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*Natural Resources Management Plan*

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Villages at Hokuano  
North & South Kona, Hawaii

March 1999

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North & South Kona, Hawaii

*Prepared For:*  
*Oceanside 1250*

*Prepared By:*



March 1999

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## ***References and Resources***

Brock, Richard E. Ph. D. (April 1992 updated October 1998). A Quantitative Assessment of the Marine Communities and Water Quality. Prepared for Oceanside 1250.

Cultural Surveys Hawaii. (January 1996). Archaeological Inventory Survey and Limited Subsurface Testing. Prepared for Oceanside 1250.

PBR HAWAII. (September 1993). Villages at Hokukano Final Environmental Impact Statement, Volumes I and II. Prepared for Oceanside 1250.

PBR HAWAII. (November 1998). Villages at Hokukano Shoreline Park Management and Public Access Plan. Prepared for Oceanside 1250.

Ordinance 97-36, County of Hawaii, Office of the County Clerk. Effective date March 13, 1997.

Ordinance 96-7, County of Hawaii, Office of the County Clerk. Effective date January 15, 1996.

Ordinance 96-8, County of Hawaii, Office of the County Clerk. Effective date January 15, 1996.

Special Management Area Use Permit No. 345, County of Hawaii, Planning Department. Effective date October 27, 1993.

Special Management Area Use Permit No. 356, County of Hawaii, Planning Department. Effective date September 14, 1995.

Use Permit No. 115, County of Hawaii, Planning Department. Effective date October 10, 1996.

Development Agreement (DA-1), County of Hawaii. Effective date April 1, 1998.

## **1.0 OVERVIEW/PURPOSE**

The Villages at Hokukano is a master-planned development of approximately 730 homesites, a golf course and an approximately 80-unit members' lodge on the approximately 1,550 acre Hokukano property in Kealakekua, North and South Kona, Hawaii.

On September 14, 1995, the County Planning Commission approved Special Management Area (SMA) Use Permit No. 356 to allow development of portions of the agricultural subdivision and related infrastructure improvements that are part of the Villages at Hokukano Master Planned Community and which are within the County SMA.

In their letter of approval for SMA Use Permit No. 356, the County Planning Commission noted that:

“The proposed development is not anticipated to have any substantial adverse or ecological effects. Surveys conducted for biological resources, historic and cultural resources, visual impacts, public access, recreation aspects and social economic aspects support this conclusion. The goals and objectives of the SMA with respect to the coastal, recreational, scenic, historic and economic resources can be met with an approval with conditions.”

With regard to the protection of the natural resources within the SMA, Condition 6 of SMA Use Permit No. 356. Condition 6 states:

“A Natural Resource Management Plan shall be submitted for review and approval by the Planning Director in consultation with the Department of Land and Natural Resources, prior to securing final subdivision approval.”

In meeting the requirements of Condition 6 of SMA Use Permit No. 356, this Natural Resource Management Plan (the "Plan") for the Villages at Hokukano has been formatted in relation to the applicable objectives and policies of the Special Management Area, (Chapter 205A), especially as they relate to the protection of the recreational, archaeological, scenic and open space, and coastal ecosystems that are present on site. The Plan presents an overview of the natural resources within the SMA, a description of the implementation measures proposed as part of the Villages at Hokukano project, procedures for implementation, and State and County controls currently in place to insure appropriate government oversight for the implementation of the mitigative measures or management strategies described in this Plan. Finally, a summary of the mitigative measures that have been planned as elements for the project is provided for reference in Section 4.0.

## **2.0 PROJECT DESCRIPTION**

### **2.1 Project Location**

The site is situated approximately ten miles south of Kailua-Kona (see Figures 1 and 2). The town of Kealahou is located mauka of the property along Mamalahou Highway and access to the property is gained from Haleki'i Street which extends from Mamalahou Highway to the mauka property boundary. Captain Cook is approximately 2 miles further south along the highway. Within the property Pu'u Ohau, also known as Red Hill, is a prominent geological feature located near the coast in the middle of the property on the boundary of North and South Kona.

### **2.2 Site Characteristics**

The project site is comprised of large areas of sloping, rolling terrain with intermittent exposed pahoehoe lava flows and some top soil in the flatter areas and between ridges. Pu'u Ohau, a natural cinder cone, is a prominent land mark in the central portion of the property near the coast. It rises to an elevation of about 230 feet at its highest point. Vegetation, comprised primarily of keawe, koa haole, and guinea grasses, all species introduced in conjunction with ranching operations, extends from the coastal area up to the 800-foot elevation mean sea level (MSL). Above 800 feet to the upper project boundary at the 1,240 foot elevation are found, large kukui and monkey pod trees, with guinea grass and buffel grass serving as the primary understory. Along the rocky coastline are found occasional small pockets of sand in the area north of Pu'u Ohau, with steep and sometimes undermined cliffs along the shore, south of the pu'u. The general slope of the property is approximately thirteen percent, with some steeper portions exceeding 20 percent.

Kauai

Oahu

Maui

ISLAND LOCATION MAP  
NOT TO SCALE

HAWAII

Kamuela

Hilo

Kailua  
Kona

PROJECT  
SITE

Naalehu

ISLAND OF HAWAII

Figure 1: Location Map

Natural Resources Management Plan

*Villages at Hokuano*





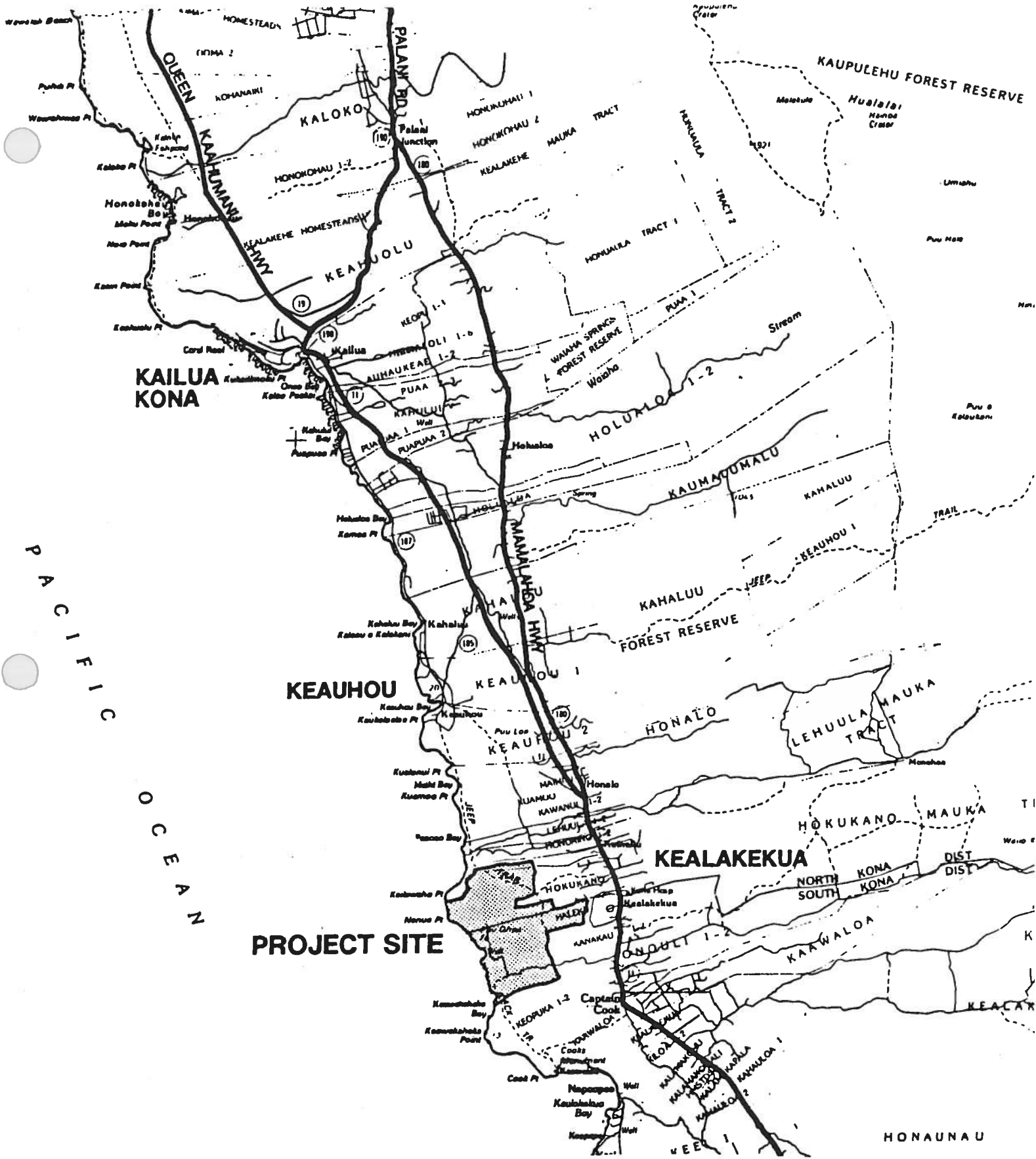


Figure 2: Regional Context Map

Natural Resources Management Plan

## Villages at Hোকukano



The County Special Management Area (SMA), which is the area of focus for the Plan, includes approximately 250 acres in the lower portion of the property, extending from the "Old Government Road" to the shoreline, (Figure 3). The Old Government Road is a State owned trail extending through the lower portion of the property in a north-south alignment.

### **2.3 Development Plan**

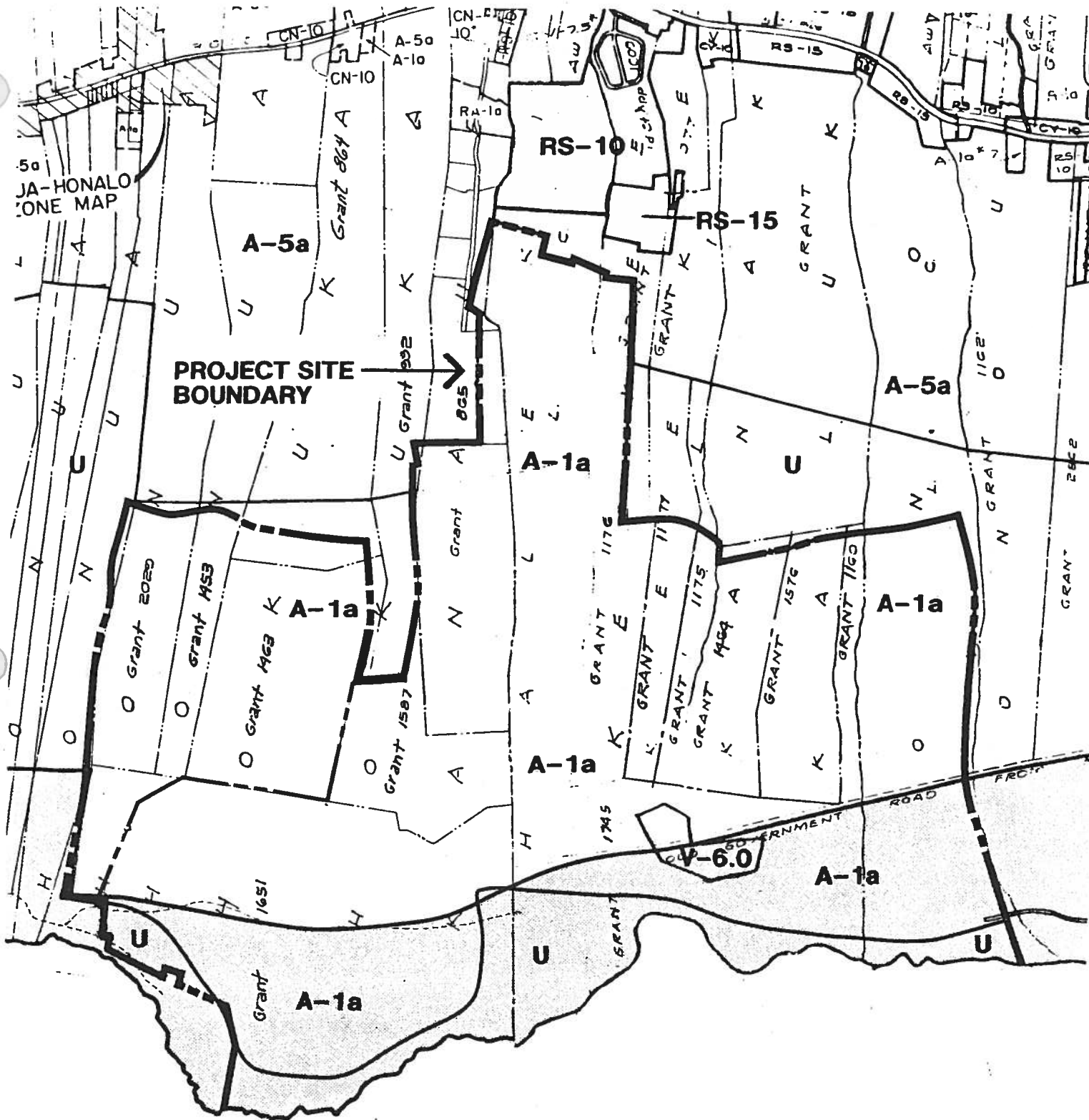
The Villages at Hokukano is a master planned low density community focused, in part, on a Jack Nicklaus designed golf course. The preliminary development plan, shown in Figure 4, includes the golf course, golf clubhouse and related facilities, a member's lodge of up to 80 units, a historic park area, approximately 140-acres coastal park area, open space elements, and approximately 730 agricultural lots, with associated single family dwellings and agricultural uses.

The golf course has been primarily planned in areas of relatively mild slopes in order to integrate it with existing land forms and minimize the need for extensive grading. Overall, the development plan seeks to help preserve the unique site characteristics of the area by maintaining low density neighborhoods integrated with generous open space areas. Additionally, design standards and controls aimed at maintaining cohesion throughout the project and a visual integrity with the surrounding area will be implemented.

The development includes approximately 730 one to three acre agricultural lots. The developer, in an effort to support agricultural activity in conjunction with the proposed agricultural lots will implement a program by which the necessary site improvements and infrastructure needed to support agricultural uses are integrated as part of overall development. The program will allow for agricultural activities that are compatible with the residential uses to be integrated in the areas of the project most suited to agricultural use.

The development plan also includes a historic park area and an extensive trail system providing access for the public and residents to other historic and prehistoric archaeological sites within the project area as part of an interpretive program. The project includes provisions for public and resident access to the shoreline and shoreline parking, and the necessary internal and external infrastructure to serve the project, including a potable water transmission and distribution system; non-potable water transmission and distribution system (for golf course and landscape and agricultural irrigation purposes); wastewater collection, transmission, treatment and disposal system; and internal roadway system.

The State Conservation District, which, in most areas, extends approximately 300 feet inland from the coast, is planned as a natural/cultural public shoreline park. Generally, together with portions of the golf course, the Conservation District provides a significant open area between the coast and the planned residential area. Public shoreline access, including parking and trails integrated with the program for historical interpretation, is also planned along the coastal area. The provisions for public access and park improvements, as well as the management strategy for the park, are detailed within the Villages at Hokukano Shoreline Park Public Access and Management Plan which was previously submitted to and approved by the County.



**LEGEND**





-  SPECIAL MANAGEMENT AREA
-  V-6.0 RESORT ZONE
-  A-1a AGRICULTUREAL ZONE (1 ACRE)
-  U UNPLANNED

Figure 3: Existing County Zoning / SMA

Natural Resources Management Plan

*Villages at Hokuano*

source: County of Hawaii; NORTH KONA ZONE MAP, SECT. 7.02, effective May 24, 1967 (last revision Jun 25, 1991); SOUTH KONA ZONE MAP, SECT. 7.03, effective MAY 24, 1967 (last revision May 22, 1991).



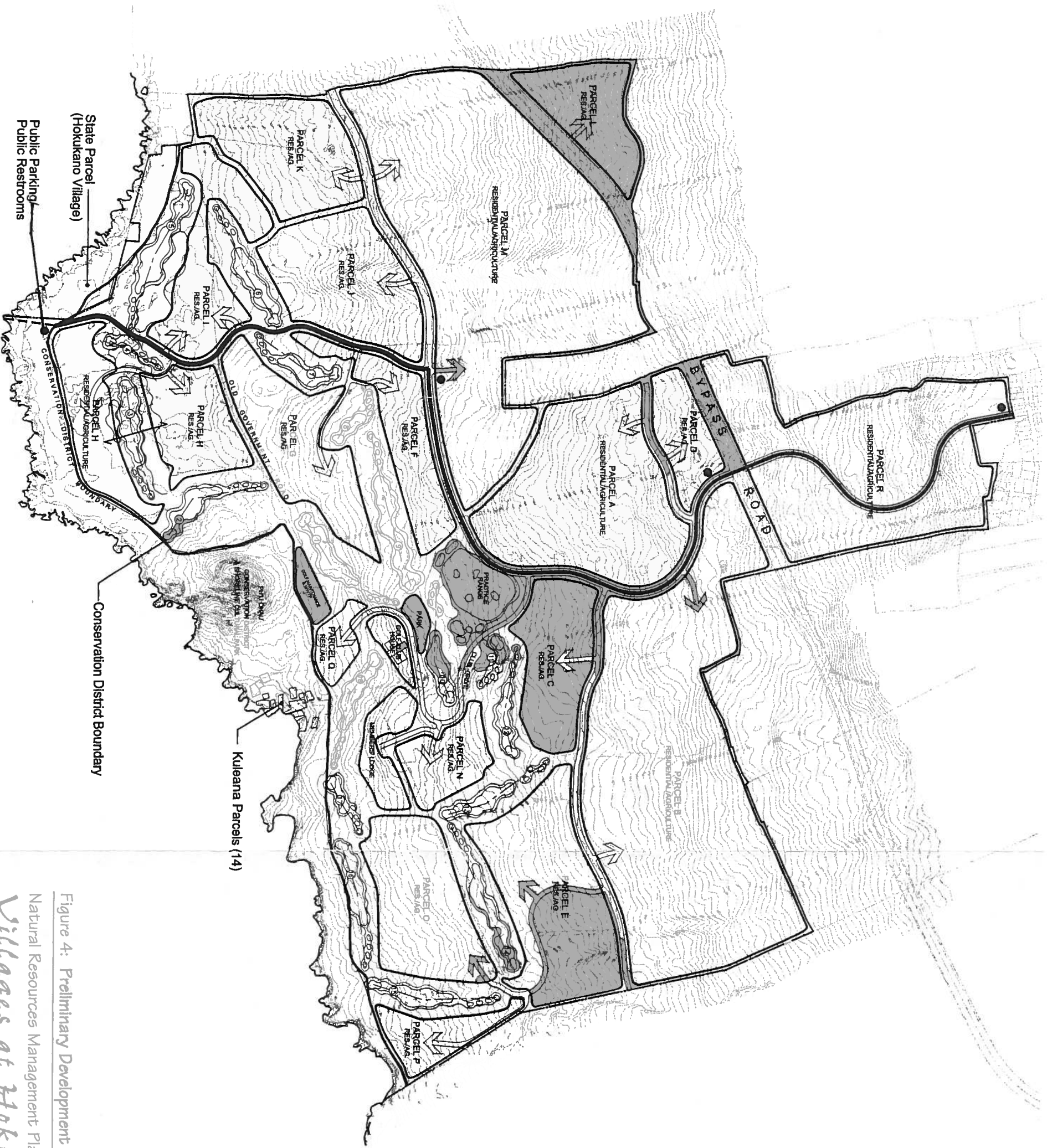


Figure 4: Preliminary Development Plan  
 Natural Resources Management Plan  
*Villages at Hokukano*



**3.0 POTENTIAL IMPACTS TO THE NATURAL RESOURCES WITHIN THE SMA AND PROPOSED MITIGATING MEASURES TO OFFSET IMPACTS**

**3.1 Natural Recreational Resources**

**3.1.1 Objectives and Priorities of Chapter 205A**

Objectives

- Provide coastal recreational opportunities accessible to the public.

Policies

- a. Improve coordination and funding of coastal recreation planning and management; and
- b. Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
  - i. Protecting coastal resources uniquely suited for recreation activities that cannot be provided in other areas;
  - ii. Requiring replacement of coastal resources having significant recreation value, including but not limited to surfing sites and sandy beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary

compensation to the State for recreation when replacement is not feasible or desirable;

- iii. Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
- iv. Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
- v. Encouraging expanded public recreational use of County, State, and Federally owned or controlled shoreline lands and waters having recreational value;
- vi. Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;
- vii. Developing new shoreline recreational opportunities where appropriate, such as artificial lagoons, artificial beaches, artificial reefs for surfing and fishing; and
- viii. Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of section 46-6 (facilities or improvements by public agencies or utilities).

### **3.1.2 Existing Conditions**

The Hokukano property includes a stretch of coastline that is rich in both natural and cultural resources. The coastline area serves as a natural recreation resource, providing opportunities for shoreline fishing, hiking and, to a limited extent, ocean access. The area along the shoreline is topographically divided into two distinctive areas: the area south of Pu'u Ohau, where the shoreline consists of cliffs that range from 25 to 80 feet in height and are undercut in several areas by erosion; and the area north of Pu'u Ohau, which has a more gentle terrain, allowing greater access to the shoreline and open area for passive recreational uses.

Along the shoreline, some sandy tide pools are found which are suitable for wading during certain times of the day, however, because of the rocky shoreline conditions, opportunities for safe access to the ocean are limited to just a few locations. There are concentrations of important archaeological sites, including house sites, heiau, agricultural features, salt bowls, game boards and petroglyphs, especially in the areas between Keikiwaha and Nenu Point and also around Nawawa Bay.

### **3.1.3 Mitigative Measures**

As part of their planning for the property, Oceanside 1250 proposed that the shoreline area, encompassing approximately 140 acres designated within the State Conservation District, be set aside, improved and managed as a shoreline park for public access. The park is envisioned as a passive park, encouraging uses such as hiking, picnicking, swimming, recreational fishing, snorkeling and to some extent, camping within designated areas.

The provisions related to public shoreline access and the management of the park area, including the planned improvements and management guidelines for the park, are described within the Villages at Hokukano Shoreline Park Management and Public Access Plan. The Plan was developed in consultation with community organizations, interested individuals, the State Department of



Land and Natural Resources, and the County Department of Planning. Although proposed as a public park, the cost of the park improvements, maintenance, and management would be assumed by the developer and the Villages at Hokukano property owners.

To be included within the park, in the area just north of Keikiwaha Point, is the approximately 9.4 acre State owned "Hokukano Village" parcel which includes the remnants of an ancient village settlement. Based on preliminary discussions, the State owned parcel will likely be included as part of the park area through a "management lease" or similar agreement with the State, although ownership of the parcel is intended to remain with the State.

There are also several kuleana parcels located just south of Pu'u Ohau in the area of Nawawa Bay, which are within the State Conservation District but excluded from the park area as they are not owned by Oceanside 1250.

Part of the planning for the park includes the provision for public access to the shoreline area. A public road would provide direct access from the mauka property boundary at Haleki'i Street and from the planned Mamalahoa Bypass Road to a parking area at the Park. The parking area is planned in the central portion near Keikiwaha Point where there is the greatest potential for recreational use and shoreline access.

Mauka of the Park area is the State-owned Ala Loa Trail, also referred to as the Old Government Road, or Ala Aupuni Trail. The park plan provides for potential links to this trail, as well as another mauka-makai trail linking the shoreline area to a planned historic park at the 275-foot elevation and to the abandoned railroad bed in the upper elevations of the property. Shorter connector trails would provide access between the shoreline area and historic sites within the Park. In all, several miles of trails and trail loops of varying difficulty are planned for public use.

At present, access to the shoreline in the project area is limited due to the lack of appropriate trail, roadways or parking. Development of the Villages at Hokukano project, including the proposed improvements for the shoreline park, will provide the public with vehicular and pedestrian access to the coastal resources by way of a designated public roadway and trail system. Additionally, in keeping with the policies of Chapter 205A, the proposed shoreline park and management strategy will help protect the natural shoreline resources by providing for the ongoing management of the area in a manner that is responsive to the environmental and cultural sensitivities of the area.

Importantly, through the implementation of the proposed park plan, the open space character of the area can be re-established and maintained while providing enhanced coastal recreational opportunities for the public.

#### **3.1.4 Regulatory Controls**

As noted, the Shoreline Park Management and Public Access Plan was approved by the County Planning Department. Per the requirements of the Change of Zone Ordinances and Special Management Area (SMA) Use Permit for the project, the first phase of the park shall be open to the public within 30 days of the opening of the golf course. Additionally, in that the park area is situated within both the County Special Management Area and State Conservation District, a SMA Use Permit and a Conservation District Use Permit will be required from the County and State, respectively, prior to implementation of the planned improvements in the park area. The development of the proposed shoreline park and public shoreline access are also conditions of a Development Agreement between Oceanside 1250 and the County (DA-1, Conditions 17 and 18).

In addition to the requirements listed above, per the conditions of the zoning approval (Ordinances 96-7, Condition L and 96-8, Condition I), the developer is required to convey to the County, by way of a perpetual easement, the right to public access and recreational use of its privately owned coastline park and trails. These conditions further require that the easement is conveyed to the County prior to final approval of the first small lot subdivision within the property.

The conditions of the existing permits, agreements and approvals as described above, in addition to other permits and approvals that will be required to implement the proposed park improvements provide sufficient governmental oversight of measures aimed at mitigating potential impacts to the natural recreational resources of the area and will insure that these measures are implemented in a timely manner in relation to the proposed Villages at Hokukano development.

## **3.2 Archaeological Resources**

### **3.2.1 Objectives and Policies of Chapter 205A, HRS**

#### Objectives

Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history.

Policies

- a. Identify and analyze significant archaeological resources;
- b. Maximize information retention through preservation of remains and artifacts or salvage operations; and
- c. Support State goals for protection, restoration, interpretation and display of historic resources.

**3.2.2 Existing Conditions**

The history of settlement along the coastline is evidenced by the concentration of archaeological remains found in this area, especially in the coastal area, including those remnants found within the State owned "Hokukano Village" parcel. Further to the South, beyond Pu'u Ohau and overlooking Nawawa Bay, is found another concentration of archaeological sites which are remnants of another ancient village settlement. From August 20, 1991 to January 17, 1992, Cultural Surveys Hawaii performed an archaeological inventory survey of the approximately 1,550-acre Hokukano property. The primary goal of the inventory survey was the identification of any and all cultural resources within the total project area meeting the standards of Department of Land and Natural Resources, State Historic Preservation Division (DLNR-SHPD). The survey report was completed in July 1992 and, following several reviews, was approved by DLNR-SHPD in October 1996.

The inventory survey identified 408 sites within the full master planned property. Of this total, 177 sites were recommended for preservation, and 231 sites were recommended to be available for data recovery. Limited subsurface testing was conducted at nine probable and possible burial sites, one agricultural mound complex and within two of the lava tube systems. Approximately two hundred acres of the overall property, including a portion

of the project area, were previously studied by Paul H. Rosendahl, Inc. for the Pu'u Ehu Estate project (Kaschko 1984). Although some important features, including the remnants of agricultural features, burials, ceremonial sites (heiaus), cave shelters, and house sites, occur within the project site, a large portion of the archaeological sites are found in the lower elevations and along the coast.

Based on the results of the preliminary testing of the possible burial sites, approximately 84% of the sites tested were found to contain no evidence of skeletal remains. Those possible sites which are tested and found to contain no evidence of human skeletal remains would be available for data recovery.

### **3.2.3 Mitigation Measures**

To mitigate potential impacts to the historical/archaeological resources of the project area, the recommendations of the consulting archaeologists, which are subject to approval from the DLNR-SHPD, will be followed by the applicant.

With regard to the Old Government Road, this trail segment has been determined to be under State ownership. An alignment for the trail as it transects the Hokukano property has been determined and agreed to based on existing map information and historical references. As agreed to with DLNR, the specific treatment and management of the trail alignment will be determined in conjunction with an Archaeological Mitigation Plan currently under preparation for the full property.

Buildings, roads, infrastructure, and the proposed golf course have been planned to avoid sites noted for preservation. The specific treatment for features designated for preservation would be determined as part of the archaeological approval process, in conjunction within the recommendations of the consulting archaeological, DLNR-SHPD, Hawaii Island Burial Council and other resource groups, as appropriate.

The applicant and consulting archaeologists have been and will continue to work together with local historians, resource persons and community groups to gain a full appreciation of the historical and archaeological resources of the project area. Should new archaeological/cultural sites be found during project construction, the County Planning Director and the State DLNR-SHPD will be notified and appropriate mitigative actions taken.

### **3.2.4      *Regulatory Controls***

As required under the provisions of Chapter 6E, HRS, Historic Preservation, the DLNR is given an opportunity to review and comment on the effect of the project on historic properties or burial sites prior to any permit or land use approval. Additionally, the land use approvals that have been issued for the project, including the Change of Zone, SMA Use Permit, and Golf Course Use Permit approvals, require that an archaeological mitigation plan be prepared and submitted to the County for approval prior to submitting plans for subdivision approval. Further, the approved mitigation measures must be approved and implemented by the County Planning Department in consultation with the DLNR-HSPD prior to or in conjunction with any land alternation activity within the project area. In this manner, the protection of important archaeological resources within the property is accomplished with appropriate governmental oversight, insuring that protective measures are in place prior to construction and that long-term preservation and interpretive measures are implemented in accordance with the approved archaeological mitigation plans.

### **3.3 Scenic and Open Space Resources**

#### **3.3.1 Objectives and Policies of Chapter 205A, HRS**

##### Objectives

Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

##### Policies

- a. Identify valued scenic resources in the coastal zone management area;
- b. Insure that developments are compatible with their visual environment by designing and locating such development to minimize the alteration of natural landforms and existing public views to and along the shoreline;
- c. Preserve, maintain and, where desirable, improve and restore shoreline open space and scenic resources; and
- d. Encourage those developments which are not coastal dependent to locate in inland areas.

#### **3.3.2 Existing Conditions**

The existing visual character can be characterized as marginal pasture lands consisting of understory of mixed grasses and shrub, with scattered trees of various sizes and conditions. The vegetation consists almost entirely of species introduced in conjunction with ranching and due to drought conditions, especially in lower areas of the master planned area, these areas have been

abandoned for grazing and are somewhat overgrown. Portions of the property include areas of rolling terrain with exposed pahoehoe lava flows and some top soil in the flatter areas between ridges. Vegetation, comprised of keawe, koa haole, grasses, and brush, extends from the coastal area up to the 800-foot elevation (MSL). Above the 800-foot elevation are found kukui and monkey pod trees, with an understory of guinea grass and buffel grass. Pu'u Ohau, a prominent land feature located midway near the coast, serves as a landmark and reference point for fisherman. Along the shore is found a rocky coastline with occasional pockets of sand found in the area north of Pu'u Ohau, and with steep and undermined cliffs along the shore, south of the Pu'u.

Only a few partial and distant views of the project site are presently available from limited portions along Kuakini Highway, primarily from the northeast, and from portions of the existing residential neighborhoods that are directly mauka of the project site, including the Kona Scenic Subdivision from which a small area of Hokukano Flats is visible. The project site is also visible to those accessing the property along the coast.

### **3.3.3 Mitigative Measures**

In general, the visual character of the proposed project will be a low density and low profile development, with landscaped dwellings integrated with compatible agricultural uses and significant open space elements. The proposed project, being located downslope from mauka developments, will not impact present partial views of the ocean from the highway or nearby neighborhoods.

Several measures have been proposed by the developer to enhance the visual characteristics of the proposed project. These include:

- Use of landscaping and an architectural style designed to blend the buildings with the visual character of the site;



- The golf course clubhouse and lodge buildings will be low-profile in nature and designed to fit well with the existing topography thereby minimizing the impacts to views to the shore from surrounding areas;
- The lower portion of the property (from the 800 foot elevation to the shoreline) will be eventually cleared and landscaped more like the area above the 800 foot elevation which will consist of short field grasses and occasional Monkey Pod trees;
- Implementing architectural standards and design guidelines as part of the CC&R's for the residential neighborhoods in order to maintain a visual cohesion throughout the community and to present a more pleasing visual harmony with the existing conditions;
- Maintaining the coastal area (State Conservation District) primarily as an open space shoreline park with parking areas for public shoreline access and structures within the park area landscaped and designed to be compatible with the surrounding environment;
- Providing for a generally low density planned development integrated with generous open space elements in order to achieve a rural character that is consistent with the surrounding area;
- Controlling residential development by designating building envelopes within each lot and controlling the landscape improvements that can occur within the lots; and
- Providing selected agricultural activities to occur on portions of the lots.

Taken as a whole and combined with sensitive site planning, these measures will ensure that the resulting development presents a positive impact to the existing visual character of the property including public views to or from the shoreline.

### **3.3.4 Regulatory Controls**

The preservation and protection of scenic and open space resources has been addressed throughout the regulatory approval process, especially related to the protection of scenic and open space resources within the County SMA. Following approval of the Final EIS for the Villages at Hokukano in September 1993, nine land use approvals were granted by the County for various aspects of the project, including a Use Permit and SMA Use Permit for the project golf course and clubhouse, an SMA Use Permit and three Change of Zoning approvals for the planned agricultural lot subdivision, and a General Plan Amendment, State Land Use Boundary Amendment and Change of Zoning for the members' lodge. In conjunction with this process, more than 30 project related public meetings and hearings were held.

Through this extensive public review and regulatory approval process, concerns regarding the potential impacts to the scenic and open space resources of the area were addressed by the developer as well as the County Planning Commission and County Council through the control and approval of land uses and densities, and the imposition of conditions as part of the various regulatory approvals. Although the project had always been planned as a relatively low density project with large open space components, partially in response to the concerns expressed during the public hearing and review process, the overall density of the project was reduced nearly in half, further adding to the low density, rural character of the project.

Regarding the related conditions of approval, Condition 4 of Use Permit No. 115 for the project golf course requires that final plan approval be secured from the Planning Director and that, in the design and review of the plans for golf course and related improvements, the visual impacts be minimized through the appropriate siting, height, bulk, color schemes, and landscaping for the golf clubhouse and golf course facilities. Furthermore, as a requirement of the SMA Use Permit No. 345 for the project golf course, Condition 12 requires the landscape plans for the golf course and golf clubhouse to address the method of preservation and/or propagation of native plants, such as the prosopis, capparais, and wili wili trees, be submitted with plans for the golf course and golf clubhouse.

It is through this regulatory approval process and the conditions of approval that the potential impact to the scenic and open space elements have been and will continue to be addressed throughout the development process.

### **3.4 Coastal Ecosystems**

#### **3.4.1 Objectives and Policies of Chapter 205A, HRS**

##### Objectives

Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

##### Policies

- a. Improve the technical basis for natural resource management;
- b. Preserve valuable coastal ecosystems of significant biological or economic importance;

- c. Minimize disruption or degradation of coastal water ecosystems by effective regulation or stream diversion, channelization, and similar land and water uses, recognizing competing water needs; and
- d. Promote water quantity and quality planning and management practices, which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate State water quality standards.

### **3.4.2 Existing Conditions**

A Quantitative Assessment of the Marine Communities and Water Quality was completed by Richard E. Brock, Ph. D., in April 1992 and updated in October 1998. In general, the marine communities' resident to the water fronting the Villages at Hokukano were found to be diverse and the fish communities did not show the declines in abundance that have been encountered in many other Hawaiian coastal settings in recent years.

No unusual marine species or communities were noted in the study area. No threatened or endangered species were encountered within the study area, however, several humpback whales were noted well offshore of the site. Despite not seeing green turtles (a threatened species), it is expected that turtles, at a minimum, pass through the waters fronting the project site.

In the study area, 24 sites were established to quantitatively assess water quality characteristics. One of the sampled sites was a brackish water pool, and the remaining stations sampled marine waters. Based on this analysis, the waters fronting the project site were found to be typical of well-flushed, underdeveloped West Hawaii coastal settings.

### **3.4.3 Mitigative Measures**

To assure that groundwater and nearshore marine water quality is maintained, standard engineering and design precautions and adherence to State, County and Federal standards and permitting requirements will be followed in the design of the drainage system, including meeting National Pollution Discharge Elimination System (NPDES) permitting requirements which are implemented by the State Department of Health. Construction specifications will provide plans and describe techniques to mitigate soil erosion and control sediment in accordance with County requirements. Design techniques will be used to minimize the grading required and the potential for soil erosion by the establishment of onsite retention basins. Retention basins or water features will be incorporated into the design of the golf course and site improvements to ensure that surface water is allowed to remain on the property long enough to reduce its velocity, thereby controlling erosion. Water held by the retention basins may also be reused for golf course irrigation purposes. Surface water runoff to existing draineways will be limited to pre-construction volumes. Additionally, other mitigation measures have been incorporated as part of the golf course planning, design, and operation in order to help mitigate the potential for nutrients or chemicals associated with the golf course maintenance from impacting groundwater or coastal waters. These measures include:

- Incorporating a "Reduced Turf" golf course design, which reduces turf areas and subsequent requirements for water, fertilizers, and chemicals;
- Engineering the golf course with a somewhat bowl-shaped fairway construction and with a drainage system designed to collect excess stormwater runoff or irrigation water and conduct the run off to the irrigation ponds for reuse on the course;

- Implementing an Integrated Golf Course Management Program (IGCMP) aimed at minimizing the use of chemicals for golf course maintenance and ensuring safe handling and storage of all chemicals;
- Adopting Hawaii proven biorational pest control methods when appropriate; and
- Implementing a Water Quality Monitoring and Mitigation Program to ensure ongoing monitoring of soil and coastal waters for chemicals used in the golf course maintenance and, if indicated, implementing appropriate mitigation measures. The Water Quality Monitoring and Mitigation Program will also monitor for potential erosion and sedimentation affecting the coastal waters during periods of construction activity.

Collectively, the measures represent the state of the art in environmentally sensitive golf course design and management and are part of the development to ensure protection of coastal ecosystems. Also, as a basis for the proposed Water Quality Monitoring and Mitigation Program, the Quantitative Assessment of the Marine Communities and Water Quality, which was conducted for the coastal waters fronting the project site, provides a strong technical basis for the ongoing monitoring of the coastal marine environment.

In addition to the integrated management strategies described above, the shoreline park component of the Villages at Hokukano will provide an added level of protection to the coastal waters and ecosystems. The shoreline park area, encompassing approximately 140 acres, will provide a natural buffer of generally over 300 feet between the coastal waters and the proposed development. Among the objectives of the approved Villages at Hokukano Shoreline Park Management and Public Access Plan is to implement management controls to help prevent inappropriate access to environmentally

sensitive areas and near shore resources and to protect shoreline areas from over use. Included among the management strategies is the establishment of a Shoreline Resource Advisory Committee whose role, in part, will be to develop and provide input towards establishing programs aimed at protecting the near shore environment from damage resulting from increased shoreline access through management and educational activities. The establishment of the natural shoreline park in conjunction with the ongoing management controls will help insure that potential impacts to coastal ecosystems are minimized.

#### **3.4.4 Regulatory Controls**

Included as requirements of nearly all the project related regulatory approvals are conditions requiring the submittal and approval of flood and drainage studies pertaining to the various elements of the project. These include the following conditions:

Ordinance 97-36, Condition G;

Ordinance 96-7, Condition G;

Ordinance 96-8, Condition F;

SMA Use Permit No. 345, Condition 7;

SMA Use Permit No. 356, Condition 7; and

Use Permit No. 115 Condition 6.

In addressing the above conditions, protection of coastal resources will be promoted through the implementation of appropriate drainage improvements meeting the approval of the Department of Public Works. Such approvals are required prior to final subdivision approval or, in the case of the golf clubhouse and members' lodge, prior to certificate of occupancy.

Additionally, both the SMA Use Permits for portions of the agricultural lot subdivision and golf course within the County SMA include conditions requiring approval of a Ground and Coastal Water Monitoring Plan prior to final subdivision approval and golf course construction, respectively. Further, these conditions require that the ground and coastal water monitoring plans for the golf course include a "Golf Course Best Management Plan" to insure that best management practices pertaining to chemical applications and water quality monitoring are components of an integrated monitoring program.

In light of the above, appropriate protection of coastal waters and ecosystems will be promoted through the review and approval of flooding and drainage studies and plans for an integrated water quality monitoring program prior to receipt of final subdivision plan approval for the agricultural lot subdivision or certificate of occupancy for the golf clubhouse and members' lodge.



#### **4.0 SUMMARY OF PROPOSED MITIGATIVE MEASURES**

As described in the preceding sections, numerous mitigative measures and management strategies are planned as part of the Village at Hokukano development and are aimed at achieving a development that protects and enhances the natural resources of the area. Taken as a whole, these measures, developed and implemented in conjunction with the State and County regulatory approval process, will insure that the policies and objectives of Chapter 205A pertaining to the protection of the natural resources within the County SMA are met. For reference, these measures are summarized as follows:

##### **Natural Recreation Resources**

- The shoreline area encompassing approximately 140 acres has been set aside as a public shoreline park. The park is envisioned as a passive park, encouraging uses such as hiking, picnicking, swimming, recreational fishing, snorkeling and to some extent, camping within designated area. The provision related to public shoreline access and management of the park area are described within the Village at Hokukano Shoreline Park Management and Public Access Plan.

##### **Archaeological Resources**

- An Archaeological Inventory Survey Report, which was approved by DLNR-SHPD, has identified the archaeological resources within the total project area. The recommendations of the consulting archaeologist, which are subject to approval for the DLNR-SHPD, will be followed by the applicant.
- Procedures of Section 43, Chapter 6E, HRS (Historic Preservation) will be followed for possible burials identified within the project area.

- Providing for a low density, planned development integrated with generous open space elements in order to achieve a rural character that is consistent with the surrounding area;
- Controlling residential development by designating building envelopes within each lot and controlling the landscape improvements that can occur within the lots; and
- Providing selected agricultural crops and activities to occur on portions of the residential lots.

### **Coastal Ecosystems**

- Incorporating a “Reduced Turf” golf course design, which reduces turf areas and subsequent requirements for water, fertilizers, and chemicals;
- Engineering the golf course with a bowl-shaped fairway construction and with a drainage system designed to collect excess stormwater runoff or irrigation water and conduct the run off to the irrigation pond for reuse on the course;
- Implementing an Integrated Golf Course Management Program (IGCMP) aimed at minimizing the use of chemicals for golf course maintenance and ensuring safe handling and storage of all chemicals;
- Adopting Hawaii proven biorational pest control methods when appropriate; and

- Buildings, roads, infrastructure, and the proposed golf course have been planned to avoid all sites noted for preservation.
- Should any new archaeological sites be found during project construction, the County Planning Director and the State DLNR-SHPD will be notified and appropriate mitigative measures taken.

### **Scenic and Open Space Resources**

- The golf club house and lodge buildings will be relatively low-profile in nature and designed to fit with the existing topography, thereby reducing the need to alter the natural terrain and minimizing view impacts to and from the shore;
- Use of landscaping and architectural styles for the golf and lodge buildings designed to blend the buildings with the visual character of the site;
- Implementing architectural standards and design guidelines as part of the CC&R's for the residential neighborhoods in order to maintain a visual cohesion throughout the community and to present a visual harmony with the existing natural conditions;
- Maintaining the coastal area (State Conservation District) primarily as a natural open space shoreline park with parking areas for public shoreline access and structures within the park area landscaped and designed to blend in with the surrounding environment;

- Implementing a Water Quality Monitoring and Mitigation Program to ensure ongoing monitoring of soil and coastal waters for chemicals used in golf course maintenance and, if indicated, implementing appropriate mitigation measures. The monitoring program will also monitor for the potential impacts of erosion and sedimentations occurring during construction periods.
- The creation of the approximately 140 acre shoreline park will serve as a natural buffer between the coastal waters and the proposed development, further minimizing the potential disruption to coastal ecosystems. Management controls will also be implemented to further protect the near shore environment from damage resulting from increased shoreline access.

As evidenced by the protective measures described in the Plan, the Villages at Hokukano community has been planned from the onset with the goal of integrating the development with the environment in a manner that protects and enhances the natural resources of the area. It is the developer's goal that, through this environmentally sensitive approach to development, the Villages at Hokukano will not only enhance the quality of life in the region, but will also serve as a model for future development in the area.