# KEAUKAHA







# REGIONAL PLAN

December 2010

#### DEPARTMENT OF HAWAIIAN HOME LANDS

#### KAULANA H.R. PARK

Chairman Hawaiian Homes Commission

### COMMISSIONERS

Stuart Keahiahi Hanchett (Kauaʻi)
Donald S. M. Chang (Oʻahu)
Francis Kahoku Lum (Oʻahu)
Trisha Morikawa (Oʻahu)
Henry K. Tancayo (Molokaʻi)
Perry O. Artates (Maui)
Malia Patrice Kamaka (West Hawaiʻi)
Alapaki Nahale-a (East Hawaiʻi)

#### ANITA S. WONG

Deputy to the Chairman

### ROBERT J. HALL

**Executive Assistant** 

#### DEPARTMENT OF HAWAIIAN HOME LANDS HALE KALANIANA OLE 91-5420 KAPOLEI PARKWAY KAPOLEI, HI 96707

www.hawaii.gov/dhhl

#### CHAIRMAN'S OFFICE

Telephone: (808) 620-9500 Facsimile: (808) 620-9599

#### **MAILING ADDRESS**

P.O. Box 1879 Honolulu, Hawai'i 96805

#### PLANNING OFFICE

Telephone: (808) 620-9480 Facsimile: (808) 620-9559



Introduction	2
Elected Officials & Political Boundaries	3 - 4
Planning Hilo's Future	5
Key Community Partners	6
Partnering Benefits & Examples	7 - 8
History & Cultural Aspects of the Area	9
Hawaiian Home Lands Area Map	10
Adjacent Lands	11
Regional Demographics	12
Development Trends	13 -14
Infrastructure - Roads	15 - 16
Infrastructure - Water	17 - 18
Infrastructure - Sewer	19 - 20
Infrastructure - Utilities	21 - 22
Infrastructure - Public Facilities	23 - 24
Hualani Park Complex - Keaukaha's "Piko"	25
Potential Priority Project Process	26
Potential Priority Project List	27 - 28
Priority Project - The Keaukaha Hawaiian Community Pavilion	29-30

Disclaimer: The regional plan was developed between 2008 and 2010. The community requested the plan be submitted for approval in 2010, under the leadership identified.



he Department of Hawaiian Home Lands' (DHHL) mission is to manage effectively the Hawaiian Home Lands Trust and to develop and deliver lands to native Hawaiians. DHHL works in partnership with other government agencies, private sector entrepreneurs, and non-profit organizations to carry out this mission. This work includes a collaborative vision, long-range planning, resource allocation, and project-specific joint ventures. DHHL believes that these partnerships benefit not only its native Hawaiian beneficiaries but the larger community as well.

This report has been prepared to facilitate the work of such partnerships as DHHL and others develop lands in Keaukaha. Specifically, this report is intended to:

- Help identify opportunities for partnerships with DHHL in the development of its Keaukaha lands;
- Provide information essential to the planning of projects, services, and entrepreneurial ventures;
- Identify key issues, opportunities, and constraints affecting regional development and area improvements;
- Assist in the efficient allocation of resources by DHHL and its partners; and
- Identify priority projects that are essential to moving development and community improvement projects forward.

DHHL knows that regional development is a dynamic process with constantly changing opportunities and emerging issues. With that in mind, this document will be regularly updated as development projects progress and priorities change.



# ECTED OFFICIALS AND POLITICAL BOUNDARIES



Linda Lingle Governor



James R. "Duke" Aiona, Jr. Lieutenant Governor



Daniel K. Inouye U.S. Senator



Daniel K. Akaka U.S. Senator



Mazie K. Hirono Congressional District 2

# State, Federal, & County Leaders

Disclaimer: The regional plan update was developed prior to the election in 2010.



Kaulana H.R. Park Hawaiian Homes Commission Chairman



Alapaki Nahale-a Hawaiian Homes Commission East Hawai'i Commissioner



Haunani Apoliona Office of Hawaiian Affairs Chairperson



Robert K. Lindsey, Jr. Office of Hawaiian Affairs Trustee. Hawai'i



**Billy Kenoi** Hawai'i Mayor



Dwight Y. Takamine State Senate District 1



Russel Kobubun State Senetorial District 2



**Jerry Chang** State House of Representatives District 2



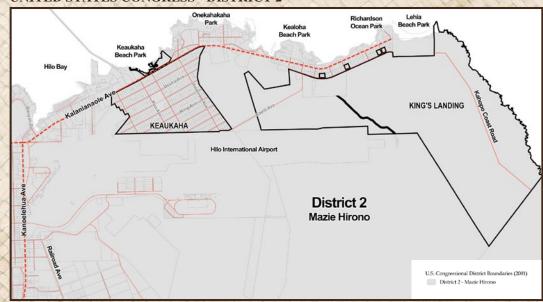
Clift Tsuji State House of Representatives District 3



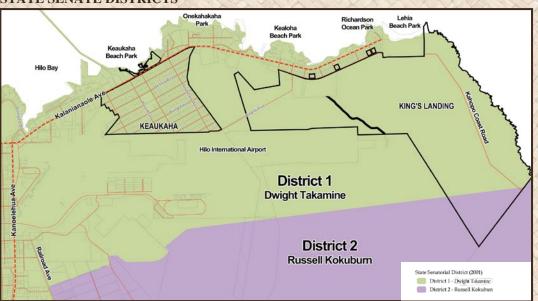
Dennis "Fresh" Onishi Hawai'i CountyCouncil District 4

# Political Boundaries

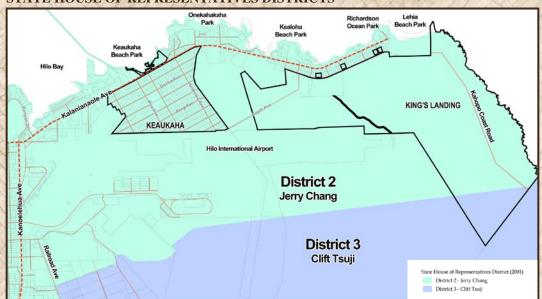
#### **UNITED STATES CONGRESS - DISTRICT 2**



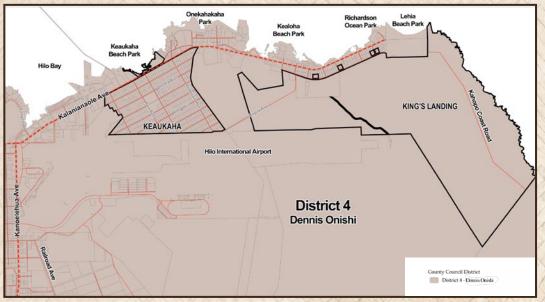
#### STATE SENATE DISTRICTS



#### STATE HOUSE OF REPRESENTATIVES DISTRICTS



#### HAWAI'I COUNTY COUNCIL DISTRICTS



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

# Key Community Stakeholders



Charmaine Bugado



Myla Gumayagay



Patrick Kahawaiola'a



Willie Kalei



Luana Kawelu



**Hans Mortensen** 



W. Mapuana Waipa



Avis Yoshioka



P. Lilinoe Young

Not Pictured: Christine Hanohano

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

# Planning Hilo's Future



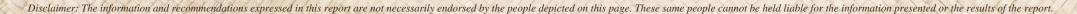
he current County of Hawai'i General Plan which was completed in 2005 is a comprehensive planning document to ensure the consistent, long-term development of the Big Island. The overall long term goal of the general plan focuses on providing a regulatory framework for decision making, improve the physical environment, encourage community participation in determining the utilization of natural and man-made resources, and identifying other values, issues, and priorities that are important to the county's residents.

The first general plan for Hawai'i County was completed in the late 1950's and focused on specific regions throughout the county. These early plans were not comprehensive in scope and failed to create a consistent development framework for county policy development.





In 1975, the Hilo Community Development Plan was the first long-range plan for the region. Within the policy outline, the continued expansion of the agricultural industry in and around the Hilo area was of pressing concern. Since the original 1975 development plan, policies and goals for the development of the Hilo area have changed considerably. With the current 2005 Hawai'i General Plan serving as the community development plan for the Hilo area, emphasis has also been placed on resident well-being in additional to economic development.



# Partnering Benefits & Examples

# Shared Costs & Multiple Financing Options

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 improvements and the development of regional and public facilities. This coordination helps individual organizations achieve their goals while bringing long term benefits to the community and region.





DHHL Ground Breaking Ceremony

#### DHHL brings the following 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

DHHL has participated in a number of successful partnerships, a few of which are highlighted below.

# 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.

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 Area,the Pālā'au and Mo'omomi preserves, the Kalaupapa peninsula, and the Kamā'oa-Pu'u'eo National Historic District where koa forests, endangered plants and animals, and native species are being protected for future generations.



Kamehameha Preschools on DHHL Property

# 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.

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 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.

# History and Cultural Aspects of the Area

eaukaha, located in the Waiākea ahupua'a along the lava shoreline of Hilo Bay literally means "the passing current." Historically, Hilo has been known for the royal fishponds in Waiākea and the areas surrounding the Waiolama River.

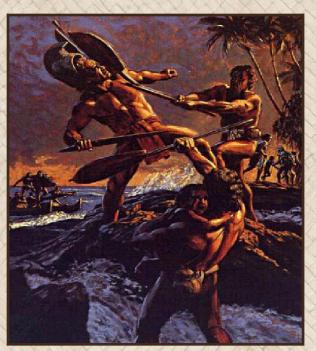
Hilo itself has always been a center of political activity for the ruling chiefs since the time of 'Umi-a-Liloa, the first to unite the Big Island in the 16th century. Prior to King Kamehameha beginning his quest to unite the Hawaiian Islands, Hilo served as the royal seat of power for Kalani'ōpu'u, When Kalani'ōpu'u died in 1782, Kamehameha eventually usurped power from Kalani'ōpu'u's son Kiwala'ō that same year.

After Captain Cook's arrival in Hawaii in 1778, Hilo became a major port for foreign ships to refuel and seek shelter after a long journey across the Pacific Ocean. When sandalwood was discovered in the forests of Hawai'i, Hilo, like many coastal areas served as a central location for the loading of this valuable timber product onto China-bound schooners. Once Hawai'i's sandalwood stock was decimated by excessive harvesting in the 1830's, attention was focused on whaling and sugar.

In an effort to address the indignities faced by the native Hawaiian population after the overthrow of the monarchy in 1893, Prince Jonah Kūhiō Kalaniana'ole, in the capacity of U.S. senator, passed legislation for the Hawaiian Homes Commission Act of 1921 which set aside lands for native Hawaiians. Keaukaha was one of the first tracts opened for settlement under the Hawaiian Homes Commission Act. However, the community would undergo considerable change due to growth issues with the growing airport.

Since it's inception in 1925, Hilo International Airport, or then known as General Lyman Field, grew in size and slowly encroached upon Keaukaha's boundaries. With the outbreak of World War II and increased passenger traffic, Keaukaha sacrificed a considerable amount of housing lots. Based on maps of the original homestead tract, there were approximately 600 parcels of land. South of the present parcels, there were over two hundred individual half-acre lots spaced along a grid pattern. Further airport expansion in the 1950's resulted in approximately 200 parcels south of the then existing Kamehameha Avenue to be eliminated.

In addition, approximately another one hundred parcels North of Kamehameha Avenue and west of Kauhane Avenue were removed or had their property lines redrawn. Homesteaders that lot their lots were given parcels in the newly developed Pana'ewa lots in 1962. Over time, many of the remaining lots were subdivided and thus the overall number of lots in Keaukaha has since increased. Two five acre parcels of land between Parker and Pua Avenues were converted into the existing Keaukaha Elementary School and Hualani Park.



"The Incident of the Splinterred Paddle" by Herb Kāne

Keaukaha Tract II is also known as King's Landing. King's Landing was a name given to a little fishing village known as Pāpa'i. This was the location where King Kamehameha I landed in 1792 during a raid to take over the island of Hawai'i. In search of human sacrifice (an offering for his newly built heiau), Kamehameha and his warriors stumbled upon two fishermen. The fishermen fled when they realized they were being pursued. Just as they were about to be captured, Kamehameha's foot was caught in a lava fissure. One of the fishermen beat Kamehameha over the head with his paddle with a blow so hard causing the paddle to splinter. The men spared Kamehameha's life despite nearly being killed themselves.

Kamehameha knew that that the fishermen could have easily killed him and because of

their gracious act and value of life, Kamehameha put an end to human sacrifice, proclaiming a new law, the Kānāwai Mamala Hoe, otherwise known as the Law of the Splintered Paddle.



# 1 Keaukaha (295 Acres)

The Keaukaha homestead (TMK Plats 11, 13, 17-24) tracts lay south of Hilo Bay. Kalaniana ole Avenue to the north, Hilo International Airport to the south and west and a large Kamehameha Schools parcel to the east comprise Keaukaha's borders. North of the main Keaukaha residential lots is Keaukaha Beach Park overlooking Puhi Bay. Desha and King Avenues run west to east and Andrews and Pua Avenues run north to south.

In addition, there are ten scattered residential lots that lay north of King's Landing. Average lot size for Keaukaha is half an acre. Prior to the expansion of the Hilo International Airport during the 1950's and 1960's, Keaukaha tracts were generally larger. Based on maps dating back to the 1920's, many of the lots north of King Avenue were one acre in size. Over time many of these lots were further sub-divided into half-acre parcels. In 1953, lots south of Krauss Avenue were eliminated in order to make way for Hilo International Airport's expansion. These half-acre lots were primarily used for residential purposes.

There are a number of educational and social services available in Keaukaha. In addition to Keaukaha Elementary School, Ka 'Umeke Kā'eo, a language immersion school and Ke Ana La'ahana which focuses on education and culture are unique public charter schools located in Keaukaha. Kamehameha Schools/Bishop Estate runs a pre-school on Baker Street. These four schools comprise the educational options available in Keaukaha. Office of Hawaiian Affairs (OHA), DHHL Keaukaha Community Association (KCA) and Keaukaha Technology and Resource Center (KTRC) also has regional offices and facilities in the same vicinity.

With the passing of the Hawaiian Homes Commission Act of 1920 and subsequent amendments in 1921, Keaukaha was included as part of lands that could be settled by Native Hawaiians homesteaders. Parallel to the history of Keaukaha is the emergence of neighboring Hilo International Airport (also once known as General Lyman Field). With tension in the Pacific leading to World War II, priority was placed on the war effort. Fifty Keaukaha homesteaders were removed from their parcels in order to make way for the development of a larger runway (now referred to as Runway 3-21) for the airport in 1942. In 1962, an additional 193 acres of Keaukaha homestead land was exchanged for equal acreage in Pana'ewa to accommodate further airport runway expansion.

# 2 King's Landing (1,333 acres)

King's Landing (TMK 2-1-13:1) is comprised of three parcels totaling 1,333 acres that wraps around northern portion of the Puna Coastline. Kalaniana'ole Street turns into Kapoho Coast Road near Lehia Beach Park. The Kapoho Coast Road is accessible by four-wheel drive vehicle and parallels the Puna coast for several miles. King's Landing remains largely undeveloped. Aerial photographs show King's Landing with uninterrupted swaths of forests and brush. With constant exposure to the winds, the shoreline facing the ocean is often rough when compared to the calmer waters of Hilo Bay.

Closer to the shoreline, the landscape is dotted with brackish water ponds with unique and rich fauna and flora. 'Ōpae'ula naturally inhabits these ponds. The 'Io and the Kōlea can also be naturally found in this area. Though mainly characterized by exotic species, the vegetated areas around King's Landing still possess pockets of 'Ōhi'a lehua and other native plant species.

King's Landing's recent history highlights the struggle of some homesteaders. Archaeological research has shown that there was human contact in the King's Landing area prior to Cook's arrival in 1778. However in 1882, as a consequence of the Land Mahele, W.H. Shipman purchased the King's Landing parcel from the Lunalilo Estate. Though the Shipman family was the legal owners of the property, Native Hawaiians were able to still gain access to the natural resources on the property.

# Sojacent Bands



# County of Hawai'i (50 acres, TMK 2-1, Plats 14, 16, 17, 19)

County of Hawai'i lands are primarily positioned around Lihikai and Leleiwi Beach Parks. These County-held lands also include Mahikea and other surrounding islands around Leleiwi Beach Park. The single largest parcel is a twenty-one acre portion of Lihikai Beach Park.

# State of Hawai'i (3,865 acres, TMK 2-1, Plats 9-19)

State lands around the Keaukaha homestead is approximately 3,865 acres. The lands that are under State control in these areas serve various public interests.

Along the Keaukaha coastline there is approximately 137 acres of State lands that are used for beach and general recreational purposes. The largest single

parcel is a fifty acre lot where Lokoaka Fishpond is located. This fishpond was originally used by native Hawaiians as a stocking pond for various food fishes. Other notable beaches within the area includes: Richardson Ocean Park, Four Mile, Onekahakaha Park, and Lehia Beach Park.

West of the main Keaukaha housing tract is the Port of Hilo. Plans are currently underway to expand and improve existing navigational areas of Hilo Harbor. According to the Hawai'i Commercial Harbors 2020 Master Plan Task Force, recommendations include the creation of a Pier 4 Barge terminal, increase the number of access road to the harbor to five, and anticipate increased passenger arrivals from cruise ships. Part of this improvement includes the possibility of acquiring property on Kumau Street to coincide with projected increase in commercial and cruise ship activity. However, current downturns in cruiseship passenger numbers may force a rethinking of the Task Force's recommendations.

With the close proximity of Hilo International Airport to the Keaukaha homestead lands, any future developments will have a severe impact on the community. Historically, the increase in size of the airport resulted in Keaukaha land being utilized for further expansion. For the 2007

Capital Improvement Projects, Hilo International Airport will undergo a parking lot expansion, construction of additional warehousing facilities, and a noise reduction study around Keaukaha. Close proximity to the Keaukaha homesteads may leave the community exposed to noise pollution from over passing airplanes. A 1986 DHHL funded study on the community management plan for King's Landing cite previous studies that noise pollution from the airport runways makes the immediate surrounding area inappropriate for residential usage.

The Hawai'i Army National Guard (HIARNG) is located directly south of the Hilo International Airport. HIARNG has two primary functions; provide a trained and ready force to serve in support of national military strategies; and to assist civil authorities to protect life, property and to preserve order and public safety. The Keaukaha Military Reservation currently has on site a firing range, headquarters, training areas, and relevant support facilities. In order to mitigate negative environmental impacts from training activities, HIARNG created the Integrated Natural Resources Management Plan (INRMP) which focuses on a proactive land stewardship on lands that are currently in use.

## Kamehameha Schools / (KS) (244 acres, TMK 2-1, Plats 10, 13, 15)

Kamehameha Schools (KS) is the largest private landowner in the State of Hawai'i. Kamehameha Schools is a private, charitable, perpetual trust dedicated to the education of Hawaiian children and youth. Income generated from numerous investments, and residential, commercial, and resort lease fund the schools' maintenance and educational services.

Currently there are a total of forty-eight separate parcels around the Keaukaha area. The single largest lot is a 148 acre parcel that separates the Keaukaha tract from King's Landing. This particular parcel is primarily used for grazing and is largely undeveloped. The Edith Kanaka'ole Foundation uses Hau groves on KS lands for educational and training purposes. The Hilo Bay Hostel sits on a one acre lot between King's Landing and Keaukaha homestead tract. Attached to the hostel is an ice cream shop and liquor store. KS also leases waterfront property to the Hilo Yacht Club.

# Watumull Investment Company (2,111 acres, TMK 1-6-10:25)

The land bordering the southeastern section of King's Landing is the single largest adjacent parcel. Originally bought by W.H. Shipman in 1882, it was later bought by David Watumull in 1959. With the exception of a road connecting Kalaniana ole Avenue to Pāpa'i, there has been little in the way of major development. Over the years, Watumull Investment Company has tinkered with the idea of developing the property for residential and resort development. As recently as 2000, Watumull has proffered the idea of building a 1,700 bed prison facility on the land adjacent to King's Landing if the State were to contribute to the construction of roads and other related infrastructure leading up to the proposed site.

# Regional Demographics

Keaukaha's homestead community is located in the eastern portion of Hilo. With a total of 1,494 residents, Keaukaha represents 3.5 percent of Hilo's population. The 1,494 residents reside in a total of 378 units with an average population of 4.27 persons per housing unit. Children comprise 23 percent of the homestead's overall population. With 83.8 percent of residents that have completed at least a high school degree, Keaukaha residents' education level is on par with the County and the State. Keaukaha's median household income of residents' of \$40,865 is higher than both Hilo and County numbers (\$39,213 and \$39,805, respectively). When compared to Hilo residents, twice as many Keaukaha homesteaders spend thirty minutes or more on their daily commute to work. Though the percentage of households that live below the poverty line is on par with the rest of Hilo, in comparison to the rest of the state, Keaukaha's population living in poverty is over 50 percent higher.

- The Keaukaha is located in the city of Hilo on the Windward side of the Big Island.
- 2000 Census recorded the resident population of Keaukaha at 1,494.
- Median age in Hilo is 38.7, in Keaukaha it is 32.7.
- The 345 homestead residents under 18 year old population of Keaukaha represent 23 percent of the total homestead population.
- Native Hawaiians account for 6.7 percent within the State of Hawai'i. In contrast in Keaukaha, native Hawaiians comprise 49.3 percent of the resident population.
- Median income in Keaukaha at \$40,865 is slightly higher than Hilo (\$39,213) and the County of Hawai'i (\$39,805), but significantly lower than the state median average of \$49,820.
- Median per capital income for Keaukaha residents is considerably lower (\$11,406) than Hilo (\$18,260).
- The percentage of households living below or on the poverty line (17 percent) is on par with Hilo, but slightly higher then Hawai'i County (16 percent).
- According to the Hawai'i County Board of Realtors, median home prices in December 2007 in Hawai'i County were \$395,000 while homes within Hilo were \$250,000.

- When compared to 2006, 2007 Median sale prices for residential properties shrank by 6.18 percent for the Big Island. South Hilo experienced only a 4.11 percent decrease. Vacant land prices increased 7.1 percent in the same period.
- As the second heaviest populated region in the State, Hilo is home to the University of Hawai'i at Hilo, Mauna Kea science research complex, County government offices, Hilo International Airport, and a considerable mix of retail, commercial, and industrial properties.
- 2006 DBEDT figures indicate that over 668,000 tourists visited Hilo and spent a total of 2,165,346 visitor days. However, Hilo's visitor numbers are dwarfed when compared to Kona's 1,344,000 tourists and 8,058,000 total visitor days. In 2006, visitors to the Big Island spent a total of \$1.65 billion.
- Based on a 2007 study of Waiākea lands held by DLNR and DHHL, median household monthly budget in the immediate area was \$4,005. Of listed expenditures, transportation (20.6 percent, \$826), and shelter (20.0 percent, \$802) comprised the largest percentage of total monthly income consumption.
- Hilo's population grew 7.3 percent during the interim period of the 1990 and 2000 census reports. This pace of growth was slower when in comparison to the State's overall growth of 9.3 percent and the County of Hawai'i's 23.5 percent during that same period.

Characteristics <sup>1</sup>	Keaukaha	Hilo	County of Hawai'i	State of Hawai'i			
POPULATION & AGE							
Total Population <sup>1</sup>	1,494	42,425	148,677	1,211,537			
Median age	32.7	38.7	38.6	36.2			
Children under the age of 18 (%)	345 (23%)	10,632 (25.1%)	15,151 (10.2%)	289,012 (23.4%)			
Population over 65 (%)	127 (8.5%)	7,132 (16.8%)	19,951 (13.4%)	161,141 (13.3%)			
EDUCATIONAL ATTAINMENT							
% of population over 25 with high school diploma	83.8%	85.5%	84.6%	84.6%			
% of population over 25 with a bachelor's degree	6.1%	24.1%	22.1%	26.2%			
HOUSEHOLD							
Household size	4.27	2.71	2.75	2.92			
Household median income in 1999 dollars	\$40,865	\$39,213	\$39,805	\$49,820			
Percent of households living below poverty line	17%	17%	16%	11%			
Percent of households receiving public assitance	21%	10%	10%	7%			
Percent of working residents traveling 30+ minutes to work	22%	11%	29%	38%			
HOUSING MARKET							
Housing units	378	16,640	62,674	460,542			
Population per housing unit	3.72	2.55	2.37	2.63			
Median residential price 2007 <sup>2</sup>	\$336,000*	\$350,000	\$395,000	\$586,000			

GROWTH IN POPULATION BETWEEN 1990 & 2000				
	1990	2000	Change in percentage	
State of Hawai'i	1,108,229	1,211,537	9.3%	
Hawai'i County	120,317	148,677	23.6%	
Hilo	39,537	42,425	7.3%	

<sup>&</sup>lt;sup>1</sup>All data gathered from Census 2000 unless otherwise noted

<sup>&</sup>lt;sup>2</sup> Hawaii Island Board of Realtors

<sup>\*</sup> At time of publication, no data was found on transactions of homes being sold on Keaukaha homestead land. The value of \$336,500 was derived from data collected on Pana'ewa's homestead home transactions. Data provided from Pana'ewa is shown only for comparison.

# O) evelopment Trends

## Infrastructure

(1) WASTE-TO-ENERGY PLANT HILO

As the current Hilo Landfill reaches its capacity, the County government is faced with finding a solution for future waste disposal. Recent County Council votes have put a stop to developing a waste-to-energy plant adjacent to Pana'ewa. The County is now in the beginning phase of a Integrated Solid Waste Management Plan (ISWMP) which will reevaluate all potential waste management options.

(2) HILO INTERNATIONAL AIRPORT

With the close proximity of Hilo International Airport to the Keaukaha homestead lands, new developments may have an impact on the community. For the 2007 Capitol Improvement Projects Budget, Hilo International Airport will undergo a parking lot expansion and construction of additional warehousing facilities. Further noise attenuation studies around the Keaukaha Homestead Community will also be conducted. In December 2007, \$33.5M was released for the construction for new cargo facilities.

(3) PORT OF HILO

Plans are currently underway to expand and improve existing navigational areas of Hilo Harbor. According to the Hawai'i Commercial Harbors 2020 Master Plan, Task Force recommendations include the creation of a Pier 4 Barge terminal, increase the number of access road to the harbor to five, and anticipate increased passenger arrivals from cruise ships. However, the current economic condition within the State may delay construction.

4) HILO CENTRAL FIRE STATION

The Hawai'i Fire Department plans to build a new fire station that will incorporate both a fire fighting unit and battalion headquarters. The proposed fire station will be built on a 1.999 acre parcel which is part of the larger Lanakila Housing Complex that has been unoccupied for some time

(5) HILO MEDICAL CENTER

The Hilo Medical Center will incorporate an expansion and upgrade of its existing cardiovascular suite. Site and equipment improvements will be undertaken to further enhance the hospital's operational capacity. Governor Lingle released \$160K in funding for the purchase of cardiovascular medical equipment.

(6) WAILOA SMALL BOAT HARBOR DREDGING

Dredging of the Wailoa Small Harbor will be undertaken to improve the harbor's navigational waters.

(7) KEAUKAHA JOINT MILITARY CENTER

Design and construction of training facilities for soldiers and supporting staff will be built on the Keaukaha Military Reservation. Facilities for the center will include expanded commissary, Veterans' Affairs office, and other supporting facilities. Governor Lingle recently released \$6.5M in funds for the construction at the military center.

8 HILO BAYFRONT HIGHWAY, SHORELINE PROTECTION To prevent further erosion along Hilo Bay, groin fields will be implemented in FY 2010.

## Commercial

9 HILO FAMILY ENTERTAINMENT CENTER

The Hilo Family Entertainment Center will be built in two phases. The first phase will include a 37,500-sq. ft. family entertainment center, a steak house, a restaurant, and a sports bar. The second phase involves the construction of approximately 16,000-sq. ft. of retail space. The proposed site for the entertainment center is located on Kekūanaōʻa and Mililani Streets.

WAIĀKEA STATE LANDS / FOREIGN TRADE ZONE

Located adjacent to the Hilo International Airport, the proposed Foreign Trade Zone encompasses 31 acres zoned for commercial and light industrial uses. This expansion site was approved by the Foreign-Trade Zones Board in 1992. The County and the State Department of Business, Economic Development & Tourism are working to develop this site. DHHL/DLNR has also emphasized the potential of the site's ability to generate revenue by developing a commercial project. DHHL hopes

MANA QUARRY INDUSTRIAL PARK

With a combination of growing population, expanding Port of Hilo facilities and potential development of a foreign trade zone, Hawai'i County is faced with a growing need to develop more land for new industrial space. Complimentary to site development, infrastructure improvements along Leilani Street, Airport Access and New Industrial Access Roads will also be conducted to improve transportation flow.

## Community

(12) HAWAI'I COUNTY DRAG STRIP

Adjacent to unencumbered homestead land is a 71 acre strip of State land utilized as for drag racing and other related activities primarily on the weekends. Access to the drag strip is limited to Leilani Street which is located to the north of the industrial/commercial portion of Pana'ewa.

(13) ENVISION DOWNTOWN HILO 2025 ('IKE IĀ HILO)

Envision Downtown Hilo 2025 originated in 2004 through the collaboration between the County and the general public. The main objective of this program is to facilitate the process of visioning the key priorities for future development of Hilo's downtown area. The goal of this project is to enhance residents' quality of life.

(14) HILO BAYFRONT TRAILS

Hilo Bayfront Trails is a three phase project that will build multi-use pathways between the cruise ship berths at the Port of Hilo to the Wailuku River. The goal of the project is to create a walker-friendly environment in the area, foster business development, and promote greater awareness of the surrounding natural resources

(15) HILO COMMUNITY DEVELOPMENT PLAN (CDP)

(not within aerial map boundary)

Community Development Plans (CDP) are being developed for the different areas of the county to address their specific needs. The process to develop Hilo's CDP will begin in the near future with the selection of its steering committee. Until the Hilo CDP is developed and implemented, the 2005 County General Plan will serve as a guideline for the area's regional development.

16 COCO PALMS OF KEAUKAHA

Along the Keaukaha coastline, Pacific Island Investments LLC has acquired a 1.5 acre parcel to build twelve town home luxury units. Starting price for these two-bed, two-bath homes will be priced from \$600,000. Completion of these units is projected for the end of 2009.

HILO MUNICIPAL GOLF COURSE NEW CLUBHOUSE AND FACILITIES

In order to meet the demand and generate more catering opportunities, the existing restaurant at the golf course will be replaced. The budget proposal would entail relocating the sheds in order to allow for golf club facility expansion.

(18) EDITH KANAKA'OLE TENNIS STADIUM DRESSING ROOM EXPANSION PROJECT

The current dressing room area is inadequate for performers who use the facility. Renovation of the existing dressing room could possibly attract more shows at the stadium.

## Education

19 UNIVERSITY OF HAWAI'I AT HILO

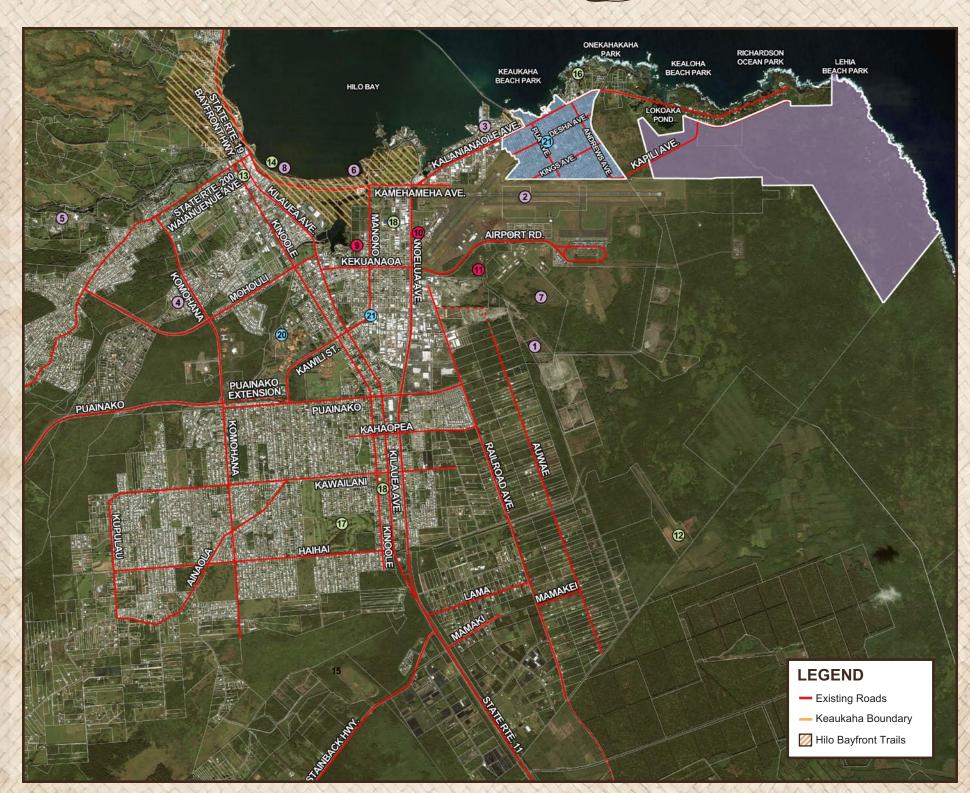
The University of Hawai'i at Hilo will undergo massive improvements and expansion over the next few years that will include construction of the China-U.S. Center, College of Pharmacy school buildings, student service building, and U.S. Geological Survey building. \$6 million in funding for design and construction was released for temporary buildings for the College of Pharmacy in October 2007. Another \$24 million was released earlier 2007 for the construction of a science and technology building at the Hilo Campus.

20 HAWAI'I COMMUNITY COLLEGE

Part of a multi-million dollar appropriation from the 2007-2008 biennium legislature budget was appropriated for construction and renovation for the campus.

(21) KEAUKAHA ELEMENTARY SCHOOL KITCHEN

A 6,000 square foot kitchen and dining room will be built on the grounds of Keaukaha Elementary School. Funding was earmarked for the State biennium budget for FY '08.



# Infrastructure - Roads

## General

Within the County of Hawai'i, there is a total of 1,393 miles of public roads. Of those roads, 394 miles are State-managed and 879 miles by the County. The major highways on the island of Hawai'i are the Hawai'i Belt and the Māmalahoa Highways which link all major towns except North Kohala. However, with an increasing population and subsequent strain on existing road infrastructure, Federal, State, and County agencies project a long term development of Saddle Road (Hwy 200) which would involve vast improvements to existing road conditions to meet existing Federal highway and design standards. Once completed, Saddle Road will become another crucial transportation link between West and East Hawai'i.

# Major Roadways

1 HAWAI'I BELT ROAD (ROUTES, 11, 19, 190)

The Hawai'i Belt Road consists of three separate state routes; 11, 19, and 190. The routes circumnavigate the entire Island of Hawai'i. Routes 11 and 19 in particular bisect central Hilo. Traffic on Hawai'i Belt Road that runs through Hilo is regulated by traffic signals.

2 SADDLE ROAD HIGHWAY (HWY 200)

The existing road was first built in 1943 as the most direct link between East and West Hawai'i. The roadway provides access to the Mauna Kea Observatories, Pōhakuloa Training Area Base, Mauna Kea State Park and various hunting and gathering access areas. Plans are currently being developed to widen the existing roadway to allow two-way traffic between Hilo and Kona.

(3) KANOELEHUA AVENUE

Kanolelehua Avenue is the main four-lane roadway that bisects Hilo north to south. Hilo International Airport, Port of Hilo, major shopping and commercial areas are accessible via Kanoelehua Avenue.

PŪ'AINAKO STREET

4 Pūʻainako Street is a major roadway that connects the Saddle Road Highway and Kaūmana Drive to Hilo and terminates at the intersection with Kanoelehua Avenue. The majority of the Pūʻainako Street consists of two-way roadways except for the area between Kīlauea Street and Kanoelehua Avenue where it widens into four lanes. With impending road improvements to Saddle Road, Pūʻainako Street will become another major road artery for traffic between Kona and Hilo.

## Major Keaukaha Roads

(5) KALANIANA'OLE AVENUE

Kalaniana ole Avenue provides primary road access to Keaukaha and King's Landing. Kalaniana ole Avenue follows the contour of King's Landing until Lehia Beach Park and then turns into Kapoho Coast Road. Traffic entering or leaving Keaukaha must cross the Kanoelehua Avenue and Kamehameha Avenue intersection. Due to the high traffic flow at this intersection, traveling in and out of the homestead community may take longer than expected. Coupled with a projected increase in cruise ship passenger disembarking at the Port of Hilo, the existing roadways leading out of Keaukaha may not be sufficient.

6 KAPOHO COAST ROAD

Kapoho Coast Road snakes along the Puna Coast and terminates at the site of the old Hawaiian village of Pāpa'i. This road requires a fourwheel drive vehicle for traveling.

## Proposed Road Infrastructure Developments

As a major city on the island with growing developments outside of the city Hilo is in the process of developing and improving current road infrastructure. While some projects are short-term and focus on repairs, others may take years before completion and include considerable upgrades to existing infrastructure.

7 MANONO STREET BIKE & PEDESTRIAN IMPROVEMENT
This project will provide bicycle and pedestrian facilities on Manono
Street from Bayfront Highway to Kawili Street.

(8) REED'S ISLAND BRIDGE REPLACEMENT

The current bridge that connects to Reed's Island does not permit vehicles weighing more than six tons to cross. Fire department trucks that respond to emergencies on the island would not be allowed to cross. The County plans to rebuild a new concrete bridge that would allow emergency vehicle access to the island.

9 HOKUPA'A STREET DRAINAGE PROJECT
Plans are underway to construct a drainage structure on Hokupa'a
Street. Once a drainage structure is in place, flooding risk will be
greatly mitigated.

KUMAU STREET PROPERTY ACQUISITION

As part of the Hawai'i Commercial Harbors 2020 Task Force recommendations, suggestions were made to acquire property on Kumau Street to help improve travel flow into the container port.

KANOELEHUA AVENUE IMPROVEMENTS -KAMEHAMEHA AVENUE TO PŪ'AINAKO STREET

This project involves designs plans for widening the north bound lane of Kanoelehua Avenue between Pūʻainako Street and Kamehameha Avenue. Lane widening will improve commuter traffic flow from the areas south of Hilo.

12 PŪ'AINAKO STREET EXTENSION

Land parallel to Pū'ainako Street between Komohana Street and the intersection of Kaūmana Drive and Country Club Road will be acquired to construct a two-lane road.

13 PŪ'AINAKO STREET WIDENING

The project requires land acquisition and design to widen and realign Pū'ainako Street from two to four lanes is proposed. The affected areas on Pū'ainako Street would include the areas between Kanoelehua Avenue and Komohana Street.

14 SADDLE ROAD IMPROVEMENTS

Various safety improvements to Saddle Road at mile posts 8, 13, and 14 will be added to improve driving conditions. Improvements would include; shoulder width widening, installation of new warning signs, reconstruct sections of road (where possible) to increase sight distance, and install thermoplastic striping and raised pavement markers from mile posts 23 to 53.

(15) WAIĀNUENUE AVENUE IMPROVEMENTS

Reconstruction efforts along Waiānuenue Avenue will incorporate American Association of State Transportation Officials (AASHTO) standards to increase pedestrian and bicycle safety.

UPPER WAIĀNUENUE AVENUE ROAD SAFETY IMPROVEMENTS

Increased traffic flow in the Kaūmana region has exposed existing inefficiencies in the road infrastructure. Proposed improvements include road re-alignment, covering drainage ditches, and installing traffic calming devices.

- 'ĀKŌLEA ROAD SAFETY IMPROVEMENTS

  The existing bridge along 'Ākōlea Drive does not have the capacity to allow emergency vehicles to cross. Proposed improvements would include the construction of a new bridge for vehicular traffic and road re-alignments.
- **KAŪMANA DRIVE ROAD SAFETY IMPROVEMENTS**Because many sections of the road are narrow and have no walkways for pedestrians, construction of sidewalks, covering of drainage ditches, and installation of traffic calming devices are necessary to make the road safe for pedestrian usage.
- 'ĀINAKŌ AVENUE ROAD SAFETY IMPROVEMENTS
  Proposed safety improvements include road re-alignment, covering of drainage ditches, and installation of traffic calming and speed reduction devices.
- BANYAN DRIVE PARKING IMPROVEMENT
  Popular local tourist spots such as Liliu'okalani Gardens, Naniloa
  Country Club and Hilo Harbor have made parking a problem. To
  alleviate this problem, additional angle parking will be installed
  along Banyan Drive.
- ROAD DIET REVIEW FOR KĪLAUEA, KINO'OLE, & WAIĀNUENUE

  The three roadways in question will go under review to eliminate inconsistent and conflicting uses throughout their entire lengths. The road diet will effectively reduce the number of lanes to improve traffic flow and reduce the number of accidents. A three lane designation on Waiānuenue Avenue would eliminate the "One

Way" traffic change during schools hours along Haili Street.v



# Infrastructure - Water

## Water Resources

Annual rainfall in Hilo varies from 100 inches near shore to 200 inches in the upslope areas surrounding Hilo Bay. The wettest spot on the Big Island is six miles upland from Hilo's city center.

The Hilo Water Systems extends from 'Alae from the north to Pana'ewa Agricultural Park to the south, Keaukaha in the east and Kaūmana and Waiākea Uka to the west. The water system is a combination of both surface and groundwater.

The primary Hilo's water sources are derived from the Pana'ewa Well Nos. 1, 2, 3, Pi'ihonua Well Nos. 3a and 3b, and Saddle Road Well "A." Water from Pana'ewa is from a basal aquifer which is extracted by three different pumps with an output capacity between 2.2 to 3.1 million gallons per day (MGD). The Pi'ihonua well output is 3.0 MGD. The Saddle Road Well "A" has an output of 1.0 MGD. Hilo's daily water requirements are approximately 6.0 MGD. Water from all six wells can be diverted to different parts of the city depending on demand.

# Sovernment Agencies and Water Resource Management

In the February 2003 State Water Projects Plan (SWPP), recommendations were made to develop new sources of water for the year 2020 usage projections. Long term recommendations advise the development of a new water source that would produce approximately 1.6 mgd. Pana'ewa's primary water storage container is located near the Pana'ewa Farm Lots. The Pi'ihonua water storage tank stores water for Pana'ewa and Keaukaha homesteads.

The Department of Water Supply is a semi-autonomous agency of the County of Hawai'i which operates by rules and regulations as adopted by the Water Board. As a semi-autonomous agency, the Department operates and maintains its water systems with revenues generated wholly through water sales. The primary function of the Department is to provide safe domestic water service through its 24 water systems and 67 sources scattered throughout the island.

Utilizing the Hawai'i County General Plan as a general guideline, there are four main courses of action for the Northeast Mauna Loa Aquifer Sector Area (ASEA)

- 1) Continue to implement water system maintenance and improvement programs in order to provide the city with a dependable and consistently safe drinking water supply
- 2) Investigate groundwater sources in the Upper Waiākea Uka area
- 3) Further investigate future groundwater sources
- 4) Investigate additional groundwater sources in the 'Ola'a area

# Keaukaha's Water Infrastructure

Keaukaha and King's Landing receives their water supply primarily from the Pi'ihonua Wells. Water lines connecting into the community span the entire length of Kalaniana'ole Avenue and ends at Lehia Beach Park. Water lines also connect along the major streets throughout the Keaukaha housing lots.

## Existing Water System

The following map reflects both existing and proposed water lines, reservoirs, and wells.

- PANA EWA WELLS NO. 1, 2, 3\* One of three major water sources for Hilo, Pana ewa Wells also serves the Pana ewa homestead community. Output capacity is between 2.2-3.1 MGD.
- PI'IHONUA WELLS NO. 3A, 3B\* One of three major water sources for Hilo, Pi'iihonua Wells serves the Keaukaha homestead community. Output capacity is approximately 3.0 MGD.
- SADDLE ROAD WELL, "A"\* The existing well at the 1,909 foot elevation level is outfitted with deep-well pumping equipment. The well has a daily capacity of 700 gallons per minutes (GPM). Water pumped from this site can be diverted to various parts of Hilo depending on consumer demand.
- UH HILO PANA'EWA FARM (PROJECTED NEW STATE-MANAGED WELL) A well will be developed on the UH Hilo Pana'ewa Farm site to provide sufficient water sources for on-site agricultural activity.
- 5 WELL DEVELOPMENT AT PANA 'EWA FARM LOTS To meet increasing agricultural demand, exploratory wells will be dug in the Pana 'ewa Farm Lots area.
- JAS. GLOVER LTD. INDUSTRIAL WELLS Jas. Glover Ltd. owns two wells on its property in the Kanoelehua area of the city. Well water is used for industrial purposes. Well water from this system is not used by the general public.
- HELCO HILL STATION 5A, 5B, 5C Wells located on HELCO land are utilized to cool on-site power plant turbines. Well water from this system is not used by the general public.
- MAUNA LOA MACADAMIA NUT WATER SYSTEM Mauna Loa Macadamia Nut Water System is the only private-public water system in the Hilo area. The 114 acre farm is supported by a primary well source with a pumping capacity of 350 GPM. A secondary onsite well has a potential to pump 500 GPM. Well water from this system is used primarily for the farm's daily operations.
- 9 PI'HONUA RESERVOIR 1, 2, 3 Pi'ihonua Reservoir 1 and 3 has a storage capacity of 1.0 MG. Resevoir 2 has a capacity of 800,000 gallons.
- PI'HONUA RESERVOIRS 2 & 3 BOOSTER PUMP STATION (BPS) Booster pump capacity for both pumps is rated between 1-1,500 GPM.
- HAIHAI BOOSTER PUMP STATION (BPS) Booster pump capacity for Haihai is rated between 1-1,000 GPM. The backup pump is rated at 1-500 GPM.
- PI'IHONUA NO. 1 (CAMP 4) BOOSTER PUMP STATION (BPS) Booster pump capacity for Pi'ihonua No. 1 is rated between 2-100 GPM.
- PANA'EWA BOOSTER PUMP STATION (BPS) Both the primary and secondary booster pumps are rated between 1-1,500 GPM.
- WAIĀKEA UKA CAMP 7 (AINAOLA) BOOSTER PUMP STATION Booster pump capacity for Waiākea Uka is rated between 2-300 GPM.
- WAIĀKEA UKA CAMP 7 (HOAKA)BOOSTER PUMP STATION (BPS) Booster pump capacity for Waiākea Uka Camp 7 is rated between 2-300 GPM.
- **16 AINAKO TANK** The Ainako tank has a storage capacity of 100,000 gallons.
- WAIĀKEA (KOMOHANA) TANK The Waiākea (Komohana) Tank has a storage capacity of 500,000 gallons.

<sup>\*</sup> Well locations are not located in their exact location due to security concerns

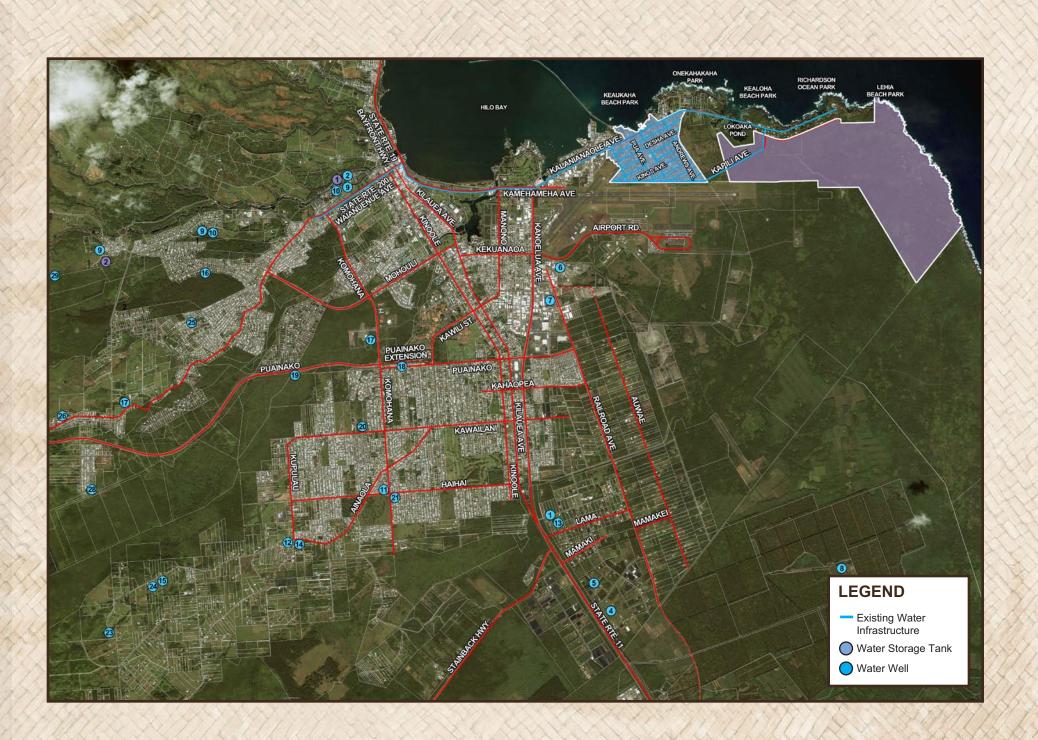
- PŪ'AINAKO TANK The Pū'ainako Tank has a storage capacity of 1.0 million gallons (MG).
- 19 UH TANK The UH Tank has a storage capacity of 1.0 MG.
- **(20) KAWAILANI TANK** The Kawailani Tank has a storage capacity of 1.0 MG.
- **21)** HAIHAI TANK The Haihai Tank has a storage capacity of 500,000 gallons.
- WAIĀKEA UKA (CAMP 6) TANK The Waiākea Uka Tank has a storage capacity of 500,000 gallons.
- **DELIMA TANK** The Delima Tank has a storage capacity of 50,000 gallons.
- 4 HOAKA TANK The Hoaka Tank has a storage capacity of 500,000 gallons.
- **KAŪMANA (CAMP POW) TANK** The Kaūmana Tank has a storage capacity of 57,000 gallons.
- **KAŪMANA NO. 1 TANK** The Kaūmana No. 2 Tank has a storage capacity of 50,000 gallons.
- **KAŪMANA NO. 2 TANK** The Kaūmana No. 2 Tank has a storage capacity of 50,000 gallons.
- COUNTY CLUB ESTATES (WILDER) TANK The Country Club Tank has a storage capacity of 300,000 gallons.
- **EXAMOAMA TANK** The Kahoama Tank has a storage capacity of 300,000 gallons.

# New Projects

- PI'IHONUA 2.0 MG RESERVOIR NO. 2. The new 2.0 MG reservoir will be built next to the existing reservoir. Work is in process to develop the final plan for the reservoir and the project will go to bid by the end of 2008.
- 2 PI'IHONUA-KŪKŪAU 2.0 MG RESERVOIR
  AND TRANSMISSION LINE This 2.0 MG reservoir is currently in the planning stage of construction. Currently, the project is awaiting subdivision of the reservoir lot before construction can commence.

#### Sources:

County of Hawai'i. Hawai'i County General Plan. 2005 County of Hawai'i. Hilo Water System Annual Water Quality Report. 2006. Fukunaga and Associates. 2006. State of Hawai'i. State Water Projects Plan. 2003



# Infrastructure - Sewer

# Existing Sewer System

Approximately 77 percent of the county's population is served by cesspools. However, due to risk of contamination of the water supply and nearshore waters, the State Department of Health plans to implement stringent pollution controls which will curtail future cesspool development.

Hilo's sewer system is supported by one wastewater treatment plant and eight pumping stations. The Hilo Wastewater Treatment Plant is located east of Hilo International Airport. Maximum capacity for the wastewater treatment plant is 5.0 MGD. Current running capacity for the wastewater treatment plant is 3.1 MGD. There are no immediate plans add or expand wastewater treatment plant capacity.

There are a total of eight pumping stations within the city. Pua Pump Station is the largest of the city's pumping stations with an average design flow of 5.0 MGD and a peak flow of 13.0 MGD. Wailoa Pumping Station has an outflow of 20.7 MGD but is documented at 8.5 MGD.

## Keaukaha Wastewater Infrastructure

Unlike other parts of South Hilo, Keaukaha is highly connected to the city's existing sewer system. Hilo's wastewater treatment plant is located south of the airport. The sewage transmission line follows the contours of King's Landing and Kalaniana'ole Avenue and then north via Pua Avenue. From the Pua pumping station, treated sewage is discharged through an ocean outfall pipe.

In addition to the Pua pumping station, there are three additional stations (Banyan, Onekahakaha, and Kolea) in the immediate Keaukaha area. These three pumping stations are positioned along the sewage transmission line that runs the breadth of Kalaniana ole Avenue and stops at Leleiwi Street. From this main line, connector sewage transmission lines branch out from Pua and Anderson Avenues and covers approximately half of the housing tracts in Keaukaha. Based on County wastewater reports, the lower half of Keaukaha is planned to receive sewer line systems within ten years.

# Ongoing Projects

(1) KOMOHANA HEIGHTS LARGE CAPACITY CESSPOOL REPLACEMENT (RE-APPROPRIATION)

Large capacity cesspools (LCC) in the Komohana Heights area will be removed. Homes that were connected to LCCs will be integrated into the County's municipal sewer system. Sunrise Ridge Pumping Station will also be eliminated which would result in an approximate savings of \$20,000 per year in operating costs.

- 2 KALANAIANA OLE INTERCEPTOR SEWER REHABILITATION

  The existing interceptor sewer pipe will be replaced due to excessive corrosion from long-term use. In the first phase of the project, portions of the pipe were relined to prevent further damage. Failure to replace this pipe may result in two million gallons of raw sewage per day being dumped into Hilo Bay.
- 3 KAPI'OLANI / KŪKŪAU DETENTION POND IMPROVEMENTS
  Construction of a detention pond will reduce flooding in the area during heavy rains.
- WAILOA WASTEWATER PUMP STATION FORCE MAIN REPLACEMENT
  The existing force main has been in use for over forty-four years and is reaching the end of its service life. Failure to replace the force main could result in fines charged by the EPA, the possibility of the existing infrastructure to fail, and dumping at more than two million gallons of raw sewage into Hilo Bay.
- the are three additional stations (Banyan, Onekahakaha, These three pumping stations are positioned along readth of Kalaniana ole Avenue and stops at Leleiwi ge transmission lines branch out from Pua and Anderson the housing tracts in Keaukaha. Based on County

  5 HILO WASTEWATER TREATMENT PLANT MODIFY DIGESTERS

  The proposal involves repairing multiple existing deficiencies (frozen valves, jammed floating cover, improper mixing, and conversion to co-generation for heating). Steel covers are also beginning to corrode and lead to of methane gas leaks. Failure to replace the covers could increase the risk of methane gas explosions.

# Infrastructure - Sewer



# Infrastructure - Utilities

# Electricity

The Hawai'i Electric Light Company, Inc. (HELCO), supplies electricity for the County. HELCO purchases a total of 112 megawatts of firm power from three privately-owned companies Hilo Coast Power Company (coat at 22 megawatts), Hāmākua Energy Partner (60 megawatts), and Puna Geothermal Venture (geothermal at 30 megawatts). These power plants are located at Keāhole, North Kona; Waimea, South Kohala; Waiākea Peninsula and Kanoelehua, South Hilo; and Kea'au, Puna. HELCO owns four hydroelectric units; two in Pu'une'o and two in Waiau.

There are two levels of transmission voltages to transfer power between areas on the Big Island. The main transmission voltage is 69kV. HELCO has four 69 kV cross-island transmission lines. One line is the southern line connecting the Kanoelehua substation to West Hawai'i via the Keālia substation along Highway 11 through the Puna and Ka'ū Districts. The other transmission voltage is 13.8kV that includes three tie-lines in Hilo connecting the Shipman and Kanoelehua power plants. HELCO uses 34.5kV as a sub-transmission voltage. Distribution voltages are 2.4kV, 4.16kV, 12.47kV, and 13.8kV. Distribution substations, which transform voltages to distribution voltages, are also located islandwide in proximity to communities and other developments.

There are three major transmission lines within the South Hilo area. One line runs south along Railroad Avenue and turns right on East Mamaki Street and continues southward on Kanoelehua Avenue/Māamalahoa Highway to Kea'au. The second line runs parallel to Kawailani Street, south on Kanoelehua Avenue/Māmalahoa Highway and goes to the Puna Power Plant. The last line originates out of the Pana'ewa Rainforest Zoo area and runs parallel southwards on Mamalahoa Highway and continues on toward Kea'au. This last line also has a connector transmission line as it passes the W.H. Shipman Industrial Park. All transmission lines are 69kV. When the transmission lines reach the various substations, voltage is transformed from 69kV to 12,470 voltsage for consumer consumption.

## Gas

Propane gas is widely used in residential and commercial facilities on the island of Hawai'i. In some rural areas of the County, gas is the only source of power. The Public Utilities Comission (PUC) regulates 67 miles of gas mains and service lines on the Big Island. Most of these lines are located in Hilo. Gas service is also available by tank or cylinder. This type of service is not regulated by the PUC. The primary gas line originates outside of the Keaukaha Baseyard along Kamehameha Avenue and terminates at Wainaku. From the main transmission line, a feeder line branches off Kamehameha Avenue on to Manono Street. When Manono Street ends and merges with Kīlauea Street, the transmission line continues until Kawailani Street and heads mauka and terminates at Iwalani Street.

# Telephone Service

Sandwich Isles Communication provides fiber optic telephone services to DHHL lands.

## Cable Television Service

The Hilo District is within the Oceanic Time Warner Cable Service area.

# Infrastructure - Utilities



# Infrastructure - Public Facilities

#### SCHOOLS

The public school complexes in the Hilo District include the Waiākea Complex, Hilo Complex, and Laupāhoehoe Complex. The Waiākea Complex includes two elementary schools, one intermediate school, and one high school. The Hilo Complex includes seven elementary schools, one intermediate school, and one high school. The Laupāhoehoe Complex is comprised of Laupāhoehoe Elementary and High School. Due to the larger population, there are more private and charter schools in the Hilo area. There are three charter schools within Hilo, two of them being Hawaiian language immersion schools. Within Hilo there are six private schools that provide education services for grades K-12.

The Hilo Public Library serves the area surrounding Hilo. The Hilo Public Library has a total of 239,601 volumes. The Laupāhoehoe facility holds 24,944 volumes.

#### HIGHER EDUCATION

The University of Hawai'i System has two campuses which are located within close proximity of Pana'ewa servicing the higher education needs of East Hawai'i: University of Hawai'i at Hilo and Hawai'i Community College.

The University of Hawai'i at Hilo offers baccalaureate degrees through an arts and sciences curriculum. Although it emphasizes education in the liberal arts tradition, it also offers advanced degrees in indigenous languages and natural sciences. The campus also hosts the only accredited pharmacy school in the state. The institution also serves as a home base to many of the astronomy consortiums operating on Mauna Kea.

Hawai'i Community College focuses on providing access to those seeking a higher education. The college's curriculum centers on cultural competency, environment, Hawaiian culture and values, and workforce development. The college also offers the only known degree program in the art of Hula.

#### **PARKS**

There are a total of eleven parks and seventeen gymnasiums in the city of Hilo. The 56-acre Edith Kanaka'ole/Ho'oulu Park is the largest park complex in Hilo. Located in the "piko" or center of Keaukaha is the six acre Hualani Complex. Existing facilities include: a shared parking lot with Keaukaha Elementary School/Ka 'Umeke Ka'eo public charter school, Kawānanakoa Gym, baseball diamonds, playground equipment, administrative offices for DHHL, OHA, Keaukaha Community Association, a Kamehameha pre-school, Keaukaha Technology and Resource Center (KTRC), and Ke Ana La'ahana's 7-8th grade classes.

#### FIRE / EMS SERVICES

The Hawai'i County Fire Department has 20 regular fire stations and 22 volunteer fire stations. In addition to the Central fire station located in Hilo, there are three more fire/EMS stations located in Waiākea, Kā'umana, and Kawailani. Laupāhoehoe is served by a regular fire/EMS unit and a volunteer fire department.

#### POLICE AND CORRECTIONAL FACILITIES

The Hawai'i County Police Department is in charge of enforcing all Federal, State, and local laws in Hawai'i County, the state's largest county in terms of land mass. Hawai'i County has a main police station in each of its eight districts. The police station in South Hilo has a total of eighty-two sworn officers who cover a jurisdiction of 635 miles. In the South Hilo District, there are approximately 1.93 officers per 1,000 residents. There are two correctional facilities located in East Hawaii: Hawai'i Community Correctional Facility in Hilo and Kulani Correctional Facility.

#### BUS SERVICE

The Big Island is currently served by the Hele-On Bus Program which provides a total of fourteen routes around the entire county. Of those fourteen routes, seven of them pass through or originates from Hilo. Effective June 2008, the Hele On Bus Program added an additional transit route between King's Landing and the Mo'oheau Bus Terminal.

#### HILO MEDICAL CENTER (5 MILES DISTANCE BY CAR)

A 264-bed facility, Hilo Medical Center is the largest acute care facility in Hawai'i County. The center offers 24-hour emergency services and a Family Practice medical clinic. The hospital is also part of the Hawai'i Health Systems Corporation.

#### HAWAI'I VOLCANOES NATIONAL PARK (32 MILES DISTANCE BY CAR)

Hawai'i Volcanoes National park was established through an Act of Congress in 1916. The park is the island's most visited attraction, with over 2.6 million visitors passing through the park gates annually. The park encompasses 333,000 acres and includes the state's two active volcanoes: Kīlauea and Mauna Loa. The park is a full service recreational facility of the National Park Service, including lodging, concessions, interactive visitor centers, and numerous trails.

#### HILO INTERNATIONAL AIRPORT

The Hilo International Airport lies immediately south of the Keaukaha homestead lots. Currently, go!, Hawaiian Airlines, Mokulele Airlines, and Island Air provide direct service to various parts of the State of Hawai'i. In 2006, Hilo International Airport welcomed over 703,000 domestic and international visitors.

#### HILO HARBOR

The Port of Hilo serves as the primary entry of goods for the Big Island. In addition to accepting goods, the harbor also plays host to visiting cruise ships. In 2006, Hilo Harbor welcomed over 492,000 cruise ship passengers. However, as the number of cruise ship operators leave the islands, passenger numbers are likely to decrease.

School Name	Private / Public	Grades	Actual Enrollment 2007-2008	Projected Enrollment 2012-2013	Change in Enrollment Numbers	Percent Change	Student / Teacher Rati
			HILO COMPLE	EX			
DeSilva Elementary School	Public	K-6	367	323	-44	-11.99%	17/
Ha'aheo Elementary School	Public	K-6	154	148	-6	-3.90%	15/
Hilo High School	Public	9th - 12th	1,491	1301	-190	-12.74%	16/
Hilo Intermediate School	Public	7th - 8th	507	511	4	0.79%	13/
Hilo Union Elementary School	Public	K-6	483	477	-6	-1.24%	14/
Kapiolani Elementary School	Public	K-6	402	372	-30	-7.46%	15/
Kalanianaole Elementary and Intermediate	Public	K-8	334	319	-15	-4.49%	12
Kaumana Elementary School	Public	K-6	229	207	-22	-9.61%	15/
Keaukaha Elementary School	Public	K-6	295	265	-30	-10.17%	14
			WAIAKEA COME	PLEX			
Waiakea Elementary School	Public	K-5	858	903	45	5.24%	17,
Waiakea High School	Public	9th - 12th	1276	1231	-45	-3.53%	16
Waiakea Intermediate School	Public	6th - 8th	893	937	44	4.93%	17
Waiakeawaena Elementary School	Public	K-5	764	757	-7	-0.92%	16
		PR	IVATE / CHARTER	SCHOOLS			
Connections Public Charter School	Public	K-12	359	N/A			12
E Maka'ala School	Private	PreK-4	61	N/A			9
Haili Christian School	Private	PreK-11	379	N/A			13
Hale Aloha Nazarene School	Private	PreK-8	86	N/A			22
Ka 'Umeke Ka'eo Public Charter School	Public	K-6	168	N/A			17.
Ke Ana La'ahana Public Charter School	Public	7th - 12th	77	N/A			9,
Mauna Loa School	Private	K-9	24	N/A			8
St. Joseph Jr / Sr High School	Private	7th-12th	435	N/A			10
St. Joseph School	Private	K-6	169	N/A			17
			HIGHER EDUCA	TION			
University of Hawaii, Hilo	Public	University	3,608	N/A			N/
Hawaii Community College	Public	2-Year College	2,551	N/A			N/

<sup>\*</sup> Enrollment numbers for Hilo and Waiākea Complexes provided by DO



# Infrastructure - Public Facilities

#### HIGH SCHOOL COMPLEX

- DeSilva Elementary School
- Ha'aheo Elementary School
- Hilo High School
- 4 Hilo Intermediate School
- 5 Hilo Union Elementary School
- 6 Kapi'olani Elementary School
- (7) Kalaniana'ole Elementary School (beyond map)
- 8 Kaumana Elementary School
- 9 Keaukaha Elementary School

#### WAIĀKEA SCHOOL COMPLEX

- (10) Waiākea Elementary School
- (11) Waiākea High School
- Waiākea Intermediate School
- (13) Waiākeawaena Elementary School

#### PRIVATE CHARTER SCHOOLS

- Connections Public Charter School
- 15 Ē Maka'ala School
- Haili Christian School
- Hale Aloha Nazarene School
- (18) Ka 'Umeke Ka'eo Public Charter School
- (19) Ke Ana La'ahana Public Charter School
- Mauna Loa School
- St. Joseph Jr./Sr. High School / St. Joseph School

#### HIGHER EDUCATION

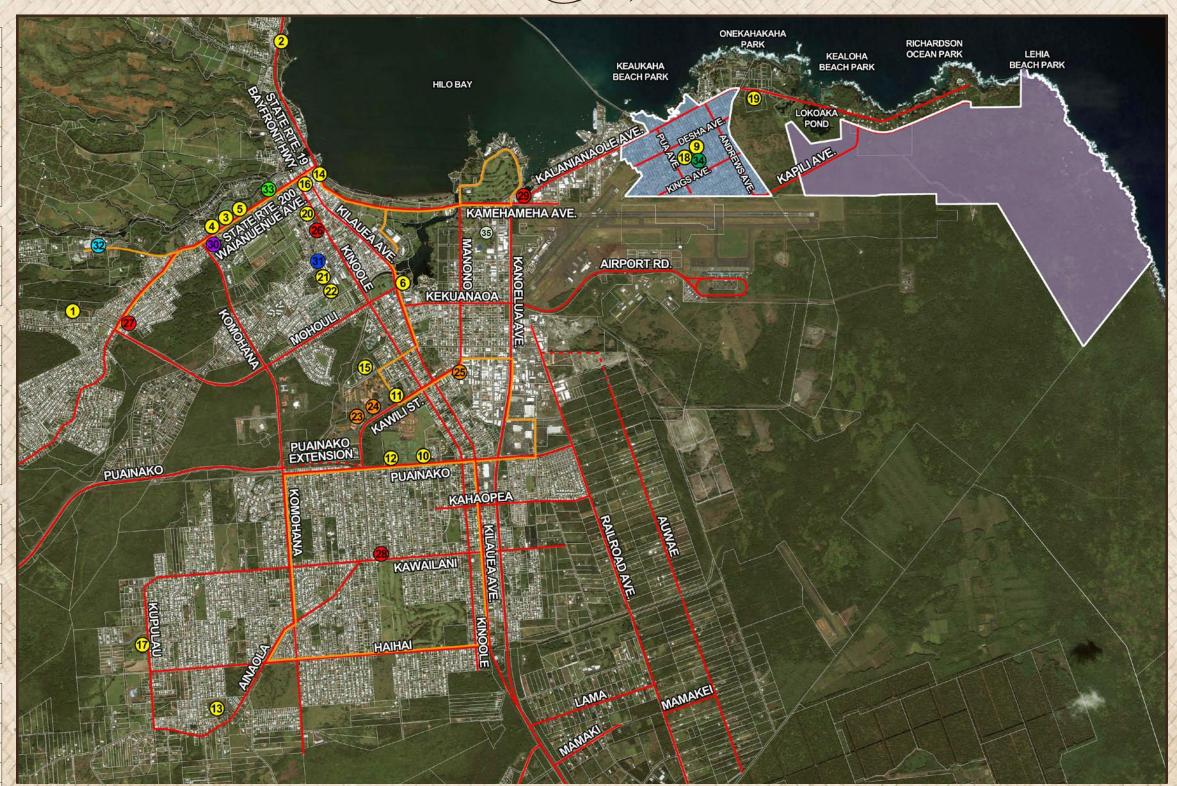
- University of Hawai'i, Hilo
- Hawai'i Community College
- Hawai'i Community College, Manono Campus

#### FIRE STATIONS

- Central Fire Station
- Kaumana Substation
- Kawailani Fire Substation
- Waiākea Fire Substation

#### VARIOUS PUBLIC FACILITIES

- 30 Correctional Facility
- 31) Police
- Hilo Medical Center
- Hilo Public Library
- Hualani Park
- (35) Edith Kanakaʻole/Hoʻolulu Complex



# Hualani Park Complex - Keaukaha's "Piko"

## Introduction

The Hualani Park Complex and its accompanying facilities are often referred as Keaukaha's "Piko" or center. Throughout the year, residents come together at the park to share in the day's festivities and in each other's knowledge. Residents have identified the park as a valuable cultural and educational resource for the community. Hualani Park can be separated

# Recreational - Hualani Park | Kawānanakoa Symansium



The 4.8 acre Hualani Park and Kawānanakoa Gym and its surrounding facilities are located southern portion of the piko. The park's main facility, Kawānanakoa Gymansium is a 20,000 sq. ft. multipurpose recreational facility that provides a variety of recreational and educational activities for the community.

Other facilities within the park include play ground equipment and a 3.7 acre play field with two baseball diamonds. Additional playground space is available on the adjoining Keaukaha Elementary School field.

## Administrative Facilities

On the east portion of the piko, on 1.1 acres of land is a small complex of buildings that are currently used by various Hawaiian agencies and organizations. Department of Hawaiian Home Lands (DHHL) and Office of Hawaiian Affairs (OHA) each have regional offices and provide a variety of services for the local homestead community.

Keaukaha Community Association (KCA) currently leases office space within the complex to hold meetings and organize community events.

## Educational

Keaukaha Elementary School is on the north portion of the piko on 5.5 acres of land. The school was founded in 1930 and has educated most if not all of the community's children. The school currently shares classroom space with Ka 'Umeke Ka'eo Public Charter School, a Hawaiian language immersion school that focuses on language and culture.

Kamehameha Schools currently operates a pre-school on the southern portion of the Hualani Park Complex.

Beginning in 2008, Ke Ana La'ahana Public Charter School will begin offering enrollment for 7th and 8th grade students. The addition of middle school options will allow Keaukaha residents the option to enroll their children from pre-Kindergarten to eight grade within the piko.

The Keaukaha Technology and Resource Center (KTRC) is a program funded by the USDA and in partnership with the Keaukaha Community Association (KCA), University of Hawai'i at Mānoa's College of Tropical Agricultural and Human Resources (CTAHR), DHHL, and Queen Liliu'okalani Children's Center (QLCC). The purpose of the program is to create positive change for at-risk youth and their families. College preparatory courses, summer enrichment, and computer literacy are some of the various programs available through KTRC.



## Community Planning Process

Beginning on June 4, 2008, the Department of Hawaiian Home Lands (DHHL) held four (4) Keaukaha Regional Plan focus group meetings with Keaukaha homestead leaders and other stakeholders in the region. The first objective of these meetings was to identify and inventory Keaukaha's needs, opportunities, concerns and issues impacting the community. The second objective was to identify projects that addressed these needs and resolved the issues.

Through these meetings, DHHL planners were able to identify key issues and concerns for Keaukaha's community. With these key issures, a total of sixteen (16) potential priority projects were identified as important to the community. Ballots were mailed to all lessees and priority projects were identified and ranked.

At the request of the homestead leadership, approval of the regional plan was postponed until 2010.





# Meeting Dates

- 1. June 6, 2008: Keaukaha Homestead Leaders Meeting
- 2. July 2, 2008: Keaukaha Stakeholders Meeting
- 3. July14, 2008: Keaukaha Stakeholders Meeting
- 4. August 13, 2008: Beneficiary Community Meeting



#### 1. CONTINUE TO ADDRESS NOISE IMPACTS OF HILO INTERNATIONAL AIRPORT ON THE KEAUKAHA COMMUNITY

- Commission a cost-benefit study for a parallel runway (parallel to taxiway 8-26) as permanent solution to the problem.
- Construct noise towers to monitor noise pollution in Keaukaha as a mitigation measure.
- Implement noise remediation measures for Keaukaha Elementary School
- Provide continued funding for the Keaukaha noise remediation pilot program.

#### 2. DEVELOP A COMMUNITY HEALTH CENTER OR MOBILE HEALTH SERVICES IN KEAUKAHA

• Bring services into the community.

#### 3. ERECT KEAUKAHA COMMUNITY SIGN

- Identify and secure land easement for a 'Welcome to Keaukaha' Sign/Marquee and Community Bulletin Board Along Kalaniana' ole Avenue
- Facilitate Permitting and Approval Process

#### 4. IDENTIFY KEY ELEMENTS OF THE KEAUĀKEA EDUCATIONAL PLAN THAT COULD BE IMPLEMENTED

#### 5. IMPROVE CURRENT EMERGENCY EVACUATION PLAN FOR KEAUKAHA REGION

- Work with Kamehameha Schools to secure an agreement that allows Ke Ana La'ahana Public Charter School (PCS) to cross through their pasture fields to Nahale-a Avenue (allowing a direct route inland) in the event of a tsunami or emergency evacuation.
- Work with the Hawai'i County Civil Defense Department and DOT, Airports to designate a third emergency evacuation route through the Hilo International Airport in the event of a tsunami or an emergency.
- Work with the Hawai'i County Civil Defense Department and DOT, Airports to develop specific emergency evacuation procedures for evacuees once they enter the Airport property.
- Provide additional education and awareness among Keaukaha landowners to ensure that all residents, tenants, employees, and visitors understand existing tsunami evacuation procedures.

#### 6. IMPROVE KEAUKAHA'S ROAD AND SEWER INFRASTRUCTURE

- Assess and document the health risks posed by the surrounding port, gas depots, waste water plant, and other industrial infrastructure that surrounds Keaukaha.
- Request County Wastewater Division to investigate odors emanating from the ground.
- Work with Federal, State, and County departments to provide the Keaukaha community with early notification for all future roadwork along Keaukaha's roadways.
- Implement traffic mitigation measures to alleviate traffic along Kalaniana ole Street caused by trucks turning left into the Port of Hilo

#### 7.INCLUDE NĒNĒ STREET HOMESTEADERS INTO KEAUKAHA COMMUNITY ASSOCIATION

- Definition of "Keaukaha" area.
- 8. INVESTIGATE OPPORTUNITY TO WORK WITH PACIFIC RESEARCH CENTER (PACRC) TO DEVELOP NEW OPPORTUNITIES

#### 9. KEAUKAHA HAWAIIAN COMMUNITY PAVILION (ELEVATED TO PRIORITY PROJECT)

- Incorporate a "Hawaiian Village" with meeting hale, and other facilities to serve as a gathering place that promotes cultural connections.
- Gather past and present plans for cultural centers as suggested in the Keauākea Educational Plan.





#### 10. PROMOTE DEVELOPMENT OF KEAUKAHA'S "PIKO"

- Assist Keaukaha Community Association (KCA) to assume management of Kawānanakoa Gymnasium from the County after their ten year lease expires.
- Install photo-voltaic (PV) panels on main buildings as a means to power the community's public facilities and generate revenue.
- Provide additional funding to Keaukaha Technology and Resource Center (KTRC) to hire necessary technical staff and obtain additional educational materials to meet Keaukaha's needs
- Work with the District 4 council member to acquire funding for gymnasium flooring for special events.
- Work with KS and OHA to relocate their existing programs in Hualani Park to accommodate other programs that are deemed necessary to the community.

# 11. PROVIDE TRAINING AND TECHNICAL ASSISTANCE TO THE HOMESTEAD ASSOCIATION TO INCREASE THEIR CAPACITY TO MEET THE NEEDS OF THEIR COMMUNITIES

- Develop better communication and rapport between DHHL and its beneficiaries
- Increase capacity of the community leadership through mentorship and specialized training

#### 12. REASSESS KAMOLEAO TO EXPEDITE ITS DEVELOPMENT

- Support Pana'ewa's efforts to develop Kamoleao.
- Identify potential stakeholders to help in developing Kamoleao. For example, Kamehameha Schools and Ka 'Umeke Ka'eo Immersion School.
- The development of Ka 'Umeke Ka'eo's expansion to include 7th and 8th grade.

# 13. UPDATE THE KING'S LANDING SUBSISTENCE HOMESTEADING PLAN FOR KEAUKAHA TRACT II (KING'S LANDING) OR DEVELOP A NEW PLAN IN ORDER TO:

- Provide current information on settlement, natural and cultural resources, and potential future uses at King's Landing.
- Provide a clearer definition of the King's Landing "Special Use District."
- Utilize King's Landing as an educational and cultural resource for the Keaukaha community.
- Allow community access to King's Landing.
- Identify and clean-up a few key areas at King's Landing that could be used for educational and cultural purposes.
- Investigate the feasibility of developing portions of the King's Landing tract along the Kalaniana ole Street for residential homesteads.

#### 14. UTILIZE NAHASDA FUNDS TO FACILITATE KŪPUNA HOME REPAIRS:

- Simplify and streamline the NAHASDA application process.
- Utilize NAHASDA funds to target specific types of repairs (ie. Re-roofing, termites, etc).

# 15. WORK WITH COUNTY WASTEWATER DIVISION AND THE HOMESTEADERS TO IDENTIFY AND RESOLVE ISSUES RELATED TO SEWAGE USAGE FEES AND SEWER HOOK UP REQUIREMENTS:

- Review with homestead community Right-of-Entry Agreement No. 103 signed in 1991 and provide clearer clarification regarding sewer hook-up fees.
- Review with homestead community Memorandum of Understanding between DHHL and County of Hawai'i regarding land use designations.

#### 16. WORK WITH SANDWICH ISLES COMMUNICATIONS (SIC) TO IMPROVE INTERNET/TELECOMMUNICATION SERVICES AT COMPETITIVE RATES TO KEAUKAHA:

• Identify ways that SIC can assist and better serve the Keaukaha community.

# "Tke 'ia i ka nani o Keaukaha, 'āina ho 'opulapula no nā Hawai'i" Well known in the beauty of Keaukaha is the homestead land for the Hawaiians

The true beauty of Keaukaha lies in its people, its place, and the rehabilitation of Hawaiian thinking.

## Background

One of Keaukaha's most famous residents, Mr. Albert Nahale'a's song Ku'u Home O Keaukaha transcends the true meaning of what many Hawaiian Homesteaders in Keaukaha believe regarding their sense of place and connection to this place. For generations, Keaukaha Beach Park along Puhi Bay has been a place for Hawaiians to gather and enjoy each other and connect to the land and ocean. Every summer, the Keaukaha community as well as Hawaiians from other regions in East Hawai'i camp along Puhi Bay. Keaukaha Beach Park is transformed into a Hawaiian Village during the summer months where the keiki enjoy what the ocean has to offer, and families can reconnect. This custom connects generations past to those not born.

In years past the Hawaiian Village of Keaukaha Beach Park provided the Keaukaha community with a sustainable economic venue. Situated on the skirts of Kulapae, it provided the greater east Hawai'i region with a centralized area for entertainment and Hawaiian crafts. It served as a venue for entertainment, lū'au, and a meeting place for the members of the community.

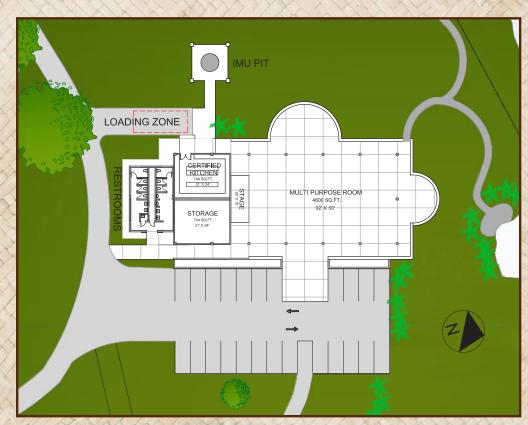
This project proposes to re-invigorate the Keaukaha Hawaiian Village by developing permanent facilities. The concept initiated in the 1950's remains basically the same, modified to meet the needs of the community today. In today's economy, a sustainable economic venue needs to include provisions for food security as well as opportunities for entrepreneurial activities. The community intends to utilize the area for growing kalo, 'uala, mai'a, 'ulu and other needed food staples in order to promote food security and sustainability. To facilitate economic opportunities the project will include the construction of a community pavilion with a certified cooking facilities. The certified facilities would include both a western kitchen and traditional imu.

The building will also be used for community meetings, gatherings,  $l\bar{u}$  au, and an open market. The community envisions a Village that can once again become a centralized area for the Keaukaha community, the greater Hilo region, and for those visiting the area with an interest in Hawaiian Culture.

This is a long term plan that is expected to be completed in four phases. This priority project will focus only on completing phases I and II. A conceptual Land Use development plan has been prepared by CDS Consulting – Mr. Glenn Miura. Community leadership is working on securing a long term lease with DHHL, identifying the roles and responsibilities of partner organizations and securing funding for planning and preliminary design. Program development will continue as part of the design activities.



Artistic Rendering of Pavilion



Site Plan 22 Keaukaha Pavilion.



## Bocation

Keaukaha Beach Park, Hilo Hawai'i

## Potential Partners & Stakeholders

- Dept. of Hawaiian Homelands
- Office of Hawaiian Affairs
- Queen Lili'uokalani Trust
- County of Hawai'i
- The University of Hawai'i, Hilo
- Department of Labor
- Department of Land and Natural Resources
- Department of Education
- Hawaii Charter Schools Network
- Hui Mālama
- Alu Like, Inc
- East Hawai'i Homestead Associations
- CDS Consulting

## Cost

The approximate cost for Planning and preliminary Design - \$150,000.00

## Phasing

Phase I: Planning and Programming
Develop conceptual Land Use plan: completed
Initiate Program Development
Identify roles and responsibilities of partners
Secure long-term lease agreement with DHHL
Secure funding for Phase II

Phase II: Engineering and Design
Finalize programming
Conduct Preliminary engineering and design work
Prepare required environmental compliance
documents based upon funding pursued
Off-site and on-site engineering
Final Design

Phase III: Permitting and Construction
Building permits and other needed permits
Infrastructure Development
Facility Construction
Interior Design

Phase IV: Operation and Maintenance
Staffing
Long term maintenance







