A community is composed of people, as well as places where they live; it is as much a social environment as a physical development. Thus, communities must not only be environmentally sustainable, they must also be socially sustainable.

A socially sustainable development supports more equitable distribution of resources, supports diversity within the community, meets the basic needs of residents and invests in social and human capital, thereby sustaining the quality of life and community livability for all residents into the future.

Socially sustainable development includes the following:

- recognizes, respects and values cultural and social diversity;
- preserve and maintains a high quality of life for all of its residents;
- meets basic needs of food, shelter, education, work, income and safe living and working;
- is equitable, ensuring that the benefits of development are distributed fairly across society;
- promotes education, creativity and the development of human potential;
- preserves our cultural and biological heritage, thus strengthening our sense of connectedness to our history and environment;
- is democratic, promoting citizen participation and involvement;
- promotes the context of “Live Aloha,” with people living together harmoniously and in mutual support and respect for each other

We saved the concept of Social Sustainability for the end of the analysis, to serve as a summary of the many socially-focused actions suggested in prior sections of this Sustainability Plan. Following are just a few of the issues previously mentioned:

- Affordable housing will be incorporated within the development, allowing for a diversity and mix of housing types and options
- Complete streets with walkways and bile lanes, allowing for slow movement through the neighborhoods for easy social interaction
- Space for the relocated County swimming pool
- Allocation for commercial spaces, affording project residents the opportunity to work near where they live
- Proximity to the Middle School affords multi-generational interaction and learning
- Cooperation with the State by making land available for the Kapa’a Bypass Road, helping regional residents
- Project layout and design will create an opportunity for both residents and the community to have a positive effect on their health through walkable and bikable transportation options.
- Consistency with long range planning documents, implementing the community’s vision for the future
Kapaa Highlands Agricultural Master Plan

June 1, 2007

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Kapaa Highlands Agricultural Plan
June 1, 2007

A. SUMMARY

Livestock (goats) can be raised successfully at Kapaa Highlands. Climate conditions will allow
for normal pasture rotation the year around. The ratio of livestock to fenced pasture should be 3
animal units (AU) to 1 acre or better.

The climate and soils at Kapaa Highlands are not ideal for the growing of most commercially
viable crops due to the poor soil, strong trade winds, and the salt spray from the ocean.

Goats are sold for their meat value and the local markets on all of the islands are excellent. The
intended markets for goats raised on the property are the local Kauai market and the Honolulu
market.

The economics for Goats included in this report provides a picture of expected revenue and
classifications of operating expenses associated with a Livestock (goat) operation ("Project").

The Association of Coadominum Owners of the Kapaa Highlands Condominium ("Association")
may choose to operate the Project on behalf of participating owners. Alternatively, the Association
may choose to enter into a contractual relationship with a Livestock
contractor pursuant to a license agreement in which the livestock contractor will pay an annual
rent per acre to grace the property, plus a percentage of gross profits.

Livestock grazing is a permissible use within the agricultural districts as outlined under Hawaii
Revised Statutes (HRS) Chapter 205, Section 205-4.5.

B. DESCRIPTION

The Kapaa Highlands Subdivision is located in Kapaa, above the Kapua Bypass Road and
adjacent to Kapua Middle School. The property is further identified by Kauai Tax Map Key No.
(4) 4-4-03-01. The total land area is 163.125 acres and the combined grazing area is
approximately 101.573 acres.

Almost all of the property is located in the State Land Use Commission Agricultural District and
within the Agriculture District of the Comprehensive Zoning Ordinance of the County of Kauai
(CZO). As such, owners of subdivision lots will be required to comply with the requirements of
HRS Chapter 205 and the CZO. Individual lot owners, through the Association, will be required
either to provide a portion of their lot for the grazing of livestock as outlined in this Agricultural
Master Plan, or to obtain an amendment to this Agricultural Master Plan to conduct alternative
agricultural activities. The Kapaa Highlands is shown on the map attached hereto as Exhibit
"A".

C. ENVIRONMENTAL SUITABILITY

1. Climate

The property is exposed to the northeast trade winds and, due to the proximity of
the property to the ocean the trade winds will carry some salt spray to the
property. This is problematic for most commercial crops, but should have no
impact on livestock and minimal impact on salt resistant grasses. Annual rainfall
is generally between 40 and 50 inches.

2. Soil

The soils are generally well-drained, dark reddish-brown silty clay and silty clay
loam. The soil depth is generally between 10 and 15 inches.

The property was previously planted to sugar cane and due to the nature of sugar
cane cultivation, these soils can be expected to be low in organic matter and have
a low pH (very acid).

A Soils Map for the property is attached hereto as Exhibit "B", and a Soils
Inventory (containing technical descriptions of soil types) is attached hereto as
Exhibit "C".

The Land Study Bureau Land Classification for this property is B, C, D and E
lands, as shown on the Detailed Land Classification Maps attached hereto as
Exhibits "D" and "E".

3. Drainage

All the soils on the property are well-drained indicating that, if good conservation
practices are used, they should not erode.

D. CROP SUITABILITY

Due to the generally poor soils and harsh climate, the commercial crops most suited to the area
are sugar and pineapple. Both of these industries are declining in Hawaii. Pineapple is no longer
grown on Kauai and there is only one sugar mill that remains in operation. With appropriate
irrigation and management, both tropical orchard crops (including trees) and some vegetable
plants could be grown on the property, although with some difficulty and risk given the physical
conditions at the property.
E. LIVESTOCK

1. Association Project

The Association may choose to operate the Project on behalf of all participating owners. In such case, the Association would be responsible for the rotation, care and marketing of the animals. The participating owners would be responsible for providing fixed assets (fences, gates, and water systems) on their lots. The participating owners would be required to pay their proportionate share of all operational costs to the Association, and would be entitled to their proportionate share of all profits generated by the Project.

2. Contractor Operation

As an alternative, the Association could hire an independent contractor ("Contractor") to operate the Project. In such a case, the Contractor would own the assets and be responsible for the rotation, care, and marketing of the animals. The Association, through the participating owners, would be responsible for the fixed assets. These assets would include the fences, gates, and water systems. The Contractor would pay the Association a fixed rent per acre of pasture plus a percentage of gross profits, and would be responsible for normal maintenance of the fixed assets associated with the livestock operation.

3. Individual Goat Operators

The Owner may elect to engage in individual goat raising operations within the Owner's Agricultural Area of the Owner's Lot ("Owner's Operation"). In such case, the following shall apply:

a. The Owner shall be solely responsible for the costs of the Owner's Operation.

b. The Owner shall raise a minimum of three (3) goats for each acre within the Owner's Agricultural Area.

c. The Owner shall submit reports to, and as required by, the Association providing pertinent information concerning the Owner's Operation and in such detail as to comply with and satisfy the reporting requirement contained in the Agricultural Subdivision Agreement and the County Subdivision Approval.

4. Goat Husbandry

It is recommended that a breeding herd with a ratio of 1 buck to 50 does be maintained. Does will produce an average 1.5 kids per year. Kids can be weaned at approximately 2 to 6 months and should be separated from the breeding herd at this point. The gestation period for a doe is approximately 5 months.

The carrying capacity of the pasture at Kapaa Highlands is approximately 3 to 4 animal units (AU) to the acre. The breeding herd that consists of bucks and does is considered to be one AU per animal. Kids are 1/3 AU per animal. Therefore, assuming all of the owners became participants in the Project, there would be 101.753 acre of pasture available to carry 335 AU at 3.5 AU per acre. Attached herein as Exhibit "F" is a spreadsheet entitled "Economics for Goats" which contains detailed assumptions regarding carrying capacity.

The breeding herd should be given good pasture and be kept on a strict health program so that its production of kids is at its optimum. The herd should be wormed every 30 to 60 days and provided with a mineral supplement. The water requirement for goats is between 2 and 3 gallons per day per AU. This will be dependent upon climatic conditions. Supplemental feeding is generally not required unless rainfall diminishes over several months to a point where the grain growth is insufficient to maintain the herd. At this point, the contractor has the option of providing supplemental feed or moving some or all of the goats to another location.

Goats are marketed at between 6 and 9 months of age at a weight of between 60 and 80 pounds. The estimate market price per goat ranges from $140 and $180. The primary market is in the Kauai Island market that commands a higher price. The secondary market is Honolulu. The freight to Honolulu is paid by the buyer. Goats are generally sold to individuals who slaughter them for their meat. The market in Hawaii for goats is very stable.

The Economics for Goats spreadsheet contains details on the economics of the livestock (goat) operation.

F. HRS 205 COMPLIANCE

Hawaii Revised Statutes Chapter 205 establishes classifications of lands and requirements for land use. Section 205-4.5 defines permissible uses within the agricultural districts. This section also defines the soil classification rating that applies to the Chapter.
G. CONCLUSION

The climate and soils at Kapaa Highlands are not ideal for the growing of most commercially viable crops due to the poor soil, strong trade winds, and the salt spray from the ocean. Thus a livestock operation provides an economically viable agricultural use for the property.

Either the Association operation of a livestock project, or a contractual relationship between the Association and a livestock Contractor, would allow the agricultural component of the property to be managed as one unit. Individual lot owners would also have the option of compliance with alternate livestock grazing or with the cultivation of agricultural crops, provided they obtained the approval of the Planning Commission of the County of Kauai, Subdivision Committee, for an amendment to this Agricultural Master Plan for such alternative agricultural activities.

Livestock grazing is a permissible use within the agricultural districts as outlined under IRRS Chapter 205, Section 205-4.5.
Exhibit "B"

Soils Map
Kapaa Highlands Agricultural Master Plan
June 1, 2007

Exhibit “C”

Soils Inventory Report
Soils Inventory Report

TMK (4) 4-3-3:1

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Hanalei Series

This series consists of somewhat poorly drained to poorly drained soils on bottom lands on the islands of Kauai and Oahu. These soils developed in alluvium derived from basaltic andesite rock. They are level to gently sloping. Elevations range from nearly sea level to 300 feet. The annual rainfall amounts to 20 to 120 inches. The mean annual soil temperature is 74°F. Hanalei soils are geographically associated with Hanalei, Ho'omana, Makua, and Pearl Harbor soils.

These soils are used for tano, pasture, sugarcane, and vegetables. The natural vegetation consists of palo grass, sandalwood, koheho, Java plum, and guava.

Hanalei silty clay, 0 to 2 percent slopes (HnA).

This soil is on stream bottoms and flood plains. Included in the areas mapped on Kauai along the Waimea River and in Waiea Valley are small areas where the surface layer is 8 to 10 inches thick, reddish-brown silty clay. These areas were small areas of very poorly drained aluvial soils and small areas of very poorly drained to poorly drained clay soils that are strongly modified and are inundated by peat, mud, or massive marine clay.

In a representative profile the surface layer, about 10 inches thick, is dark gray and very dark gray silty clay that has dark-brown and reddish-mottles. The subsurface layer is very dark gray and dark-gray silty clay about 8 inches thick. The subsurface, about 18 inches thick, is reddish-brown soil, dark gray and dark-gray silty clay loam that has angular blocky structure. The substratum is stratified alluvium. The soil is strongly acidic to very strongly acidic in the surface layer and neutral in the subsoil.

Permeability is moderate. Runoff is very slow, and the erosion hazard is no more than slight. The available moisture capacity is about 2.1 inches per foot of soil. Roots penetrate to the water table. Flooding is a hazard.

Representative profile, Island of Kauai, lat. 22°12′37.8″ N. and long. 159°28′34.7″ W.

Alp-k to 0.5 inches, dark-gray (7.5YR 3/2) silty clay, common distinct mottles of dark brown (7.5YR 4/2) and red-brown (5YR 5/2) and dark-red-brown (5YR 5/2) and dark-gray (7.5YR 4/2) and mottles of gray and white mottles, very hard, very dry and plastic, average fine for medium coarse and medium medium, moderately strong, slightly rough, rough, medium medium, smooth boundary, 0 to 0.5 inches thick.

Alp-k to 10 inches, very dark gray (7.5YR 3/1) silty clay, many distinct mottles of dark brown (7.5YR 4/2) and dark-gray (7.5YR 4/2) and dark-gray (7.5YR 4/2) and dark-gray (7.5YR 4/2) and mottles of gray and white mottles, very hard, very dry and plastic, common medium and fine roots, many fine and medium and fine roots, slightly rough, rough, smooth boundary, 0 to 10 inches thick.

Alp-k to 15 inches, medium dark-gray (7.5YR 3/1) and dark-gray (7.5YR 4/2) and mottles and mottles of gray and white mottles, very hard, very dry and plastic, common medium and fine roots, many fine and medium and fine roots, slightly rough, rough, smooth boundary, 0 to 15 inches thick.

Alp-k to 10 inches, medium dark-gray (7.5YR 3/1) and dark-gray (7.5YR 4/2) and mottles of gray and white mottles, very hard, very dry and plastic, common medium and fine roots, many fine and medium and fine roots, slightly rough, rough, smooth boundary, 0 to 10 inches thick.

Alp-k to 20 inches, dark gray (7.5YR 3/1) and dark-gray (7.5YR 4/2) and mottles of gray and white mottles, very hard, very dry and plastic, common medium and fine roots, many fine and medium and fine roots, slightly rough, rough, smooth boundary, 0 to 20 inches thick.

Alp-k to 30 inches, dark-gray (7.5YR 3/1) and dark-gray (7.5YR 4/2) and mottles of gray and white mottles, very hard, very dry and plastic, common medium and fine roots, many fine and medium and fine roots, slightly rough, rough, smooth boundary, 0 to 30 inches thick.

http://www.crair.hawaii.edu/soilsurvey/SiteDescsSoils/HanaleiSeries.htm

3/7/2007
Hanalei Series

Hanalei silty clay, 2 to 6 percent slopes (HsB).

This soil has a profile that is characteristic of Hanalei silty clay, 2 to 6 percent slopes, except that it is stony. Runoff is slow, and the erosion hazard is slight. The upper table is at a depth of more than 3 feet. This soil is used for sugarcane and pasture. (Capability classification: w, irrigated or nonirrigated; sugarcane group 3, pasture group 7; woodland group 4)

Hanalei sandy silty clay, 2 to 6 percent slopes (HsB).

This soil has a profile that is characteristic of Hanalei silty clay, 2 to 6 percent slopes, except that it is stony. Runoff is slow, and the erosion hazard is slight. The upper table is at a depth of more than 3 feet. This soil is used for sugarcane and pasture. (Capability classification: w, irrigated or nonirrigated; sugarcane group 3, pasture group 7; woodland group 4)

Hanalei sandy silty clay, 0 to 2 percent slopes (HmA).

This soil has a profile that is characteristic of Hanalei silty clay, 0 to 2 percent slopes, except for the texture of the surface layer. Also, this soil is underlain by sand at a depth of 30 to 60 inches. The upper table is at a depth of less than 30 inches deep over sand. This soil is used for sugarcane, cane pasture, and sugarcane. (Capability classification: w, irrigated or nonirrigated; sugarcane group 3, pasture group 7; woodland group 4)

Hanalei sandy silty clay loam, 0 to 2 percent slopes (HmA).

This soil has a profile that is characteristic of Hanalei silty clay, 0 to 2 percent slopes, except for the texture of the surface layer. Also, this soil is underlain by sand at a depth of 30 to 60 inches. The upper table is at a depth of less than 30 inches deep over sand. This soil is used for sugarcane, cane pasture, and sugarcane. (Capability classification: w, irrigated or nonirrigated; sugarcane group 3, pasture group 7; woodland group 4)

Hanalei sandy loam, 0 to 2 percent slopes (HoA).

This soil has a profile that is characteristic of Hanalei silty clay, 0 to 2 percent slopes, except for the texture of the surface layer. Also, this soil is underlain by sand at a depth of 30 to 60 inches. The upper table is at a depth of less than 30 inches deep over sand. This soil is used for sugarcane, cane pasture, and sugarcane. (Capability classification: w, irrigated or nonirrigated; sugarcane group 3, pasture group 7; woodland group 4)

Ioleau Series

Ioleau Series

This series consists of well-drained soils on uplands on the island of Kauai. These soils develop in material derived from basaltic igneous rocks, probably mixed with volcanic ash. They are usually sloping to steep. Slopes range from 10 to 50 feet. The mean annual rainfall amounts to less than 70 inches. The mean annual soil temperature is 72°F. Ioleau soils are geographically associated with Lihue and Puu soils.

Ioleau sandy clay loam, 0 to 12 percent slopes (IoC).

This soil is on ridge-tops in the uplands. In a representative profile the surface layer is brownish-yellow and yellowish clay loam 15 inches thick. The subsoil, 40 to 60 inches thick, is dark brown and dark reddish-brown clay loam that has subangular blocky structure and is very compact in place. The substratum is a silt, weathered rock. The soil is very strongly able to withstand and retain water.

Permeability is slow. Runoff is medium, and the erosion hazard is moderate. The available water capacity is about 14 inches per foot of soil. Roots penetrate to a depth of 15 to 20 inches or to the plow depth.

Representative profile: Island of Kauai, lat. 22°0'7.32"N. and long. 158°11'3.03"W.

http://www.ctahr.hawaii.edu/soilsurvey/Sis/Descriiols/HanaleiSeries.htm

3/7/2007

http://www.ctahr.hawaii.edu/soilsurvey/Sis/Descriiols/IoleauSeries.htm

3/7/2007
Ioleau Series

Ioleau silty clay loam, 2 to 6 percent slopes (IolB).

This soil has a profile like that of Ioleau silty clay loam, 8 to 12 percent slopes, except that it is 10 to 20 inches deep to the compact layer. Runoff is slow, and the erosion hazard is slight. Roots penetrate to a depth of 25 to 40 inches.

This soil is used for sugarcane, pasture, pineapples, orchards, and truck crops. (Capability classification Ile, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 6; woodland group 6)

Ioleau silty clay loam, 12 to 20 percent slopes, eroded (IolE2).

This soil is similar to Ioleau silty clay loam, 8 to 12 percent slopes, except that it is moderately steep and part of the surface layer has been removed by erosion. Runoff is rapid, and the erosion hazard is moderate to severe.

This soil is used for sugarcane, pineapple, and pasture. (Capability classification Ile, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 6; woodland group 6)

Ioleau silty clay loam, 20 to 35 percent slopes, eroded (IolE2).

This soil is similar to Ioleau silty clay loam, 6 to 12 percent slopes, except that it is steep and most of the surface layer has been removed by erosion. Runoff is rapid, and the erosion hazard is severe.

This soil is used for pasture, woodland, sugarcane, pineapple, and water supply. (Capability classification Ile, nonirrigated; pasture group 6; woodland group 6)

Lihue Series

Lihue clay, 0 to 8 percent slopes (Lhb). This soil is on the slope of interfluvies in the uplands. Included in mapping were small areas of a soil that has a very high clay content in the upper 8 inches. It is redder than most of the other soils and is dominated by a clay fraction. The soil is well-drained and is characterized by a high clay content.

This soil is used for sugarcane, pineapple, pasture, truck crops, orchards, and home gardens. The natural vegetation consists of grasses, shrubs, trees, and herbs. (Capability classification Ile, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 6; woodland group 6)

http://www.cafr.hawaii.edu/soilsurvey/SIS/Desertsoils/IoleauSeries.htm

Lihue Series

This series consists of well-drained soils on uplands on the Island of Kauai. The soils are developed from basaltic parent materials. The climate is tropical, with temperatures ranging from 70 to 80°F and annual precipitation ranging from 50 to 100 inches. The soils are well-drained and are characterized by a high clay content.

This soil is used for sugarcane, pineapple, pasture, truck crops, orchards, and home gardens. The natural vegetation consists of grasses, shrubs, trees, and herbs. (Capability classification Ile, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 6; woodland group 6)

http://www.cafr.hawaii.edu/soilsurvey/SIS/Desertsoils/LihueSeries.htm
Lilue Series

Lilue silt clay, 0 to 15 percent slopes (LIC).

On this soil, runoff is slow and the erosion hazard is slight. This soil is used for sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites. (Capability classification (Ve, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 5; woodland group 5)

Lilue silt clay, 15 to 25 percent slopes (LcD).

On this soil, runoff is medium and the erosion hazard is moderate. This soil is used for sugarcane, pineapple, pasture, wildlife habitat, and woodland. (Capability classification (Ve, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 5; woodland group 5)

Lilue silt clay, 25 to 40 percent slopes, eroded (LhE2).

This soil is similar to Lilue silt clay, 0 to 15 percent slopes, except that the surface layer is thin. Runoff is rapid, and the erosion hazard is severe.

This soil is used for pasture, woodland, and wildlife habitat. Small areas are used for pineapple and sugarcane. (Capability classification (Ve, nonirrigated; pasture group 5; woodland group 5)

Lilue gravelly silt clay, 0 to 8 percent slopes (LGB).

This soil is similar to Lilue silt clay, 0 to 8 percent slopes, except that it contains transition-gelisols pebbles and has brighter colors in the B horizon. Included in mapping in the Ekeha area and north of the town of Hanapepe were small areas of soils that have a dark yellowish brown, subsoil.

This soil is used for sugarcane, pasture, and homesites. (Capability classification (Ve, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 5; woodland group 5)

Lilue gravelly silt clay, 8 to 15 percent slopes (LIC).

On this soil, runoff is slow and the erosion hazard is slight. Included in mapping were areas where the slope is less than 25 percent.

This soil is used for sugarcane, pasture, wildlife habitat, and homesites. (Capability classification (Ve, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 5; woodland group 5)

Marsh

Marsh (M2) consists of wet, periodically flooded areas covered dominantly with grasses and bushes or other herbaceous plants. It occurs as small, low-lying areas along the coastal plains. Water stands on the surface, but marsh vegetation thrives. The water is fresh or brackish, depending on proximity to the ocean. Included in mapping were small areas of mangrove swamp and small areas of open water. (Capability classification (Ve, nonirrigated)
Mokuleia Series

This series consists of well-drained soils along the coastal plains on the islands of Oahu and Kauai. These soils form in recent alluvium deposited over coral sand. They are shallow and nearly level. Elevations range from near sea level to 160 feet. The annual rainfall amounts to 15 to 40 inches on Oahu and 60 to 100 inches on Kauai. The mean annual soil temperature is 74°F. Mokuleia soils are geographically associated with Hartd, Jacks, and Kekolu soils.

In this survey area a poorly drained variant of the Mokuleia series was mapped. This soil, Mokuleia clay loam, poorly drained variant, is described in alphabetical order, along with other mapping units of this series.

These soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of kikuyu, koa, lehua, and commelinaeae in the drier areas and reenagona, guava, and joes in the wetter areas.

Mokuleia clay loam (Mk).

This soil occurs as small areas on the coastal plains. It is nearly level. Included in mapping were small areas of Aauwai soils; small areas of very deep, very well drained soils in open grassland; and small areas of poorly drained clay loam soils under red flatwoods.

In a representative profile the surface layer is very dark grayish-brown clay loam about 16 inches thick. The next layer is 34 to more than 48 inches thick, dark-brown and light-gray, single granular sand and loamy sand. The surface layer is neutral in reaction, and the underlying material is moderately alkaline.

Permeability is moderate in the surface layer and rapid in the subsoil. Runoff is very slow, and the erosion hazard is no more than slight. The available water capacity is about 1.9 inches per foot in the surface layer and about 1.6 inches per foot in the subsoil. In places roots penetrate to a depth of 5 feet or more.

Representative profile: Island of Oahu, lat. 21°34'46" N. and long. 158°10'00" W.

http://www.ctahr.hawaii.edu/soilsurvey/Series/Desertsoils/MokuleiaSeries.htm

This soil is used for sugarcane and pasture. (Capability classification III if irrigated, IV if nonirrigated; sugarcane group 1; pasture group 3)

Mokuleia fine sandy loam (Mr).

This soil occurs on the eastern and northern coastal plains of Kauai. It is nearly level. This soil has a profile like that of Mokuleia clay loam, except for the texture of the surface layer.

Permeability is moderately rapid in the surface layer and rapid in the subsoil. Runoff is very slow, and the erosion hazard is slight. The available water capacity is about 1 inch per foot in the surface layer and 0.7 inch per foot in the subsoil. Included in mapping were small areas where the slope is as much as 8 percent.

This soil is used for pasture. (Capability classification III if irrigated, IV if nonirrigated; sugarcane group 1; pasture group 3)

Mokuleia loam (Ml).

This soil has a profile like that of Mokuleia clay loam, except that the surface layer is loam and in most places is about 8 inches thick. It is nearly level.

This soil is used for sugarcane, truck crops, and pasture. (Capability classification III if irrigated, IV if nonirrigated; sugarcane group 1; pasture group 3)

Mokuleia clay loam, poorly drained variant (Nl).

This soil occurs on Kauai. It is nearly level. The soil is poorly drained, and in this way, it differs from other soils of the Mokuleia series. The surface layer is dark brown to black and is mottled.

This soil is used for sugarcane, taro, and pasture. (Capability classification III if irrigated, IV if nonirrigated; sugarcane group 1; pasture group 3)

Mokuleia clay (Mb).

This soil has a profile like that of Mokuleia clay loam, except for the texture of the surface layer. It is nearly level. Permeability is slow in the surface layer. Workability is difficult because of the sticky, plastic clay.

http://www.ctahr.hawaii.edu/soilsurvey/Series/Desertsoils/MokuleiaSeries.htm

This soil is used for sugarcane, pasture, and hay. (Capability classification III if irrigated, IV if nonirrigated; sugarcane group 1; pasture group 3)
Pohakupu Series

This series consists of well-drained soils on terraces and alluvial fans on the islands of Oahu and Kauai. These soils formed in old alluvium derived from basic igneous materials. They are nearly level to moderately sloping. Elevations range from 50 to 250 feet. The annual rainfall ranges from 40 to 60 inches. The mean annual soil temperature is 73°F. Pohakupu soils are geographically associated with Akepa, Paau, and Lilue soils.

These soils are used for sugarcane, pineapple, truck crops, pasture, and homesites. The natural vegetation consists of guava, Christmas berry, Japanese tea, kauai maile, and kauai grass.

Pohakupu silty clay loam, 0 to 8 percent slopes (PK-6).

This soil has smooth slopes and occurs on terraces and alluvial fans. The slopes are mainly 5 to 8 percent. Included in mapping were small areas of Aleo and Waihou soils and small areas where the slope is as much as 15 percent. Also included on Kauai were small areas where the texture is silty clay and small areas that have a hue of 2.5YR in the subsol.

In a representative profile the surface layer is dark reddish-brown silty clay loam about 15 inches thick. The subsol, 40 to more than 50 inches thick, is dark reddishbrown and dark-red-brown silty clay loam that has angular and subangular blocky structure. The subsoil is slightly weathered gravel. The soil is slightly acid to medium acid.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.5 inches per foot of soil. In places roots penetrate to a depth of 5 feet or more.

Representative profile: (island of Oahu), lat. 21°22'52" N., and long. 157°45'16" W.

Silty clay loam, 2.5YR 3/1, loamy, silty, clayey (10% texture), slightly acid, mesic, Typic family, with a single horizon. The surface layer is about 15 inches thick, dark reddishbrown (7.5YR 3/4) toward dry, very fine, sandy loam on terraces, very fine, sandy loam on alluvial fans. The subsol, 40 to more than 50 inches thick, is dark reddishbrown and dark-red-brown silty clay loam that has angular and subangular blocky structure. There is a slight sticky and plastic subangular blocky structure that is very fine and fine, loamy, Typic family, and a single horizon. The soil is slightly weathered gravel. The soil is slightly acid to medium acid.

This soil is used for pasture, truck crops, and homeslots on Oahu and for sugarcane and pineapple on Kauai. (Capability classification for irrigated, 1; non-irrigated, sugarcane group 1; pasture group 6; woodland group 3.)

Puhi Series

This soil consists of well-drained soils on uplands on the island of Kauai. These soils are derived from basaltic rock. They are nearly level to steep. Elevations range from 178 to 800 feet. The annual rainfall amounts to 60 to 90 inches. The mean annual soil temperature is 73°F. Puhi soils are not associated with Cline and Kepos soils.

These soils are well-drained, very fine, silty clay loams (1%) to very fine, silty clay loams (1%). They have a high percentage of clay and a low percentage of sand. They have a high percentage of organic matter and are moderately to strongly acid. The percolation rate is moderately to strongly rapid. The surface layer is moderately to strongly well drained. The subsoil is slightly to medium drained. The depth of the surface layer is 0 to 3 percent slopes (PNB).

This soil is on broad interfluves on the uplands.

Puhi silt loam, 9 to 15 percent slopes (PNB).

On this soil, runoff is slow and the erosion hazard is slight. This soil is used for sugarcane, pineapple, orchards, pasture, truck crops, and homesites. (Capability classification Is, irrigated or nonirrigated; sugarcane group 1; pineapple group 5, pasture group 6; woodland group 7.)

Puhi silt clay loam, 15 to 25 percent slopes (PNB).

On this soil, runoff is moderate and the erosion hazard is moderate. Included in mapping are small areas of wetlands.

This soil is used for sugarcane, pineapple, orchards, pasture, woodland, wildlife habitat, and water supply. (Capability classification Is, irrigated or nonirrigated; sugarcane group 1; pineapple group 5; pasture group 6; woodland group 7.)

Puhi silt clay loam, 25 to 40 percent slopes (PNB).

On this soil, runoff is severe and the erosion hazard is severe. This soil is used for pasture, woodland, wildlife habitat, and water supply. (Capability classification Is, nonirrigated; pasture group 8; woodland group 7.)

http://www.ctahr.hawaii.edu/soilsurvey/5is/Desertsloils/PuhiSeries.htm
Rough Broken Land

Rough broken land (RBL) consists of very steep and broken by numerous intermittent drainage channels. In most places it is not stony. It occurs in gulches and on mountain sides on all the islands except Oahu. The slope is 45 to 70 percent. Elevations range from nearly sea level to about 8,000 feet. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. The annual rainfall amounts to 25 to more than 250 inches.

Soils usually are variable. They are 20 to more than 60 inches deep over soft, weathered rock. In many places some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones, and soil slips are common. Included in mapping were areas of colluvium and alluvium along gulch bottoms.

This land type is used primarily for watershed and wildlife habitat. In places it is used also for pasture and woodland. The dominant natural vegetation in the drier areas consists of guava, ferns, Nandina, waihau, kahili, and mesquite grass. Ohia, koa, haakaa, and fono are dominant in the wetter areas. Puakea, ohi'a, and sweet vernal grasses are common at the higher elevations. (Capacity classification: VII, nonirrigated)

Exhibit “D”

LSB Map 100
Exhibit "E"
LSB Map 107
Exhibit "F"

Economics For Goats