 47205.000).	20.881667	-156.263056	2-8-008:	Halehaku Gulch	159
3	191	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake KH-3 from Opana Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.887222	-156.272778	2-8-008:	Opana Gulch	314
4	192	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake L-22 from Opana Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.906111	-156.268056	2-8-008:	Opana Gulch	220
5	193	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake O-1 from East Opana Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.848056	-156.263333	2-8-008:	Tributary to Opana Gulch	303
6	194	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake W-23 from Piiloi Stream. Quantity of use taken at Wailoa Ditch - Opana gaging station (total declared Q for gage is 47205.000).	20.886111	-156.258056	2-8-008:	Piiloi	153
7	195	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake H-10 from Halahaku Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.911944	-156.266389	2-8-007:	Kakipi Gulch	179
8	196	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake H-9 from Kapalaalaea Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.919444	-156.256667	2-8-007:	Papalua	183
9	197	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake O-2 from West Opana Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.848333	-156.263889	2-8-008:	Tributary to Opana Gulch	289
10	198	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake NH-24 from Piiloi Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.886944	-156.258333	2-8-008:	Piiloi	256
11	199	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake L-19 from Kapalaalea Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.909444	-156.258333	2-8-008:	Piiloi	219
12	200	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake NH-25 from West Piiloi Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.886944	-156.259167	2-8-008:	Piiloi	252
13	201	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake L-20 from East Halehaku Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.910556	-156.261389	2-8-008:	Unmapped	218
14	202	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake NH-26 from Kaulu Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.888611	-156.262778	2-8-008:	Kaulu	251
15	203	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake L-21 from Waihee Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.906111	-156.264722	2-8-008:	Waihee	198
16	204	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake NH-27 from Makaa Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.887778	-156.264444	2-8-008:	Makaa	249
17	205	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Kapalaalaea Reservoir from Piiloi Stream. Quantity of use taken at Haiku - Maliko gaging station (total declared Q for gage is 10298.000).	20.911111	-156.258611	2-8-007:	Piiloi	184
18	206	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake NH-28 from Halehaku Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.883333	-156.263889	2-8-008:	Halehaku Gulch	248
19	207	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake KH-1 from Makaa Stream. Quantity of use taken at Kauhikoa - Mauna Olu gaging station (total declared Q for gage is 8439.000).	20.889722	-156.265556	2-8-008:	Makaa	313
20	208	Point	MAUI PINE 3	6	Haiku	Stream diversion, dam in Opana Stream. Flows to tunnel.	20.848056	-156.263889	2-7-015:033	Opana Gulch	773
21	217	Point	EAST MAUI IRR	6	Haiku	Stream diversion, Intake L-18 from East Kapalaalea Stream. Quantity of use taken at Lowrie - Maliko gaging station (total declared Q for gage is 4176.000).	20.913889	-156.2525	2-8-008:	Honopou	211



Ōpāna Gulch
Rises at 4,760’ elevation, under Pu`u o Kakae
Joins Halehaku at 575’ to form Kakipi
“Perhaps related to ‘opā – to squeeze”

Halehaku
Rises at 2,640’
Joins Ōpāna at 575’ to form Kakipi
“master house”

Koale
Rises at 2,100’ elevation
Joins Halehaku at about 1,450’

Palama
Rises at 1,600’ elevation
Joins Halehaku at about 1,070’
“lama wood enclosure”

Pi`iloi
Rises at 1,600’ elevation
Flows to Kapalaalea Reservoir
Kapalaalea Reservoir is formed by a dam on Pi`iloi Stream at 580’

Maka`a Stream
Rises at about 1,420’
Joins Kaulu Stream at about 990’ to form Waihe`e Stream

Kaulu Stream
Rises at about 1,420’
Joins Maka`a Stream at about 990’ to form Waihe`e Stream

Waihe`e Stream
Begins at the junction of Maka`a and Kaulu Streams at about 990’
Joins Kakip Stream at about 575’
“Squid liquid”, “Water of Flight”

Kakipi
Begins at junction of Opana and Halehaku streams at 575’
Flows to sea
“1. Poi made of soggy taro, 2. Cabbage”

Kapala`alaea
Stream rises at about 560’
Joins Papalua Stream at about 320’
“The daub of red ochre”

Papalua Stream
Begins at Kapalalaea Reservoir, joins Kakipi Gulch at 35’

Info from UluKau.org

Species Potentially in Upper Reaches of Kakipi - Critical Habitat

Image by F & K Starr –shows Kukui In mid-lower reaches of Kakipi

Species	Status	Observed / Potential for Occurrence
Birds		
'Apapane (*Himatione sanguinea*)	Endemic Protected under MBTA	Observed in the License Area
Hawai'i 'amakihi (*Chlorodrepanis virens wilsoni*)	Endemic Protected under MBTA	Observed in the License Area
Chestnut munia (*Lonchura atricapilla*)	Non native	Observed in the License Area
'Iiwi (*Drepanis coccinea*)	Federally threatened State threatened Protected under MBTA	Observed in the License Area
Japanese white-eye (*Zosterops japonicas*)	Non native	Observed in the License Area
Melodious laughing thrush (*Garrulax canorus*)	Non native	Observed in the License Area
House finch (*Haemorhous mexicanus*)	Non native Protected under MBTA	Observed in the License Area
Northern cardinal (*Cardinalis cardinalis*)	Non native Protected under MBTA	Observed in the License Area
Pacific golden-plover (*Pluvialis fulva*)	Migrant Protected under MBTA	Observed in the License Area
Crested honeycreeper / Akohekohe (*Palmeria dolei*)	Endangered	Known to occur in the License Area.
Maui parrotbill / Kiwikiu (*Pseudonestor xanthophrys*)	Endangered	Known to occur in the License Area
Hawaiian duck (*Anas wyvilliana*)	Endangered	May occur in License Area
Hawaiian goose or nēnē (*Branta sandvicensis*)	Endangered	Known to occur in License Area
Hawaiian petrel (*Pterodroma sandwichensis*)	Endangered	May occur in License Area
Newell's shearwater (*Puffinus auricularis newelli*)	Threatened	May occur in License Area
Band-rumped storm petrel (*Oceanodroma castro*)	Proposed endangered	May occur in License Area
Mammals		
Hawaiian hoary bat (*Lasiurus cinereus semotus*)	Endangered	Likely to occur in License Area
Reptiles		
Green sea turtle (*Chelonia mydas*)	Threatened	Unlikely to occur In License Area
Hawksbill sea turtle (*Eretmochelys imbricata*)	Endangered	Unlikely to occur In License Area
Invertebrates		
Flying earwig Hawaiian damselfly (*Megalagrion nesiotes*)	Endangered	Known to occur in License Area
Orangeblack Hawaiian damselfly (*Megalagrion xanthomelas*)	Endangered	May occur in License Area
Pacific Hawaiian damselfly (*Megalagrion pacificum*)	Endangered	Known to occur in License Area
Yellow-faced bee (*Hylaeus anthracinus*)	Endangered	Unlikely to occur in License Area
Yellow-faced bee (*H. assimulans*)	Endangered	Unlikely to occur in License Area
Yellow-faced bee (*H. longiceps*)	Endangered	Unlikely to occur in License Area
Blackburn's sphinx moth (*Manduca blackburni*)	Endangered	May occur in License Area

List from FEIS for water licenses, but immediately adjacent

Figure 7. *C.* Kauhikoa Ditch, lined open-ditch section at ʻŌpana Stream.

USGS
science for a changing world

Important for you to know:

- Water Data for the Nation is replacing NWISweb over the next 3 years. On Thursday, December 19th at 2 PM EST / 11 AM PST, join our Teams Live Event to learn more about the NWISweb decommission. Registration is required! Register for the event here.

IMPORTANT Inventory Page

Kauhikoa Ditch at Opana Weir NR Huelo, Maui, HI - 16602000

No continuous, daily or groundwater visit collection types are available for this site.

Interested in understanding how to access the upstream/downstream data? Learn about the Network-Linked Data Index (NLDI)

Summary of sample data +

Summary of all available data +

Location metadata +

Questions or Comments

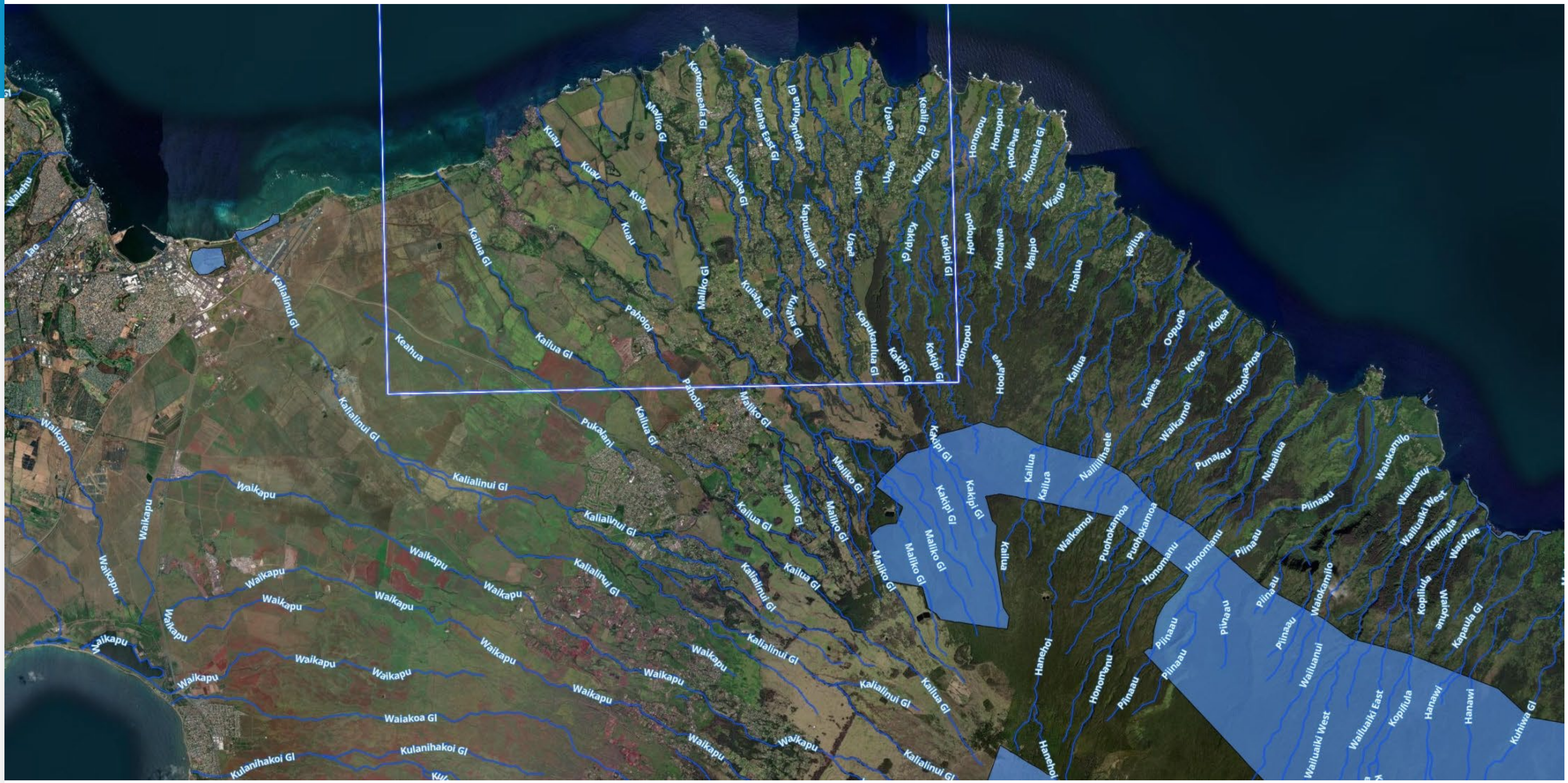

HALEHAKU GULCH.

Thanks!

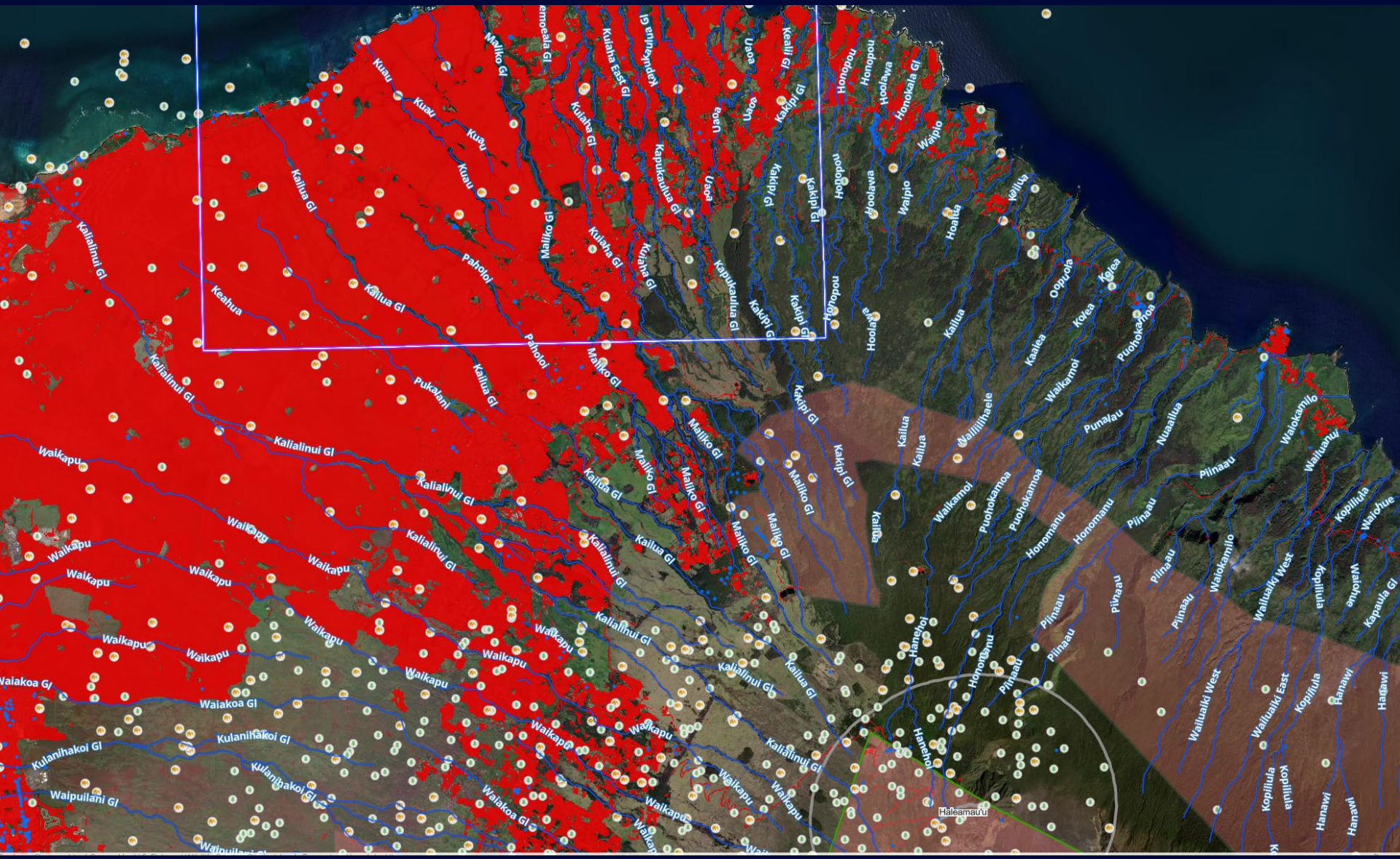
By Water
All Things
Find Life

Spares

- Benthic Ecosystems
- There is some coral reef habitat in the subject area



- Critical Habitat



Threatened and Endangered Species Identified
Map from a Clemson University Study

Aloha Kenneth and Hugh,

My husband, Maurice and I bought our property here in Maliko in 1985. It has a riparian boundary and that boundary was underwater for the first 15 years we lived here. The first ten years we had between 100 and 150 inches of rain per year. Our land had a thick layer of moss that acted like a sponge and held the water for weeks slowly releasing it into Maliko which kept it running all year round.

We had a 100 foot waterfall within 200 feet of our home and we weren't able to hear our TV for months at a time, the roar was so loud at times.

That moss is gone now except for a few extremely shaded places and the stream is partially dry now too, only running after a significant storm. I currently have a neighbor who thinks I'm somehow to blame for the lack of rainfall and streamflow.

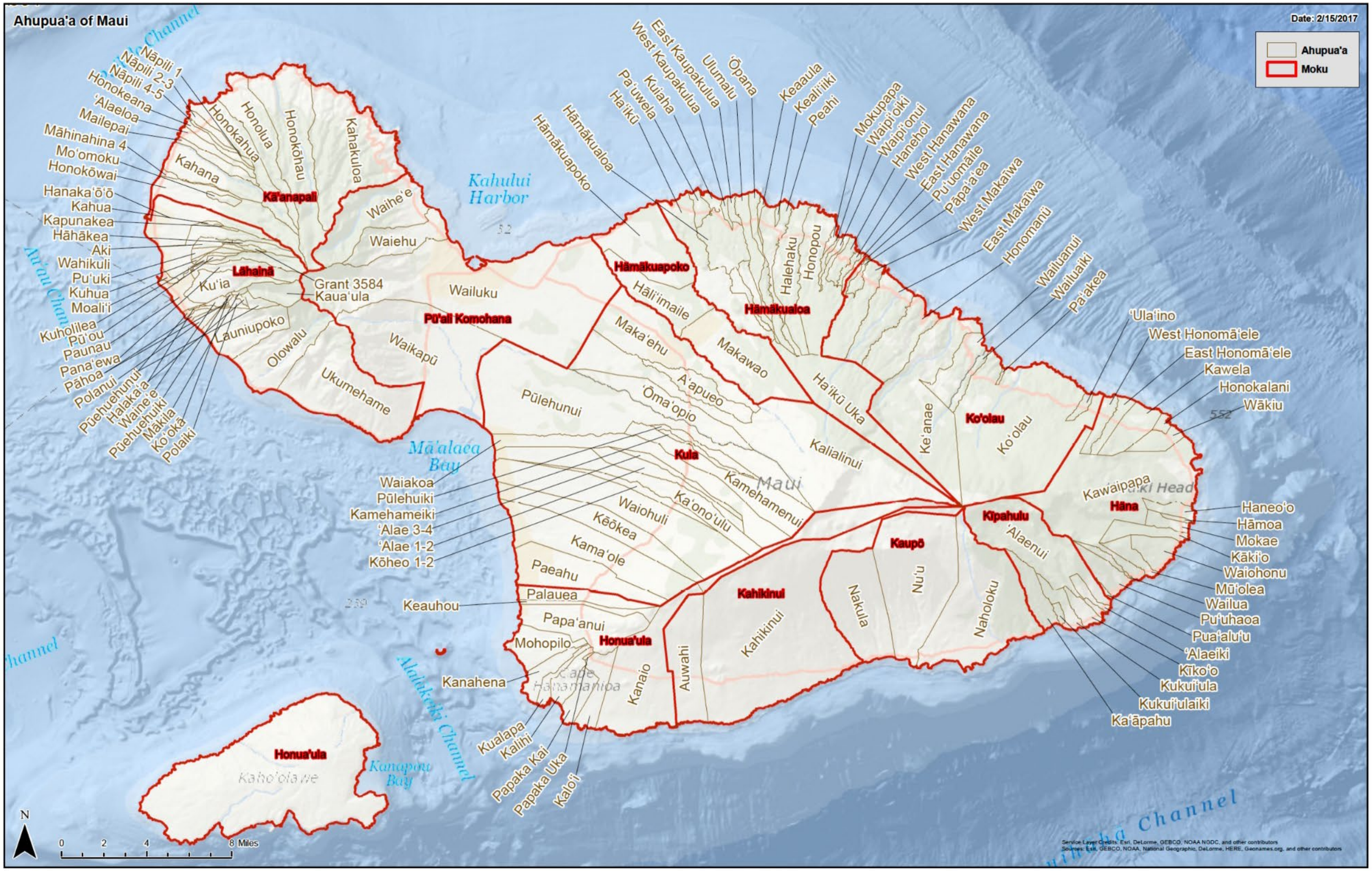
In those early days it rained every night and cleared up around 10 am and then we would experience fog and steam as the sun heated up the damp ground for about an hour or two until noon when we'd have good productive work days until 6 or 7 pm when the rain would start again.

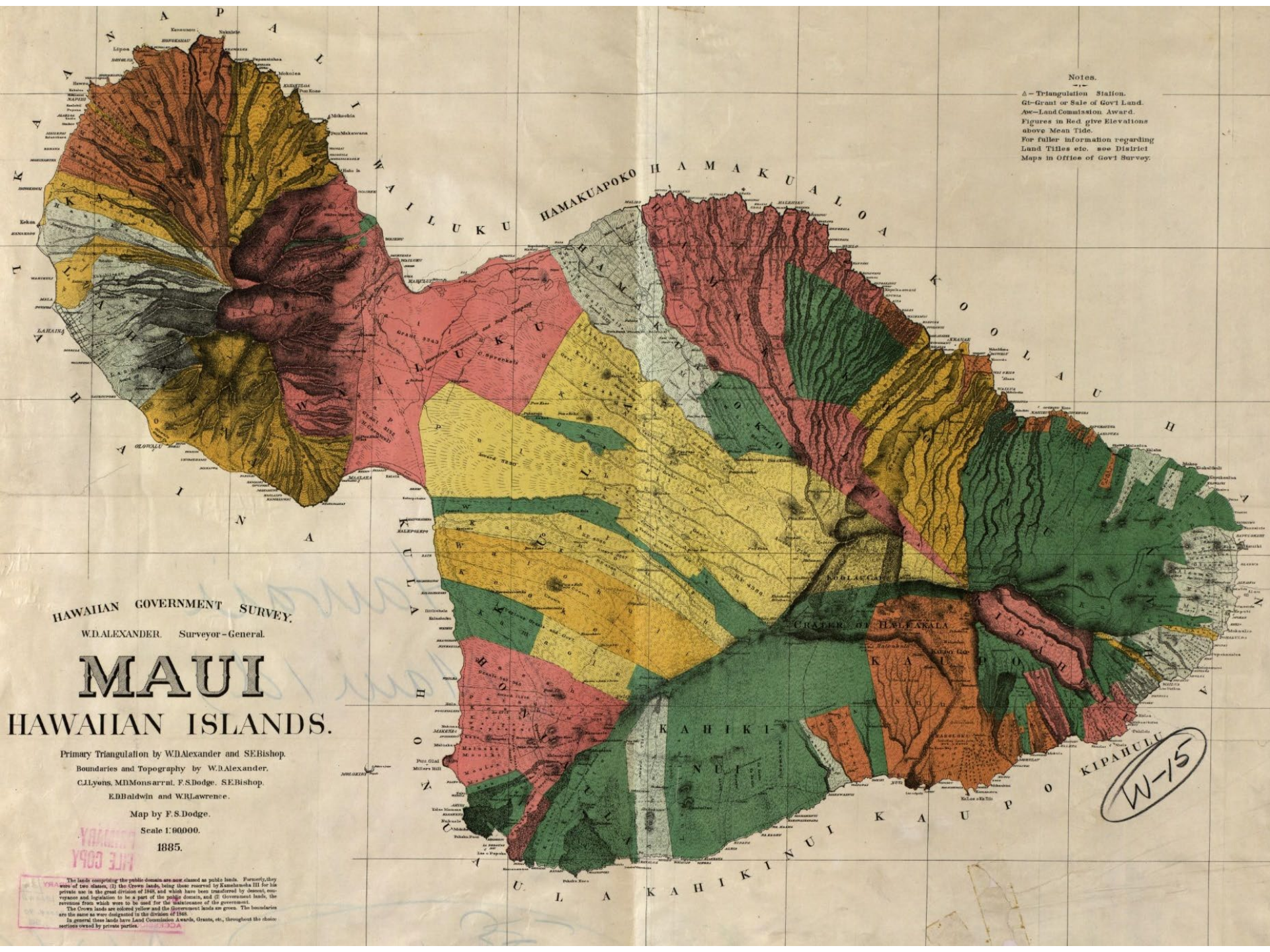
There were a lot more trees on the slopes of Haleakala at that time. I have a clear view of that forested area that borders the watershed area. What kind of trees is unknown but it was dark green and the clouds formed right there. Large swaths of forest have been removed from that area. At this same time the jet stream moved and as Kenneth and Hugh observed, wind patterns changed.

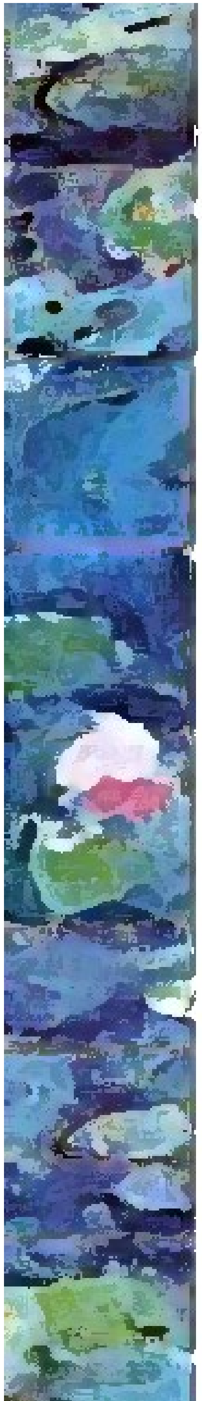
Last year we had 20 inches of rain here on our property. The year before just under 15 inches. In June of this year, the year round portion of Maliko that's been fed by springs all these years stopped running. This is the first time that has happened in the past 40 years. We still have water in the pools but not enough to get it to spill into the next pool until it reaches the area where it goes underground.

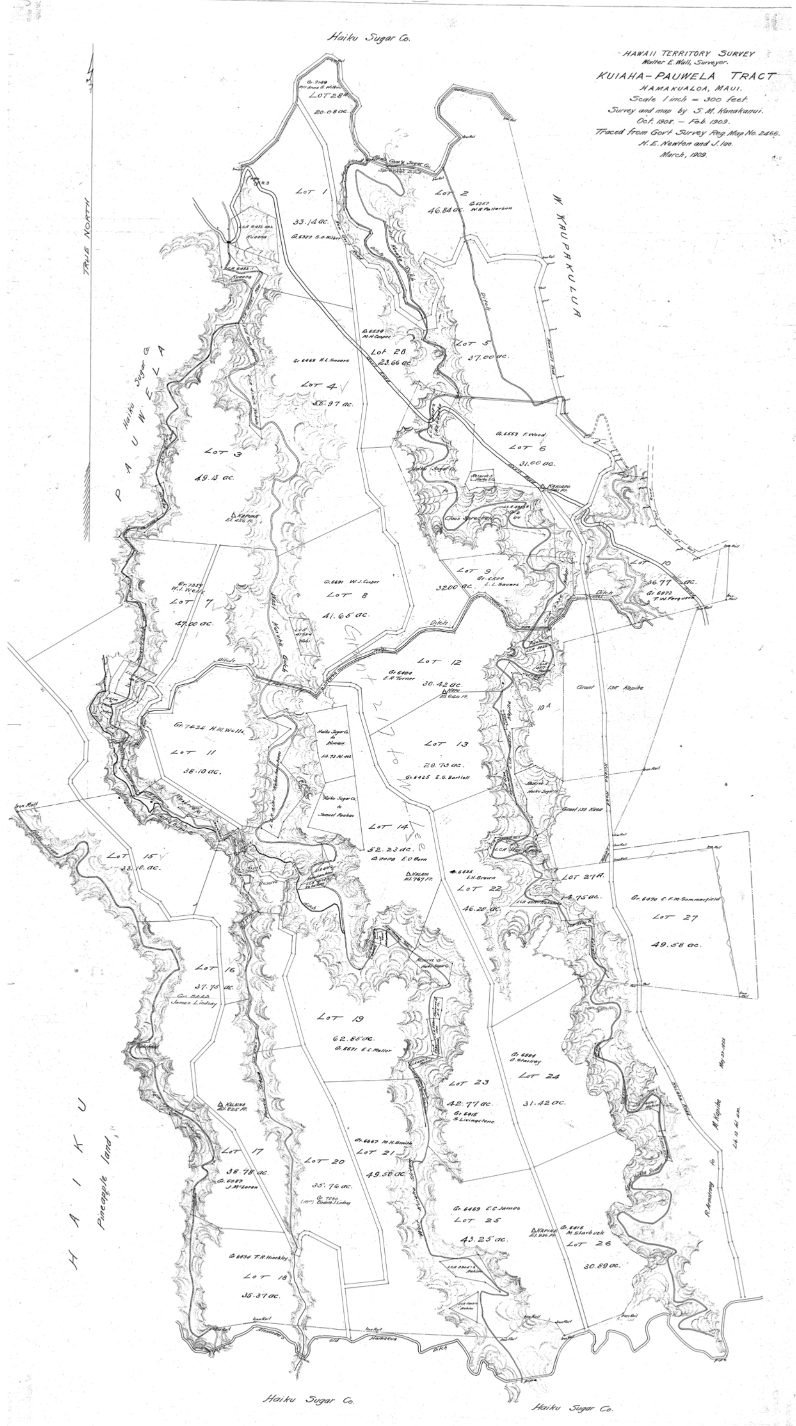
Hugh, hearing that this happened once before in the 1800s gives me hope that things will return to "normal."

I'm including this painting which was done in the 1800s by Edward Bailey and hangs at the Bailey House. I took this photo of the painting many years ago. It has darkened over the years and currently needs restoration. But it shows Maliko, much of it currently my property and Eve Hogan's property and it appears dry like now only with much worse erosion than we have now since we have worked to control the drainage issues.


Ahupua'a of Maui
Date: 2/15/2017
Ahupua'a
Moku
Kahului Harbor
Mā'alaea Bay
Ka'anapali
Lāhainā
Pū'ali Komohana
Hāmākuapoko
Hāmākualoa
Ko'olau
Kula
Hāna
Kīpahulu
Kaupō
Kahikinui
Honua'ula
Maui
Kaho'olawe
Kanapou Bay
Alalakeiki Channel
Cape Hanamanioa
Nāpili 1
Nāpili 2-3
Nāpili 4-5
Honokeana
'Alaeloa
Mailepai
Māhinahina 4
Mo'omoku
Honokōwai
Hanaka'ō'ō
Kahua
Kapunakea
Hāhākea
Aki
Wahikuli
Pu'uki
Kuhua
Moali'i
Kuholilea
Pū'ou
Paunau
Pana'ewa
Pāhoa
Polanui
Puehuehunui
Halaka'a
Waine'e
Puehuehuiki
Mākila
Ko'okā
Polaiki
Honokahua
Honolua
Honokōhau
Kahakuloa
Kahana
Waihe'e
Waiehu
Grant 3584
Kaua'ula
Ku'ia
Launiupoko
Olowalu
Ukumehame
Wailuku
Waikapū
Hāmākuapoko
Hāmākualoa
Ha'ikū
Pa'uwela
Kuiaha
West Kaupakulua
East Kaupakulua
Ulumalu
Ōpana
Keaaula
Keali'iiki
Peahi
Halehaku
Honopou
Mokupapa
Waipi'oiki
Waipi'onui
Hanehoi
West Hanawana
East Hanawana
Pu'uomaile
Pāpa'a'ea
West Makaiwa
East Makaiwa
Honomanū
Wailuanui
Wailuaiki
Pa'akea
Hāli'imaile
Maka'ehu
Makawao
A'apueo
'Ōma'opio
Pūlehunui
Ha'ikū Uka
Kalialinui
Ke'anae
Ko'olau
Kamehamenui
Ka'ono'ulu
Waiohuli
Kēōkea
Kama'ole
Paeahu
Palauea
Papa'anui
Mohopilo
Kanaio
Auwahi
Kahikinui
Nakula
Nu'u
Naholoku
'Ālaenui
Kawaipapa
'Ula'ino
West Honomā'ele
East Honomā'ele
Kawela
Honokalani
Wākiu
Haneo'o
Hāmoa
Mokae
Kāki'o
Waiohonu
Mū'olea
Wailua
Pu'uhaoa
Pua'alu'u
'Alaeiki
Kīko'o
Kukui'ula
Kukui'ulaiki
Ka'āpahu
Waiakoa
Pūlehuiki
Kamehameiki
'Alae 3-4
'Alae 1-2
Kōheo 1-2
Keauhou
Kanahena
Kualapa
Kalihi
Papaka Kai
Papaka Uka
Kalo'i
N
0 2 4 8 Miles


Notes.
△ – Triangulation Station.
Gt–Grant or Sale of Govt Land.
Aw–Land Commission Award.
Figures in Red give Elevations above Mean Tide.
For fuller information regarding Land Titles etc. see District Maps in Offices of Govt Survey.
HAWAIIAN GOVERNMENT SURVEY.
W.D.ALEXANDER. Surveyor-General.
MAUI
HAWAIIAN ISLANDS.
Primary Triangulation by W.D.Alexander and S.E.Bishop.
Boundaries and Topography by W.D.Alexander, C.J.Lyons, M.D.Monsarrat, F.S.Dodge, S.E.Bishop, E.D.Baldwin and W.R.Lawrence.
Map by F.S.Dodge.
Scale 1:90000.
1885.
HAMAKUAPOKO
HAMAKUALOA
KAHIKINUI
KIPAHULU
CRATER OF HALEAKALA
W-15





HAWAII TERRITORY SURVEY
Walter E. Wall, Surveyor.
KUIAHA-PAUWELA TRACT
HAMAKUALOA, MAUI.
Scale 1 inch = 300 feet.
Survey and map by S. M. Kanakanui.
Oct. 1908. – Feb. 1909.
Traced from Gov't Survey Reg. Map No. 2466.
H. E. Newton and J. Iao.
March, 1909.
Haiku Sugar Co.
TRUE NORTH
PAUWELA
W. KAUPAKULUA
HAIKU
Pineapple land
Lot 1 33.14 ac.
Lot 2 46.84 ac.
Lot 3 49.13 ac.
Lot 4 35.97 ac.
Lot 5 37.00 ac.
Lot 6 31.00 ac.
Lot 7 47.00 ac.
Lot 8 41.65 ac.
Lot 9 32.00 ac.
Lot 10 36.77 ac.
Lot 11 38.10 ac.
Lot 12 30.42 ac.
Lot 13 29.73 ac.
Lot 14 52.23 ac.
Lot 16 37.79 ac.
Lot 17 38.78 ac.
Lot 18 35.37 ac.
Lot 19 62.85 ac.
Lot 20 35.76 ac.
Lot 21 49.56 ac.
Lot 22 46.28 ac.
Lot 23 42.77 ac.
Lot 24 31.42 ac.
Lot 25 43.25 ac.
Lot 26 30.89 ac.
Lot 27 49.58 ac.
Lot 28 23.66 ac.
Haiku Sugar Co.
Haiku Sugar Co.