

# ISLAND OF MOLOKA‘I

HO‘OLEHUA • KALAMA‘ULA • KALAUPAPA • KAPA‘AKEA • ‘UALAPU‘E



## REGIONAL PLAN

APRIL 2010



DEPARTMENT OF HAWAIIAN HOME LANDS



ISLAND OF MOLOKA'I  
HO'OLEHUA · KALAMA'ULA · KALAUPAPA · KAPA'AKEA · 'UALAPU'E

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# I. INTRODUCTION

The mission of the Department of Hawaiian Home Lands (DHHL) is to effectively manage the Hawaiian Home Lands Trust and to develop and deliver lands to native Hawaiians. To accomplish this, DHHL works in partnership with government agencies, private landowners, non-profit organizations, homestead associations, and other community groups. Regional plans provide the means to solidify visions and partnerships that are essential to effectively manage Hawaiian Home Lands trust lands for the betterment of native Hawaiian beneficiaries.

This regional plan is one of twenty (20) regional plans that DHHL is developing statewide. Kealakehe/La'i 'Ōpua is one of the six regions on the island of Hawai'i that have been selected for regional planning. In these regional plans, DHHL takes on a leadership role in the region, working to strengthen the growth of the area, developing partnerships to leverage diverse resources and capital investment; and fostering beneficiary participation in determining the future direction of the homestead community. The regional plans provide the Department and the affected homestead community opportunities to assess land use development factors, identify issues and opportunities, and identify the region's top priority projects slated for implementation within the next three (3) years.

## WHAT ARE REGIONAL PLANS?

Regional Plans are part of DHHL's 3-tiered Planning System (see Figure 1). At tier one is the General Plan which articulates long-range Goals and Objectives for the Department. At the second tier, there are Program Plans that are statewide in focus, covering specific topic areas such as the Native Hawaiian Housing Plan and a Native Hawaiian Development Program Plan. Also at this second tier are the Department's Island Plans that identify the Department's Land Use Designations per island which function similar to the counties' land use zones. The regional plans are located at the third tier in the Department's planning system which focuses at the community/regional level. The regional plans apply the goals, policies, and land use designations to specific geographic regions. The regional plans are a means to:

- Identify data -- people, lands, and infrastructure of homestead communities and the surrounding region;
- Identify what DHHL and other landowners are planning to do;
- Provide the primary mechanism for beneficiary input in the development of their homestead communities;
- Identify issues and potential projects; and
- Identify Priority Projects determined by the Department and homestead community.

## DHHL's Planning System

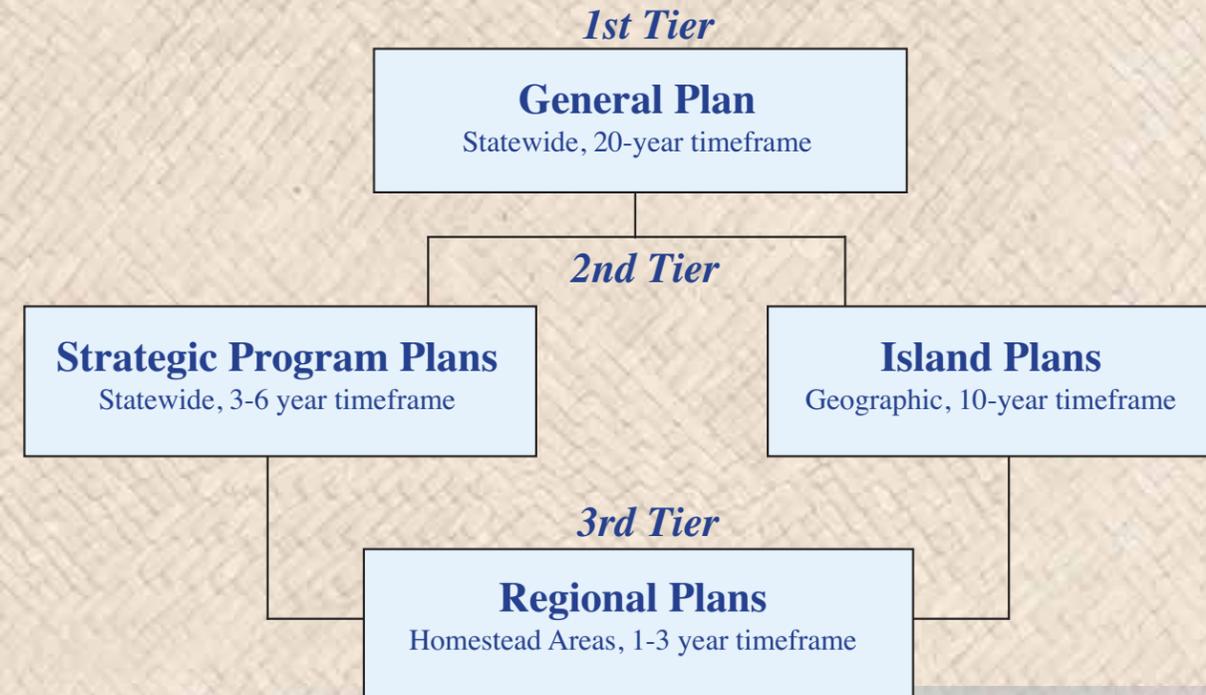
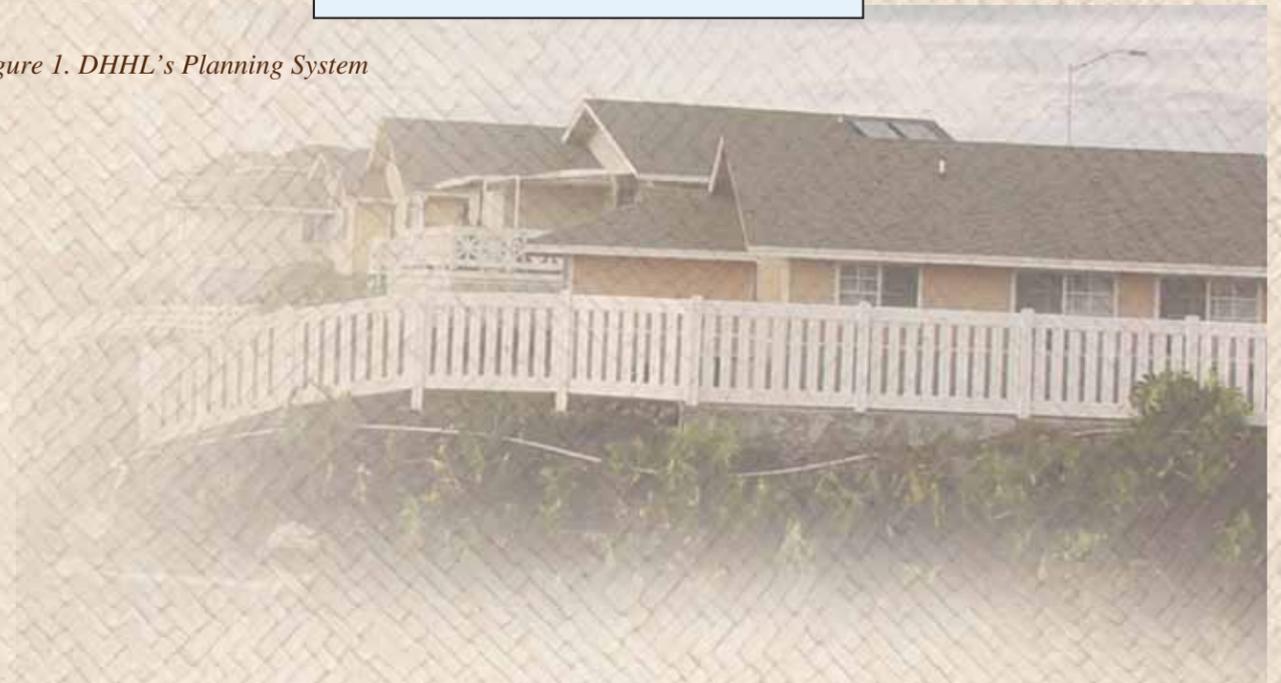


Figure 1. DHHL's Planning System



## HOW ARE REGIONAL PLANS DEVELOPED?

The regional plans are developed in conjunction with lessees of the region as well as regional stakeholders (landowners, agencies, other organizations) in a series of planning meetings as illustrated in Figure 2. During these meetings, issues and opportunities that should be addressed in the regional plan are identified and a list of potential projects is developed to address those issues and opportunities. From this list lessees determine by consensus, their top five (5) priority projects that are written up with project details, budget estimates, and other pertinent project planning information. Draft regional plans are then subject to the approval of the Hawaiian Homes Commission, which means that the Commission and Department officially support the priorities identified in the regional plan.

Upon approval, the homestead community, the Department, and other development partners can seek necessary funding and pursue the implementation of the Priority Projects. The Priority Projects is a key component of aligning support and providing focus to efforts to develop the region. Finally, since DHHL knows that regional development is a dynamic process with constantly changing opportunities and emerging issues, regular regional plan updates are built into the planning process. In this way, regional plans are updated as needed, which generally have amounted to biennial updates (one update every two years), in order to keep abreast of changing conditions and new opportunities.

## HOW ARE REGIONAL PLANS USED?

As a compilation of existing plans and proposed projects for the region, the regional plan helps to coordinate the orderly development of regional infrastructure improvements. With the addition of lessee input in the process, the regional plans become a powerful tool to focus energies and efforts, align interests, and secure funding for the top priorities identified in the regional plan. In this way, regional plans have become a critical tool to unify and support our beneficiary community.

### The Regional Plan Development and Update Process



Figure 2. The Regional Plan Development and Update Process



# PARTNERING BENEFITS

## Shared Costs & Multiple Financing Benefits

DHHL is working in partnership with other government agencies, the private sector and community organizations to develop its lands and improve community life. DHHL believes that partnerships are an effective way to leverage resources and capital investments, mitigate undesirable impacts of development, coordinate area growth, reduce risks in large scale community projects, and create broad community benefits.

These partnerships allow for better prioritization and coordination of infrastructure improvement and the development of regional and public residential facilities. This coordination helps individual organizations achieve their goals while bringing long term benefits to the community and region.



Photo by Dennis Flanagan, USDA-ARS



### DHHL BRINGS TO THESE PARTNERSHIPS:

- Land for development in strategic locations
- Potential use of tax-exempt financing
- Access to legislative appropriations
- Access to federal funding such as HUD, USDA, SBA
- Flexibility in the application of development standards, zoning, and design
- Cultural understanding and resources

### Kūlana ‘Ōiwi

- The consortium partnership includes: DHHL, The Queen Emma Foundation, Kamehameha Schools, Queen Lili‘uokalani Children’s Center, ALU LIKE, Inc., and the Office of Hawaiian Affairs.
- The center is designed to house the offices and programs run by these Hawaiian organizations.
- The concept of a “one-stop service center” for the Hawaiian people will facilitate the coordinated delivery of government and private services more efficiently.
- At Kūlana ‘Ōiwi, each agency provides different services, such as child welfare, social and educational services for youth, health care services, and vocational training services geared to strengthen Hawaiian families, values and culture.



DHHL has participated in a number of successful partnerships. A few of these are highlighted here.

## Public Facilities Partnership

DHHL participated in a number of partnerships involving public facilities and community resources. The most notable partnerships brought together Hawaiian agencies and non-profit organizations into a multi-service complex where a broad range of programs are housed to serve the public. Such multi-service complexes have been built on Hawaiian Home Lands in partnership with Kamehameha Schools, Queen Lili'uokalani Children's Center, Alu Like, Papa Ola Lōkahi, the Office of Hawaiian Affairs, Hawaiian community organizations, and the counties.

These multi-service complexes are housing preschools, offices, meeting facilities, health clinics, and activity centers. For example, the Keaukaha homestead on Hawai'i is served by a County Park on DHHL land, next to a gymnasium and elementary school, DHHL and OHA offices, and a Kamehameha preschool.



Kamehameha Preschools on DHHL Property

Through a series of management partnerships with DLNR and the Nature Conservancy, unique ecosystems and historic sites are being protected. Examples include the Hakalau Forest Reserve, the 'Aina Hou Management District where koa forests, endangered plants and animals, and native species are being protected for future generations.



## Infrastructure Partnership

DHHL has partnered with county governments and utility providers on infrastructure improvements that benefit the entire community. DHHL has participated in water-system development with the counties by providing funding, land easements, and access to federal and state programs. Examples include the extension of the Lower Kula Water System on Maui, the Waimea Irrigation System and the Maku'u Water System on Hawai'i, and the Wahiawā-Waipahu water system on O'ahu. Similar partnerships have been created to provide community wide benefits for major roadway projects like Kūalaka'i Road in Kapolei and the Mid-Level Road in Kealahou. DHHL continues to explore opportunities for partnerships that provide benefit to the beneficiaries while minimizing improvement costs to the Department.

DHHL has also provided numerous easements over its lands to electrical, water, telephone, and cable companies to service both homestead areas and the general public.

## Residential Partnership

Through partnerships, DHHL has reduced the cost of homes to low-income beneficiaries. DHHL has done this by sharing in the cost of infrastructure, helping to secure tax credits, and using self-help methods of construction. Partnerships in Kapolei resulted in 70 rent-to-own units constructed by Mark Development using low-income tax credits and 45 self-help homes constructed with Menehune Development and Honolulu Habitat for Humanity. In these types of partnerships, DHHL provides the land, secures federal grants, and provides access to, or assistance in, acquiring tax credits, subsidies, or other financing.



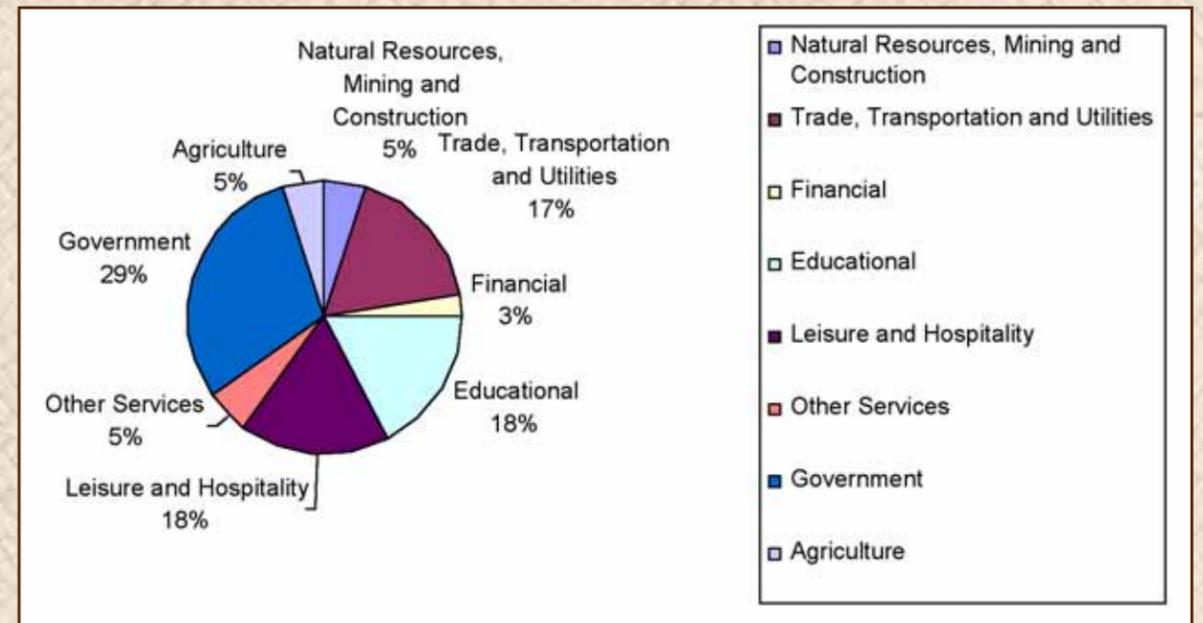
- Self-help housing partnerships:
  - Construction of 41 homes in La'i 'Ōpua with Kōkua Housing Corporation
  - Construction of 45 homes in Kapolei with Menehune Housing Corporation and Honolulu Habitat for Humanity
- Co-location of various Hawaiian agencies and services providers on O'ahu, Moloka'i, and Maui
- Location of Kamehameha Preschools on DHHL property on several islands
- Partnership to create a community resource center with Chaminade University, Association of Hawaiian Civic Clubs, and other Hawaiian organizations



# HOMESTEAD REGIONAL PROFILE

## Regional Demographics

- Based on the 2000 US Census, the resident population of Moloka'i is 7,404 (7,257 without Kalaupapa) persons, making up 2,420 (2,305 without Kalaupapa) households. The population breakdown per region of Moloka'i is: 4,688 persons in East Moloka'i, 2,569 persons in West Moloka'i, and 147 persons in Kalawao County (Kalaupapa). Population in specific census-designated places (CDP) were 2,726 people in Kaunakakai, 1,936 people in Kualapu'u; and 230 people in Maunaloa.
- The gender breakdown is 3,168 males and 3,786 females. The race demographics on Moloka'i include 4,599 Native Hawaiian or other Pacific Islander (62%), 3,101 Asian (42%), 2,299 Caucasian/White (31%), 702 Hispanic (9.5%), 189 Native American (2.5%), 75 African/Black (1%), and 169 of other descent (2%) (Note: The sum of the reported percentages is greater than 100 due to multiple racial identifications by an individual of mixed race).
- The primary industry on Moloka'i today is government, yet the island's economy still depends on tourism and agriculture as economic sources. More economic opportunities will be necessary to stem the high unemployment and the out-migration of Moloka'i's youth. Nevertheless, the island's abundant agricultural land and potential for alternative energy development show a great deal of promise for the future.



Inset: Employment force breakdown by sector.

(from U.S. Census, DBEDT, DHHL & USDA-RD, Moloka'i Community Plan Sources)



Kalaupapa

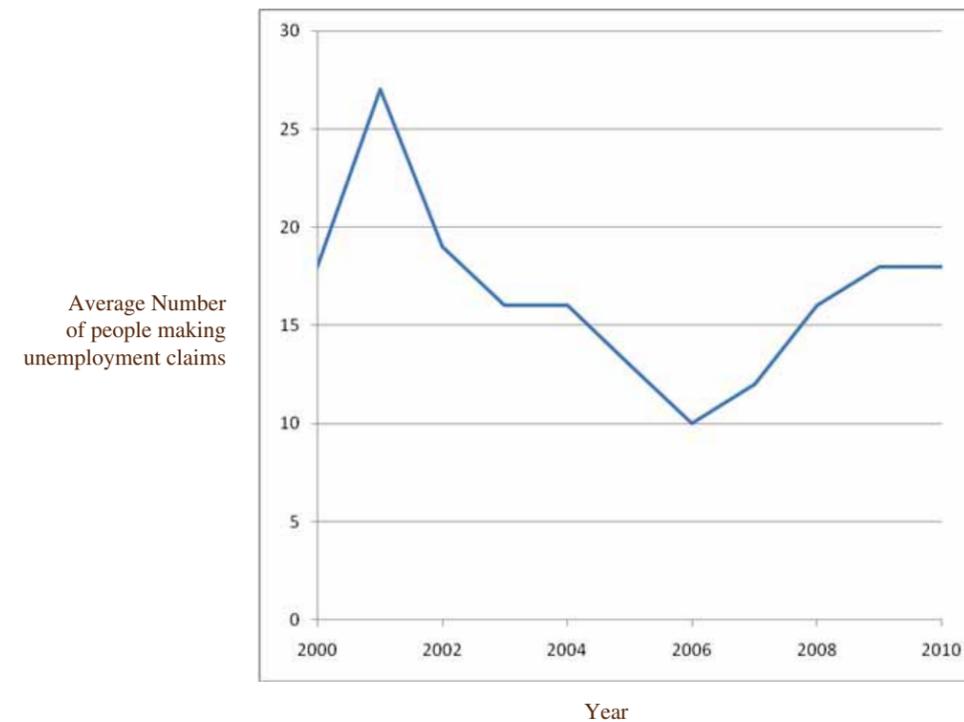


Kapuāiwa



- Limited economic opportunity is the most significant problem facing the community, due to the limited availability of jobs. In the 1970s and 80s, the economy of Moloka'i was devastated when two pineapple plantations closed down. Moloka'i's economy continued to struggle as several major employers closed operation. In 2000, Kaluako'i Resort, Moloka'i's only major resort closed. Then in 2008 after losing money for several decades, Moloka'i Ranch closed putting 120 Moloka'i residents out of work. Currently the State's unemployment rate is 6.9%, Moloka'i's rate is 15.9%. Moloka'i continues to have the highest jobless rate within the State.
- Median income on Moloka'i is comparatively lower than the State's. In 2000, the State's median household income was \$42,433. Moloka'i's median household income was \$33,398, and Hawaiian homesteaders' median income was \$37,714. Currently, the percentage of population below the poverty level statewide is 8.8%, whereas on Moloka'i it is 26.0% and for Hawaiian homesteaders it is 15.7%.
- Other socio-economic statistics for Moloka'i include: 24.4% of the island's resident population receive food stamps; 32.5% receive Medicaid; and 20% of the population 18 years and older do not have a high school diploma.
- The majority of residents living in Moloka'i tend to live and work in the Kaunakakai area. According to the 2000 US Census, in Kaunakakai, the median age of residents was 36, the median income for a household was \$34,492, and the median income for a family was \$39,348.

**Average Weekly Unemployment Claims on Moloka'i**



(from U.S. Census, DBEDT, DHHL & USDA-RD, Moloka'i Community Plan Sources)



# HOMESTEAD REGIONAL PROFILE



**M. Kammy Purdy**  
*Ahupua'a o Moloka'i  
President*



**Harry K. "Tuddie" Purdy**  
*Ho'olehua Homestead  
Agriculture Association  
President*



**Evangeline "Ochie" Bush**  
*Ho'olehua Homestead  
Association  
President*



**Gayla Haliniak-Lloyd**  
*Kalama'ula Hawaiian  
Homestead Association  
President*



**Vivian Lehua Ainoa**  
*Kamiloloa-One Ali'i  
Homestead Association  
President*



**Doreen Pinky Gasper**  
*Kapa'akea Homesteaders  
Association  
President*



**Lynn Pualani DeCoite**  
*Moloka'i Homestead  
Farmers Alliance  
President*



**Donna Howard**  
*Moloka'i Livestock  
Association  
President*



**Sybil K. Lopez**  
*Kalama'ula Mauka  
Homestead Association  
President*



# Homestead Associations and Community Leaders and Stakeholders

## Government

Morris Atta, Land Division Administrator – State of Hawai‘i Department of Land & Natural Resources  
Keith Chun, State Land planning & Development Manager – State of Hawai‘i Department of Land & Natural Resources  
Laura Thielen, Chair – State of Hawai‘i Department of Land & Natural Resources  
Lindsey Ball, Complex Superintendent, Moloka‘i – State of Hawai‘i Department of Education  
Clyde Namu‘o, Administrator – Office of Hawaiian Affairs  
Haunani Apoliona, Chairperson Aide: Scotty Bowman – Office of Hawaiian Affairs, Board of Trustees  
Thomas Phillips, Police Chief – Maui County Police Department  
Jeffery A. Murray, Fire Chief – Maui County Department of Fire Control  
Kalbert Young, Director – Maui County Department of Finance  
Lori Tzuhako, Director – Maui County Department of Housing & Human Concerns  
Tamara Horcajo, Director – Maui County Department of parks & recreation  
Jeff Hunt, Director – Maui County Department of Planning  
Milton Arakawa, Director – Maui County Department of Public Works & Environmental Management  
Jeffrey Eng, Director – Maui County Department of Water Supply  
Joseph Kalipi – Chair, Moloka‘i Planning Commission  
Steven Chaikin, Vice Chair, Moloka‘i Planning Commission  
Lori Buchanan - Moloka‘i Planning Commission  
Nathaniel Bacon - Moloka‘i Planning Commission  
Dan Williams – Moloka‘i Planning Commission  
Napua Leong – Moloka‘i Planning Commission  
John Sprinzel – Moloka‘i Planning Commission  
Mikiala Pescaia - Moloka‘i Planning Commission  
Taryn Waros - Moloka‘i Planning Commission  
Clyde Sakamoto – Chancellor, Maui Community College/Moloka‘i University Center  
James J.C. Haynes- Reagent, Maui County, University of Hawai‘i  
Janice Espiritu- Principal, Kaunakakai Elementary School  
Leighton Kawai- Principal, Kilohana Elementary School  
Joe Yamamoto- Principal, Maunaloa Elementary School  
Denise Kelly- Acting Principal, Moloka‘i High School  
Gary Zukeran- Principal, Moloka‘i Middle School  
Lydia Trinidad- Director, Kualapu‘u Elementary Charter School

*Disclaimer: The information and recommendations expressed in this report are not necessarily endorsed by the individuals on this page. These same people cannot be held liable for the information presented or the results of the report.*

*Community members listed took part in the 2010 Regional Planning Process update and signed in on meeting attendance sheets. Every effort has been made to accurately represent the attendees. Our apologies for any omissions or errors.*

## Stakeholders

William Akutagawa - Na Pu‘u Wai Native Health Care  
Karen Holt - Moloka‘I Community Service Council  
Charlie Ice - CWRM  
Keoni Lindo - Molokai Properties, LTD.  
Peter Nichols - Moloka‘I Properties  
George Pescaia - Moloka‘I LTD.  
Shari Lyn - Ka Hale Pōmaika‘i  
George Maioho - DHHL  
Ed Misaki - The Nature Conservancy  
Alan Murakami - Hawaiian Legal Corp.  
Glenn Teves - CES  
Ke Aupuni Lokahi, Inc. (Molokai EC)  
Stacie Crivello - Ke Aupuni Lokahi (KAL)  
Colette Machado - OHA Trustee

## Community

Sybil Lopez  
Adele Lee  
Adolph Helm  
Alden Helm  
Andrew Ance  
B. Dudoit  
Benson Lee  
Bob Kaikaka  
Bobo Alcon  
Cammy Purdy  
Carla Hanchett  
Carrie Marie Poaha  
Colette Machado  
Corene Helm  
Davianna McGregor  
David Keohaloa  
Doreen Pinky Gasper  
Edward Lani  
Frank Keoho  
Fred Aki III

Fred Ato IV  
Gayla Haliniak-Lloyd  
Glen Teves  
Halone Kaopuiki  
Hannah Tavares  
Harriet Fukuoda  
Harriet Fukuoka  
Henry Tancayo  
Irene Ka‘ahanui  
James Boswell  
Joan Lasua  
Joseph Souza  
Kamaka Helm  
Kammy Purdy  
Kanani Negrillo  
Kanohowailuku Helm  
Kapua  
Karen Hew  
Keani Acasio  
Kekoa Kaluhiwa  
Kuulei Ara  
Lawrence Lasua  
Lorena Atchison  
Lori Buchanan  
Lorraine Aki  
Lovenu Malukuu  
Luise Ku  
Lynn DeCoite  
Mahealani Davis  
Malia Akutagara  
Margaret Furtado  
Melody Alcon  
Noa Horner  
Ochie Bush  
Pearl Sanchez  
Phyllis Gomes  
Piliialoha Kalaiwaa  
Pinky Gasper

Raymond Gomes Jr.  
Renee Mortizor  
Richard Negrillo Sr.  
Ron Joao  
Rosie Davis  
Samson Kaahanu  
Scott Furtado  
Shona Pineda  
Stacy Helm Crivello  
Stasia Kuuhanui  
Suliana Aki  
Sulini Vuctir  
Sybil Lopez  
Tania Joao  
Victoria Kapuni  
Viola Mundrick Whichman  
Violet Rodrigues  
Vivian Ainoa  
Wade Lee  
Walter Kaehu  
Walter Ritte  
Wanda Hudela  
Wanette Lee  
Wescot Lee  
Westcott Luu  
William K. Sr.



# HOMESTEAD REGIONAL PROFILE



**Linda Lingle**  
*Governor*



**James "Duke" Aiona**  
*Lt. Governor*



**Dan K. Inouye**  
*U.S. Senator*



**Daniel K. Akaka**  
*U.S. Senator*

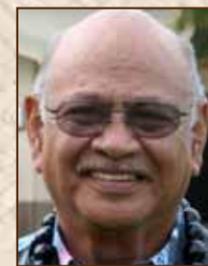


**Mazie Hirono**  
*Congressional  
District 2*

## State, Federal, & County Leaders



**Kaulana Park**  
*DHHL Commissioner  
Chairman*



**Henry Tancayo**  
*DHHL Moloka'i  
Commissioner*



**Colette Machado**  
*OHA Board Member,  
Moloka'i, Lana'i*



**J. Kalani English**  
*State Senatorial District 6*



**Mele Carroll**  
*State House of Representatives  
District 13*



**Charmaine Tavares**  
*Maui County Mayor*



**Danny Mateo**  
*Maui County Council  
Moloka'i*

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**UNITED STATES CONGRESS DISTRICT 2**



**MAUI COUNTY COUNCIL DISTRICT (MOLOKA'I)**



**STATE HOUSE OF REPRESENTATIVES DISTRICT 13**



**STATE SENATE DISTRICT 6**



### III. REGIONAL LAND AND DEVELOPMENT

#### *History and Cultural Aspects of the Area*

Like all islands within the Hawaiian Archipelago, the Island of Moloka'i grew out of a series of basaltic eruptions from a "hot spot," amassing two large shield volcanoes from the sea floor. The island's formative volcanoes emerged from beneath the sea approximately 1.9 and 1.5 million years ago. Geologically the island's most notable feature, its cliffs along the north shore are the tallest in the world, rising in excess of 1,200 meters from the sea. A separate small shield vent during the island's volcanic rejuvenation stage created the Kalaupapa peninsula along its north shore.

The Island of Moloka'i has long been known as a place where time's effects are a little less evident, where the pace is just a little slower, and where an abundance of aloha can be found in the faces of the residents of the "Friendly Isle." The fifth-largest island in the archipelago, Moloka'i seems to have avoided the ravages of modernization and foreign influences creating an untouched atmosphere highly reminiscent of the "Old Hawai'i" of decades ago, and is also traditionally held as the birthplace of hula, the quintessence of Hawaiian culture.



*Photo of Kalaupapa Peninsula*



Predominately an aqua- and agricultural-based economy, many of the industries continue in the same vein as established by the early k̄naka maoli (original people, or Native Hawaiians). The use of fishponds, traditional Hawaiian aquaculture began on the shores of Moloka'i and spread to the other islands where chiefs requested assistance in developing their own "fish farms." Many can still be seen along the southern coast of the island. Some fishponds are still in use today. Ancient sacred sites are plentiful on the island, including Ka-ule-o-Nānāhoa where Hawaiians believed in its powers of fertility.

Although Moloka'i's history provides deep insight into the lifestyle and way of the Hawaiian culture, its modern history also teaches us of the sometimes vicious nature of mankind, as well as the grace and kindness of others.

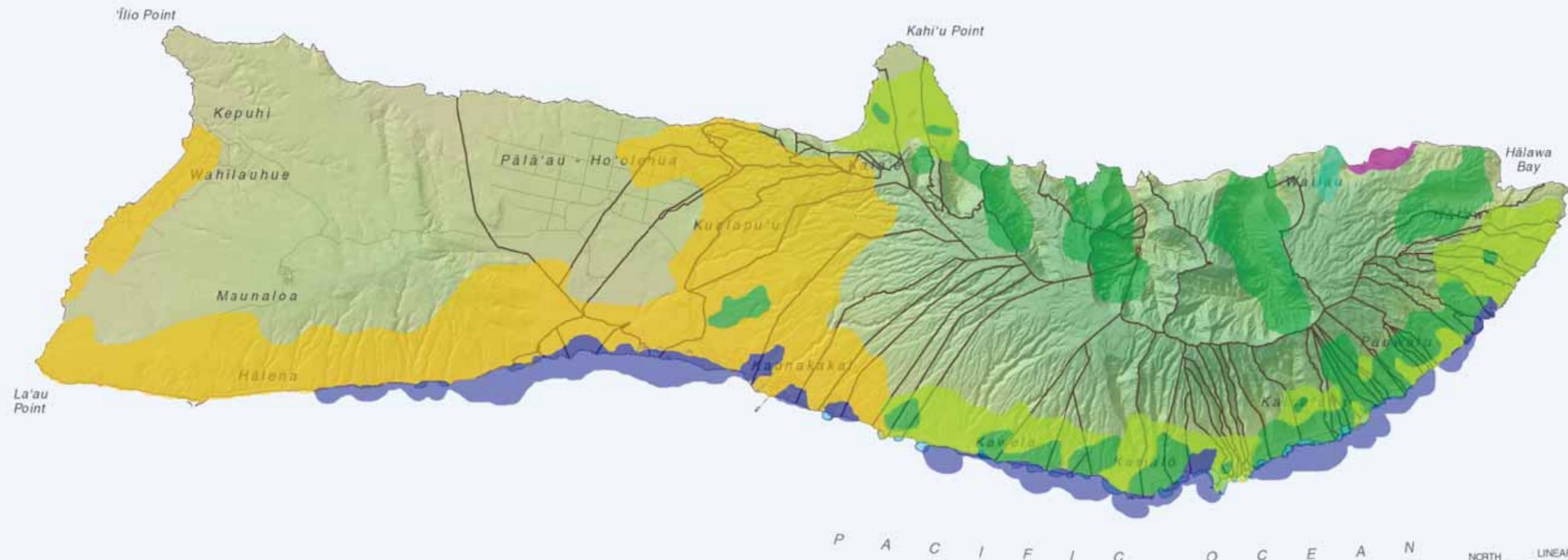


*Ka-ule-o-Nānāhoa*

*Traditional Hawaiian Fishpond*



## Traditional Land Divisions and Historic Land Uses



**LEGEND**

Ahupua'a	Current Fishpond
<b>Land Use circa 1850</b>	
Not Permanently Inhabited	Possible Taro Areas
Kula (Sweet Potatoes)	Melons & Gourds
Taro	Fishpond
Kula or Dry Land Taro	

*It is estimated that the island of Moloka'i was divided into 72 ahupua'a prior to the Māhele in 1848. Traditional community demographics and accounting were based on these districts.*





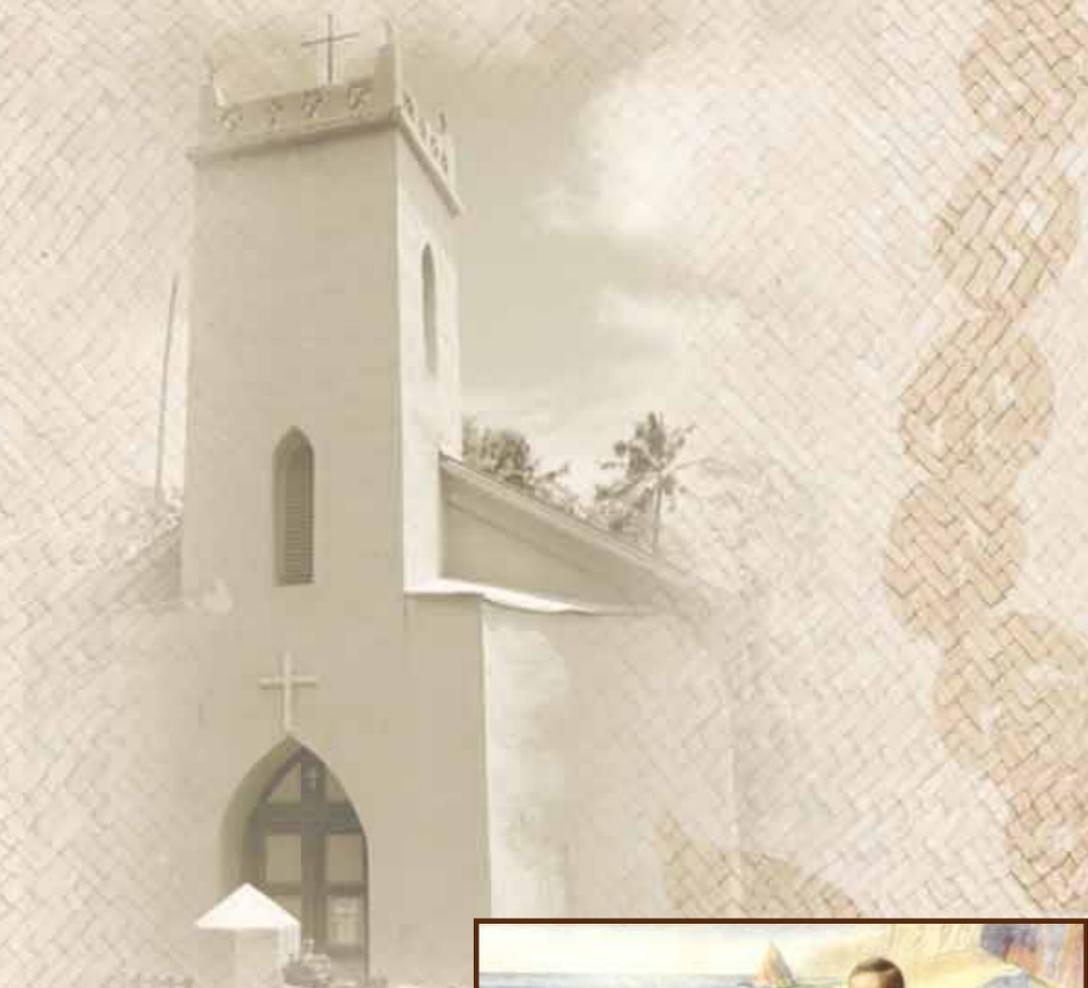
*Saint Damien*

Prior to western contact, as well as immediately after, Moloka'i remained relatively free from the ravages of European foreign disease due to its continued legacy of relative isolation. The island's isolation prompted Kamehameha V to banish those with leprosy, otherwise known as Hansen's disease, to the remote Kalaupapa peninsula in an effort to contain the spread of the disease. The banishment of individuals to Kalaupapa split family units apart, with many never having the opportunity to see their kin again.

The mission of Blessed Father Damien to the sick of Kalaupapa is renown, such that Pope John Paul II beatified him in 1995. Father Damien was not the first missionary to go to the remote settlement. However, he was the first to stay. In addition to building over 300 homes, tending the sick, and burying the dead, Damien brought hope to the residents of the Kalaupapa settlement. Father Damien eventually contracted Hansen's disease and succumbed to the same disease inflicting those to whom he missioned. The year 2009 was an exciting one for the people of Moloka'i, the State of Hawai'i and the entire catholic community as the Vatican canonized Father Damien as a

Saint on October 11th. Saint Damien of Molokai is considered the patron Saint of Hansen's disease, HIV, Aids and outcasts. Father Damien Day is celebrated statewide on April 15th.

In 1921, the United States Congress passed the Hawaiian Homes Commission Act, which set aside 43,000 acres of land for those with at least 50 percent Hawaiian blood. This Act was the direct result of efforts made by Prince Kūhiō Kalaniana'ole who had been concerned with the rapid decline of the Hawaiian population throughout the islands. One year later, the first Hawaiian homesteader moved into the Kalaniana'ole settlement on Moloka'i. By 1924, the flourishing fields of the settlement had been dubbed the "Moloka'i Miracle." The Hawaiian Homestead Project represented the climax in a long controversy of the fate of the Hawaiians. It served as irrefutable evidence that the Hawaiian's link to the land is both indivisible and essential.



*Father Damien*



# REGIONAL LAND AND DEVELOPMENT

1. **‘Ualapu‘e** – ‘Ualapu‘e comprises 401.409 acres, which is located on the eastern end of the island. The parcel is mauka of Kamehameha V Highway and is highlighted by its sloped terrain from its mountainous regions interspersed by deep ravines of Kahananui Gulch, Ki‘inohu Gulch, and Mo‘omuko Gulch. The elevation ranges from 25 to 1,000 feet above sea level.
2. **Kapa‘akea, Kamiloloa, and Makakupa‘ia** – The 5,182.899 acres of Kapa‘akea, Kamiloloa, and Makakupa‘ia are located along the southern portion of Moloka‘i, approximately one mile east of Kaunakakai town. Most of these DHHL lands are situated mauka of Kamehameha V Highway, highlighted by variable slope and major drainage channels that help form the wetlands near the shoreline. The elevation ranges from sea level to its mauka boundary at 2,000 feet above sea level.
3. **Kalama‘ula** – Kalama‘ula consists of 5,117.831 acres, located west of Kaunakakai. This parcel is mauka of Kamehameha V Highway, gently sloping upland to Pu‘u Luahine (372 ft. elevation) transected with the declining slopes of Kuhuaawi Gulch and Kaluaoho Gulch. The elevation ranges from sea level to 1,800 feet above sea level. Kalama‘ula consists of multiple uses with a growing residential community in the lowlands and coastal region, wetlands to the southwestern corridor, pastoral use, Kapuāiwa Grove, Church Row, and Kulana ‘Ōiwi.
4. **Kalaupapa and Pālā‘au** – The DHHL lands of Kalaupapa are 1,247.00 acres located on the northern plateau and peninsula of the island. The area of Pālā‘au is mostly ironwood forest under license to the State Parks Division until 2011. Kalaupapa peninsula is separated from the rest of the island by a 1,600-foot cliff.

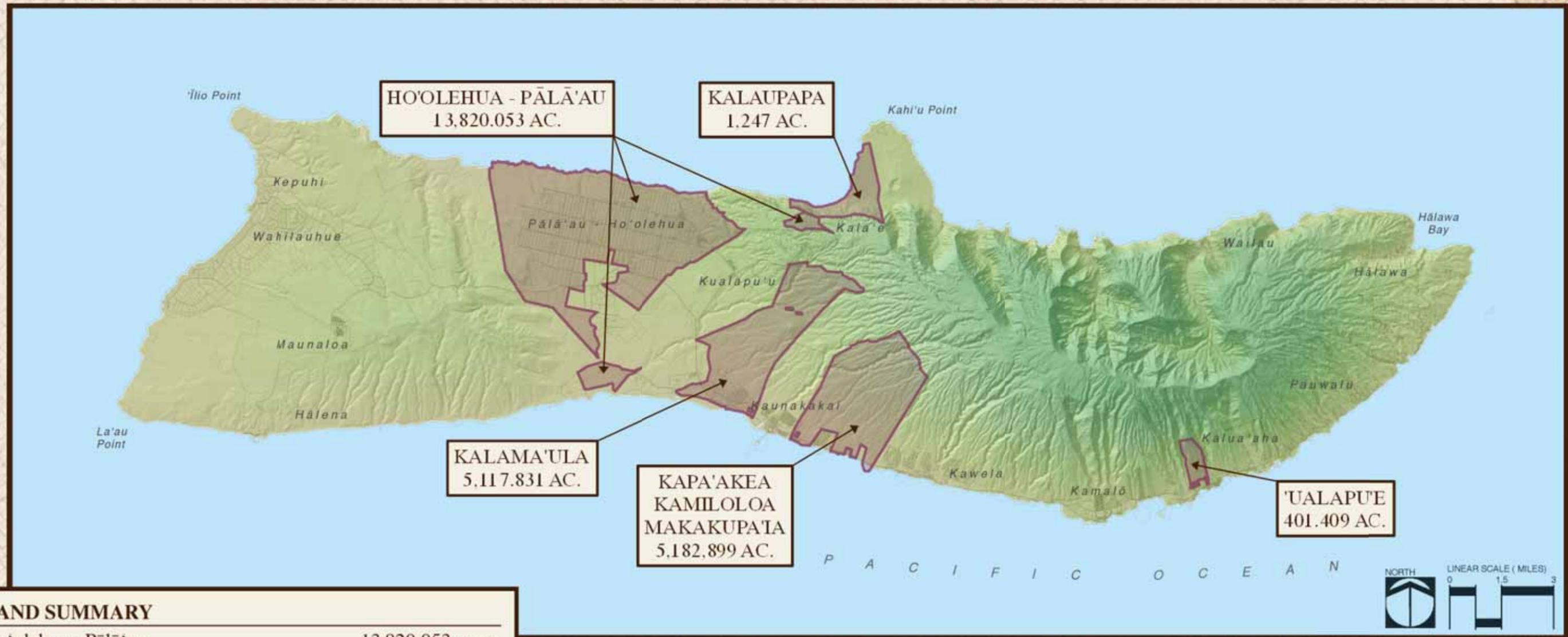
5. **Ho‘olehua-Pālā‘au** – Ho‘olehua-Pālā‘au comprises 13,820.053 acres within the northern central plateau and southern coastal corridor of Moloka‘i, respectively. Fronted by Maunaloa Highway, Ho‘olehua is a rural agricultural community, also known as the first Hawaiian homestead established following the passage of the Hawaiian Homes Commission Act in 1921. The lands of Ho‘olehua are varies in topography, ranging from level plains to rolling hills and sea cliffs at the northern coastal boundary. Kāluape‘elua and Mane‘opapa Gulches bisect the eastern section of Ho‘olehua, and Anahaki Gulch bisects the northwest.

## LAND SUMMARY

‘Ualapu‘e	401.409 acres
Kapa‘akea, Kamiloloa, and Makakupa‘ia	5,182.899 acres
Kalama‘ula	5,117.831 acres
Kalaupapa and Pālā‘au	1,247.00 acres
Ho‘olehua-Pālā‘au	13,820.053 acres
<b>Total DHHL land:</b>	<b><u>25,769.192 acres</u></b>

*As of June 30, 2008, DHHL currently has 843 active leases on Moloka‘i (392 residential, 424 agricultural and 27 pastoral).*





LAND SUMMARY	
Ho'olehua - Pālā'au	13,820.053 acres
Kapa'akea, Kamiloloa, and Makakupa'ia	5,182.899 acres
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Kalaupapa	1,247.000 acres
'Ualapu'e	401.409 acres
<b>Total DHHL Land:</b>	<b>25,769.192 acres</b>



# REGIONAL LAND AND DEVELOPMENT

## DHHL PROJECTS

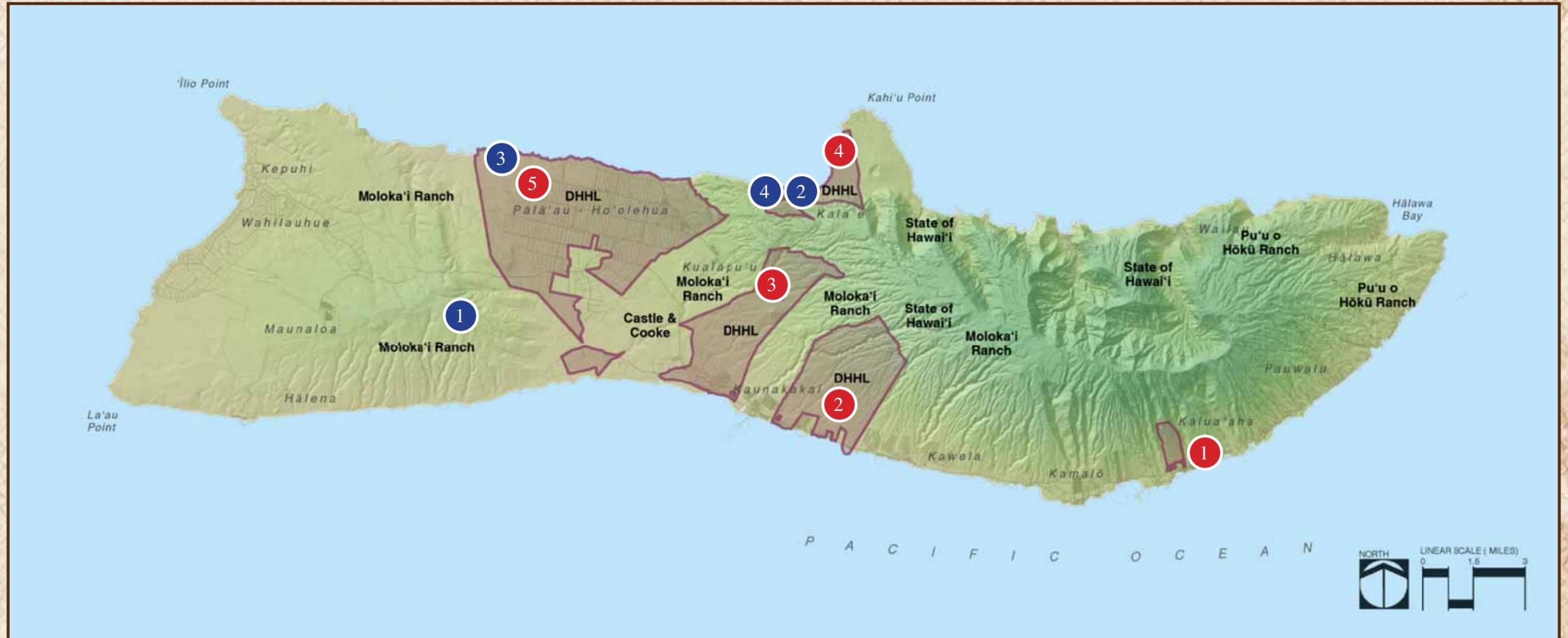
- 1 **‘Ualapu‘e** – This proposed residential area is a first priority for DHHL and will provide 74 residential lots on 25 acres to be developed in two phases. The first phase will consist of 27 lots on 9 acres on the east end, and the second phase would have 47 lots on 16 acres on the west end. Also planned at ‘Ualapu‘e are 299 acres general agricultural land, 85 acres of special district, and 3 acres of community use area.
- 2 **Kapa‘akea, Kamiloloa, and Makakupa‘ia** – Currently, there are 72 residential leases on 60 acres of this coastal homestead. The new residential area will comprise 204 acres of 286 half-acre lots on lands mauka of Kamehameha V Highway. Also available at Kapa‘akea are 465 acres of pastoral homesteads, 2,165 acres general agricultural land, 2,247 acres of special district, 58 acres of community use area, and 17 acres of industrial land.
- 3 **Kalama‘ula** – Currently, there are 160 existing lots on 210 acres. Future plans include limited growth of a new residential development of 57 lots on 81 acres. Also included at Kalama‘ula are 2,353 acres general agricultural land, 1,719 acres of special district, 76 acres of community use area, and 12 acres of commercial use land.
- 4 **Kalaupapa & Pālā‘au (Apana 3)** – Of the 621 acres designated as special district land, approximately 224 acres in Pālā‘au (Apana 3) will remain as forested reserve. Another 609 acres will remain Conservation District. Two areas totaling 7 acres will be designated for community use.
- 5 **Ho‘olehua-Pālā‘au (Apana 1 & 2)** – There are two existing residential areas on 55 acres in Ho‘olehua. Approximately 5,862 acres have been designated as supplemental agriculture and 3,681 acres as general agriculture. Other land uses include 922 acres of pastoral homesteads, 660 acres of special district, 73 acres of community use areas, 46 acres of Conservation District, and 40 acres of commercial use land.

## OTHER PROJECTS

- 1 **Moloka‘i Land Trust** – Moloka‘i Properties Limited has plans to turn over control of approximately 50,000 acres to a community land trust either by title or restrictive easement.
- 2 **Kalaupapa** – The National Park Service is in the process of developing a General Management Plan for Kalaupapa.
- 3 **First Wind** – First Wind, an independent developer of wind power is exploring the concept of a large wind farm on Moloka‘i to provide clean, renewable energy to O‘ahu.
- 4 **Ala Pālā‘au** – A consortium of local community groups, Ke ‘Aupuni Lōkāhi, Inc and the National Park Service, with grant funding from the State are working on developing plans for forest restoration and trail development.

*Note: Any references to non-DHHL development projects are for information purposes only, and should not be interpreted as an endorsement of the projects by the department.*





# IV. INFRASTRUCTURE

## INFRASTRUCTURE - WATER

The major water systems on Moloka'i include: DHHL, Maui County DWS, Moloka'i Irrigation System (MIS), and private systems.

Nearly all of Moloka'i's water comes from wells dug to tap the basal reservoirs. The west and central regions have aquifer systems that produce relatively low amounts of potable water. Total sustainable yield for the island is 81 million gallons per day (mgd) (Wilson Okamoto 2003).

### DHHL WATER SYSTEM

DHHL owns two wells (0801-01 and 0801-02) in Kualapu'u, and has a groundwater reservation of 2.905 million gallons per day (mgd) from the Kualapu'u Aquifer System.

The existing DHHL Moloka'i Water System serves three areas in Central Moloka'i: Kala'e, Kalama'ula Homestead, and the Pālā'au-Ho'olehua Homestead. The existing DHHL Moloka'i Water System serves Kalama'ula and the Pālā'au-Ho'olehua Homesteads. The two wells at Kala'e are located within the Kualapu'u Aquifer System. Water is pumped to a 1.0 million gallon reservoir at Kala'e. Two 6-inch parallel pipes direct water westward from the reservoir at Kala'e to two 3.5 million gallon concrete storage tanks located north of Kualapu'u (SSFM 2002).

Numerous water lines from the storage tanks branch out in a westerly direction towards Ho'olehua along Keonelele Avenue. Service in the Ho'olehua area is along water lines within the rights-of-way of Farrington Avenue, and intersecting avenues. The water system also serves the Kalama'ula homestead area located west of Kaunakakai, via a 12-inch diameter, gravity-flow pipe to a 200,000-gallon concrete reservoir above Kalama'ula. Water transmission and distribution lines from the reservoir were installed in 1985 to service the Kalama'ula homestead area (Wilson Okamoto 1993).

In addition to the two wells at Kala'e, DHHL's water system also has two surface water sources located in the Forest Reserve area in the upper reaches of East Moloka'i western drainage area: Waihānau Stream and Kamiloloa Gulch intake. Both surface sources deliver water for filtration and storage at an elevation of 1,412 feet in Kauluwai (PBR 1986).

The Waihānau Stream drains to the north side of the island at Kalaupapa Peninsula. Water is diverted from the stream at the 2,264-foot elevation through 2,800 feet of tunnel to an intake structure in Kahapa'aki Gulch. From there, it is delivered through 3,000 feet of 8-inch and 14,000 feet of 6-inch cast iron pipes with lead joint to the storage tank at Kala'e. The stream's yield varies seasonally from 800,000 gallons per day average in rainy months to as low as 3,000 gallons per day in dry summer months.

The other surface source is an intake on Kamiloloa Gulch at 3,100 feet. The yield averages 15,000 to 20,000 gallons per day with substantial seasonal fluctuation. The water is delivered by 3- and 4-inch transmission pipeline.

The 'Ualapu'e system is sourced by well, which has a 41-foot deep vertical shaft and is fed by 180 feet of skimming tunnels. A 9.5-mile long pipeline system extends from Kamalō to Moanui Stream, and is served by a 12-inch distribution main along Kamehameha V Highway. There is a 1.0 million gallon storage tank at elevation 250 feet above the well.

The Kala'e system is sourced by Waikalae and Wai'alalā tunnels at elevations 1,715 and 1,625 feet, respectively. The tunnels yield perched water and deliver to thy system by gravity. Another source is by purchase from the DHHL tank in Kualapu'u and pumped via an 8-inch main to DWS tanks in Kala'e.

The Hālawā system is sourced from a diversion in Maka'ele'ele Gulch at elevation 250 feet. There is no storage tank; service is by direct diversion into the system's single 1.5-inch transmission/distribution pipeline.

### MIS WATER SYSTEM

(Source: Santo, L. (2001). Assessment and Improvement Recommendations for the Molokai Irrigation System. Hawaii Agriculture Research Center: Aiea, Hawaii. CWRM website)

The MIS, managed by the State Department of Agriculture (DOA), has three wells (0855-01, -02, and -03), which withdraw water from the dike complex in northeastern Moloka'i to irrigate farmlands in central and western parts of the island.

- MIS is operated by an irrigation manager and 2 irrigation system service workers employed by the DOA. Operation and maintenance costs of the MIS are provided by water use revenues and supplemented by DOA operating funds. Capital improvements are financed with State bonds.
- The sole water source is from the Waikolu Valley Watershed.
- Surface water system: 54% comes from 4 surface water diversion dams in Waikolu Valley, 28% from groundwater intercepted by the Waikolu tunnel, and 18% pumped from wells.
- Three intakes divert stream flows at the 1,000-ft elevation into the Moloka'i Tunnel. The 4th intake with a pump station at the 800-ft elevation lifts stream flows to the Moloka'i Tunnel inlet portal.
- Collected surface water and pumped groundwater are transported by gravity through a 5.1 mile-long tunnel, 0.3 mile-long concrete flume, and a 3.85 mile-long 30-inch steel pipeline connecting to a 1.4 billion-gallon Kualapu'u reservoir, before being delivered to the customers.
- The Kualapu'u reservoir has high evaporation losses, seepage losses, and water quality problems related to sediments, algae, animals, and organic matter.
- From the reservoir outlet, water is distributed via 22 miles of pipeline to customers.
- The MIS serves approximately 235 customers on 3,102 acres with water use of 3.35 mgd; customers include diversified agricultural operations, native Hawaiian homesteads in Ho'olehua, a large coffee farm, and a seed corn operation.



**PRIVATE WATER SYSTEM**

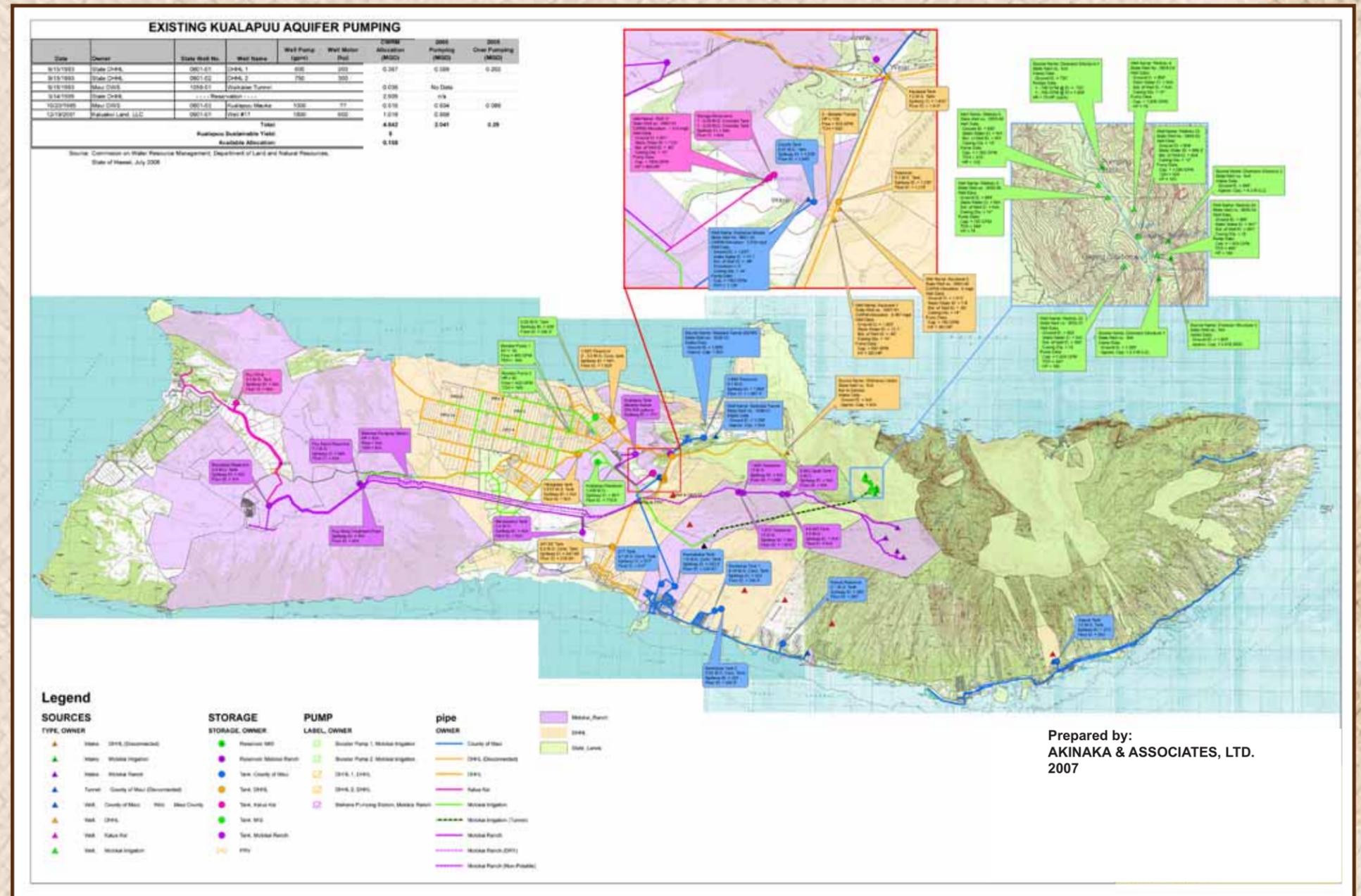
There are various private systems owned by Molokai Ranch, Meyers Estate, and Kawela Plantation.

**PROPOSED PROJECTS**

Because DHHL and DWS are currently over-pumping from the Kualapu'u aquifer, there will need to be an exploration of new water sources and wells. DHHL is currently in discussions with the major island water stakeholders to collaborate on a USGS model for groundwater resources.

The County of Maui is also proposing an appropriation of \$430,000 to make improvements on the County Distribution system and conduct source improvements. These projects have not yet been approved, but are slated for approval in May 2010.

To provide backup capabilities, Maui County appropriated \$250,000 from its unrestricted water fund for the installation of a mobile backup generator.



Prepared by:  
AKINAKA & ASSOCIATES, LTD.  
2007

# INFRASTRUCTURE



### *Existing State Roads*

1. Route 450, Kamehameha V Highway, Kaunakakai to Hālawā Valley *This two-lane, divided highway provides access to DHHL homesteads at 'Ualapu'e, Kapa'akea, Kamiloloa, and Makakupa'ia.*
2. Route 460, Maunaloa Highway, Maunaloa Village to Kaunakakai. *Maunaloa Highway runs from an intersection at Kamehameha V Highway just east of the Moloka'i Airport to Maunaloa Town in the West End. The Kalama'ula Homestead is accessed from Maunaloa Highway.*
3. Route 465, Airport Loop off of Maunaloa Highway (Route 460). *This road accesses the Moloka'i Airport in Ho'olehua.*
4. Route 470, Kala'e Highway, Intersection with Maunaloa Highway (Route 460) to Kalaupapa Lookout *This road provides access to Kalaupapa & Pālā'au (Apana 3).*
5. Route 480, Pu'upe'elua Avenue, Intersection with Maunaloa Highway to Intersection with Farrington Avenue. *This road provides access to the Ho'olehua Homestead.*

### *Funded Road Improvements*

The 2009 Hawai'i State Legislature appropriated funds for improvements to highways on Moloka'i. These projects include:

- East Mo'omomi Road Construction Contract was awarded Nov. 2009
- Roadway Resurfacing - Farrington Avenue. Contract was awarded Nov. 2009



## *Existing Wastewater System*

- 1. Kaunakakai** -- Wastewater service is provided by Maui County in Kaunakakai Town and the Kualapu'u subdivision. Wastewater from the Kaunakakai system is conveyed to the County-owned Kaunakakai Wastewater Reclamation Facility for treatment and reuse as recycled irrigation water from excess disposed of via injection wells.

The Kaunakakai collection system consists of one County-owned and operated pump station, eight miles of gravity sewers, and 0.2 miles of force main. The majority (85%) of lines in the Kaunakakai system are 8-inch diameter pipes constructed of VCP or PVC material. Small portions (approx. 6%) consist of 6-inch pipes, and approximately 9% of the sewer lines are larger than 8-inches in diameter. The County began using plastic pipe as a construction standard in the late 1970s; majority of areas constructed prior to 1970s are clay pipe.

The Kaunakakai Wastewater Reclamation Facility has a capacity of 0.3 mgd. Current allocation is 0.289 mgd (96%) (Wilson Okamoto 2003).

The Kaunakakai Wastewater Reclamation Facility provides secondary treatment of sewage, featuring rotating biological contractors, secondary clarifier, effluent filters, and chlorinators. Reclaimed or recycled water is reused for irrigation purposes, with the excess disposed of by injection wells.

- 2. Kualapu'u** -- Wastewater from the Kualapu'u system is conveyed to a private wastewater treatment facility owned and operated by Moloka'i Ranch. Information regarding this system is not available.

## *Proposed Wastewater System Improvements*

Wastewater Treatment Facility for Kapa'akea, Kamiloloa, and Makakupa'ia Homestead – In order to construct the proposed homesteads at Kapa'akea, Kamiloloa, and Makakupa'ia, an onsite wastewater treatment facility may be required. This new facility is estimated to cost \$12.5 million.

### *Electrical Services*

- The Maui Electric Company, Inc. (MECO) supplies electricity for the County of Maui and the island of Moloka'i. A power plant is located in Pālā'au, and a substation at Pu'unānā. Main transmission voltage is 34.5 kV
- Moloka'i library energy retrofit project was funded in 2009. Energy efficient light fixtures retrofit began in June 2009.
- \$258,000 has been appropriated by the State to upgrade Kualapu'u Elementary school electrical. The project is currently in the bidding stage.

### *Telephone Service*

Sandwich Isles Communications provides telephone service to DHHL's lands. Hawaiian Telcom will provide telephone service to the non-DHHL lands.

### *Cable Television Service*

Cable television service is provided by Oceanic Time Warner Cable.



# INFRASTRUCTURE

**Education** – Moloka‘i currently has six public schools and three private schools. Thirteen percent of the students are enrolled in special education. Although there is currently a surplus of classrooms, there is a high level of dependence on portable classrooms. At Kualapu‘u Elementary School, 64% of all classrooms are portable. With the projected enrollment of intermediate-high school significantly higher than current enrollment, it is expected that 35-40 additional classrooms will be needed by 2020. The elementary schools have enough facilities for future demands; however, a second intermediate-high school for the island may be needed.

The implementation of weighted student formula funding for public schools throughout the state has negatively impacted the schools on Moloka‘i. The low number of students has directly translated to a decrease in funding for the schools leading to cutbacks in discretionary programs.

With regard to Capital Improvements, 2.6 million from the State Legislature to conduct school wide renovations at Kaunakakai and Kualapu‘u Elementary Schools. Renovation of both schools began in April 2009. Maunaloa Elementary school received funding for renovation of its special education classrooms.

	Private / Public	Grades	Enrollment	Projected Enrollment
Aka‘ula School	Private	5-8	58 (2009)	63
Ho‘omana Hou School	Private	9-12	10 (2009)	15
Kaunakakai Elementary	Public	K-5	225 (2008)	184 (2012)
Kilohana Elementary	Public	K-5	101 (2008)	87 (2012)
Kualapu‘u School (Charter)	Public	K-5	379 (2008)	N/A
Maunaloa Elementary	Public	K-5	54 (2008)	55 (2012)
Moloka‘i High	Public	9-12	360 (2008)	296 (2012)
Moloka‘i Middle	Public	6-8	151 (2008)	160 (2012)
Moloka‘i Mission School	Private	K-8	14 (2006)	N/A

**Library** – The Moloka‘i Public Library is located in a 3,627-square foot building in Kaunakakai. It has a space deficit of about 2,428 – 3,962 gsf. The Hawai‘i State Public Library System is planning for a larger replacement for the library in Kaunakakai that would serve the entire island.

**Higher Education** – The University of Hawai‘i opened a permanent facility in 1999 on Moloka‘i. Administratively attached to Maui Community College, the Moloka‘i Education Center services approximately 225 students with traditional classroom, hands-on and distance learning options. There are two educational facilities. The Moloka‘i Education Center in Kaunakakai provides a wide range of credit/non-credit courses leading to certificate and associate degrees from Maui Community College. The center also facilitates distance learning that allows student to receive selected bachelors and masters degrees. The second facility, the Moloka‘i Farm encourages new farm and entrepreneurial agriculture development through vocational training programs.

**Police** – Moloka‘i is protected by Maui Police Department’s Moloka‘i Patrol District V. The Police Station is located in Kaunakakai, next to the Kaunakakai Fire Station. There are 23 officers at Moloka‘i Station. Moloka‘i is unique in that it has its own separate dispatch center with 6 dispatchers on island. There are no State correctional facilities located on Moloka‘i.

**Fire Protection** – There are three fire stations on the island: Kaunakakai, Ho‘olehua, and Pūko‘o. The main station is the Kaunakakai Fire Station located next to the Police Department. The Kaunakakai Fire Station has an Engine and Tanker, a rescue boat and a utility truck. The station houses a five-man engine company and one tanker company, for a total of six firefighters on duty 24-hours a day. The Pūko‘o Fire Substation is 16 miles east of Kaunakakai and houses a two-man engine company. The Ho‘olehua Fire Station serves the west end, and houses a full five-man engine company.

A \$10.5 million new fire station for Kaunakakai is under construction. This new station will house full equipment, apparatus, and personnel, and will serve as an Emergency Operations Center in case of disasters.

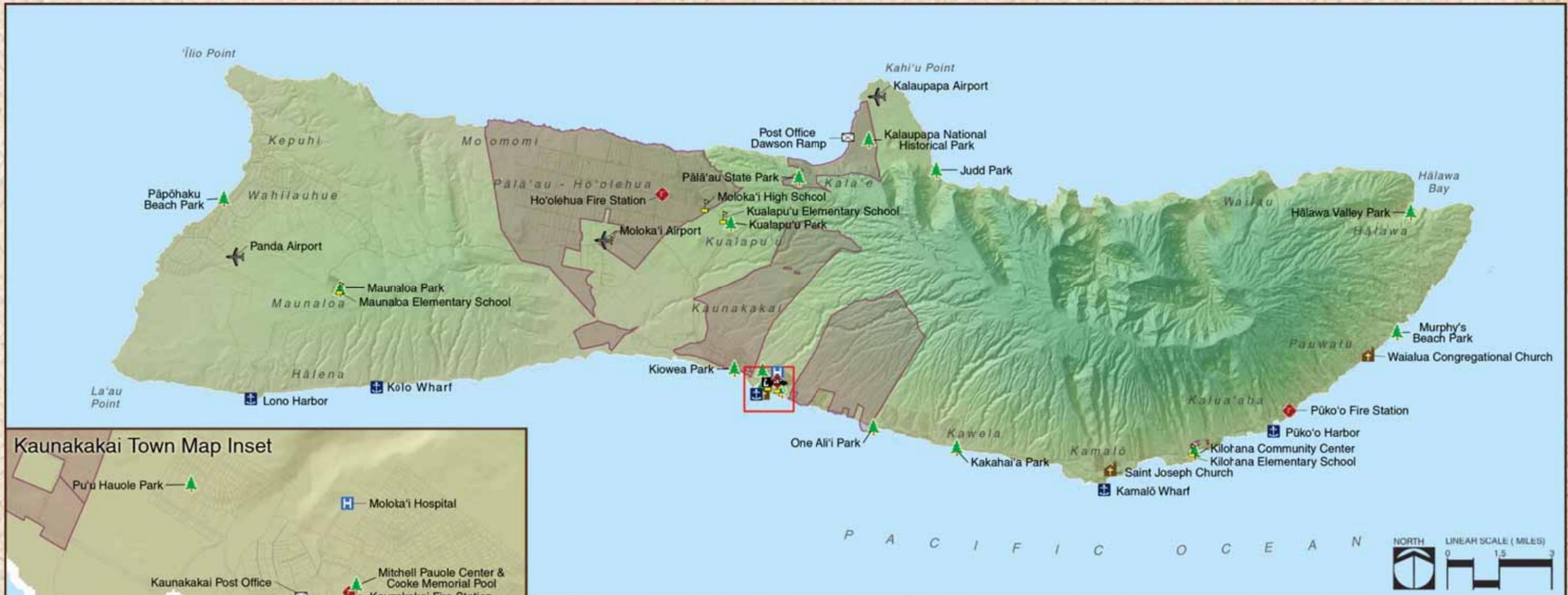
**Health Care** – Moloka‘i General Hospital has the only emergency room and urgent care clinic for residents and visitors to the island. Moloka‘i General is a 15-bed rural health care facility located in Kaunakakai. The hospital provides acute, long-term care, and low-risk obstetrical in-patient services. It also offers outpatient primary care in a Rural Health Clinic, chemotherapy, diabetes management, preventative health, high-risk weight management, compassionate care/hospice services, midwifery, family planning, and family support services. Moloka‘i General Hospital works in partnership with Na Pu‘uwai Native Hawaiian Health Care System. Na Pu‘uwai has been critical in preventative care on Moloka‘i since 1988 when it accepted responsibility for a Native Hawaiian Health Care System on Moloka‘i. Na Pu‘uwai provides a variety of services including to the people of Moloka‘i.

**Airports** – Moloka‘i is serviced by two airports, one in Ho‘olehua and the other on the Kalaupapa Peninsula. Moloka‘i Airport at Ho‘olehua receives the bulk of off-island air traffic, and is the only airport on the island with regularly scheduled air service. Moloka‘i Airport processed 217,256 passengers in 2008. Kalaupapa Airport processed 7,418 passengers and 204 tons of mail and cargo that same year. Both airports are under the jurisdiction of the Hawai‘i State Department of Transportation. Several security and safety projects were funded by the State Legislature in 2009. The security upgrades are anticipated to begin in late 2010. The airport fire fighting station project is currently out to bid.

**Harbors** – Moloka‘i has three operable ports of call in Kaunakakai, Kalaupapa, and Hale ‘o Lono. The State Department of Transportation operates a commercial port at Kaunakakai where most of the goods and services flow into the island. The State Department of Health is responsible for the harbor at Kalaupapa. Small boat harbors at Kaunakakai, Hale ‘o Lono, and an anchorage at Kalaupapa are under the jurisdiction of the Department of Land and Natural Resources. Ferry system improvements at Kaunakakai have received funding allocations of 4 million dollars as part of the State CIP budget. The project is estimated to go out to bid in mid 2010.



# PUBLIC FACILITIES



**LEGEND**

Department of Hawaiian Homelands Property	Hospital
Park	School
Harbor/Wharf	Public Library
Airport	Church
Fire Station	Post Office
Police Station	



# V. HOMESTEAD PRIORITIES

## AGRICULTURE

- Continued funding of farm equipment program
- DHHL point of contact (either an entire division or position) dedicated to advancement of agriculture issues statewide
- Develop a Community Base to promote agriculture initiatives that is supported by DHHL
- Restructure general leases to provide opportunities for longer term general leases for homesteaders investing in agriculture improvements
- Restructure homestead lease option to allow for an agriculture and pastoral lease for an individual beneficiary to improve agriculture diversification
- Award more agriculture homestead lots
- Create community agriculture plots to assist homesteaders wanting to get started in agriculture
- Grow crops with local market
- General lease preference should be given to homesteaders
- Sue former pineapple production operators for breach of contract for acidification of soil from pineapple production
- Improve viability of slaughter house through improvements of training, energy costs, USDA inspection capabilities
- Support Ho'olehua agriculture project, Kukui Helepō, Moloka'i Sustainment Farmers Program (MSFP) biomass energy production; site acquisition for processing plant; site acquisition/assist farmers on 40 acre parcels to grow kukui to reach goal of 80 farmers in kukui cultivation; Kukui-multipurpose, energy production, lā'au, oil production

## COMMUNITY

- Resurfacing of Farrington Avenue; Installation of fiber optics by Sandwich Isle Communications (SIC) has left the road bumpy; the community would like the road to be repaired to previous conditions at SIC expense.
- Recreation area in Ho'olehua: Develop gym at Lanikeha. With 85 additional house lots, there are a lot of keiki that could utilize a gym.
- Development of community halau to provide lodging opportunities for visiting groups that is centrally located and inexpensive. The facilities could be designed utilizing the Maori marae concept, but making it culturally appropriate for Hawaiians.
- Kiowea Park septic system needs to be improved
- Improve Relationship between DHHL and DOE
- Lanikeha; Provide playground equipment
- Lease land above middle school to DOE (Identify location of DOE lease). Pave dirt road above middle school for use as bus turn around; The middle school students currently utilize the same breezeway/bus pickup as the high school. The younger kids are being bullied. Recommend separating the children to ensure their safety.
- Provide more information on DHHL jurisdiction regarding State and County rules/regulations.

## ECONOMIC DEVELOPMENT

- Develop Open Market in Ho'olehua
- Commercial development of chicken stadium on DHHL lands
- Light industrial area for homesteaders
- Acquisition of DLNR lands near airport for economic development

## RESOURCE MANAGEMENT

- Keep Pālā'au Park open. Address funding and management issue relative to the DLNR lease expiration
- Community based sustainable fishing program from Nihoa to 'Ilio. Endorse permanent rules generated during pilot project. Partner with northwest landowners, Moloka'i land trust, Hui Malamo'o Mo'omomi, Nature Conservancy
- Kalaupapa; DHHL should engage with NPS in planning. Develop a management plan for Kalaupapa that is separate from the Moloka'i Regional Plan; Drive Kalaupapa discussions, impacting the direction the plan will take
- NPS is developing a general plan. How will the homestead input be incorporated? What will DHHL's stance be?
- The people of Moloka'i have little or no input; however, DHHL, as a landowner can have a meaningful dialogue with NPS on the issues at stake in Kalaupapa
- A management plan should be developed that allows for gathering and also provides protection for Kalaupapa
- A special area plan should be developed for Kalaupapa/Pālā'au
- At the end of the first state contract in 2011, homestead community want to ensure that the DHHL lands are NOT attached to NPS
- What happens when Kalaupapa lease ends in 2041?
- Jobs at Kalaupapa: Homesteaders are supposed to be given priority, but the system is not working. Homesteaders are not getting the jobs
- Free housing at Kalaupapa: State workers (DOH) get free housing, but homesteaders do not
- Homesteads on Kalaupapa: Would like to see it turned back to DHHL for traditional agriculture like lo'i kalo.
- Both economics and land use need to be looked at. There is no place like Kalaupapa in the world. While the patients wants NPS and wants to be remembered DHHL need to look closely at what will best serve to rehabilitate the Hawaiian population.
- Provide a mechanism for homesteaders and community to get into decision making process of the park. Can DHHL help, insist on some kind of decision making mechanism to ensure beneficiaries have input



### RESOURCE MANAGEMENT *(continued)*

- DHHL weak link with NPS because of the revenue the park generates.
- Need update to Ornellas's plan to identify viable concessions and economic viability, with a preference to native Hawaiian concessions
- Waikolu Valley is critical in addressing return of natives
- Pālā'au Priority Project; Keep integrity of forest; The forest should be used to advance Hawaiian culture in general not just of Moloka'i; Forest should be utilized for training of next generation of cultural leaders; No partnership with the Park Service
- Develop a water management plan.
- Provide more information on DHHL water rights; Preserve and protect water rights.
- Create a water use development plan with county; The plan needs to be all encompassing, looking at ground and surface waters
- Support the creation of a new land designation - "Traditional Land Use"

### WATER

- DHHL take back MIS system (after necessary repairs are made)
- Water meter subsidy- for those on County water
- Develop water source for Kalama'ula homesteads
- Food security is a concern, so lands need to be made productive by ensuring agriculture water is available for those wishing to engage in food production.
- Determine the number of beneficiaries that are not able to farm due to a lack of water meters. Meters need to be made available.
- Support the transfer of management of MIS to DHHL
- Provide homesteaders (particularly those without irrigation water) with access to MIS system.
- Ensure adequate representation on MIS board; Land for Agriculture Park traded for development of MIS system (DHHL was given 2/3 right to MIS in trade)
- Fix and maintain the MIS system as per the recommendations of the Audit
- Conduct a feasibility study and assessment before taking over MIS system that has approximately \$10-\$12 million dollars of needed repairs
- Advocate for proper fund appropriation to the MIS. Ensure funding is used properly
- DHHL takeover of MIS system
- Develop a schedule and repair water lines in Ho'olehua
- Integrate water system- County/ranch/DHHL.
- Address county well impact on DHHL wells.
- Provide status update on reservoirs in Ho'olehua
- Prioritize potable water issues above non-potable water issues.
- Repair water delivery system in Kalama'ula to improve water pressure. Resolve discrepancy in swater rates.

- Develop back up water service plan.
- Potable water is being used for agriculture.
- Determine final disposition of County well after relocation. Will it be properly sealed, or can DHHL take over operation as a back up?
- How long has DHHL Managed Potable water system?
- Initiate injunctive/legal action regarding inappropriate use of the resource; Pumping water from well 17 without a permit; Water Transmission (EIS)
- Conduct verification testing
- Capture surface water for back-up at Wai'anae.
- Follow up on USGS monitoring well, is it operational.
- Is DHHL subject to water commission?
- Develop a water management plan.
- Provide more information on DHHL water rights; Preserve and protect water rights.
- Create a water use development plan with county. The plan needs to be all encompassing, looking at ground and surface waters.
- Does DHHL manage potable or non-potable water systems?



# HOMESTEAD PRIORITIES

Potential Projects	Community Discussion
**Support Moloka'i Sustainment Farming Project, Ho'olehua Farmer's Association and Kukui Helepō.	This is an energy production project with a goal of getting Kukui under cultivation as well as generating fuel source for energy production. The team is working on site acquisition and assisting farmers in developing their 40 acre parcels to grow kukui. The hope is that the Kukui cultivation will serve multiple purposes, energy production, lā'au, oil production, increase agriculture production, and provide an on island energy source, watershed management.
Continue funding shared farm equipment program.	This is an existing priority project that has been successful in obtaining shared use farm equipment. This project would continue funding the program to develop a cooperative governance structure for access to this equipment as well as equipment that may be available from other programs such as the new farmers project.
Support the creation of a new division address agriculture needs within the department.	Agriculture issues brought to the attention of the Department often go unanswered due to the lack of point of contact for agriculture.
Support the development of a community base to promote agriculture initiatives.	Create a community agriculture group that acts as a clearing house for agriculture initiatives that affect beneficiaries.
Support the modification of lease/permit options available to native Hawaiians.	Leases available currently do not provide the flexibility some beneficiaries desire. Use of revocable permits limits the capability of permit holders to acquire loans/grants. Community members would like to see other options for land use be made available to them.
Support legal action against former agriculture lessees engaged in pineapple production.	Acidification of soil may have occurred as a result of pineapple production. Raising the pH back to pre-pineapple levels is expensive and limits production for several years. This project would support legal action against former agriculture lessees for breach of contract, failure to return general lease lands in same condition as when acquired.
Create community agriculture plots.	Food security is a concern for many homesteaders. The development of community gardens is an opportunity for native Hawaiians to become involved in farming while providing food for their families. The community agriculture plots would also provide homesteaders with an opportunity to get involved in agriculture even if they only have a residential parcel.
Support production of crops with local market.	Crops with off-island markets must contend with the costs associated with shipping and distribution. Production of crops that can be utilized on-island can reduce some of the associated over-head and improve profitability of farming.
**Create a separate planning mechanism.	Industrial scale wind farms in Mo'omomi and Anahaki are a concern for many residents (i.e. "no build zone," cables, etc.).
Endorse permanent rules for sustainable fishing from Nihoa to 'Ilio.	The fishing resources off the Northwest coast of Moloka'i are impacted by the activities that occur both on the island and at sea. A pilot project that created guidelines for sustainable fishing was successful in protecting the fisheries for future generations while continuing to provide opportunities for harvesting. The creation of enforceable, permanent rules would provide long-term protection for the fisheries.

Potential Projects	Community Discussion
Recreation at Lanikeha	With the addition of over 80 new house lots, there is a need for recreational facilities in Lanikeha. The type of facilities would be dependent on the needs of the community. Decisions on the type of recreation pursued should look at long term costs incurred by the community and future needs i.e. development of ball field leaves no space for a gym or vice versa.
Coordinate with DOE, advocate for the separation of children before and after school based on school type (middle school).	The middle school students currently utilize the same breezeway/bus pickup as the high school. The younger kids are being bullied. Community members would like to see middle school and high school students separated to ensure their safety.
Retain Pālā'au Park as a separate facility from Kalaupapa after the DLNR lease expires.	Pālā'au Park is the only State Park on the island of Moloka'i and is currently leased to DLNR. The lease is set to expire in 2011. The State recently invested approximately \$1 million dollars in improvements to the park. Under the current lease, DLNR maintains the campsites and covers the caretaker expenses. Pālā'au Park is culturally significant and should not be considered as part of Kalaupapa.
**† Determine if DHHL can legally sponsor the development of a chicken stadium on DHHL land.	Development of gaming (chicken fighting) could boost the local economy.
Create a Community Halau.	The cost for lodging on Moloka'i can be expensive. The development of community halau(s) to provide lodging opportunities for visiting groups/extended family that are centrally located and inexpensive would provide opportunities for more frequent cultural exchange between the people of Moloka'i and those visiting. The facilities could be designed utilizing the Maori marae concept, but making it culturally appropriate for Hawaiians.
**Modify septic system at Kiowea Park	Kiowea Park gets a lot of use due in part to lower rental rates when compared to other facilities. The high use as well as its location near sea level causes frequent back up of the septic system into the lavatory facilities. The system needs to be modified to reduce sewage backflow. DHHL has identified a funding source that can be utilized for materials necessary to modify the system if community can supply labor.
Support creation of new land designation.	There are 10 land designations utilized in the planning of DHHL lands. These designations do not work well for special lands like Kalaupapa or culturally significant lands like Pālā'au or Mo'omomi.
Request coordination with contractors to repair road to pre-installation conditions.	Installation of fiber optics by Sandwich Isle Communications (SIC) has left the road bumpy; The community would like the road to be repaired to previous conditions at SIC expense.
Develop a light industrial area.	Homesteaders have indicated the need for a light industrial area. There are not adequate cost effective facilities available. Homesteaders often conduct these light industrial activities on their homestead. The creation of the light industrial park would move these types of activities to more appropriate land designations. An unencumbered DLNR parcel has been identified near the airport that might be suitable for the development of an industrial area.



## POTENTIAL PROJECTS

Potential Projects	Community Discussion
Support development of an on-island green-trades training program	Homesteaders have indicated that making Moloka'i self-sustainable is important. A self-sustainable Moloka'i could provide opportunities to use/buy/support local agriculture, energy production/resources. The development of an on-island training program in green-trades would address one facet to the self-sustainable Moloka'i concept.
**Alternative Energy Initiatives	The State's current dependence on imported fossil fuels impacts residents, businesses and farmers on Moloka'i. Energy costs are higher than the national average and can be more volatile due to fluctuations in crude oil. Homesteaders have indicated they would like to find alternatives that will generate energy on Moloka'i reducing cost.
Develop Open Market in Ho'olehua.	Development of an open market would provide a local venue for homesteaders to sell food products within the homestead community.
Support the creation of a new division to address energy issues within the department.	Energy issues brought to the attention of the Department often go unanswered due to the lack of point of contact for energy.
Support long-term viability of slaughter house.	The slaughter house has been plagued with high energy cost, lack of trained labor, and limited USDA inspection capabilities. Viability of the slaughter house is necessary for livestock to be a profitable enterprise on Moloka'i.
Master Plan Kalaupapa.	Kalaupapa is a unique county that was a traditional native Hawaiian settlement. In 1866, this isolated peninsula also became a community for people afflicted with Hansen's disease. A portion of the peninsula is part of the DHHL land inventory under lease to NPS. The National Park Service (NPS) has begun planning for the future of the peninsula. The NPS lease will expire in 2041. The need for the Hansen's settlement also expires as the remaining patients pass on. DHHL has a vested interest in the planning of Kalaupapa as a land owner, and also as a native Hawaiian Trust. The beneficiaries have indicated their desire to be engaged in the planning for the future of Kalaupapa.
Assess and repair leaks in Potable Water delivery and storage system.	The homestead communities on Moloka'i were the first to be established. As the infrastructure ages, repairs may be necessary to ensure system integrity is maintained.
MIS Feasibility Study	The Moloka'i Irrigation System (MIS) managed by the Department of Agriculture provides irrigation water to some of the agriculture lots as well as other non-homestead users. DOA's capability to effectively management and properly maintain the MIS has been questioned by the homesteaders. If management of the MIS is transferred, annual operation and maintenance as well as deferred maintenance costs should be assessed.
Support legal action	Initiate legal action, cease and desist use of well 17 without a permit, provide back payment for consumption at appropriate rate, non-agriculture rate. Injunctive relieve- cease transmission of water by Molokai Ranch until required HRS 343 EIS requirements are met.

Potential Projects	Community Discussion
**Conduct pressure testing in Kalama'ula	The water conveyance system in Kalama'ula appears to deliver water at varying pressure based on the homestead location. DHHL is installing a SCADA system to improve water delivery management and conducting well pump repairs. These improvements to the system should ensure adequate water pressure is provided to all homestead lots. This project would recommend conducting a pressure test once installation is complete to ensure adequate pressure is available.
DHHL Moloka'i Potable/Non Potable Water Management Plan	The water resources on the island of Moloka'i are interconnected. A plan that looks at the entire watershed, surface and ground water management can provide a baseline for sustainable use of this resource.
DHHL/DOA MIS Initiatives	The Moloka'i Irrigation System (MIS) managed by the Department of Agriculture (DOA) provides irrigation water to some of the agriculture lots as well as other non-homestead users. DOA's capability to effectively management and properly maintain the MIS has been questioned by the homesteaders. A variety of issues regarding availability of water meters, proper funds appropriation and maintenance of the infrastructure have been raised.
Normalize water rates between users receiving water from county and DHHL systems.	Some homestead lots are connected to the County water system, and pay higher rates than homesteads connected to the DHHL water system.

\*\* By consensus, the community voted to elevate these potential projects to priority projects.

† Hawai'i State statute (§711-1109) precludes animal cruelty and the development of cock fighting on DHHL lands. As a result of the current statute prohibitions, the chicken stadium/gaming project was removed from the priority project list.





## *Alternative Energy Initiative*

### Description

As a state Hawai‘i produces virtually all of its electricity from imported fossil fuels, resulting in Hawai‘i having the highest electricity rates in the nation. Residential users on the Island of Moloka‘i pay more than 43 cents per kWh. This is nearly four times what the average U.S. residential user pays at 11 cents per kWh. Residents of Moloka‘i pay more than residents on all other islands except Lāna‘i. Moloka‘i residents pay thirty percent more than residents of O‘ahu. According to HECO representative Darren Pai, “We know that the price of fossil fuels only go in one direction, and that’s up....There’s also the real potential that there may be some type of carbon taxes or additional costs incurred for using fossil fuels as energy.”

This has been a major concern of Moloka‘i homesteaders, that have a limited economic base and a high utility cost. Therefore, the development of alternative energy initiatives has become a priority. They recognize that the conversion to renewable energy will generate more jobs. For example, researchers have found that solar photovoltaic create more jobs than fossil fuels per unit of energy produced. Exploring other renewable energy options like biodiesel also has the potential to bring farmlands that have been fallow back into production and improve the state of the local watershed. So as Hawai‘i’s renewable energy industry grows, the local economy diversifies and a variety of jobs will be created. With generous federal and state tax incentives available right now, switching to renewable sources of energy is viable option, particularly when compared to the high price of fossil fuel-based electricity.

Being proactive on the energy front, DHHL recently adopted an Energy Policy. The goal of this policy is to enable native Hawaiians and the broader community to work together and lead Hawai‘i’s effort in achieving energy self sufficiency and sustainability. An objective of this policy is to facilitate the use of diverse renewable energy sources on both large and small scale.

The objective of this initiative is to not only generate renewable energy, but also to reduce energy cost for beneficiaries and to develop other communities benefits like employment opportunities and reinvestments in the local economy. A variety of renewable energy opportunities have been identified by the beneficiaries that can meet this objective which include:

- Development of Solar Farm on DHHL land
- Development of Biodiesel production (e.g. Kukui nut farms) to supply Moloka‘i on island energy requirements
- Produce biomass for energy generation
- Retrofit existing homes and install new homes with solar energy
- Install solar panels on middle and high schools with cost savings utilized at the discretion of the school, not DOE.

## PRIORITY PROJECT - ALTERNATIVE ENERGY INITIATIVE



### Location

Various on island (Moloka'i) areas and locations.

### Status

DHHL will be supporting this project primarily through the development of a land lease. The costs for the preparation of reports that may be developed in support of this project will be based on the in-house resources of DHHL and the type of reports required.

### Potential Partners

DHHL, DOE, MECO, renewable energy companies

### Phasing

1. Determine a strategy that will meet objectives for lowering beneficiary energy cost while ensuring consistency with the DHHL Energy Policy, Ho'omaluō
2. Engage in discussions with renewable energy entities. Determine what type if any large scale energy production will be pursued
3. Secure Land Lease from DHHL if necessary
4. Engage in discussion with MECO & HECO,
5. Obtain Entitlements (Environmental/Zoning/Subdivision)
6. Complete the Planning and Design Process
7. Begin Construction

### Cost

Cost will be dependent upon strategy pursued.





## *Conduct Beneficiary Consultation On Large Scale Renewable Energy Development*

### Description

Hawai'i's energy policy seeks to ensure dependable, efficient, and economical energy; increased energy self-sufficiency; greater energy security; and reduction of greenhouse gas emissions, according to the State of Hawai'i's Department of Business, Economic Development and Tourism (DEBDT). Development of this policy is a critical step in achieving a goal meeting 70% of the States energy needs with clean energy by 2030.

In support of the State's energy goals, and in an effort to be a leader in energy self-sufficiency and sustainability, DHHL adopted an Energy Policy. The goal of DHHL's policy is to enable native Hawaiians and the broader community to work together to lead Hawai'i's effort in achieving energy self sufficiency and sustainability. An objective of this policy is to facilitate the use of diverse renewable energy sources on both large and small scale. The DHHL Energy Policy (Ho'omaluo) has five objectives:

1. *Mālama 'āina: Respect and protect our native homelands*
2. *Ko'o: Facilitate the use of diverse renewable energy resources*
3. *Kūkulu pono: Design and build homes and communities that are energy efficient, self-sufficient and sustainable.*
4. *Kōkua nō i nā kahu: Provide energy efficiency, self-sufficiency, and sustainability opportunities to existing homesteaders and their communities.*
5. *Ho'ona'auao: Prepare and equip beneficiaries to promote a green, energy efficient lifestyle in and around communities*

After adopting its Energy Policy, DHHL has been approached by various entities and vendors with renewable energy project applications for its lands statewide. Potential renewable energy projects range from a solar farm in Kalaoa, North Kona, to wind turbines in Mo'omomi and Anahaki. While DHHL has been actively pursuing renewable energy development, this is a relatively new policy. It has become apparent that the siting of renewable energy projects need to factor in both the environmental conditions appropriate for energy production as well as the concerns of the local community that will be impacted by the development. The industrial scale wind farms proposed at Mo'omomi and Anahaki is a concern for many residents. All things considered, the Department has determined that it should consult with its beneficiaries on large scale renewable energy developments on Hawaiian Home Lands.

This priority project supports conducting beneficiary consultation on large scale renewable energy development on Hawaiian Home Lands in an effort to meet both the Department and the beneficiary goals regarding sustainability, self-sufficiency, and the protection of natural and cultural / resources. Moloka'i will be the first island to participate in this beneficiary consultation process.



## PRIORITY PROJECT - CONDUCT BENEFICIARY CONSULTATION ON LARGE SCALE RENEWABLE ENERGY DEVELOPMENT



### Location

Various on island (Moloka'i) areas and locations.

### Status

An initial beneficiary consultation meeting is tentatively scheduled for sometime in May or June 2010.

### Potential Partners

DHHL, DBEDT (Energy Division), MECO

### Phasing

Pursuant to the Department's Beneficiary Consultation policy, this priority project would be implemented in the steps prescribed by the policy as follows:

1. Develop an appropriate meeting format, identify an appropriate venue and recommend and secure approval on the date and time for the consultation session on Moloka'i.
2. Notify all lessees and applicants on Moloka'i about the consultation session through a direct mail out and posting on our website.
3. Planning Office conducts the consultation session and records input and feedback from beneficiaries who either attend the meeting or respond electronically with comments and/or concerns.
4. Planning Office develops a draft consultation report that identifies the information presented to beneficiaries for consultation and documents all comments received.
5. A review period of 30 days will be provided for participants to review the draft consultation report and to submit any corrections to their statements.
6. The Planning Office will prepare a final consultation report that makes recommendations to the Commission and documents and responds to the comments and concerns raised. The final report will be posted on our website.
7. The Hawaiian Homes Commission receives the consultation report and is able to make decisions that take beneficiary concerns and issues into consideration

### Cost

\$10,000 for Beneficiary Consultation



## *Conduct Water Pressure Testing in Kalama'ula*

### Description

The potable water system on the island of Moloka'i is unique. Three water purveyors, drawing from the same source provide water to residents, businesses and farms. DHHL provides water to its beneficiaries in Ho'olehua and Kalama'ula. Kapa'akea is served by the County water system. Within Kalama'ula, the water transmission system appears to deliver water at varying pressure based on the homestead location. Beneficiaries are concerned with the homestead not having adequate water pressure. DHHL system operators are equally concerned that some homes may have water pressure levels that exceed safety standards and can be damaging to systems in the home.

The DHHL source pumping, transmission, and storage systems have been undergoing a series of repairs and upgrades. As part of the 2007 Regional Plan process, beneficiaries voted to implement four Akinaka Water study recommendations. During 2009, the pumps at the two DHHL wells failed. As a result of the 2007 Regional Plan priority project, and failure of the wells, a variety of system repairs and upgrades are being made to the potable water system. The following modifications to the system have been completed or are underway:

- Purchase/install a diesel generator to provide back up power, ensuring continued water service during power outages
- Purchase/install a supervisory control and data acquisition (SCADA) system to automate and monitor pumping, storage and transmission of potable water
- Conduct verification testing to confirm safe pumping capacity and preserve integrity of the aquifer
- Conduct a water loss study; find and repair the source of the 200,000 gallon per day leak.
- Replace failed well pumping equipment

Upon completion of these repairs and upgrades, a pressure test should be conducted to test the water pressure in the system. Findings of this pressure test will verify if there is adequate pressure or if additional repairs to the system is needed.



## PRIORITY PROJECT - CONDUCT WATER PRESSURE TESTING IN KALAMA'ULA



### Location

Homesteads in Kalama'ula

### Status

Awaiting completion of repair and upgrades

### Potential Partners

DHHL

### Phasing

1. Complete 2007 Regional Plan Priority Project, "Implement Water Study Recommendations," and well repair
2. Conduct pressure tests
3. Report what, if any, repairs are required.

### Cost

\$15,000 to conduct pressure tests, determine if additional repairs are required



## *Modify Septic Tank at Kiowea Park*

### Description

Kiowea Park is centrally located with facilities that are conducive to large gatherings such as picnics and baby luaus. The park amenities include restrooms, grills, and sheltered picnic areas. The park facilities are in high demand due in part to its location, but also to the low rental rates when compared to other island facilities. In 2003, the pavilion and restroom facilities were constructed with the joint efforts of the engineers of the Hawai'i National Guard and the homestead community.

The restrooms are connected to a septic system that frequently backflows into the restrooms. This typically occurs after a large event is held at the park. While sewage backflows into both lavatories, it occurs more frequently in the women's restroom.

The lavatory facilities are just a few hundred yards from the shoreline, and near sea level. According to the United States Department of Agriculture NRCS's soil survey of Moloka'i, the soils of this area are primarily juacas sands. However, mudflats extend out off the coast at Kiowea. It is likely that a denser, clay soil horizon (similar to the offshore mudflats) is located just below the sandy layer. While capable of supporting a septic system leach field, this hydric clay soil is not as efficient at quickly moving effluent into the leach fields as a more typical sandy or gravelly beach soil type, resulting in backflow and drainage issues.

This project would include an assessment of the existing system, and if necessary local geology, to determine repairs and modifications necessary to eliminate back flow issues, acquisition of materials, and repair of system. The engineers of the Hawai'i National Guard, may be able to provide technical assistance based on their involvement in the construction of the lavatory facilities. Upon completion the system would be evaluated to ensure acceptable system performance.



## PRIORITY PROJECT - MODIFY SEPTIC TANK AT KIOWEA PARK



### Location

Kiowea Park, Kalama'ula

### Status

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### Potential Partners

DHHL, Maui County Parks and Recreation, U.S. National Guard

### Phasing

1. Solicit funding for assessment and labor
2. Conduct facility assessment
3. Acquire materials
4. Perform repairs
5. Conduct system test

### Cost

\$25,000-\$40,000. Funding may already be available from DHHL for materials to complete this project.



# HOMESTEAD PRIORITIES

## *Support Moloka'i Sustainment Farming Project, Ho'olehua Homestead Agriculture Association and Kukui Helepō*

### Description

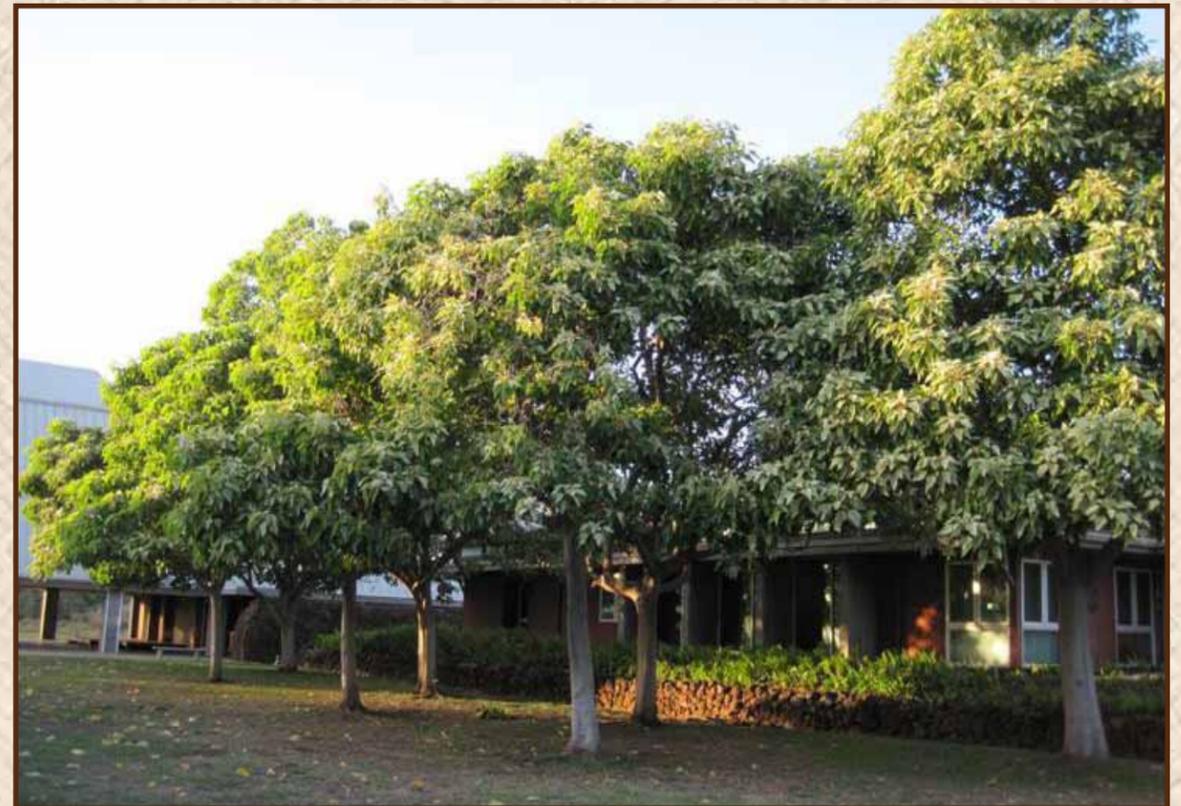
This is an energy production project being developed by Moloka'i residents as part of the Moloka'i Sustainment Farming Project, supported by Ho'olehua Homestead Agriculture Association and their Kukui Helepō initiative. The goals are as follows:

- Provide sustainable employment infrastructure through cultivation of bio compatible produce, biodiesel manufacturing, distributing, and byproduct utilization.
- Provide a renewable "green" alternative to imported diesel to the island of Moloka'i.
- Reduce imported diesel by 95% by the year 2020.

Moloka'i uses over 2 million gallons of diesel a year at a cost average of over \$6.6M, with a high of over \$9.1M in FY08. The project team proposes to accommodate this market through producing environmentally green biodiesel on-island. Biodiesel is a clean burning alternative fuel, produced from domestic renewable resources. The project intends to use the indigenous light energy producing kukui nut as its signature feedstock to produce biodiesel, however will accept other oil producing agriculture products like sunflowers, peanuts and soybeans. The by-products of manufacturing biodiesel will then go to produce vegetable oils, kukui nut oil and livestock feed. To avoid the penalization of interisland taxations and transportation fees, the project proposes to establish a local market for its products.

The Moloka'i farmers are critical to the project, as they provide the foundation upon which this project will be built upon. Approximately 3,000 acres of kukui nut cultivation is required, which gives existing farmers a marketable crop to grow, harvest, and utilize on-island making Moloka'i truly sustainable.

The group also hopes that cultivating kukui across the island, will improve watershed conditions over the long term in addition to producing biodiesel. Achieving these goals will require people with farmlands to cultivate the signature feedstock. It will also require acquisition of a site to locate a crushing and biodiesel plant.



While these are the ultimate goals, the program is just getting underway and is undergoing initial testing and evaluation. The leadership team is working on getting land under cultivation. They are assisting beneficiaries on fallow or underutilized agriculture plots in getting kukui under cultivation by providing seedlings and technical assistance.

With the support of the Moloka'i Homestead Communities, and the commission, this cooperative of farmers and energy producers will continue to move forward in meeting its objectives of reducing oil imports and creating new economic opportunities and revenues for residents of Moloka'i.

# PRIORITY PROJECT - SUPPORT MOLOKA'I SUSTAINMENT FARMING PROJECT, HO'OLEHUA HOMESTEAD AGRICULTURE ASSOCIATION AND KUKUI HELEPŌ



## Location

Various

## Status

A few acres of land on homestead lots are currently being cultivated with kukui. Kukui seedling propagation has begun to supply farmers with starters.

## Potential Partners

Ho'olehua Agriculture Association, DHHL, DOA, Moloka'i Sustainment Farming Project, biodiesel companies, MECO, Department of Energy

## Phasing

- Phase 1 Planting kukui, get support to get additional acres under cultivation
- Phase 2 Conduct Exploratory Research and Development, Develop Business Plan, Create Farm Infrastructure, Prepare Entitlement documents,
- Phase 3 Purchase/construct Crushing Plant, Evaluate feedstock production and diesel quality
- Phase 4 Purchase/construct Biodiesel plant

## Cost

Total cost over all phases is approximately \$25 million.

## BIO FUEL SUPPLY CHAIN



Feedstock  
Production



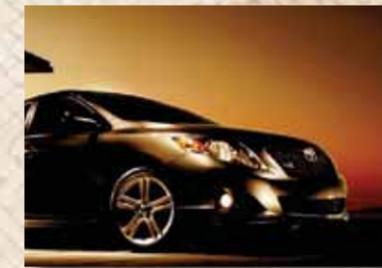
Feedstock  
Logistics



Biofuels  
Production



Biofuels  
Distribution



Biofuel  
End Use



