Monsanto Company
Petition to Voluntarily Designate 1,084.079 acres at Naiwa, Manowainui, Kahanui, Moloka‘i as Important Agricultural Lands (IAL)

State of Hawai‘i Land Use Commission
October 18, 2017

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EXHIBIT 16

Monsanto Serves Farmers Around the World

Working with Growers Large and Small

100% Agriculture

MONSANTO

Vegetable Seeds

- **Over 2,000 seed varieties covering 22 vegetable crops.**
- **Develop and provide** seeds in all major markets globally, including conventional and organic farmers.
- **Deliver quality vegetable seeds** under the Seminis brand to many Hawai'i farmers, both conventional and organic.

De Ruiter™
Sharing your passion.
Seeding your success.

Seminis®
grow forward

MONSANTO

Row Crop Seeds

- High-quality seeds are at the center of our business.
- Monsanto helps farmers achieve better harvests while using natural resources more efficiently.

Eight Row Crops

Sugarbeet | Corn | Soybean | Cotton | OSR/Canola | Sorghum | Wheat | Alfalfa

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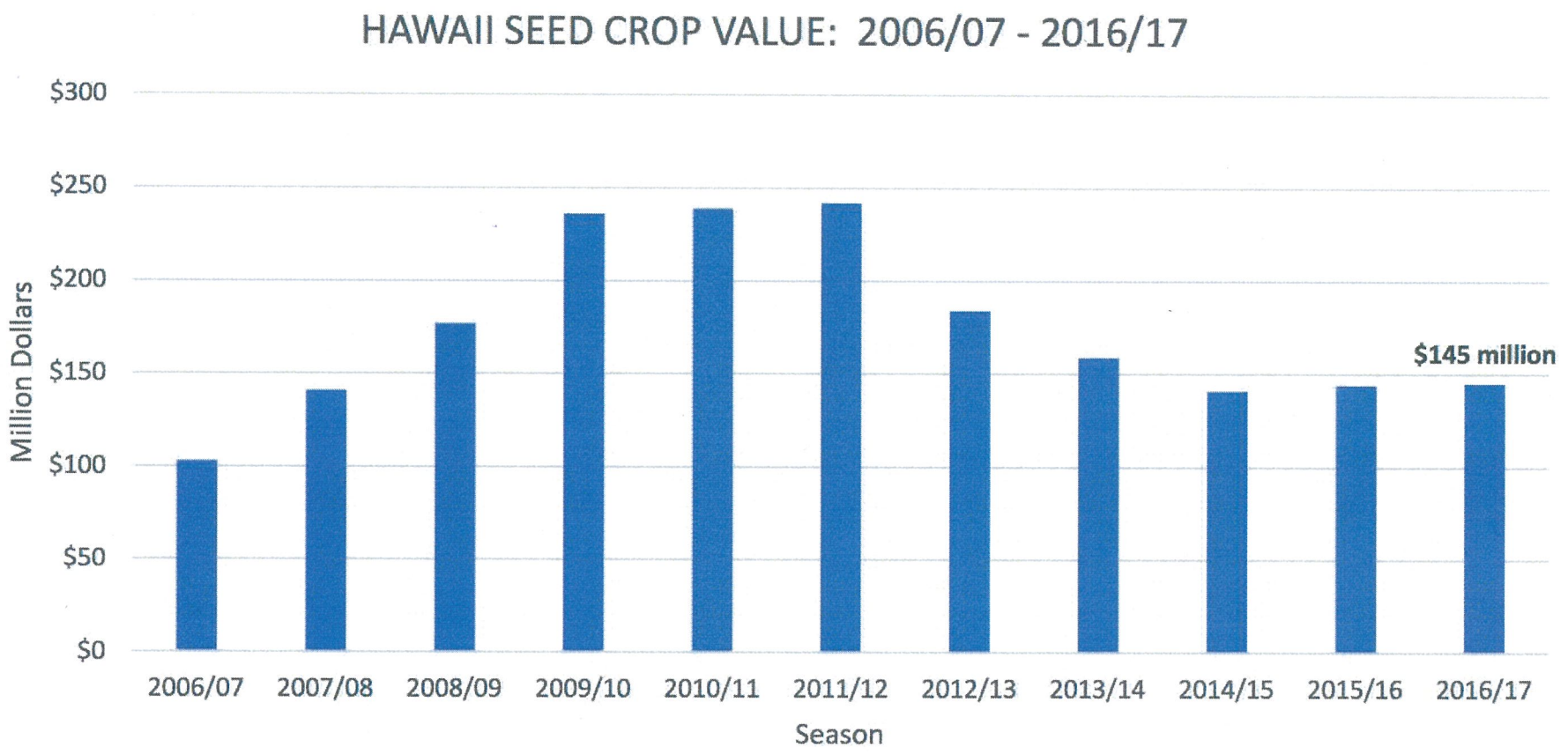
USDA, National Agriculture Statistics Service



Source: United States Department of Agriculture, National Agriculture Statistics Service, June 1, 2017

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Top 20 Commodities, 2015 Crop Year

Top 20 Commodities, State of Hawaii, 2015

Commodity	Rank	Value of production ($1,000)
Seed crops	1	140,830
Cattle	2	68,251
Coffee	3	49,214
Sugarcane	4	48,148
Macadamia nuts	5	40,020
Other aquaculture	6	42,426
Algae	7	33,808
Landscape plant material	8	15,240
Bananas	9	10,866
Papayas	10	10,570
Milk	11	9,975
Lettuce	12	9,270
Cucumbers	13	6,490
Palms, potted	14	5,550
Cabbage, head	15	3,805
Dendrobiums, potted	16	3,502
Plant rentals	17	3,193
Honey	18	2,785
Hogs	19	2,742
Anthurium, cut	20	2,638

Source: United States Department of Agriculture, National Agriculture Statistics Service, March 2017

HRS § 205-42(a)(2): Important agricultural lands; definition and objectives. . . .

"important agricultural lands" means those lands . . . that:

Contribute to the State's economic base and produce agricultural commodities for export or local consumption.

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Economics and Employment

- 1964, University of Hawai‘i College of Tropical Agriculture and Human Resources, Seed Industry Council.
- 1969, $500,000 agricultural industry.
- Today, $323 million total economic impact including multiplier effects.
- 20% of ag workers in Hawai‘i are seed industry employees.
- 66 full time Monsanto employees on Moloka‘i.

HRS § 205-42(b) The objective for the identification of IAL is to . . .

- **support a diversity of agricultural activities and opportunities that expand agricultural income and job opportunities**
- **increase agricultural self-sufficiency for current and future generations**

Source: Fifty Years of Seed in the Fiftieth State Economic Report of the Hawaii Crop Improvement Association

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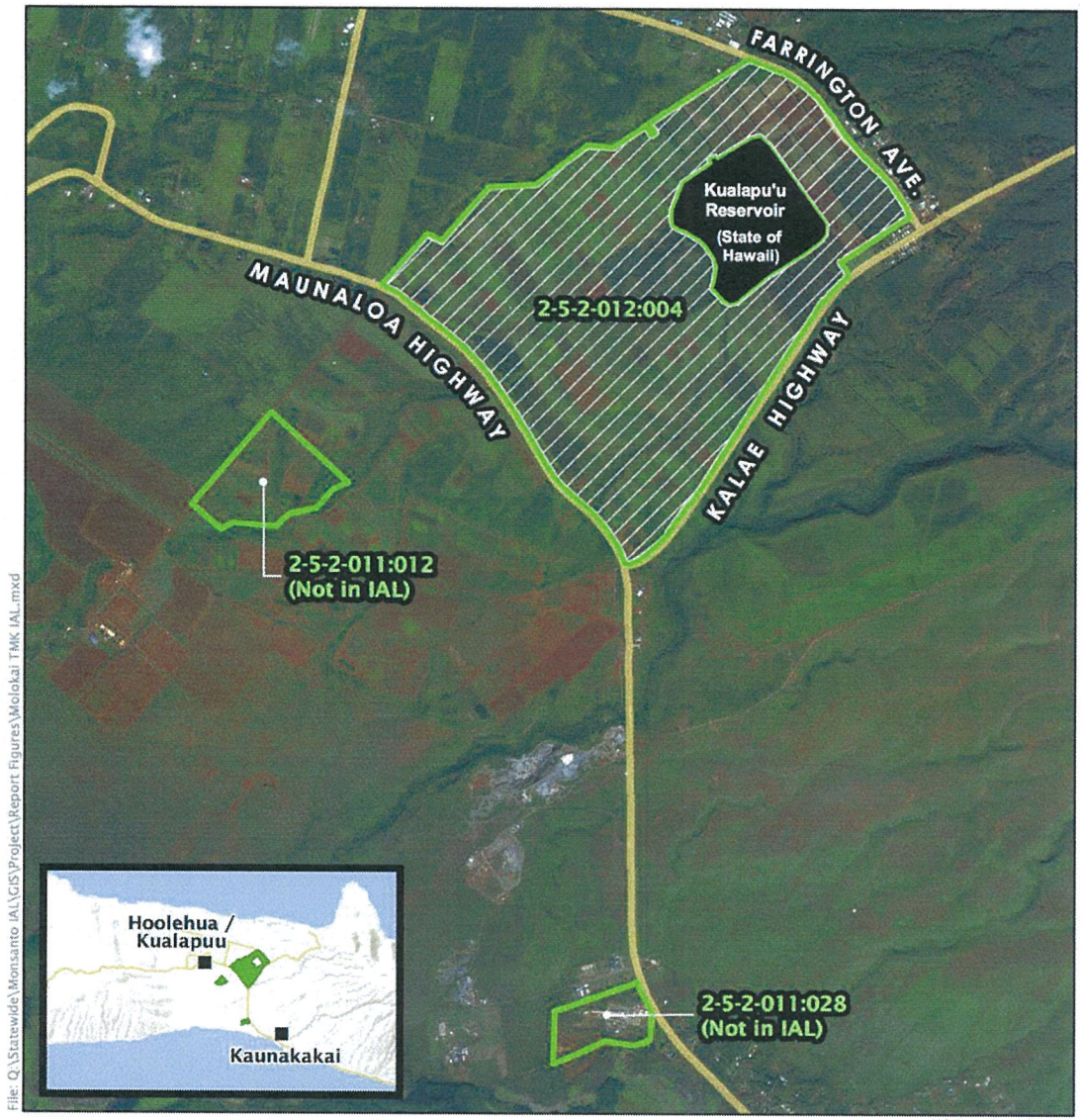

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IAL

- Monsanto owns 1817.36 acres in Maui County.
- Proposing 1084.079 acres on Moloka'i to be designated as IAL.
- 60% of total landholdings in Maui County.
- 89% of total landholdings on Moloka'i.

Standards and criteria . . . *land that contributes to maintaining a critical land mass important to agricultural operating productivity.* (*HRS §205-44(c)(7)*)

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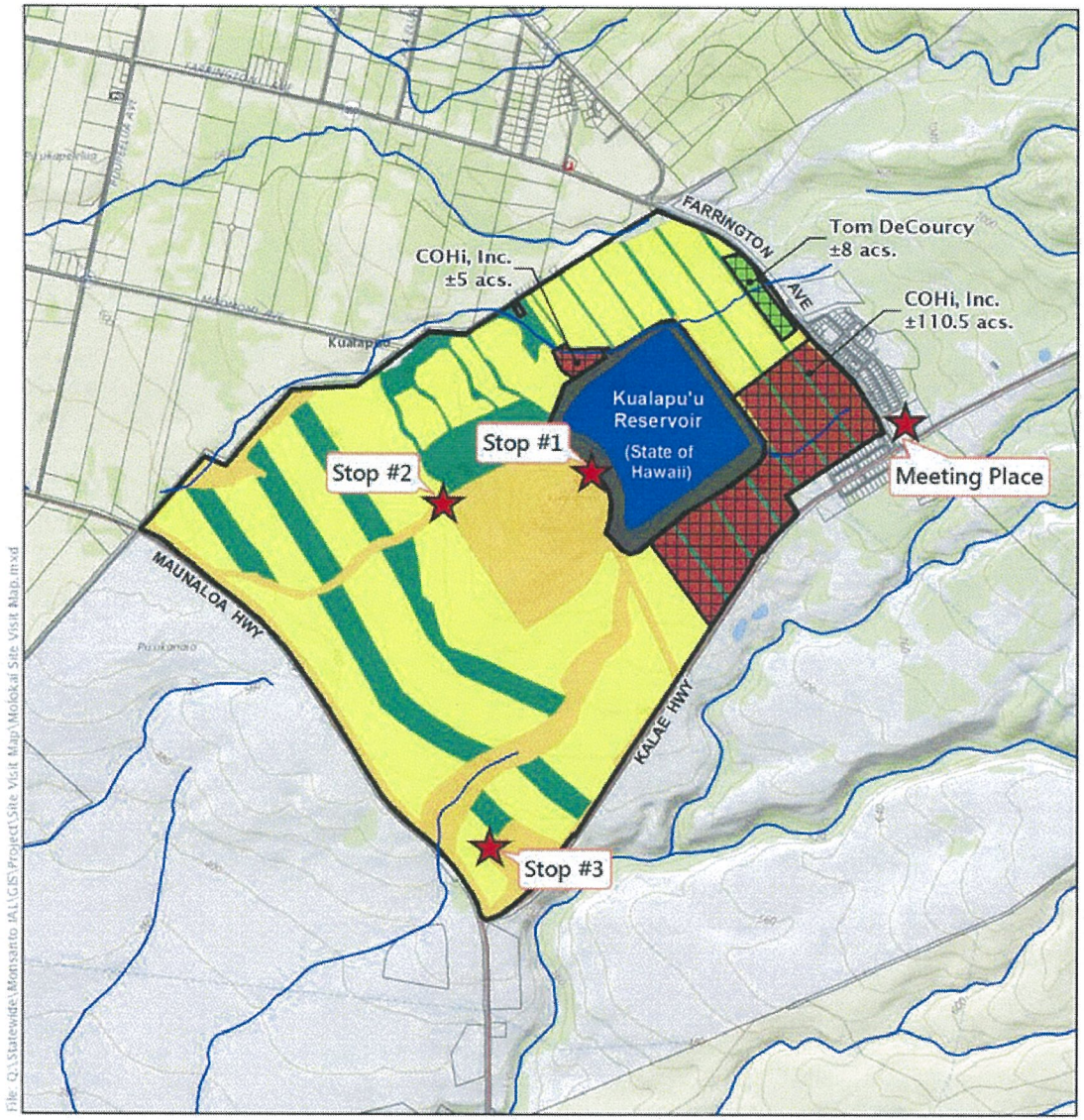
Land Use



LEGEND

- Proposed IAL
- Owned by Others
- Leases
- TMK Parcels
- Reservoirs
- Streams / Gulches
- Roads

Current Agricultural Use

- Corn and Soybean
- Coffee
- Sunn Hemp Seed
- Soil Conservation
- Other (non classified, native plant restoration, pu'u, gulch)
- Site Visit Viewing Points

Source: Monsanto Company (2017). County of Maui. ESRI Online Basemap.
Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 2
Agricultural Areas
(10/18/17 Site Visit Viewing Points)

Monsanto IAL

Monsanto Company — Island of Moloka'i
North — Linear Scale (Feet)
0 500 1,000 2,000

Agricultural Use	Acres	Percent
Corn and Soybean Production	524.400	48%
Coffee & Sunn Hemp Seed Production	123.500	12%
Soil Conservation	210.00	20%
Other (non classified, plant restoration, gulch)	168.179	15%
Pu'u	58.000	5%
Total	1,084.079	100%

Standards and criteria . . . *land currently used for agricultural production. (HRS §205-44(c)(1))*

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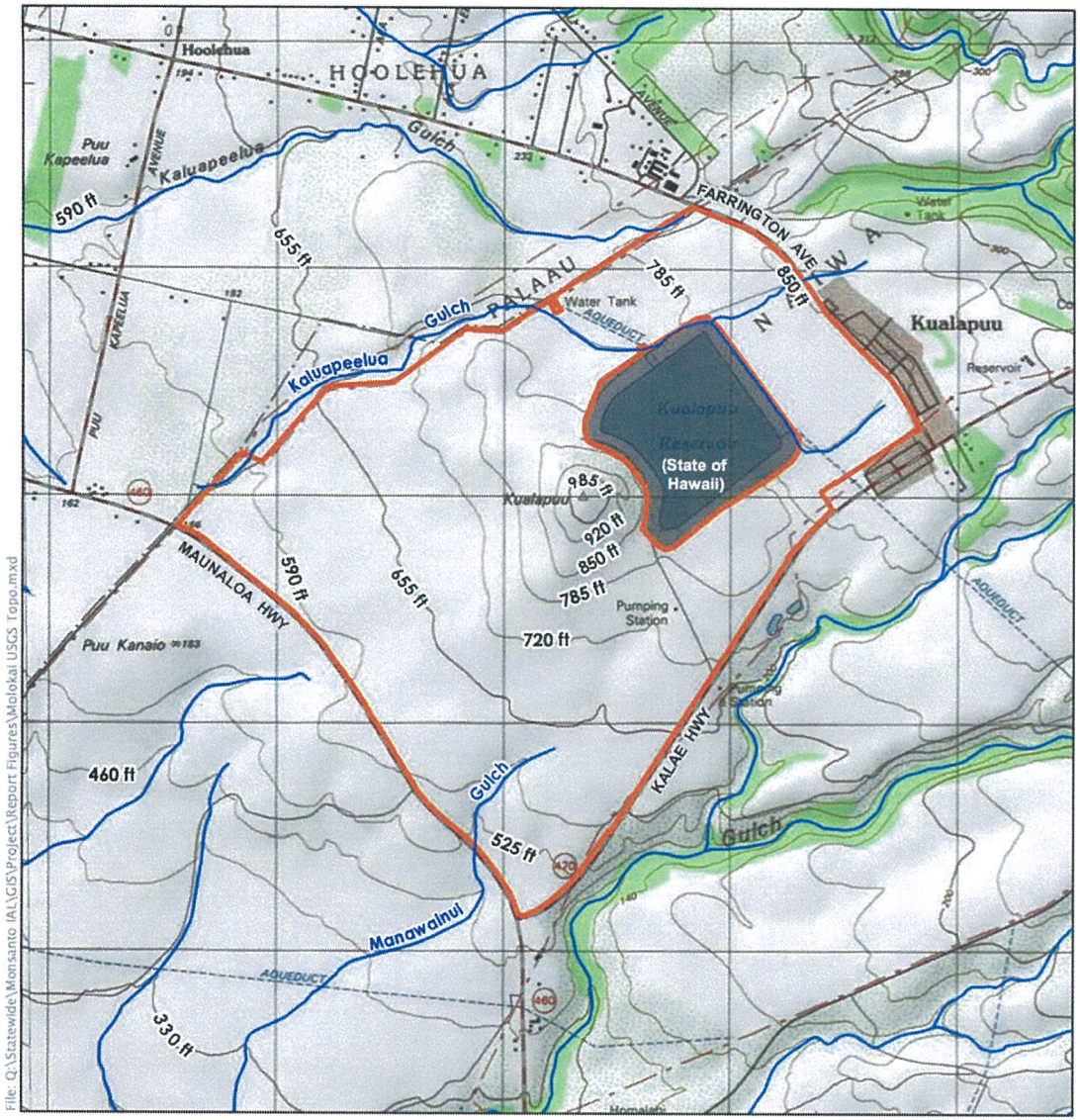
Topography and Streams



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DATE: 9/25/2017

LEGEND

- Proposed IAL
- Owned by Others
- Streams / Gulches

Figure 3

Topography and Streams

Monsanto IAL

Monsanto Company — Island of Moloka'i

North — Linear Scale (Feet) 0 500 1,000 2,000

Source: U.S. Geological Survey, State of Hawaii, County of Maui.
Disclaimer: This graphic has been prepared for general planning purposes only.

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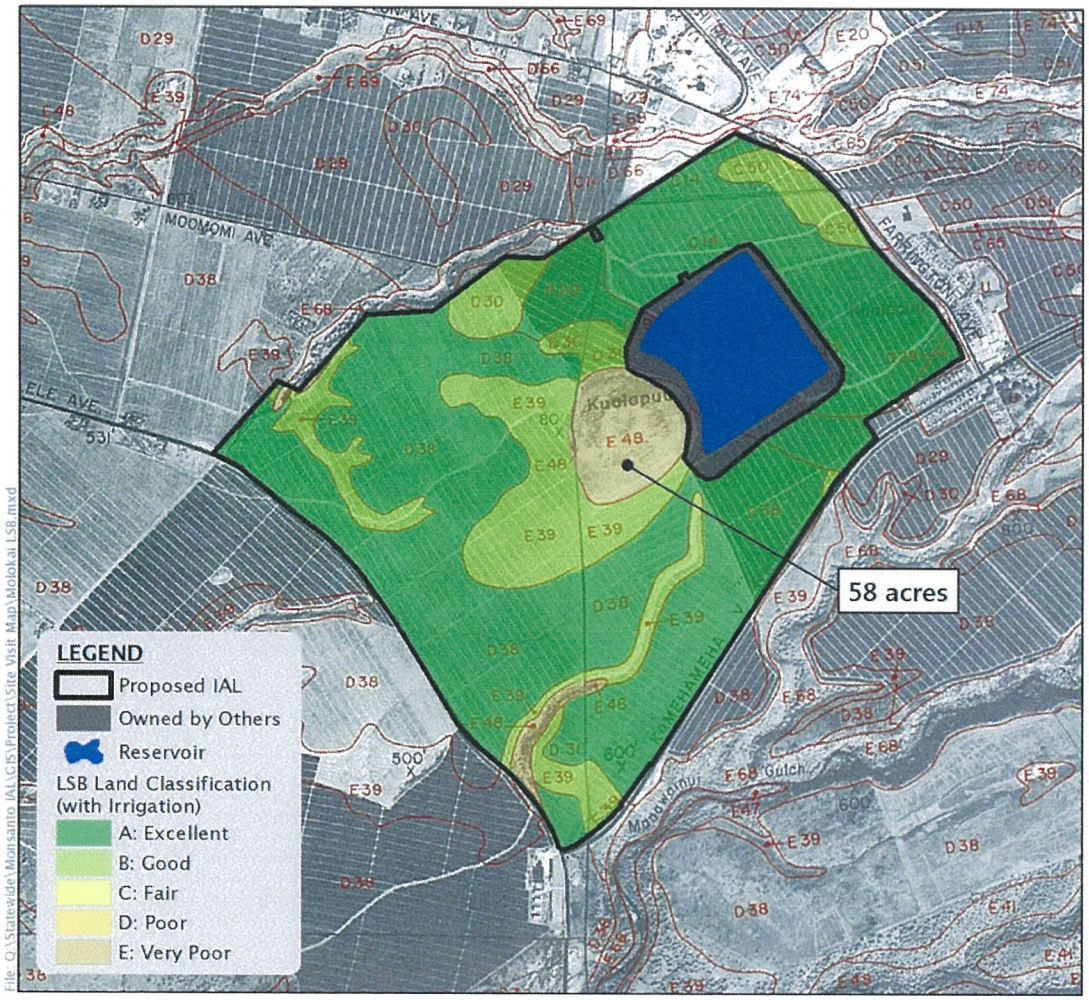
LSB

(Land Study Bureau)
Detailed Land Classification System



This map, from the LSB's *Detailed Land Classification – Island of Molokai*, (colors added) was published in 1968, before the construction and operation of the Kualapu'u Reservoir (built in 1969 and drawn in the upper center of the Property) made it possible to irrigate the Property.

The LSB system classifies soil productively as A, B, C, D, and E. These letter ratings are combined with a Land Type number for both irrigated (indicated by "i" after the Land Type number) and unirrigated conditions (indicated by the absence of an "i" after the Land Type number). For example, land designated D 38 (as shown throughout most of the lower portion of the Property) is the same Land Type as land designated A 38i, with the difference being a much higher productivity rating with irrigation.

As shown on this 1968 map, the unirrigated productivity ratings of the Property range from C to E without irrigation; however, based on the Land Type number, and with irrigation, over 93% of the Property has a productivity rating of A (70.4 %) or B (22.8 %) and less than 7% of the Property has a productively rating of C (0.1 %) or E (6.7 %). None of the Property has a productivity rating of D.

For more information please refer to the text in Section 4 and Appendix A.

Source: University of Hawaii Land Study Bureau (1968) *Detailed Land Classification - Island of Molokai.*
Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 4b

Land Study Bureau (LSB)
Detailed Land Classification System

Monsanto IAL

Monsanto Company — Island of Moloka'i
North — Linear Scale (Feet)
0 500 1,000 2,000

PBR HAWAII

Productivity Rating	Total IAL	
	Acres	% of IAL
A	764.504	70.4%
B	245.739	22.8%
C	1.298	0.1%
D	0	0%
E	72.538	6.7%
Total	1084.079	100%

Standards and criteria . . . *land with soil qualities and growing conditions that support agricultural production of food, fiber, or fuel- and energy-producing crops. (HRS §205-44(c)(2))*

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Figure 5

Agricultural Lands of Importance to the State of Hawaii (ALISH)

ALISH

(Agricultural Lands of Importance to the State of Hawai'i)

ALISH Classifications	Total IAL	
	Acres	% of IAL
Prime	975.729	90%
Unique	0	0%
Other	7.453	0.7%
Unclassified	100.897	9.3%
Total	1,084.079	100%

Standards and criteria . . . *land identified under agricultural productivity rating systems, such as the agricultural lands of importance to the State of Hawai'i (ALISH) system . . . (HRS §205-44(c)(3))*

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Solar Radiation

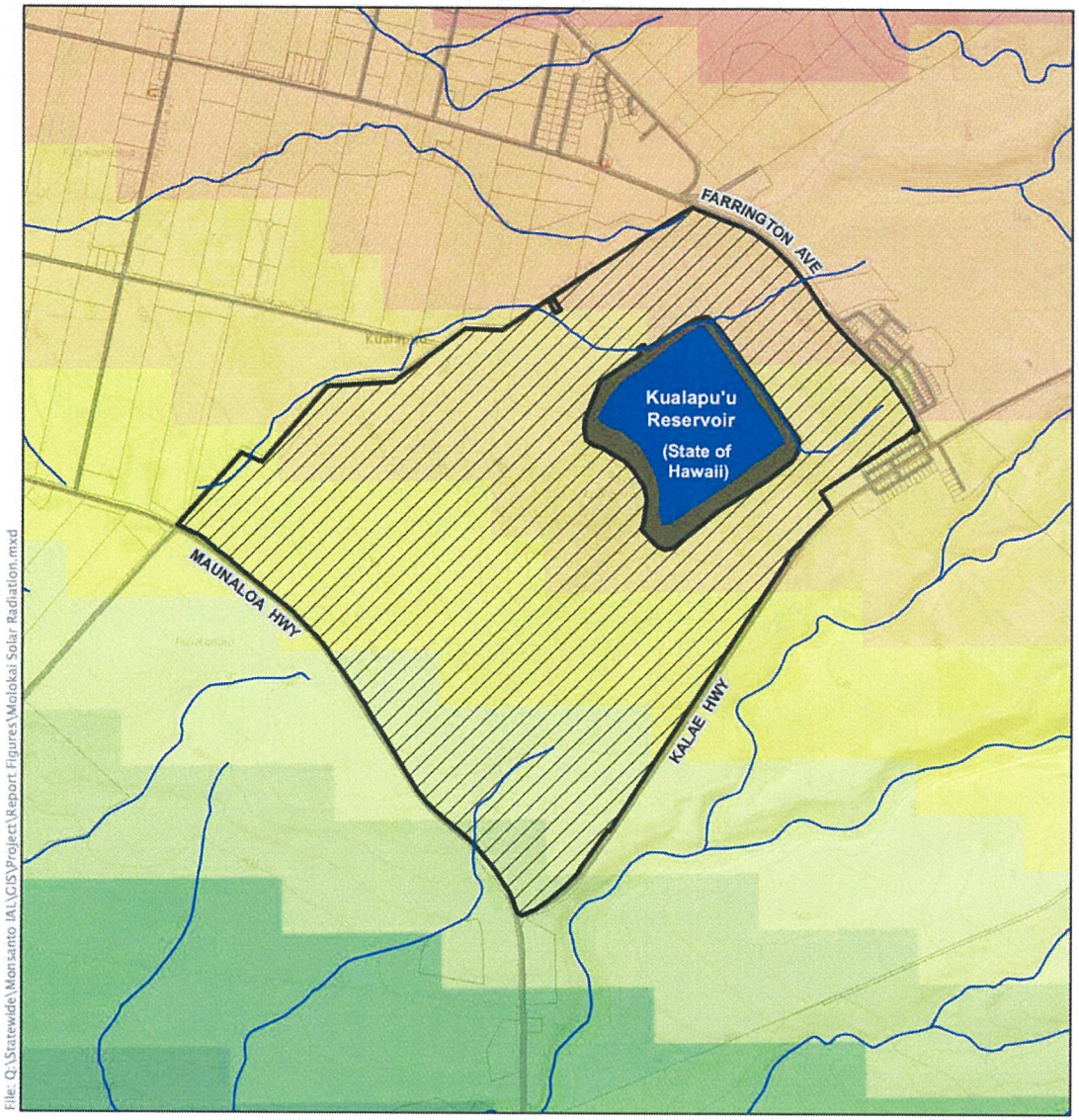

Figure 6

Solar Radiation

Monsanto IAL

Monsanto Company — Island of Moloka'i

North — Linear Scale (Feet) 0 500 1,000 2,000

Mean annual solar radiation: 215 to 240 watts per square meter per hour.

Standards and criteria . . . *land with . . . growing conditions that support agricultural production of food, fiber, or fuel- and energy-producing crops. (HRS §205-44(c)(2))*

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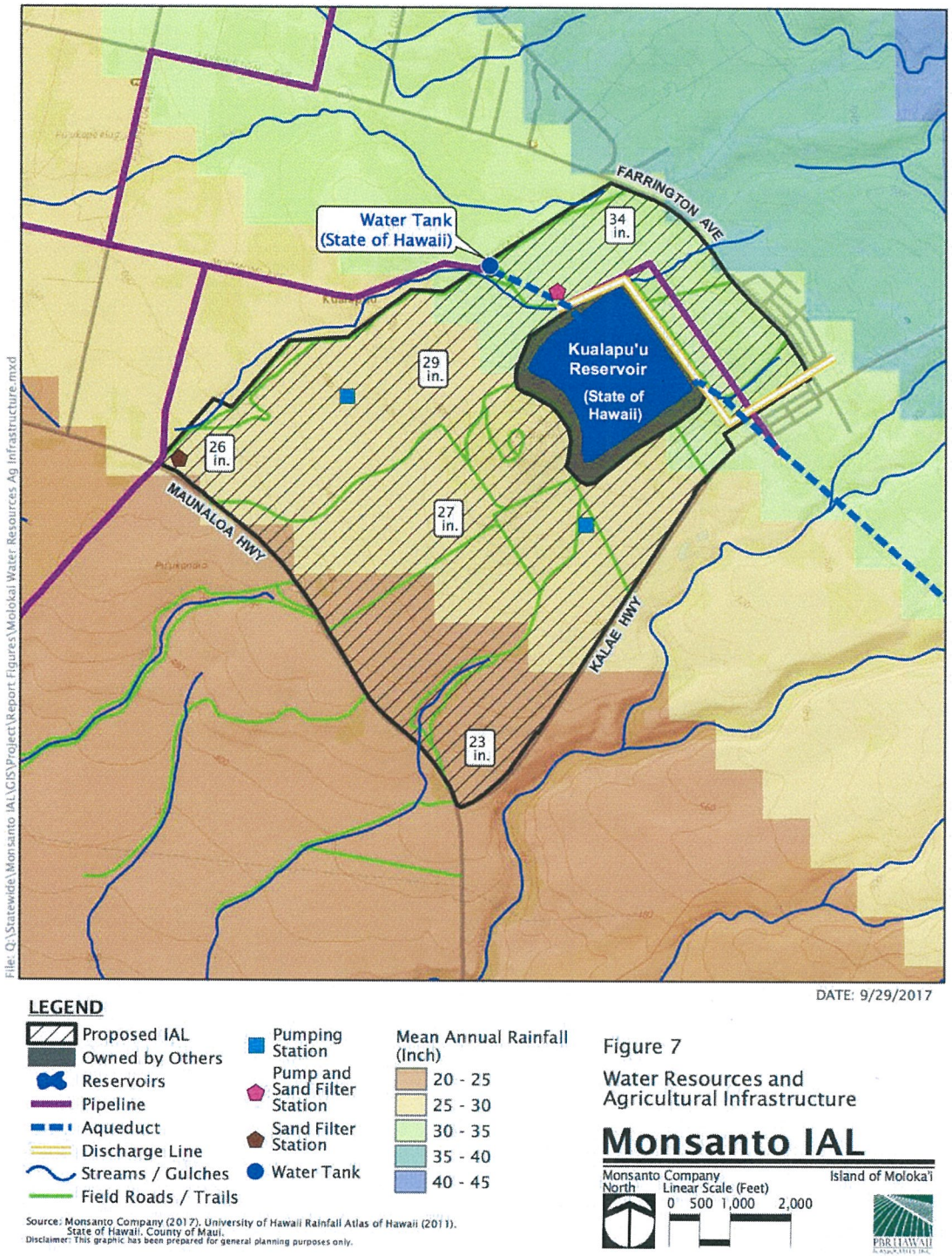
Water Resources and Agricultural Infrastructure



- Source of Water: Moloka'i Irrigation System ("MIS")
- MIS is owned and operated by the Agricultural Resource Management Division of the Department of Agriculture, State of Hawaii
- Mean annual rainfall: 22" to 34"

Standards and criteria . . . *land with sufficient quantities of water to support viable agricultural production. (HRS §205-44(c)(5))*

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Hawai'i State Land Use District (SLUD)

Agricultural

Standards and criteria . . . *land with or near support infrastructure conducive to agricultural productivity, such as transportation to markets, water, or power. (HRS §205-44(c)(8))*

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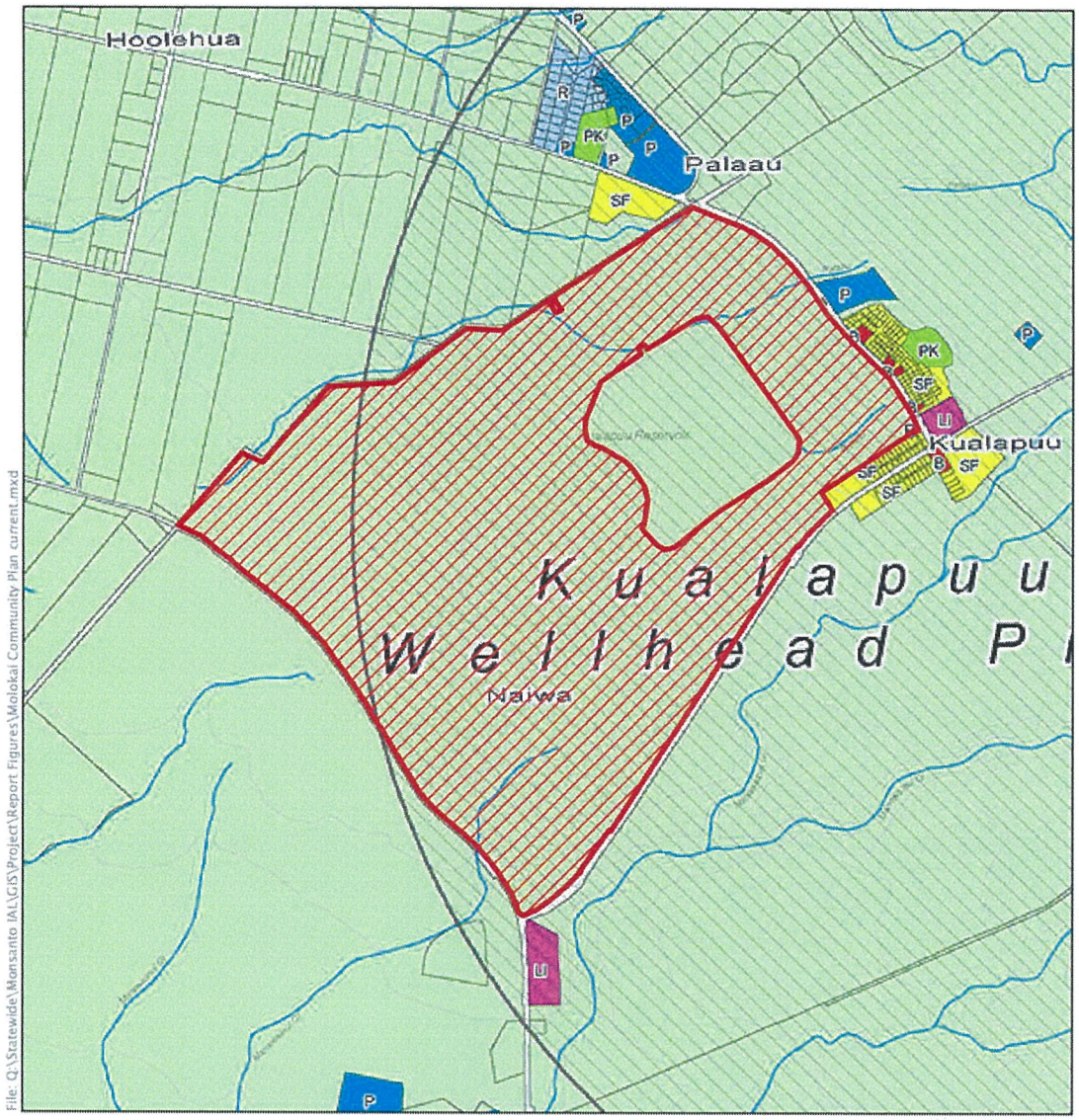
Moloka‘i Development Plan (Current)

- Agriculture Area
- Outside of Urban Community Boundary



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DATE: 9/26/2017

LEGEND

- Proposed IAL
- Agriculture
- Wellhead Protection Buffer

Source: Molokai Community Plan (2001), County of Maui.
Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 9a

Molokai Community Plan (current)

Monsanto IAL

Monsanto Company — Island of Moloka'i

North — Linear Scale (Feet) 0 500 1,000 2,000

PBR HAWAII

Standards and criteria . . . *land whose designation as IAL is consistent with general, development, and community plans of the county. (HRS §205-44(c)(6))*

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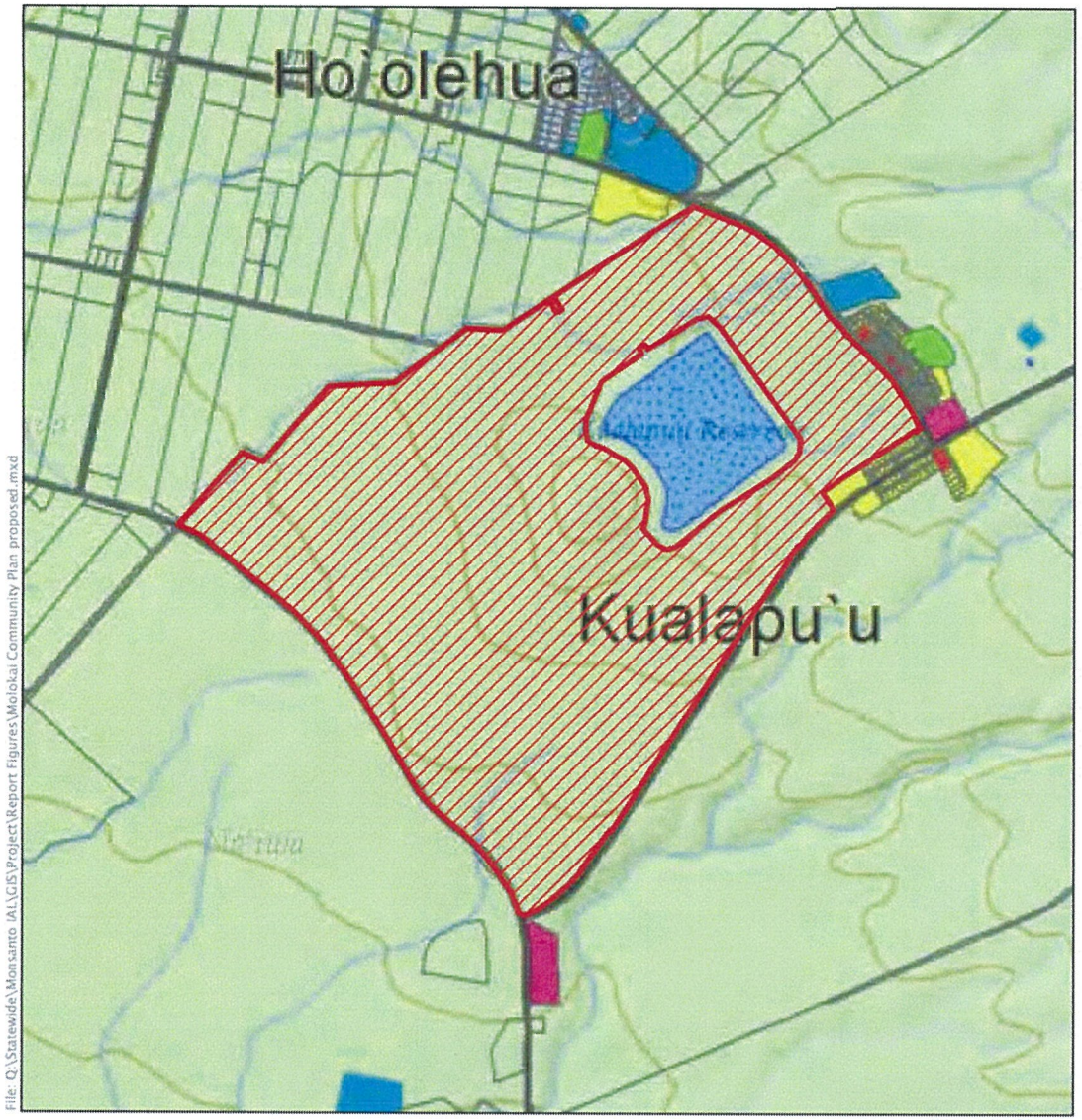
Moloka‘i Development Plan (2017 DRAFT)

Agriculture



Standards and criteria . . . *land with or near support infrastructure conducive to agricultural productivity, such as transportation to markets, water, or power. (HRS §205-44(c)(8))*

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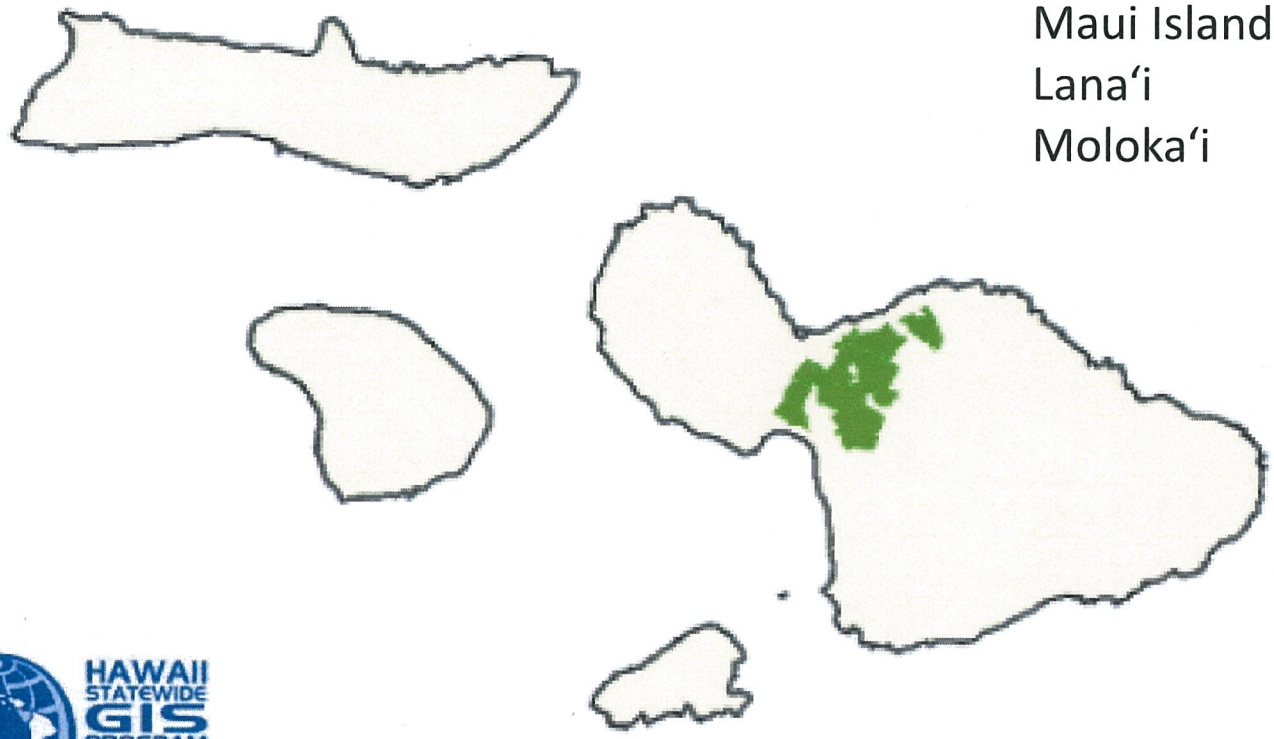
Existing IAL in Maui County



Maui Island	27,102 acres
Lana‘i	0 acres
Moloka‘i	0 acres

HAWAII STATEWIDE GIS PROGRAM
HAWAII STATE OFFICE OF PLANNING

Important Agricultural Lands

For more information about data sources, please refer to imp_ag_lands.pdf

N

January, 2017

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Standards and Criteria for IAL

HRS §205-44(c)

1. *Land currently used for **agricultural production**;*
2. *Land with **soil qualities and growing conditions** that support agricultural production of food, fiber, or fuel-and energy-producing crops;*
3. ***Land identified under agricultural productivity rating systems**, such as the agricultural lands of importance to the State of Hawai'i (ALISH) system adopted by the board of agriculture on January 28, 1977;*
4. *Land types associated with **traditional native Hawaiian agricultural uses**, such as taro cultivation, **or unique agricultural crops** and uses, such as coffee, vineyards, aquaculture, and energy production;*
5. *Land with **sufficient quantities of water** to support viable agricultural production;*
6. *Land whose designation as important agricultural lands is **consistent with general, development and community plans of the county;***
7. *Land that contributes to maintaining a **critical land mass** important to agricultural operation productivity;*
8. *Land with or near **support infrastructure** conducive to agricultural productivity, such as transportation to markets, water or power.*

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Molokai Land Use 1937

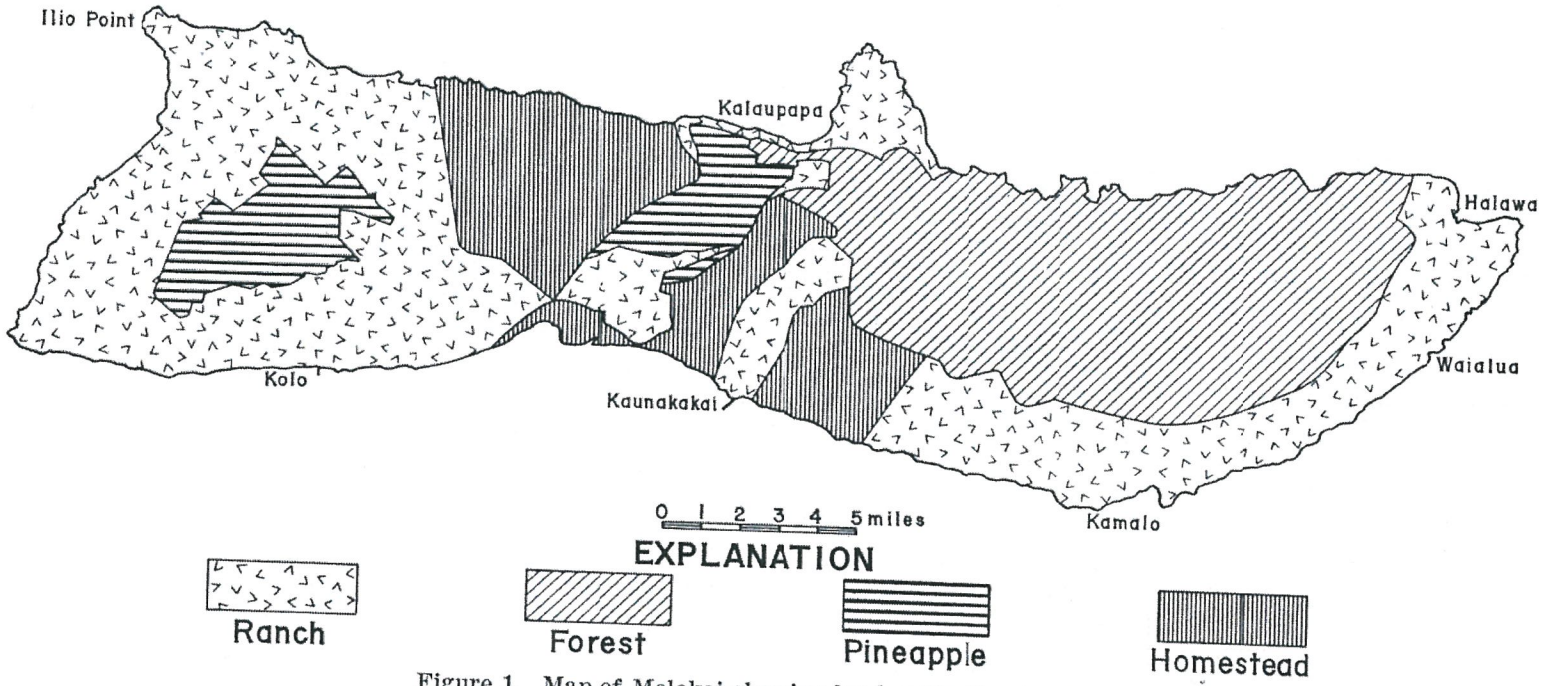

Figure 1. Map of Molokai showing land utilization in 1937.
(After pl. 36, Hawaii Terr. Plan. Bd., 1st Progress Rept., 1939.)

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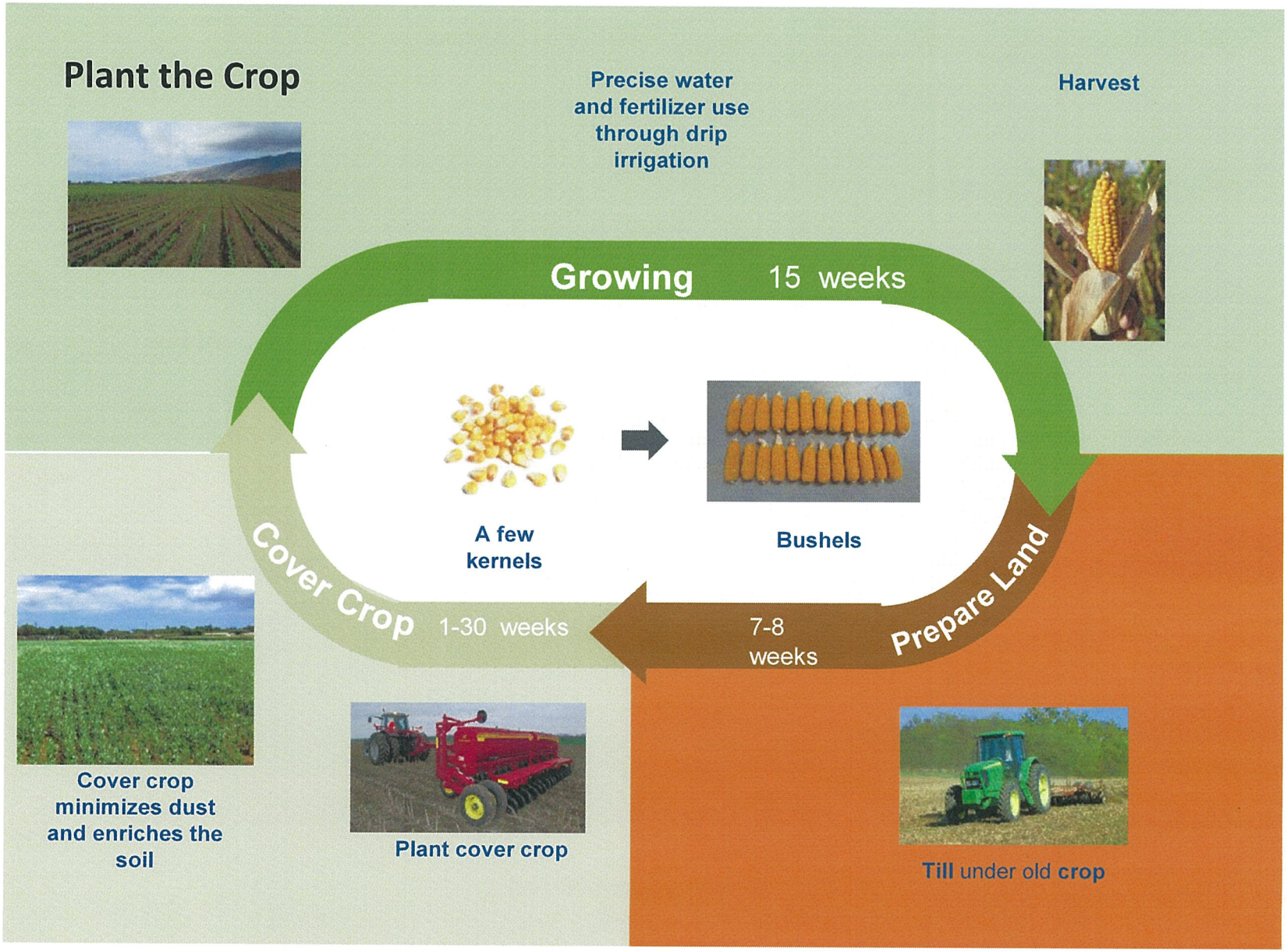
Moloka‘i Farm Crop Production Cycle



USDA-NRCS Soil Conservation Plan

- Berms and grassed filter strips
- Crop rotations and fallow periods
- Cover crops
- Reduced tillage methods
- Windbreaks
- Micro-irrigation/water management

Land Stewardship

Berms and grassed filter strips

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Mahalo!

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