



APPENDIX J  
Impacts on Agriculture

***MAUI RESEARCH & TECHNOLOGY PARK  
MASTER PLAN UPDATE:  
IMPACTS ON AGRICULTURE***

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# CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>ES-1</b>
<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. PROJECT LOCATION, DESCRIPTION AND REQUIRED APPROVALS.....</b>	<b>1</b>
a. Project Location and TMKs .....	1
b. Project Description.....	1
c. Required Approvals .....	2
<b>3. AGRICULTURAL CONDITIONS .....</b>	<b>3</b>
a. Soil types and Characteristics .....	3
b. Soil Ratings .....	3
c. Elevation and Slopes .....	4
d. Climatic Conditions .....	4
e. Irrigation Water .....	5
f. Road Access .....	5
g. Summary .....	5
<b>4. POTENTIAL CROPS .....</b>	<b>5</b>
<b>5. LOCATIONAL ADVANTAGES AND DISADVANTAGES FOR FARMING.....</b>	<b>6</b>
a. Maui Island Market.....	6
b. Honolulu Market .....	6
c. Mainland Market.....	6
d. Summary .....	7
<b>6. SURROUNDING LAND USES .....</b>	<b>7</b>
<b>7. IMPACT ON CATTLE OPERATIONS, HALEAKALĀ RANCH.....</b>	<b>8</b>
a. Haleakalā Ranch Operations .....	8
b. Impact of the Project on Haleakalā Ranch Cattle Operations.....	8
c. Cumulative Impact on Haleakalā Ranch Cattle Operations .....	8
d. Mitigating Measures .....	9
<b>8. IMPACT ON ALGAE OPERATIONS, BIOREAL INC.....</b>	<b>9</b>
a. Algae Operations .....	9
b. Impact on Algae Operations.....	9

<b>9. IMPACT ON SEED-CORN OPERATIONS, MONSANTO HAWAI‘I .....</b>	<b>9</b>
a. Monsanto Seed-Corn Operations .....	9
b. Impact on Seed-Corn Operations .....	10
c. Mitigating Measures .....	11
<b>10. IMPACT ON THE GROWTH OF DIVERSIFIED CROP FARMING .....</b>	<b>11</b>
<b>11. OFFSETTING BENEFITS .....</b>	<b>12</b>
<b>12. CONSISTENCY WITH STATE AND COUNTY POLICIES .....</b>	<b>13</b>
a. Availability of Lands for Agriculture .....	13
b. Conservation of Agricultural Lands .....	13
c. State Districting .....	13
d. Kīhei-Mākena Community Plan .....	13
e. County Zoning .....	14
<b>13. REFERENCES .....</b>	<b>14</b>

#### **APPENDIX**

A. State and County Goals, Objectives, Policies and Guidelines Related to Agricultural Lands .....	A-1
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#### **FIGURES**

1. Regional Location Map
2. Aerial Map
3. TMK Parcel Map
4. Overall Concept Diagram
5. State Land Use Map
6. Kīhei-Mākena Community Plan Map
7. Maui County Zoning Map
8. Soil Classifications
9. ALISH Classifications
10. Land Study Bureau Map

# EXECUTIVE SUMMARY

## 1. PROPOSED DEVELOPMENT

Maui R&T Partners, LLC proposes to update the Maui Research & Technology Park Master Plan (“the Project”). The update will include (1) expanding the Park’s urban-designated land by about 253 acres (from about 158 acres to about 411 acres), and (2) broadening lot sizes and permitted uses. The Park includes an additional 21 acres of agricultural land that will remain in agriculture, but which is not part of the Master Plan Update.

## 2. AGRICULTURAL CONDITIONS

The Project expansion area has high solar radiation, but the poor soils, low soil ratings, and lack of irrigation water indicate that the property is poorly suited for growing commercial field crops.

## 3. IMPACT ON CATTLE OPERATIONS, HALEAKALĀ RANCH

### a. Impact of the Project on Haleakalā Ranch Cattle Operations

Development of the Project will remove about 102 acres of grazing land from Haleakalā Ranch, or about 0.44% of the 23,000 acres of their grazing land. The corresponding reduction in feed produced from all of the Ranch’s grazing land will be about 0.22%. The lower percentage for feed reflects the fact that the arid Kīhei lands have lower yields than *mauka* pastures.

While Kīhei pastures are important for winter cattle grazing, the Ranch anticipates that this relatively small reduction in feed will have no significant affect on the Ranch’s cattle operations, including no significant impact on the size of their herd, production, revenues, employment or payroll. The Ranch has sufficient lands to move its cattle to other pastures.

**b. Cumulative Impact on Haleakalā Ranch Cattle Operations**

Over the next 20 years or so, planned and proposed projects on file with the County could result in the development of about 419 acres that are now used by Haleakalā Ranch to graze cattle, including about 102 acres for the Project and about 317 acres for other projects. All of this land is located in Kīhei within the Urban Growth Boundary. This loss amounts to about 1.82% of the Ranch's grazing land, or about 0.91% of the available feed.

The Ranch regards a 0.91% loss in feed as too small to have a significant effect on its cattle operations. Again, the Ranch has sufficient lands to move its cattle to other pastures. Even if the Ranch were operated at its maximum carrying capacity and replacement pastures were not available, the impact would be small: about 15.5 fewer breeding cows, about 11.6 fewer calves per year, about \$4,600 less in annual revenues, and the loss of about 30% of one job.

**c. Mitigating Measures**

As discussed above, the Project in combination with other projects will result in an insignificant impact on Haleakalā Ranch cattle operations. In view of this finding, mitigation measures for the impact of the Project on the Ranch's cattle operations are not recommended.

**4. IMPACT ON ALGAE OPERATIONS, BIOREAL INC.**

To the south on land abutting the Project are the facilities of BioReal Inc. As recently as 2009, BioReal grew microalgae to produce astaxanthin, an antioxidant which is believed to have a number of health benefits for humans.

The BioReal operations in Kīhei closed for reasons unrelated to the Project. In view of this closure, the Project will not impact any algae operations.

**5. IMPACT ON SEED OPERATIONS, MONSANTO HAWAI'I****a. Impact on Seed-Corn Operations**

Farther south of the Project are Monsanto Hawai'i seed-corn operations. Monsanto owns about 310 acres, of which about 100 acres are farmed.

Project construction and operations are not expected to impact Monsanto's seed-corn operations. Also, nuisance complaints by Park tenants and employees about Monsanto's farm operations—e.g., noise from farm equipment, drifting of crop-protection products during occasional applications, and dust from fields—are not expected to be significant and,

as a result, are not expected to require changes in Monsanto's seed-corn operations. Reasons for this assessment include:

- Long distances between farm operations and Park buildings (over 0.25 mile) and Park homes (over 1 mile).
- Project employees will work in enclosed air-conditioned buildings.
- Project residents will be buffered from farm operations by Project buildings, trees and shrubbery.
- Prevailing tradewinds blow *makai* and not toward the Park.
- As specified by requirements on product labels, Monsanto modifies or suspends the application of crop-protection products during adverse weather conditions (e.g., strong winds that blow towards homes and businesses).

#### **b. Mitigating Measures**

Even though nuisance complaints from Park tenants and employees about Monsanto's nearby farm operations are not anticipated, it is recommended that Park tenants and employees be informed that they will be working and/or living near farm operations. This information should be included in promotional brochures and websites, and in sales and rental contracts. With this information, future tenants and employees are more likely to accept that nearby farm operations are part of the character of the community.

In any case, Hawai'i's Right-to-Farm Act gives farmers the right to farm if they were operating before neighboring properties were developed, provided that the farm activity does not threaten public health or safety.

### **6. IMPACT ON THE GROWTH OF DIVERSIFIED CROP FARMING**

The Project will result in a small loss of low-quality agricultural land (about 253 acres) of which there is a large supply on Maui, but will not affect the supply of good farmland of which there is also a large supply. Consequently, the Project will have no impact on the growth of diversified crop farming.

### **7. OFFSETTING BENEFITS**

The loss of 253 acres of low-quality agricultural land will be offset by the following benefits of the Project:



- Construction Activity
  - Construction jobs associated with Project development.
  - Indirect jobs generated by purchases of goods and services by construction companies and families of construction workers.
  - State tax revenues (excise taxes, personal income taxes, corporate income taxes, etc.) paid by construction companies and workers, and by companies and families supported by construction activity.
- Operations
  - On-site jobs associated with research and technology, office operations, and retail operations.
  - Off-site jobs generated by purchases of goods and services by Project businesses and residents.
  - Housing for Maui residents.
  - State tax revenues (excise taxes, personal income taxes, corporate income taxes, etc.) paid by Project businesses and residents, as well as by off-site businesses and residents supported by Project operations.
  - County tax revenues (property taxes, etc.) paid by Project businesses and residents, as well as by off-site businesses and residents supported by Project operations.

## **8. CONSISTENCY WITH STATE AND COUNTY POLICIES**

### **a. Availability of Lands for Agriculture**

The *Hawai'i State Constitution*, the *Hawai'i State Plan*, the *State Agriculture Functional Plan*, the *County of Maui 2030 General Plan*, the County's *Maui Island Plan (Draft)*, and the County's *Kīhei-Mākena Community Plan* call directly or implicitly for preserving the economic viability of plantation agriculture and promoting the growth of diversified agriculture. To accomplish this, an adequate supply of agriculturally suitable lands and water must be assured.

With regard to plantation agriculture, the Project site is not and never was part of a sugarcane or pineapple plantation.

With regard to diversified crop farming, there is no current or recent farming on the property. The Project will result in a small loss of low-quality agricultural land of which there is a large supply on Maui, but will not affect the supply of good farmland of which

there is also a large supply. Consequently, the Project will have no impact on the growth of diversified crop farming.

With regard to ranching, about 150 acres of the Project site are used for grazing cattle. However, feed production is low due to arid conditions. Also, the acreage loss is too small to affect cattle operations.

**b. Conservation of Agricultural Lands**

In addition to the above, State and County policies call for conserving and protecting prime agricultural lands, including protecting farmland from urban development.

The Project will result in no loss of prime agricultural lands. All of the soils in the expansion area have an LSB rating of “E,” which is the lowest LSB rating.

**c. State Districting**

The Project expansion area is within the State Agricultural District. However, the developer is filing a petition with the State Land Use Commission for a District Boundary Amendment to redesignate the expansion area to the “Urban” District.

**d. Kīhei-Mākena Community Plan**

Most of the Project site is currently designated “Project District” in the *Kīhei-Mākena Community Plan*. However, a Community Plan Amendment will be sought to bring the entire Park site into a community plan designation that better aligns with the vision of the Master Plan Update and anticipated changes to the Maui County Code, Chapter 19.33, *Kīhei Research & Technology Park District*. This will involve amending the Community Plan to re-designate about 39 acres from “Agriculture” to “Project District.” Also, changes will be sought to the language of Chapter 19.33 to allow for a more diversified development that better aligns with the Master Plan Update.

**e. County Zoning**

Most of the expansion area is zoned “Agriculture.” Full development of the Project will require appropriate rezoning.

# **MAUI RESEARCH & TECHNOLOGY PARK MASTER PLAN UPDATE: IMPACTS ON AGRICULTURE**

## **1. INTRODUCTION**

Maui R&T Partners, LLC proposes to update the Maui Research & Technology Park Master Plan (“the Project”). The update will include (1) expanding the Park’s urban-designated land by about 253 acres (from about 158 acres to about 411 acres), and (2) broadening lot sizes and permitted uses. The Park includes an additional 21 acres of agricultural land that will remain in agriculture, but which are not part of the Master Plan Update.

This report addresses the impacts on agriculture of developing the Project. The material below gives the following information: the Project location, description, and required approvals; the agricultural conditions at the Project site; potential crops; locational advantages and disadvantages for agriculture; surrounding land uses; the impacts of the Project on cattle, algae, and seed-corn operations; the impact of the Project on the growth of diversified crop farming; benefits of the Project that would offset adverse agricultural impacts; and consistency of the Project with State and County agricultural policies related to agricultural land. Appendix A provides State and County goals, objectives, policies and guidelines related to agricultural lands. Relevant maps are at the end of the report.

## **2. PROJECT LOCATION, DESCRIPTION AND REQUIRED APPROVALS**

### **a. Project Location and TMKs**

The Maui Research and Technology Park is located in Kīhei, on Maui’s south side (see Figures 1 and 2). The Tax Map Keys for the existing and updated Park site are: (2) 2-2-024:1-9, 14-17, 31, 34 and a portion of (2) 2-2-002:54 (see Figure 3).

### **b. Project Description**

The vision for the Park is to transform it from its current single-use large-lot research and technology campus into an integrated and mixed-use community that is focussed around a regional high-technology employment base. The overall concept diagram for the Project is shown in Figure 4, and includes the following elements:

- Knowledge-based industry expansion along Līpoa Parkway which takes advantage of existing infrastructure and subdivided lots.
- A mix of office, housing, civic, retail and park uses within a “Village Center” comprising approximately 58 acres of the site.
- Residential units on approximately 100 acres to the east and west of the Village Center, within easy walking distance of schools, retail, and services.
- Long-term expansion opportunities on approximately 217 acres of land within the existing employment core and to the south and east.

### **c. Required Approvals**

#### State Land Use District Boundary Amendment

The Project will require State redistricting of about 253 acres from the Agricultural District to the Urban District (see Figure 5). In addition, the Project will require amendments to the conditions placed upon the 158 acres that are already in the Urban District.

#### Community Plan Amendment

The Park is located within the Kīhei-Mākena Community Plan region. The majority of the Project is designated Project District 6 (R&T Park) in the Community Plan, with a portion designated *Public/Quasi-public* (see Figure 6). A Community Plan Amendment will be required to bring the Project site into a community plan designation that better aligns with the vision of the Master Plan Update and anticipated changes to the Maui County Code (MCC), Chapter 19.33, *Kīhei Research & Technology Park District*. This will involve amending the Community Plan to re-designate about 39 acres from “Agriculture” to “Project District.” Also, changes will be sought to the language of Chapter 19.33 to allow for a more diversified development that better aligns with the Master Plan Update.

In Figure 6, the grey area to the south of the Project and abutting it, and which is outside the red Project Site boundary, is part of the Park but is not part of the Master Plan Update. As mentioned in Section 1, this area is the 21 acres of agricultural land that will remain in agriculture.

#### Change in Zoning

The Project will similarly require a Change in County Zoning in order to bring the entire Park site into the *Kīhei Research and Technology Park District* (MCC Chapter 19.33) —particularly the portions currently zoned Agricultural (see Figure 7).

### 3. AGRICULTURAL CONDITIONS

#### a. Soil Type and Characteristics

According to the soil survey by the Natural Resources Conservation Service (NRCS), formerly known as the Soil Conservation Service, the Project expansion area includes a single soil type (see Figure 8):

— WID2: Waiakoa extremely stony silty clay loam, 7 to 15% slopes

For this soil type, runoff is medium; the erosion hazard is severe, with about 50% of the surface layer having been removed by erosion in most areas; and stones cover 3 to 15% of the surface. WID2 is used for pasture and wildlife habitat.

#### b. Soil Ratings

Three classification systems are commonly used to rate soils in Hawai'i: (1) Land Capability Grouping, (2) Agricultural Lands of Importance to the State of Hawai'i, and (3) Overall Productivity Rating.

##### Land Capability Grouping (NRCS Rating)

The 1972 Land Capability Grouping by the NRCS rates soils according to eight levels, ranging from the highest classification level "I" to the lowest "VIII."

Soil type WID2 has a rating of VII<sub>s</sub>. Class VII soils have very severe limitations that make them unsuitable for cultivation and restrict their use largely to pasture or range, woodland, or wildlife habitat. The subclassification "s" indicates that the soils have an unfavorable texture, or are extremely rocky or stony.

##### Agricultural Lands of Importance in the State of Hawai'i (ALISH)

ALISH ratings were developed in 1977 by the NRCS, the University of Hawai'i College (UH) of Tropical Agriculture and Human Resources, and the State Department of Agriculture. This system classifies land into three broad categories: (a) Prime agricultural land which is land that is best-suited for the production of crops because of its ability to sustain high yields with relatively little input and with the least damage to the environment; (b) Unique agricultural land which is non-Prime agricultural land used for the production of specific high-value crops; and (c) Other agricultural land which is non-Prime and non-Unique agricultural land that is important to the production of crops.

As shown in Figure 9, all of the expansion area for the Project is rated as "Unclassified," indicating that the area has poor soils for growing crops.

### Overall Productivity Rating (LSB Rating)

In 1972, the UH Land Study Bureau (LSB) developed the Overall Productivity Rating, which classifies soils according to five levels, with “A” representing the class of highest productivity and “E” the lowest.

All of the soils in the expansion area are rated “E” (see Figure 10).

### Summary Evaluation of Soil Quality

All three rating systems indicated that the expansion area for the Project has poor soils for growing crops.

#### **c. Elevation and Slopes**

The Project site ranges in elevation from about 60 feet to about 260 feet, with an average slope of less than 5%.

#### **d. Climatic Conditions**

Hawai‘i has a mild *semitropical* climate that is due primarily to three factors: (1) Hawai‘i’s mid-Pacific location near the Tropic of Cancer, (2) the surrounding warm ocean waters that vary little in temperature between the winter and summer seasons, and (3) the prevailing northeasterly tradewinds that bring air having temperatures that are close to those of the surrounding waters. But because Haleakalā blocks the tradewinds, Kīhei has a semiarid climate.

### Solar Radiation

The Project site receives considerable sunshine, with average daily insolation of about 500 calories per square centimeter.

### Rainfall

Annual rainfall in Kīhei averages less than 15 inches. Most of this rainfall occurs during the winter rainy season (October through April), while the summer months (May through September) are hot and dry.

### Temperatures

Temperature in Kīhei range from an average low of 64°F in the winter to an average high of 87°F in the summer.

### Winds

The prevailing tradewinds blow from north to south across the isthmus and out to sea at a mean speed of about 11 miles per hour in the winter and 15 miles per hour in the summer.

#### **e. Irrigation Water**

The expansion area has no existing water system for irrigating crops.

#### **f. Road Access**

Dirt roads provide access to the property from Pi'ilani Highway and Līpoa Parkway (see Figure 5).

#### **g. Summary**

The Project expansion area has high solar radiation, but the poor soils, low soil ratings, and lack of irrigation water indicate that the property is poorly suited for growing commercial field crops.

## **4. POTENTIAL CROPS**

The Project expansion area is unsuitable for most commercial field crops grown in Hawai'i. Nevertheless, the nearby seed-corn operation indicates that high-value crops could be grown provided that the land is cleared of rocks, *kiawe*, grasses and weeds; the soil is amended; and reclaimed water is obtained from the nearby wastewater treatment plant. Also, crops which do not require good soil—such as hydroponic crops and algae—could be grown provided that water is obtained.

It should be noted, however, that Kīhei has a large supply of low-quality agricultural land similar to that of the Project expansion area (see Section 10). Also, high-quality farmland is available in Central and West Maui due to past closures of sugarcane and pineapple plantations.

## 5. LOCATIONAL ADVANTAGES AND DISADVANTAGES FOR FARMING

### a. Maui Island Market

Farmers in Central Maui are well-situated for supplying the Maui Island market because of the short trucking distance to Kahului, which is the island's commercial, industrial, distribution and transportation center. While the Maui Island market is significant, it is comparatively small: in 2008, Maui County had a *de facto* population of about 181,600 residents and visitors.

### b. Honolulu Market

All farmers on Maui are at a disadvantage in competing against farmers on O'ahu for supplying the Honolulu market due to the interisland shipping costs, delays and extra handling. In comparing barge and air-cargo services, shipping by barge is less expensive and larger loads can be shipped, but the shipments are slow and infrequent. Air service is faster and frequent, but it is far more expensive and capacities are limited.

In 2008, O'ahu had a *de facto* population of about 934,300 residents and visitors. Thus, the Honolulu market is over five times larger than the Maui market.

### c. Mainland Market

Compared to Hawai'i, the mainland market is enormous: in 2010, the U.S. population totaled 308.7 million. In supplying this market with products that can be carried by container ship because they have long shelf-lives (e.g., canned fruit), farmers on Maui are competitive with farmers on O'ahu and the other islands. Even though freight from Maui must first be barged to Honolulu then transferred onto a container ship, Matson's overseas shipping service includes inter-island barge service at no additional fee: except for some minor port charges, Matson charges a common fare for all islands.

In the case of fresh products that must be shipped by air to the mainland because of their short shelf-lives, farmers on Maui are at a disadvantage compared to farmers on O'ahu because most mainland air cargo is shipped via the Honolulu International Airport. Compared to farmers on O'ahu, Maui farmers encounter additional costs, delays, and handling for interisland air-cargo service and for transferring the fresh products from small interisland aircraft to large overseas aircraft.

However, overseas air-cargo service from Maui has improved somewhat because the current generation of aircraft can depart from the short runway at Kahului with a full load of passengers and a full load of cargo in the hold. This direct service allows farmers on Maui to



be more competitive in mainland markets. However, the lift capacity from Maui is limited by the number of direct flights.

In the U.S. mainland market, farmers in Hawai'i must also compete against farmers on the mainland and in Mexico, Central and South America, the Caribbean, Australia, New Zealand, Southeast Asia, etc. Most of the competing farm areas have lower production and delivery costs than Hawai'i does. Competing against Mexico is particularly difficult given the North America Free Trade Agreement (NAFTA) and Mexico's proximity to major U.S. markets.

#### **d. Summary**

In terms of location, farmers in Central Maui are well-situated to supply the small Maui Island market. And compared to other farmers in Hawai'i, they can also compete reasonably well in supplying mainland markets, as long as their products have long shelf-lives and so can be shipped by surface vessel.

However, compared to farmers on O'ahu, they are at a disadvantage in supplying the Honolulu market. Furthermore, they are at a disadvantage supplying mainland markets if their products have short shelf-lives and so must be shipped by air. Also, farmers on Maui are at a disadvantage in competing against the low-cost producers who supply mainland markets.

## **6. SURROUNDING LAND USES**

To the north and abutting the Project are cattle grazing lands of Haleakalā Ranch (see Figure 2). About a quarter mile farther north and extending inland are the grazing lands of Ka'ono'ulu Ranch. Also to the north across Ka'ono'ulu Gulch are the proposed new South Maui High School and Ka'ono'ulu Village (see Figure 4).

To the east are additional cattle grazing lands of Haleakala Ranch.

To the south are more Haleakalā Ranch cattle grazing lands, facilities of a former algae operation on land that abuts the Project, a nearby Monsanto seed-corn operation, and the County's Kīhei Wastewater Reclamation Facility.

To the west and abutting the Project is the Elleair Maui Golf Course. Across Pi'ilani Highway are the developed lands of Kīhei Town, including single- and multi-family subdivisions, the Kīhei Community Center, Pi'ilani Shopping Village, South Maui Community Park as well as industrial and public/quasi-public developments.

## **7. IMPACT ON CATTLE OPERATIONS, HALEAKALĀ RANCH**

### **a. Haleakalā Ranch Cattle Operations**

Incorporated in 1888, Haleakalā Ranch is the oldest and largest cattle ranch on Maui. The Ranch, which is family-owned, has about 23,000 acres used for grazing cattle, about 1,700 breeding cows, and about 30 employees involved with cattle operations.

Until the late 1980s, the land that is now part of the Maui Research & Technology Park was used for Haleakalā Ranch cattle-grazing operations. The expansion area for the Park and other Kīhei lands are still used for grazing cattle.

To increase the available feed, the Kīhei lands were planted in buffelgrass in the early 1900s. Buffelgrass is a drought-resistant grass that is able to survive the dry summer months in Kīhei. Native to Africa, this grass was introduced to improve cattle forage in many tropical and subtropical regions of the world. Cattle grazing on Kīhei pastures occurs in the winter months when the grass is more plentiful following winter rains. The number of cattle on these lands and the duration of their grazing depend upon the amount of rainfall. Due to the arid conditions, annual per-acre yields of forage from Kīhei pastures are about 50% of those for the Ranch as a whole.

### **b. Impact of the Project on Haleakalā Ranch Cattle Operations**

Development of the Project will remove about 102 acres of grazing land from Haleakalā Ranch, or about 0.44% of the 23,000 acres of their grazing land. The corresponding reduction in feed produced from all of the Ranch's grazing land will be about 0.22% (0.44% x 50% adjustment for the lower yields from the Kīhei pastures).

While Kīhei pastures are important for winter cattle grazing, the Ranch anticipates that this relatively small reduction in feed will have no significant affect on the Ranch's cattle operations, including no significant impact on the size of their herd, production, revenues, employment or payroll. The Ranch has sufficient lands to move its cattle to other pastures.

### **c. Cumulative Impact on Haleakalā Ranch Cattle Operations**

Over the next 20 years or so, planned and proposed projects on file with the County could result in the development of about 419 acres that are now used to graze cattle by Haleakalā Ranch, including about 102 acres for the Project and about 317 acres for other projects. All of this land is located in Kīhei within the Urban Growth Boundary. This loss amounts to about 1.82% of the Ranch's grazing land (419 acres ÷ 23,000 acres), or about 0.91% of the available feed (1.82% x 50% adjustment for the lower yields from the Kīhei pastures).

The Ranch regards a 0.91% loss in feed as too small to have a significant effect on its cattle operations. Again, the Ranch has sufficient lands to move its cattle to other pastures. Even if the Ranch were operated at its maximum carrying capacity and replacement pastures were not available, the impact would be small: about 15.5 fewer breeding cows (about 0.91% x about 17,000 cows), about 11.6 fewer calves per year (about 75% x the number of cows), about \$4,600 less in annual revenues (about \$400 x the number of calves), and the loss of about 30% of one job (0.91% x 30 jobs).

#### **d. Mitigating Measures**

As discussed above, the Project in combination with other projects will result in an insignificant impact on Haleakalā Ranch cattle operations. In view of this finding, mitigation measures for the impact of the Project on the Ranch's cattle operations are not recommended.

### **8. IMPACT ON ALGAE OPERATIONS, BIOREAL INC.**

#### **a. Algae Operations**

To the south on 21 acres abutting the Project are the facilities of BioReal Inc., a subsidiary of the Japanese pharmaceutical company Fuji Chemical Industry Co., Ltd. (see Figure 2). As recently as 2009, BioReal grew microalgae to produce astaxanthin, an antioxidant which is believed to have a number of health benefits for humans. Astaxanthin is also produced by Cyanotech on the Big Island.

This parcel is part of the Park but it is not part of the Master Plan Update.

#### **b. Impact on Algae Operations**

The BioReal operations in Kīhei closed for reasons unrelated to the Project. In view of this closure, the Project will not impact any algae operations.

### **9. IMPACT ON SEED-CORN OPERATIONS, MONSANTO HAWAI'I**

#### **a. Monsanto Seed-Corn Operations**

Farther south of the Project are Monsanto Hawai'i seed-corn operations (see Figure 2). Monsanto leased the land in the mid-1990s and, at considerable expense and time, cleared the land of rocks, *kiawe*, grasses and weeds; added amendments to improve soil quality; and installed water lines to irrigate fields with water supplied by the Kīhei Wastewater Reclamation Facility. In 2009, Monsanto purchased the 310-acre parcel, of which about 100 acres are

farmed. The size of the parcel provides the option of expanding field operations beyond 100 acres, although Monsanto has no current plans to expand.

Even though the land was rough unimproved rangeland having poor soil-quality, Monsanto chose to locate seed-corn operations in Kīhei because of the high solar radiation, isolation of the fields, and availability of reclaimed water.

#### **b. Impact on Seed-Corn Operations**

Project construction and operations are not expected to impact Monsanto’s seed-corn operations. However, the potential of nuisance complaints about normal farm operations—tractor and truck noises, dust blown from fields, drifting of crop-protection products during occasional applications (e.g., fertilizers, soil amendments, dust-control agents, pesticides, etc.)—are a concern to farmers because complaints can force them to change their farm practices. This issue is discussed below.

At full development, the northernmost field used for growing seed corn will be about 0.25 mile from the southeast corner of the Project (see Figure 2). A “Knowledge Industry Expansion/Campus” is planned for this area (see Figure 4), and future employees will work in air-conditioned buildings. The nearest homes within the Project will be over 1 mile away from the Monsanto fields, and will be buffered from farm operations by distance and by Project buildings, trees and shrubbery. In comparison, some existing homes in Kīhei are about 0.35 mile *makai* of the Monsanto’s fields. If Monsanto were to expand its farm operations, the distances from fields to Park buildings and homes would not change inasmuch as Monsanto currently farms up to the northern boundary of its property.

The prevailing tradewinds blow *makai*. Thus, during these tradewind conditions, the Park will not be downwind from farm operations. However, the Park will be downwind from farm operations during the occasional Kona winds.

Noise from Monsanto’s farm equipment is not expected to cause a problem at the Park because the noise will be attenuated by (1) the long distances from the farm to Park buildings and homes, (2) enclosed air-conditioned buildings that will house workers, and (3) Project buildings and vegetation that will be located between the farm and Project homes.

Dust from the Monsanto farm will be blown *makai* during prevailing tradewind conditions. But, during the occasional strong Kona winds, dust from the farm will be blown toward the Park. The dust problems will be limited by the same factors which limit noise problems: long distances from the farm to Project buildings and homes, enclosed air-conditioned buildings for workers, and buildings and vegetation between the farm and homes.

During occasional application of crop-protection products, such products are not expected to drift from the Monsanto farm to the Park because (1) prevailing tradewinds blow *makai*, and (2) as specified by requirements on product labels, Monsanto modifies or suspends the application of crop-protection products during adverse weather conditions (e.g., strong winds that blow towards homes and businesses). Even if crop-protection products were to drift toward the Park, they are not expected to reach Park employees and residents for the same reasons that noise will be attenuated: long distances from the farm to Project buildings and homes, enclosed air-conditioned buildings for workers, and buildings and vegetation between the farm and homes.

In view of the above findings, nuisance complaints by Park tenants and employees about Monsanto's farm operations are not expected to be significant and, as a result, are not expected to require changes in Monsanto's seed-corn operations.

### **c. Mitigating Measures**

Even though nuisance complaints from Park tenants and employees about Monsanto's nearby farm operations are not anticipated, it is recommended that Park tenants and employees be informed that they will be working and/or living near farm operations. This information should be included in promotional brochures and websites, and in sales and rental contracts. With this information, future tenants and employees are more likely to accept that nearby farm operations are part of the character of the community.

In any case, Hawai'i's Right-to-Farm Act gives farmers the right to farm if they were operating before neighboring properties were developed, provided that the farm activity does not threaten public health or safety.

## **10. IMPACT ON THE GROWTH OF DIVERSIFIED CROP FARMING**

The Project will commit about 253 acres of land now in the Agricultural District to a non-agricultural use. However, as summarized in Subsection 3.g, this land is poorly suited for growing commercial field crops due to poor soils and the lack of water for irrigating crops. All of the soils in the expansion area have an LSB rating of "E," which is the lowest LSB rating (see Subsection 3.b). Farming of typical field crops would require soil amendments and a source of affordable irrigation water.

Maui has a large supply of low-quality agricultural land, including about 20,000 acres *mauka* of Kīhei that is similar in quality to the land that will be used for the Project. And since 1990, the contraction and eventual closure of Pioneer Mill (sugarcane) and Maui

Pineapple Co. released over 19,000 acres of good farmland in Central and West Maui. While some of this former plantation land was planted in other crops (e.g., seed corn and coffee) and some was developed for homes, most of it remains available for farming. For comparison, the entire County has about 1,700 acres in food crops that are grown for the Hawai'i market, including about 400 acres in vegetables and melons, about 300 acres in fruits other than pineapple, and about 1,000 acres in pineapple.

In summary, the Project will result in a small loss of low-quality agricultural land of which there is a large supply on Maui, but will not affect the supply of good farmland of which there is also a large supply. Consequently, the Project will have no impact on the growth of diversified crop farming.

## **11. OFFSETTING BENEFITS**

The loss of 253 acres of low-quality agricultural land will be offset by the following benefits of the Project:

— Construction Activity

- Construction jobs associated with Project development.
- Indirect jobs generated by purchases of goods and services by construction companies and families of construction workers.
- State tax revenues (excise taxes, personal income taxes, corporate income taxes, etc.) paid by construction companies and workers, and by companies and families supported by construction activity.

— Operations

- On-site jobs associated with research and technology, office operations, and retail operations.
- Off-site jobs generated by purchases of goods and services by Project businesses and residents.
- Housing for Maui residents.
- State tax revenues (excise taxes, personal income taxes, corporate income taxes, etc.) paid by Project businesses and residents, as well as by off-site businesses and residents supported by Project operations.
- County tax revenues (property taxes, etc.) paid by Project businesses and residents, as well as by off-site businesses and residents supported by Project operations.

## **12. CONSISTENCY WITH STATE AND COUNTY POLICIES**

### **a. Availability of Lands for Agriculture**

The *Hawai'i State Constitution*, the *Hawai'i State Plan*, the *State Agriculture Functional Plan*, the *County of Maui 2030 General Plan*, the *County's Maui Island Plan (Draft)*, and the *County's Kīhei-Mākena Community Plan* call directly or implicitly for preserving the economic viability of plantation agriculture and promoting the growth of diversified agriculture. To accomplish this, an adequate supply of agriculturally suitable lands and water must be assured.

With regard to plantation agriculture, the Project site is not and never was part of a sugarcane or pineapple plantation.

With regard to diversified crop farming, there is no current or recent farming on the property. The Project will result in a small loss of low-quality agricultural land of which there is a large supply on Maui, but will not affect the supply of good farmland of which there is also a large supply. Consequently, the Project will have no impact on the growth of diversified crop farming.

With regard to ranching, about 102 acres of the Project site are used for grazing cattle. However, feed production is low due to arid conditions. Also, the acreage loss will be too small to affect cattle operations.

### **b. Conservation of Agricultural Lands**

In addition to the above, State and County policies call for conserving and protecting prime agricultural lands, including protecting farmland from urban development.

The Project will result in no loss of prime agricultural lands. All of the soils in the expansion area have an LSB rating of "E," which is the lowest LSB rating (see Subsection 3.b).

### **c. State Districting**

The Project expansion area is within State Agricultural District (see Figure 5). However, Maui R&T Partners, LLC is filing a petition with the State Land Use Commission for a District Boundary Amendment to redesignate the expansion to the "Urban" District.

### **d. Kīhei-Mākena Community Plan**

Most of the Project site is currently designated "Project District" in the *Kīhei-Mākena Community Plan*. However, a Community Plan Amendment will be sought to bring the

entire Park site into a community plan designation that better aligns with the vision of the Master Plan Update and anticipated changes to the MCC, Chapter 19.33, *Kīhei Research & Technology Park District*. This will involve amending the Community Plan to re-designate about 39 acres from “Agriculture” to “Project District.”

**e. County Zoning**

Most of the expansion area is zoned “Agriculture” (see Figure 7). Full development of the Project will require appropriate rezoning.

**13. REFERENCES**

Appendix A. “Selected State and County Goals, Objectives, Policies and Guidelines Related to Agricultural Lands.”

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## **APPENDIX**

# APPENDIX A

## STATE AND COUNTY GOALS, OBJECTIVES, POLICIES AND GUIDELINES RELATED TO AGRICULTURAL LANDS

### 1. HAWAII'S STATE CONSTITUTION (Article XI, Section 3):

...to conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands...

### 2. HAWAII'S STATE PLAN (Chapter 226, Hawaii Revised Statutes, as amended):

#### **Section 226-7 Objectives and policies for the economy--agriculture.**

- (a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:
  - (1) Viability in Hawaii's sugar and pineapple industries.
  - (2) Growth and development of diversified agriculture throughout the State.
  - (3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaii's strategic, economic, and social well-being.
- (b) To achieve the agricultural objectives, it shall be the policy of the State to:
  - (2) Encourage agriculture by making best use of natural resources.
  - (10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.
  - (16) Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.

#### **Section 226-103 Economic priority guidelines.**

- (c) Priority guidelines to promote the continued viability of the sugar and pineapple industries:
  - (1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.
- (d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:

- (1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.
- (10) Support the continuation of land currently in use for diversified agriculture.

**Section 226-104 Population growth and land resources priority guidelines.**

(b) Priority guidelines for regional growth distribution and land resource utilization:

- (2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

**3. AGRICULTURAL STATE FUNCTIONAL PLAN (1991)**

(Functional plans are guidelines for implementing the State Plan. They are approved by the Governor, but not adopted by the State Legislature.)

Objective H: Achievement of Productive Agricultural Use of Lands Most Suitable and Needed for Agriculture.

Policy H(2): Conserve and protect important agricultural lands in accordance with the Hawaii State Constitution.

Action H(2)(a): Propose enactment of standards and criteria to identify, conserve, and protect important agricultural lands and lands in agricultural use.

Action H(2)(c): Administer land use district boundary amendments, permitted land uses, infrastructure standards, and other planning and regulatory functions on important agricultural lands and lands in agricultural use, so as to ensure the availability of agriculturally suitable lands and promote diversified agriculture.

**4. COUNTY OF MAUI 2030 GENERAL PLAN, COUNTYWIDE POLICY PLAN (2010)**

**Countywide goals, objectives, policies and actions**

**F. Strengthen the Local Economy**

**Objective**

2. Diversify and expand sustainable forms of agriculture and aquaculture.

**Policies**

- b. Prioritize the use of agricultural land to feed the local population, and promote the use of agriculture lands for sustainable and diversified agricultural activities.

- c. Support ordinances, programs, and policies that keep agricultural land and water available and affordable to farmers.

**Implementing Actions**

- c. Create agricultural parks in areas distant from genetically modified crops.

**J. Promote Sustainable Land Use and Growth Management**

**Objective**

- 2. Improve planning for and management of agricultural lands and rural areas.

**Policies**

- a. Protect prime, productive, and potentially productive agricultural lands to maintain the islands' agricultural and rural identities and economies.
- c. Discourage developing or subdividing agriculturally designated lands when non-agricultural activities would be primary uses.

**Implementing Actions**

- a. Inventory and protect prime, productive, and potentially productive agricultural lands from competing non-agricultural land uses.

**5. MAUI ISLAND PLAN, GENERAL PLAN 2030, DRAFT (2009)**

**Core Values**

- E. Preserve rural and agricultural lands and encourage sustainable agriculture.

**Agricultural Lands**

**Goal**

- 7.1 Maui Island will have a prosperous agricultural industry and will protect agricultural lands.

**Objective**

- 7.1.1 Significantly reduce the loss of prime and productive agricultural lands.

**Policies**

- 7.1.1.a Allow limited clustering of development on prime and productive agricultural lands identified on Maui Island Plan Map #7-1 when approved as a Conservation Site Design (CSD) through regulations.
- 7.1.1.b Require the review and approval of Conservation Site Design (CSD) plans prior to the subdivision of prime and productive agricultural lands identified on Maui Island Plan Map # 7-1.
- 7.1.1.c Discourage developing or subdividing Prime, Productive or Important agricultural lands for residential uses in which the residence would be

the primary use and any agricultural activities would be secondary uses.

- 7.1.1.e Focus urban growth, to the extent practicable, away from Prime, Productive or Important Agricultural Lands identified on Maui Island Plan Map #7-1.
- 7.1.1.f Strongly discourage the conversion of Prime, Productive or Important Agricultural Lands identified on Maui Island Plan Map #7-1 to rural or urban use, unless justified during the General Plan update, when other overriding factors are present.
- 7.1.1.h Protect Prime, Productive or Important Agricultural Lands identified on Maui Island Plan Map #7-1 from development through the use of TDR/PDR, tax credits, and easement programs.
- 7.1.1.j Require all major developments adjacent to agricultural lands to provide an appropriate and site-specific agricultural protection buffer as part of a required site plan.
- 7.1.1.k Support agricultural protection zoning as a vital component of an agricultural land preservation program.

## 6. COUNTY OF MAUI, KĪHEI-MĀKENA COMMUNITY PLAN (1998)

### LAND USE

#### *Objectives and Policies*

- p. Prevent urbanization of important agricultural lands
- r. Allow special permits in the State Agricultural Districts to accommodate unusual yet reasonable uses including: (1) limited agriculturally related commercial, public and quasi-public uses serving the immediate community; (2) uses clearly accessory or subordinate to a principal agricultural use on the property; (3) public facility uses such as utility installations or landfills whose location depends on technical considerations; and (4) extractive industries, such as quarrying, where the operation would not adversely affect the environment or surrounding agricultural uses.

### ECONOMIC ACTIVITY

#### **Objectives and Policies**

- e. Provide for the preservation and enhancement of important agricultural lands for a variety of agricultural activities, including sugar cane, diversified agriculture and aquaculture.

## 7. REFERENCES

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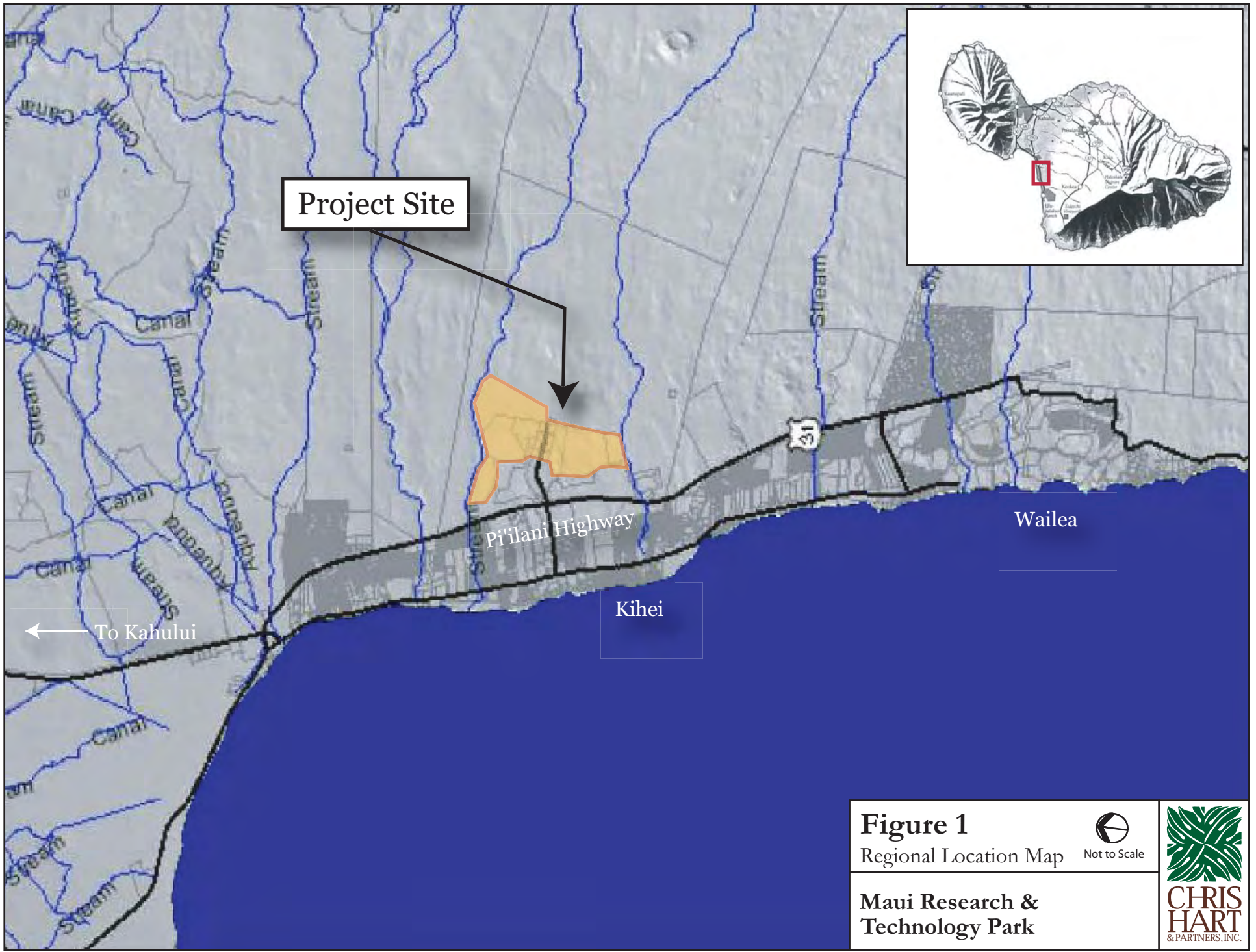
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Hawaii Department of Agriculture. *The Hawaii State Plan: Agriculture, State Functional Plan*. 1991.

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## **FIGURES**





Project Site



Pi'ilani Highway

Wailea

Kihei

To Kahului

Figure 1  
Regional Location Map

Not to Scale

Maui Research &  
Technology Park





Project Site

**Figure 2**  
Aerial Map

  
Not to Scale

**Maui Research &  
Technology Park**



Project Site

Parcels 54 (por.)

Parcels 1 - 9, 14 - 17, 31 & 34

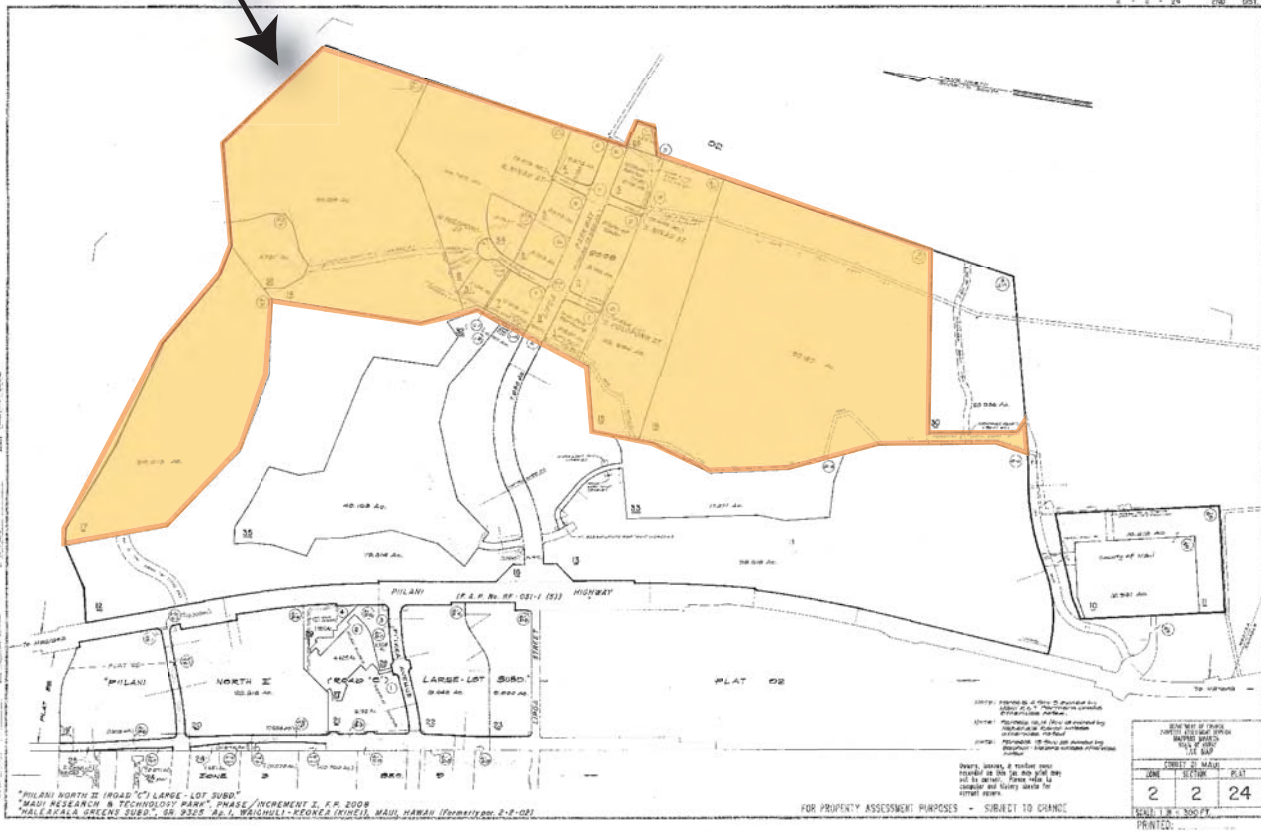


Figure 3  
TMK Parcel Location Maps

Not to Scale

Maui Research &  
Technology Park



CHRIS  
HART  
& PARTNERS, INC.

# Maui Research & Technology Park

## OVERALL CONCEPT DIAGRAM

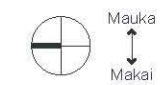


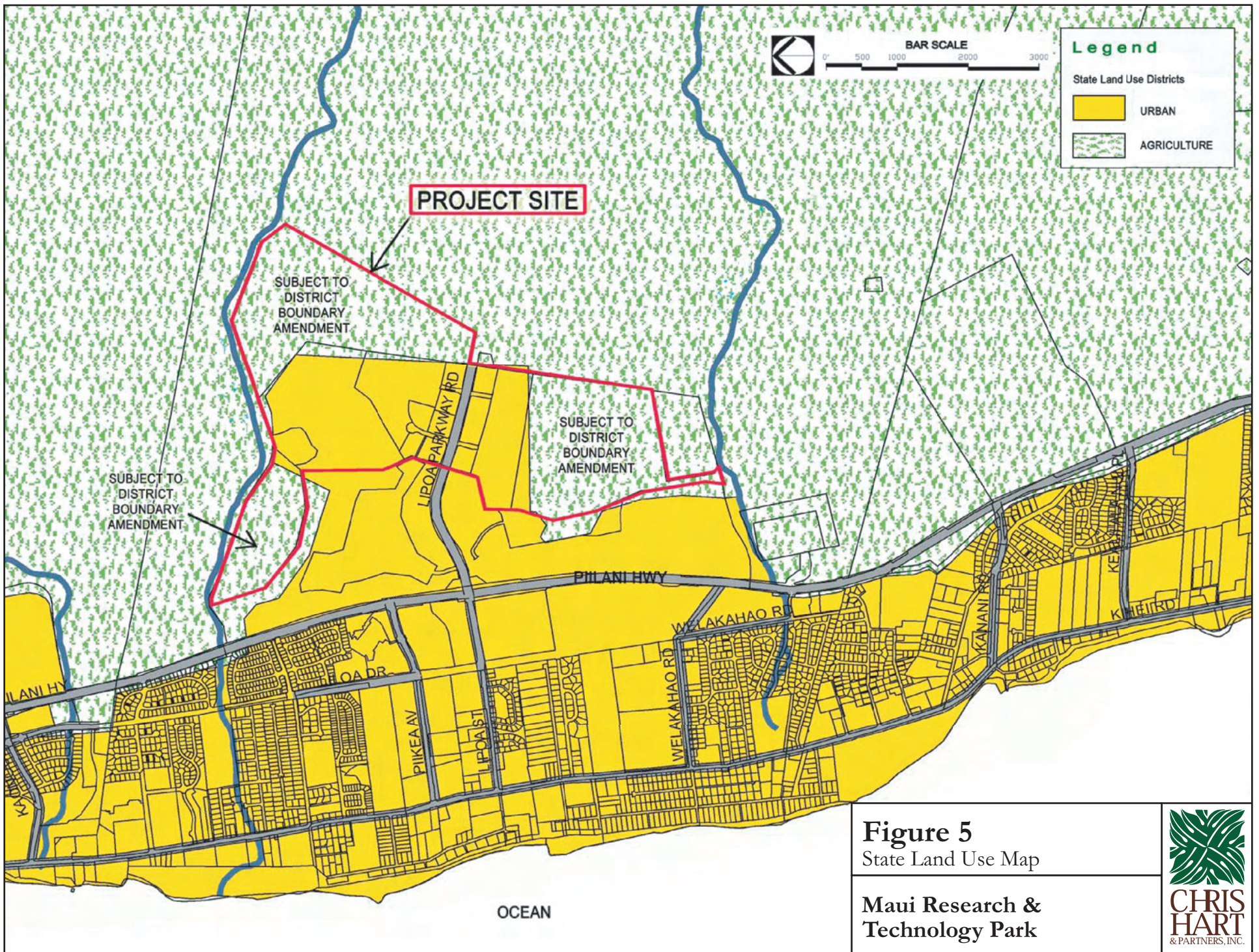
### LEGEND

- Project Boundary
- Mixed-Use
- Knowledge Industry
- Knowledge Industry Expansion
- Residential & Expansion
- Open Space / Parks

**FIGURE NO. 4**  
**OVERALL CONCEPT DIAGRAM**  
**MAUI RESEARCH & TECHNOLOGY PARK**  
 Kihei, Maui, Hawaii

March 20, 2012



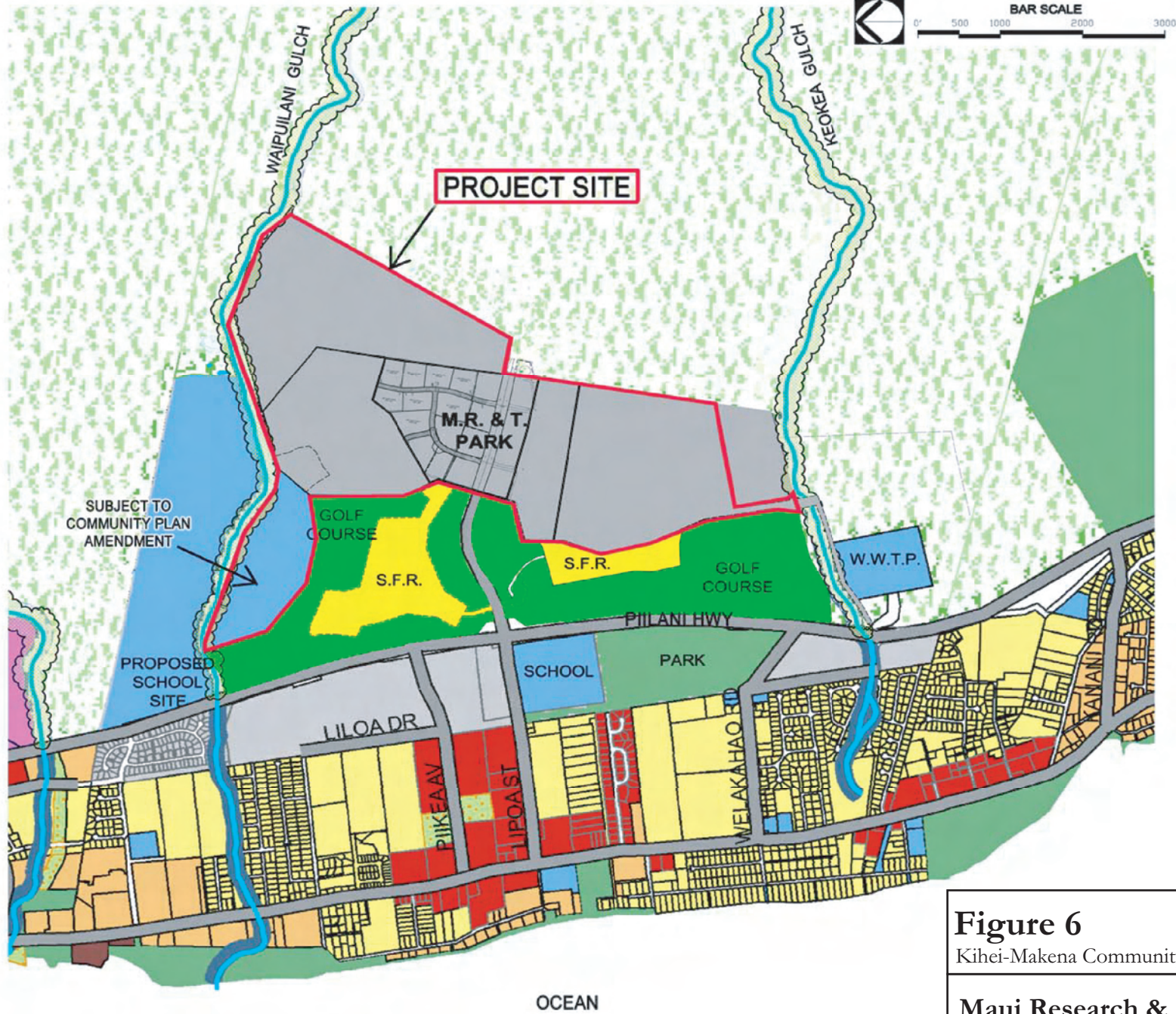


**Figure 5**  
State Land Use Map

**Maui Research &  
Technology Park**



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& PARTNERS, INC.**



**Legend**

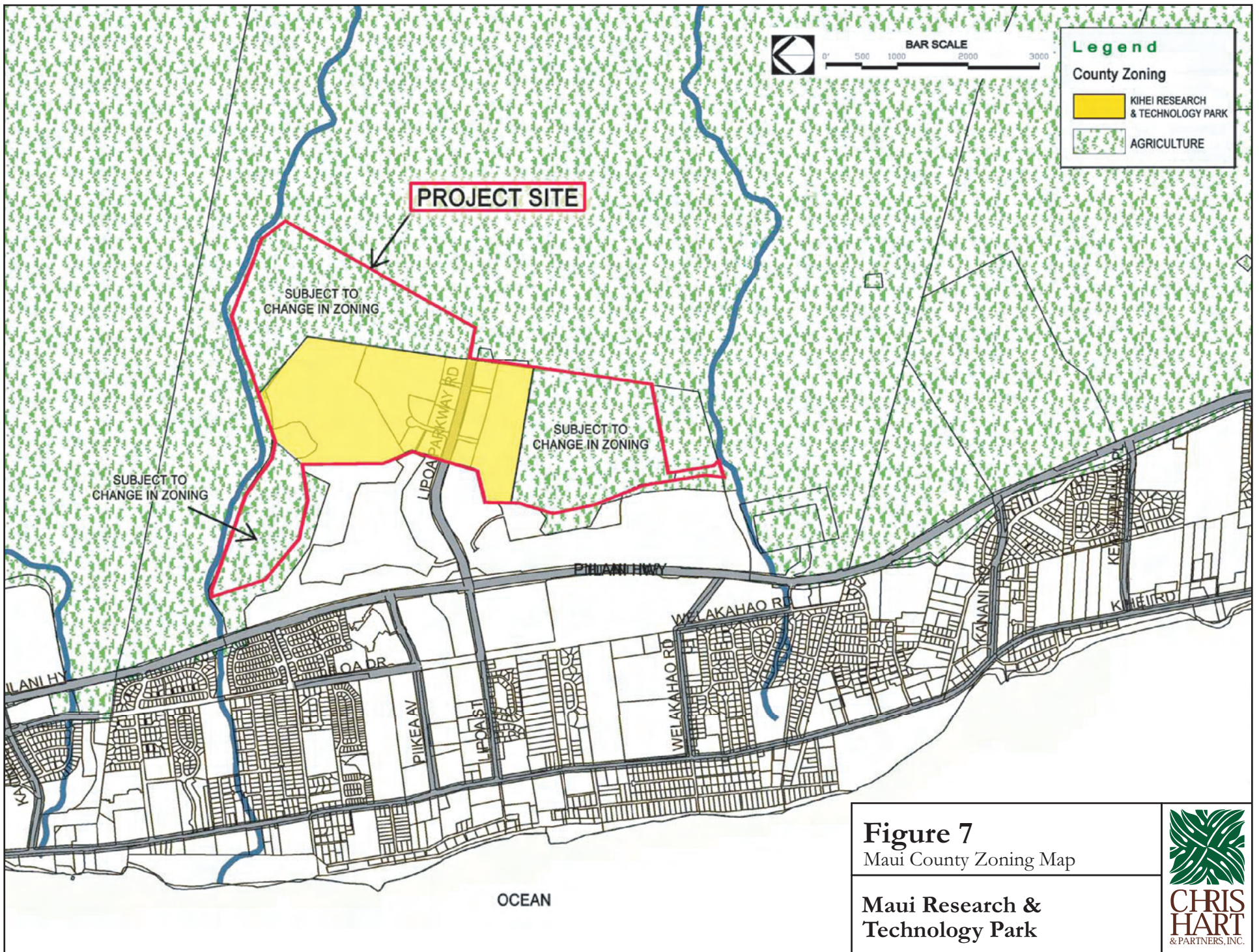
COMMUNITY PLAN DESIGNATION

	Agriculture
	Business / Commercial
	Hotel
	Light Industrial
	Multi-family Residential
	Open Space
	Open Space - Coastal
	Park
	Park (Golf Course)
	Project District
	Public / Quasi-Public
	Single Family Residential

**Figure 6**  
Kihei-Makena Community Plan Map

**Maui Research & Technology Park**



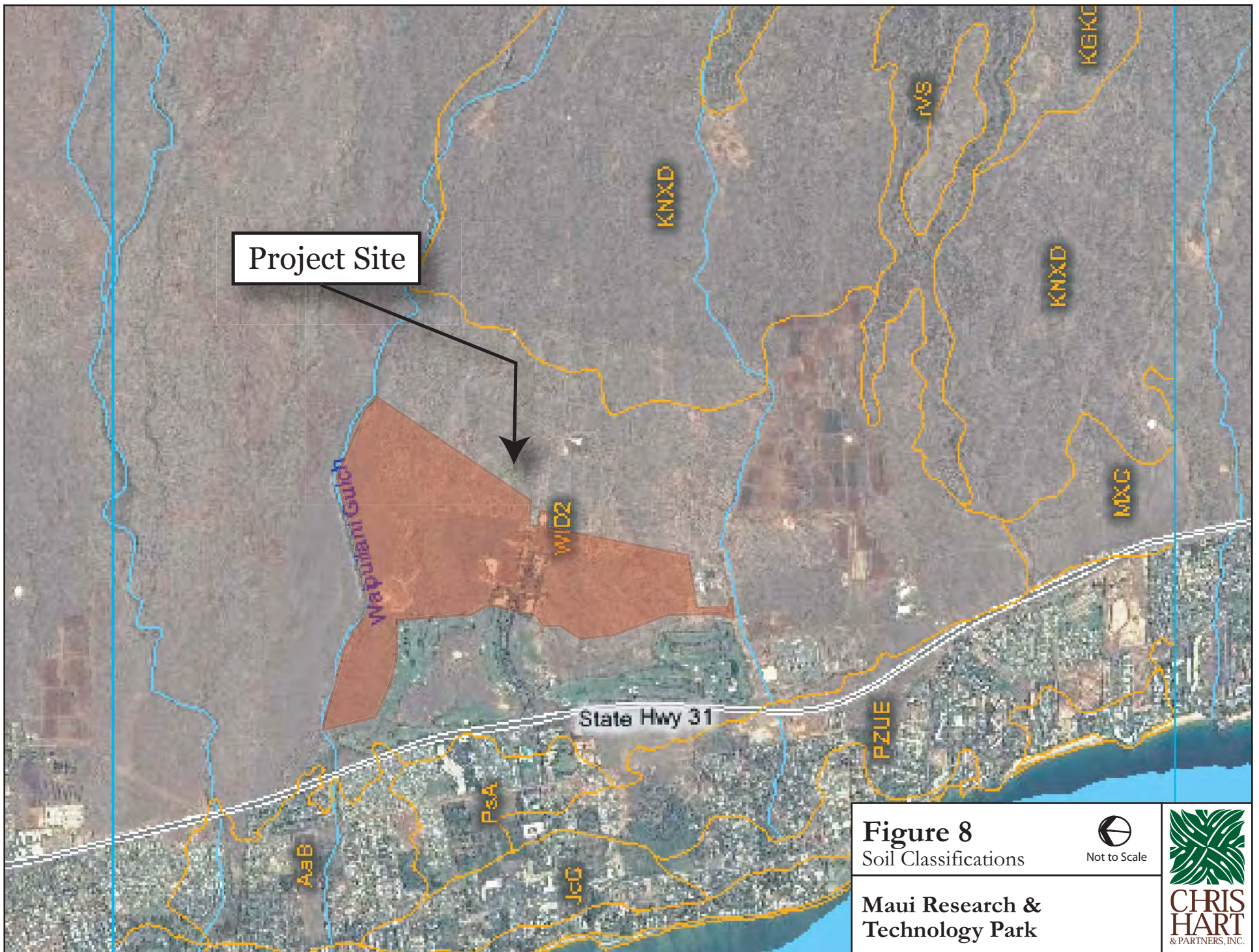


**Figure 7**  
Maui County Zoning Map

**Maui Research & Technology Park**



**CHRIS HART**  
& PARTNERS, INC.



Project Site

**Figure 8**  
Soil Classifications

Not to Scale

Maui Research &  
Technology Park





