
Kōkeʻe and Waimea Canyon State Parks Master Plan



**Division of State Parks
Department of Land and Natural Resources**

Final

**Kōkeʻe and Waimea Canyon
State Parks Master Plan**

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CHAPTER 1 EXECUTIVE SUMMARY

1.1 MASTER PLAN PURPOSE

Kōkeʻe and Waimea Canyon State Parks were the first parks established under the State Park System. They were created in recognition of the unique environmental resources, abundant recreational opportunities, and rich natural heritage existing in the uplands of western Kauaʻi.

Each year the parks are enjoyed by an estimated 300,000 people. Local residents and visitors alike come to Kōkeʻe and Waimea Canyon State Parks for sightseeing, recreational activities, cultural and educational pursuits, and simply to get away from daily routines and relax in the beautiful mountain setting.

The tremendous popularity of the two parks is testament to the foresight of the territorial foresters who advocated their preservation in the early 1900s, and a clear indicator of the parks' continued value to the people of Hawaiʻi. This popularity also poses challenges to park managers and caretakers who are working to ensure that the parks' resources can be enjoyed by visitors today, and will be available for the experience of future generations.

The master plan vision is to preserve and perpetuate the existing character of Kōkeʻe and Waimea Canyon State Parks by protecting the area's unique native ecosystems, scenic views, historic and cultural landscape, and recreational resources, and by guiding public uses and developing park facilities in a manner that does not compromise the integrity of the mountain's natural resources, wilderness values, and intrinsic qualities. Towards this end, this master plan is guiding the management, enhancement and development

of Kōkeʻe and Waimea Canyon State Parks for a twenty-year period extending from 2005 to 2025.

1.2 SCOPE AND METHODOLOGY

The master plan project area includes Kōkeʻe State Park (4,345 acres) and Waimea Canyon State Park (1837.4 acres), for a total area of 6,182.4 acres. See **Figure 1-1**, Project Area Map.

The master plan *study area* includes the project area plus adjacent State-owned lands that include Puʻu ka Pele and Nā Pali-Kona Forest Reserves, Alakaʻi Wilderness Preserve, Kuʻia Natural Area Reserve, and the Mokihana Game Management Area. State-owned lands along Waimea Canyon Drive are included in the study area to be considered as possible locations for expansion of Waimea Canyon State Park.

The master plan was developed through a four step process:

◆ BACKGROUND INVENTORY AND FACILITY ASSESSMENT

Background information about park resources, activities, operations, management, and issues and opportunities was obtained through research of existing documentation, field investigations, agency comments, and public input. The background studies prepared for the Master Plan focus on the following subject areas:

- Natural Resources
- Cultural and Historic Resources
- Scenic Resources
- Outdoor Recreation Resources
- Other issues identified by agencies and the public.

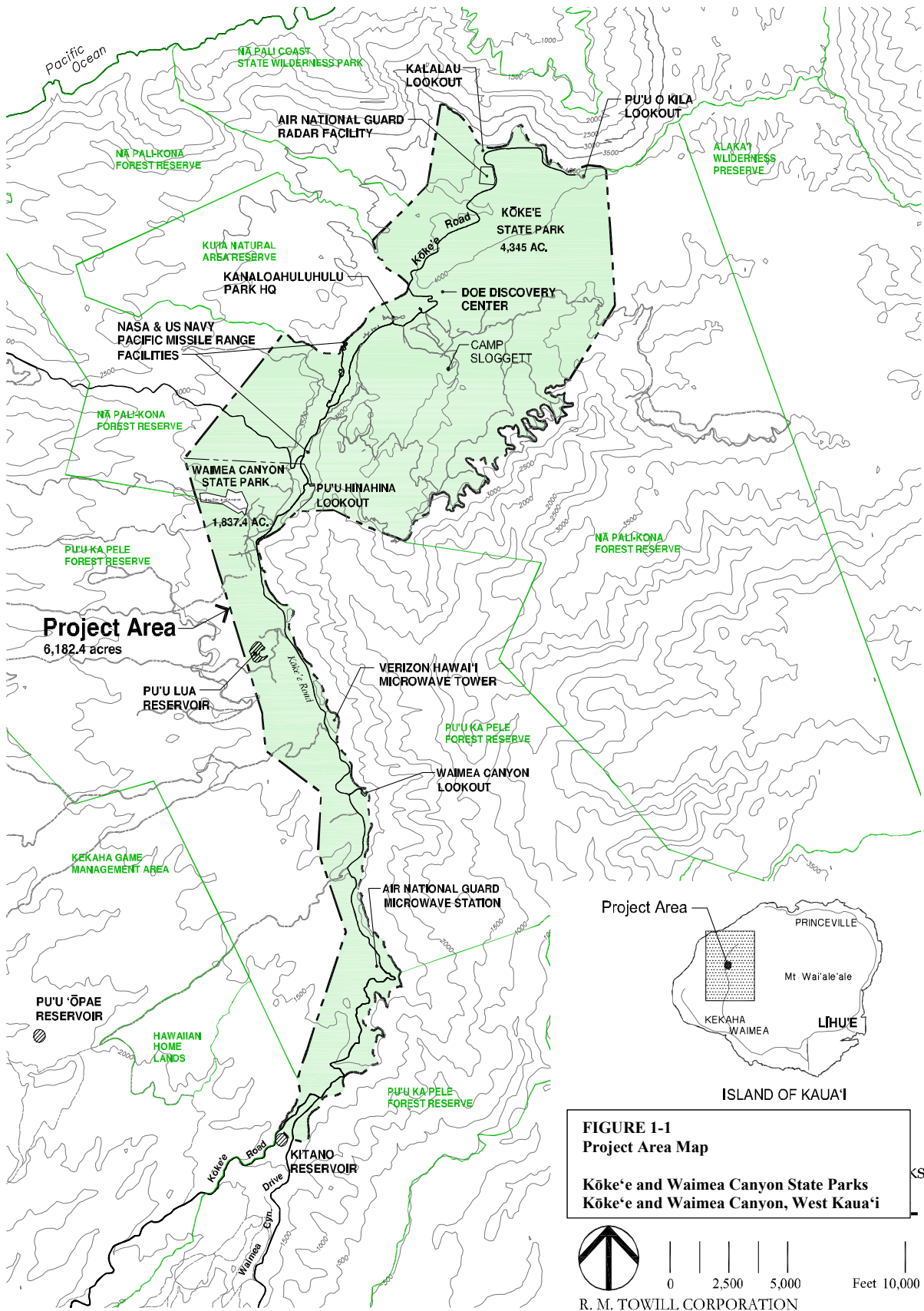


FIGURE 1-1
Project Area Map
Kōke'e and Waimea Canyon State Parks
Kōke'e and Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION

During the course of the project the following subject areas were added:

- Recreation Residences
- Infrastructure
- Organizational Development and Management
- Costs and Revenues

The findings of the background inventory and facility assessment are presented in **Chapters 3 and 4** of this master plan report.

◆ ANALYSIS

A goal statement and list of resource values is presented for each resource category to provide guidance for the analysis. Each resource is analyzed in terms of its condition-fragility, resource limits (capacity), public use and user limits (socially acceptable impacts), and issues, opportunities and constraints related to protection, management, restoration, development, enhancement, and interpretation.

For the parks' developed resources, analysis includes:

- Evaluation of existing buildings to determine if they are suitable for continued short-term and/or long-term use.
- Evaluation of the historic integrity of buildings within the parks and assessment of their value to the Kōke'e cultural and historic landscape.
- Evaluation of existing utilities, (water, sewage, electrical-communication, and roads) and identification of utility deficiencies and necessary repair work.
- Estimation of budgetary costs for repairs to park buildings, infrastructure, and utilities, including cost estimates for demolition and reconstruction of buildings determined to be unsuitable for

continued use.

- The Analysis chapter also includes recommendations for a best management approach to meet the goals for each resource category. Where available and applicable, financial information is presented to support the recommendations. The results of the analysis are presented in **Chapter 5** of this report.

◆ PLAN ALTERNATIVES DEVELOPMENT AND EVALUATION

Four conceptual master plan alternatives are presented for the Kōke'e and Waimea Canyon State Parks. The alternatives are based on available information, issues, problems and opportunities relating to the Kōke'e and Waimea Canyon State Parks, the adjoining game management areas, the forest reserves, and the Natural Area Reserve as identified by government agencies and the public.

The development of the alternatives included the following tasks:

- Establishment of development themes. The alternatives express a range of development options from status quo and low-intensity development to expanded development of park facilities and recreational resources.
- Identification of Recreation Opportunity Zones (ROZ). ROZs are a means of geographically organizing the plan area according to user expectations of "wilderness" and development. Five ROZs are identified for Kōke'e and Waimea Canyon State Parks, including primitive, semi-primitive non-motorized, semi-primitive motorized, rustic, and concentrated. These designations establish levels of access, facility development, and environmental preservation.

- Identification of park activities, programs, and use intensities that can be accommodated in different plan alternatives.
- Development of a methodology for evaluating the alternatives based on costs, public and agency comments, park resources and recreation goals.

The four alternative plans are:

- Alternative 1. “No Action” (Existing Conditions Plan).
- Alternative 2. Remedial Plan.
- Alternative 3. Limited Access / Conservation Plan.
- Alternative 4. Park Facility Development Plan.

The planning process included a community-outreach program whereby community members and interested parties/groups were provided the opportunity to participate in developing plan elements, comment on plan concepts, and vote for a preferred alternative.

The four conceptual master plan alternatives are presented in **Chapter 6** of this report.

◆ PLAN SELECTION AND REFINEMENT

Based on public input, Department of Land and Natural Resources staff, consultant recommendations, and review by the Board of Land and Natural Resources (BLNR), *Alternative 2: Remedial Plan* was selected.

The selection and refinement process and components of the preferred alternative are described in **Chapter 6** and details of the

Master Plan can be found in **Chapter 7** of this report.

1.3 MASTER PLAN

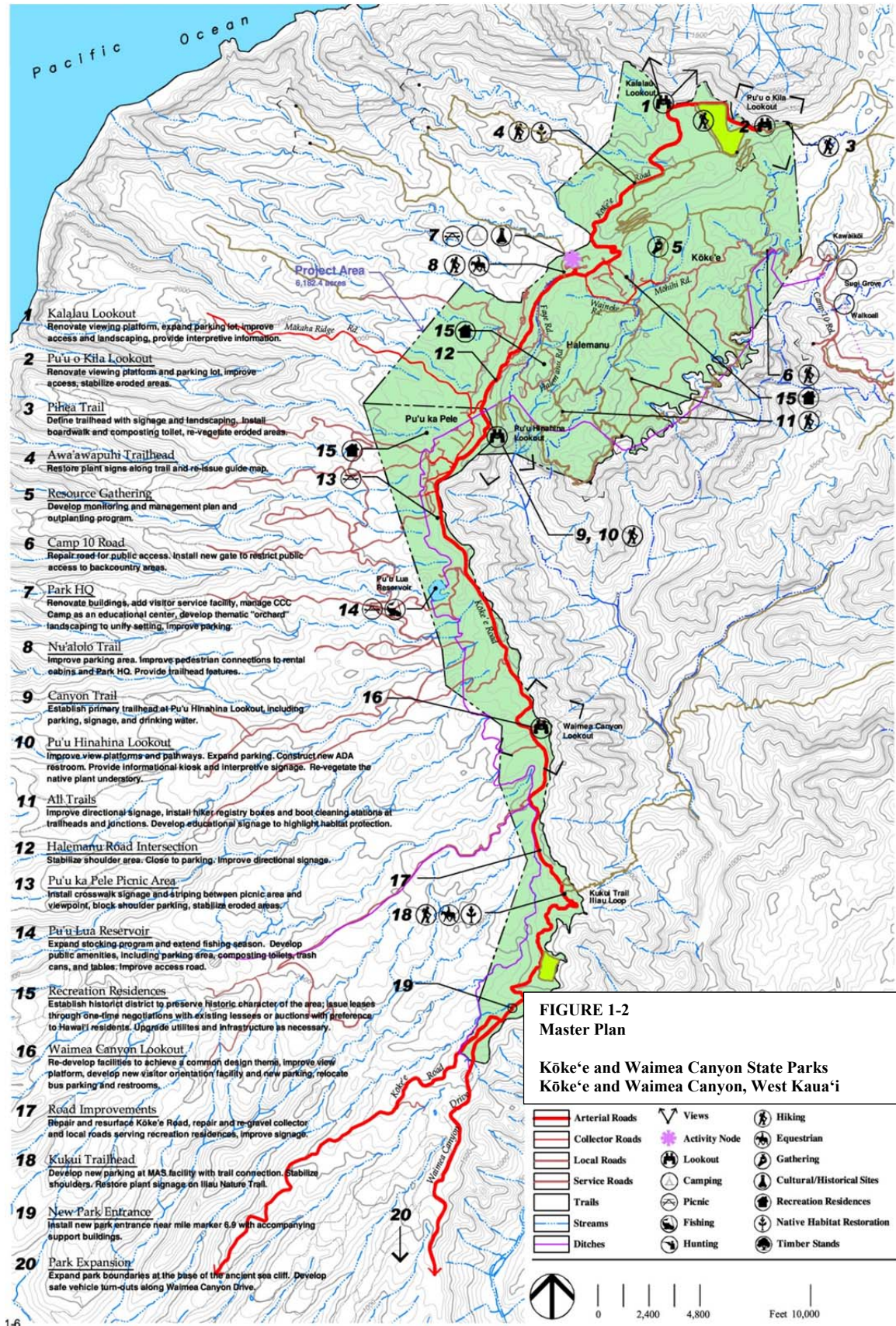
See **Figure 1-2 Master Plan**.

The Master Plan is based on the “Remedial Plan” alternative. Improvements are generally limited to repairing and upgrading existing facilities, infrastructure and utilities. The objective is to meet regulatory standards and to enhance the park users’ experience by improving orientation, service, and safety and by eliminating incompatible and obtrusive elements within the parks.

Additionally, several primary destination sites within the parks are identified for more intensive redevelopment to address the special demands placed on them. These sites include Kanaloahuluhulu Meadow and the four major lookouts: Pu‘u o Kila, Kalalau, Pu‘u Hinahina, and Waimea Canyon Lookouts.

◆ DESIGN PRINCIPLES

- Planned improvements will be concentrated within existing developed areas along the Kōke‘e Road corridor in order to minimize the development “footprint” on the natural landscape.
- Man-made elements are subordinate to the natural landscape. Structures are to be located away from primary view zones, set back from roadways and screened from view where appropriate.
- Natural materials are to be used to preserve the parks’ rustic character and blend into the wilderness landscape. Materials may be finished or unfinished depending on location and function of the structure.



◆ LANDSCAPING AND VEGETATION

Over time, the activities of the mountain residents have produced a mosaic of several distinct landscape typologies. Though each typology expresses a different relationship with the land, there is an apparent shared landscape characteristic of open lawn space defined and accented with natural and introduced tree plantings. This landscape feature is emblematic of Kōkeʻe and evident throughout the public spaces and lease lots within the two parks. It is most prominently displayed in the open meadow space and monumental trees of Kanaloahuluhulu.

Landscape design based on these typologies is appropriate for the “settlement” areas within the park, such as at Kanaloahuluhulu Meadow and within the recreation residential areas where people have asserted a human presence. Outside of the settled areas, the natural landscape should prevail.

To showcase the natural beauty of the parks, such as the lookouts and trailheads, the landscaping should be designed to blend into the “wilderness” setting. Native plant materials and massing, local earth forms, and color and texture palettes drawn from the immediate vicinity should be used in the design.

◆ PARK ENTRY STATION

A new park entry station is planned for the entrance to Waimea Canyon State Park. The entry station is an essential component of the master plan. It will serve to:

- Establish a presence that may serve to deter unauthorized and/or criminal activities
- Provide park orientation and an informational brochure to park visitors.
- Collect entry fees from non-resident visitors and commercial operators to fund park operations and maintenance, including road improvements.

◆ ROADS

Roads are categorized as Arterial (Kōkeʻe Road and Waimea Canyon Drive), Collector (Waineke Road, Mākaha Ridge Road), and Local (recreation residence access, Camp 10 Road). Improvements include:

- Repair and resurface the entire length of Kōkeʻe Road. Stabilize shoulders and install road-surface reflectors.
- Re-grade, gravel, and correct drainage on unpaved collector roads.
- Re-grade, gravel, and correct drainage on local roads serving recreation residences.
- Repair Camp 10 Road for public access, including re-grading and graveling, and improving stream crossings.
- Improve identity and directional signage at key intersections.
- Limit bus traffic to Waimea Canyon Lookout. School buses only are allowed up to the meadow by special permits.
- Incorporate Kōkeʻe Road and Waimea Canyon Drive under the management authority of the Division of State Parks.

◆ TRAILS

Recommendations and planned improvements for the trail system include:

- Improve identity and directional signage at all trailheads and junctions.
- Update trail guide materials and trailhead signs to inform visitors of trail conditions and features.
- Update informational and interpretive materials for Awaʻawapuhi Trail, Iliau Nature Loop Trail, and Nature Trail.
- Establish primary trailheads at Puʻu Hinahina Lookout, Water Tank Trail, and Kaluapuhi Trail.
- Complete upgrading of Black Pipe Trail, Ditch Trail, and Canyon Trail segments with connection to Puʻu Hinahina.
- Expand or improve parking at Kukui

Trailhead, Nu‘alolo Trailhead, and Awa‘awapuhi Trailhead.

- Develop new ADA accessible interpretive trails to highlight the four main forest types found in the parks.
- Consider elevated canopy trails in the forest.
- Install boardwalk / steps along the valley rim between Pu‘u o Kila Lookout and Pihea Overlook to control erosion.

◆ KANALOAHULUHULU MEADOW/PARK HEADQUARTERS

Kanaloahuluhulu Meadow is the heart of Kōke‘e and a primary park visitor destination. The meadow area serves several valuable park functions:

- Park Identity/Landmark
- Ranger Presence/Visitor Service
- Park Community/Social Center
- Research/Education Center

Proposed improvements include:

- Replace the Kōke‘e Lodge and Natural History Museum buildings and integrate a new Park Visitor Service Center into the new building design. The visitor center will be staffed by Division of State Parks (DSP) Ranger or Docent.
- The service center will provide the following services:
 - One-stop location for all park permits (camping, gathering, fishing, hunting, commercial trail use, and school bus permits).
 - Reservations and check-in/out for short-term State rental cabins.
 - Visitor orientation and information.
 - Complaints, reports, and emergency communications.
- Ensure that the new structures meet Kōke‘e vernacular architectural design standards. A building’s footprint will not increase more than 33% when reconstructed.

- Continue to lease Kōke‘e Natural History Museum operations to a nonprofit organization, such as Hui o Laka.
- Restore and renovate the historic Kanaloahuluhulu Ranger Station for park volunteer housing and use by State Parks staff for meeting space and storage.
- Develop orchard landscape theme based on historic Civilian Conservation Corps (CCC) Camp plantings. Extend orchard plantings along the north edge of the meadow to provide a unified landscape context for the park buildings - Park Manager’s House, Kōke‘e Lodge, Kōke‘e Museum, and the Judd Picnic Pavilion.
- Continue use of the CCC as an educational center and field station for natural and historic resource research and management.
- Maintain existing State cabins for short-term rental use. Outsource rental cabin operations and maintenance through lease to a private / nonprofit organization.
- Improve existing parking area. Designate school bus parking area. Utilize permeable materials for parking surface (e.g. grass pavers, gravel). Landscape parking with native plants.
- Upgrade the electrical system and place overhead utilities underground.
- Realign the road entrance at Kanaloahuluhulu Meadow to direct vehicles to the lodge and museum area. Create a T-intersection for continuation of Kōke‘e Road to recreation resources and park uplands.
- Develop a new DSP base yard on Kōke‘e Road east of Water Tank Road. Renovate the existing base yard buildings at the CCC Camp.
- Renovate the stone picnic pavilion and

tent campground restroom.

◆ LOOKOUTS

General

- Replace all cesspools with septic systems, aerobic systems or composting toilets as appropriate to the location.
- Develop potable water system (except at Pu‘u o Kila).
- Prohibit bus access past Waimea Canyon Lookout.
- Improve informational and directional signage and interpretive materials.
- Keep lookouts free of concessions, with the exception of Waimea Canyon Lookout.

Waimea Canyon Lookout

- Re-develop visitor facilities, including viewing platforms, bathrooms, concession area, new information center, and landscaping, to achieve a cohesive design.
- Re-develop the existing parking area as a pedestrian drop-off and parking only for persons with disabilities zone.
- Develop a pedestrian view plaza between the view platform and restrooms.
- Develop a new parking lot and bus staging area below the existing parking lot. Relocate bus parking to the new parking area.
- Screen new parking lot with native plantings and design it to preserve the spatial integrity and aesthetics of the view plaza area.

Pu‘u Hinahina Lookout

- Re-develop the lookout plaza and the pathway to the Ni‘ihau viewing platform to comply with ADA accessibility requirements.
- Construct a new ADA accessible restroom in the lookout plaza between

the parking lot and canyon viewing platform.

- Develop primary trailhead facilities for the Canyon-Ditch Trail system.

Kalalau Lookout

- Improve pathway system to comply with ADA accessibility requirements.
- Expand and resurface the parking lot towards the west. Use permeable paving materials or grass pavers.
- No concession presence at this lookout.
- Upgrade the walkway between the parking area and the lookout to comply with ADA accessibility standards and provide additional picnic tables.
- Renovate the lookout platforms to take full advantage of the sweeping views along the cliff face.
- Provide interpretive signage.

Pu‘u o Kila Lookout

- Renovate viewing platform to provide direct access to Pihea Trail along valley rim alignment.
- Revegetate erosion scars along canyon rim.
- Reconstruct, restripe, and correct drainage problem at parking lot.
- Provide composting toilets in parking lot area.
- Improve walkway from parking lot to viewing platform and Pihea Trailhead.

Lower Elevation Turnouts

The Waimea Canyon State Park’s lower boundary would be extended to include new lower elevation viewpoints. Improvements in these areas will be made to create safe turnouts.

◆ RECREATION RESIDENCES

Recreation residences located within Kōke‘e and Waimea Canyon State Parks are to

remain in recreational use under leases issued by the Board of Land and Natural Resources (BLNR) pursuant to HRS, Section 171-43 and Section 171-44, and Act 223.

Leaseholders will be responsible for the development and maintenance of recreation residence buildings and infrastructure, in accordance with lease terms and conditions prescribed by the BLNR.

◆ UTILITIES

Electrical System

- Replace electrical system distribution lines.

Wastewater System

- Expand the Kanaloahuluhulu leach field to handle periods of high rainfall.
- Replace all large capacity cesspools (20 or more users) with wastewater collection and treatment system.
- Connect all recreation residences within the wellhead protection zone to a wastewater collection and treatment system.
- Establish user fees to pay for operations and maintenance costs.

Water System

- Replace existing water transmission and distribution system. Extend water transmission lines to Pu‘u Hinahina and Waimea Canyon Lookouts.
- Continue exploration for potable water source development.
- Develop a replacement and backup source of potable water, particularly at Kalalau Lookout. Construct a second water tank at the main storage area.
- Install water meters for all major users.
- Develop non-potable water supply, including dip tanks, for fighting wild land fires in areas away from Kanaloahuluhulu Meadow.

Communication System

Install solar powered emergency call boxes in locations where historical records of accidents and rescue calls indicate there is a need.

1.4 RECOMMENDATIONS/BEST MANAGEMENT APPROACH

Management recommendations represent a range of alternatives to address opportunities and constraints identified in the background research and through input from task force members and the public.

◆ PARK MANAGEMENT/OPERATIONS

- Create a Kōke‘e Regional Authority under DLNR that incorporates the functions of all of the divisions which operate in Kōke‘e and Waimea Canyon State Parks and the surrounding forests and natural areas.
- Create a single DLNR interface in which the public can obtain permits for camping, hunting, fishing, gathering, and commercial uses.
- Review park services, including utility, maintenance, and visitor services, to determine which services can be privatized.
- Obtain positions and funding for thirty new personnel required to carry out the Master Plan recommendations.
- Coordinate park planning, management, and operations with the Kōke‘e State Parks Advisory Council, in accordance with Chapter 171-8.5, HRS.

◆ NATURAL RESOURCES PROTECTION

- Develop a monitoring program to record changes to park conditions over time.
- Develop a list of indicators to be used to measure conditions of natural resources, facilities, infrastructure, and rates of use.
- Develop an educational program to promote knowledge of the parks’ natural

resources.

- Provide housing and other incentives to support natural resource research and volunteer work within the parks.
- Construct nurseries and develop a native plant out-planting program.
- Develop and implement recovery plans for threatened and endangered species.
- Develop and implement restoration plans for natural plant communities.
- Work with conservation organizations, agencies, and volunteers to conduct natural resource management activities, such as weed and ungulate control, fencing, and endangered species preservation.

◆ **EDUCATIONAL/INTERPRETIVE PROGRAMS**

- Develop a coordinated information program among the DLNR divisions to ensure that visitor information and materials are consistent.
- Develop a park-wide Archaeological and Historic Resources Management Plan to set priorities, establish standards for interpretive materials, and ensure consistency of information.
- Develop and implement an educational program to promote knowledge of the parks' natural, cultural, and historic resources, and the important role the parklands continue to play in the life of the island and state.
- Use the CCC camp facilities to conduct educational programs or cultural activities that enhance resource management and stewardship of the forest resources, including traditional Hawaiian practices as well as the practices of Kaua'i's other ethnic groups.

◆ **PUBLIC SERVICE**

- Continue to provide State support for annual cultural events, such as the

Emalani Festival and Banana Poka Roundup.

- A Park Interpretive Technician, in uniform, will inform park visitors of interpretive services and parks features and may provide a presence that could serve to deter illegal activities.

1.5 COSTS AND REVENUE

◆ **COSTS**

Capital Improvement Costs

Estimated capital costs for master plan improvements total \$28.3 million over the 20-year plan period. This amount does not include costs to upgrade the recreation residences buildings, but does include a fair share cost of road, water, sewer, and drainage improvements to support the recreation residences.

Capital improvement costs are discussed in Subsection 7.8 **Phasing Plan** and presented in detail in **Appendix A, Table A-1, Master Plan Costs**.

Recreation Residence Improvement Costs

The estimated cost of improvements to recreation residences is \$4,325,000. This amount does not include infrastructure costs. It is assumed that capital improvement costs for recreation residence structures will be borne by individual lease holders and will not be a State expense.

Personnel Costs

The DSP will require thirty new positions to be approved and filled in order to implement proposed Master Plan programs. New personnel costs are listed in **Table 1-1**. In the first master plan phase, labor costs represent a 230 percent increase over the current labor cost of approximately \$150,000.

Table 1-1
Proposed Personnel Costs

Phase		New Staff	Cost
I	2007-2010	10	\$404,100
II	2011-2015	10	\$346,400
III	2016-2020	5	\$182,800
IV	2021-2025	5	\$175,200
Total		30	\$1,108,500

estimating future operational and material costs. Based on the current DSP budget, non-labor operational and material costs comprise approximately 50 percent of the total park budget. Based on this rate, operating expenses for the first four years of the master plan are projected in **Table 1-2**.

Operational and Material Costs

Personnel costs are used as the basis for

Table 1-2
Estimated Operating Budget – Master Plan Phase I (2007-2010)

Expense	2007	2008	2009	2010
Previous year's budget	\$300,000	\$390,000	\$490,000	\$750,200
Labor Increase	\$45,000	\$50,000	\$130,100	\$129,000
Non-Labor O &M Increase	\$45,000	\$50,000	\$130,100	\$129,000
Total O and M Budget	\$390,000	\$490,000	\$750,200	\$1,008,200
% Increase over previous year	30%	26%	53%	34%

Source: DSP 2004

◆ **Revenue**

A summary of projected annual revenues to the State from proposed master plan programs and projects is summarized in **Table 1-3**.

Table 1-3
Projected Annual Park Revenue

Revenue Source	Amount
Entry Fee	\$300,000
Recreation Residence Lease	\$205,000
Concession	\$226,101
Maintenance and Service Fees	\$85,870
Miscellaneous Permits	\$5,000
Total	\$879,471

Note: Projected revenue is net present value.

source of revenue for the parks. An entry fee may be assessed on a per person or per vehicle basis. A per vehicle fee may encourage visitors to car pool, thus reducing the number of vehicles within the parks and correspondingly road and parking congestion, and maintenance requirements.

Anyone holding proof of residency (Hawaii driver's license and/or a State of Hawaii ID) would not be assessed an entry fee. The estimated revenue is based on the revenue the DSP receives at other parks that have an entry fee and an estimated number of visitors annually to the parks.

Entry Fee

In 2003, an estimated 430,700 people visited Waimea Canyon State Park, according to the Hawai'i State Parks Survey (HTA 2004). Establishing an entry fee for this population offers the single, most straightforward

Recreation Residence Lease Rents

For fiscal year 2004, annual revenues to the State from recreation residence lease rents were approximately \$205,000.

A comparative analysis was conducted to demonstrate the feasibility or infeasibility and relative merits of five management options for the recreation residences, including private management under a master lease. Results of the analysis include the following:

Under State management, the projected net present value (NPV) of revenues to the State over a 20-year period is \$6.4 million. Annualized NPV revenue to the State is estimated to be \$515,000.

Under a master lease, projected NPV revenues over the same 20-year period are approximately \$6.0 million to the State and \$470,000 to the master lessee. Annualized NPV revenue is estimated to be \$478,000 to the State and \$44,350 to the master lessee. In addition, the master lease option meets a broad range of public benefit objectives, including (1) increasing the number of Hawai'i residents using the cabins; (2) increasing economic benefits (jobs and payroll, net government revenues, and profits to Hawai'i businesses) (3) improving the quality of the resources and facilities; and (4) assigning an equitable sharing of costs for operation and management of the infrastructure and support services.

Concession Fees

Concessions are leased by the State to a single private operator under negotiated terms guaranteeing the State a minimum annual income. The current lease with The Kōke'e Lodge, LLC, provides to the State a minimum guaranteed annual rent of \$226,101. Actual income to the State may

be higher based on a monthly percentage of gross concession receipts.

Maintenance and Service Fees

Maintenance and service fees should be charged to park tenants, concessionaires, and lessees to recapture the true costs to operate and maintain water, sewer, electrical and road systems. Currently, these fees amount to less than \$5,000 annually. Based on current expenses, potential annual revenue from service and maintenance fees are estimated at \$85,870. This represents a cost recovery and not a net gain to the State.

Miscellaneous Permits

Management of park use permits, including camping, fishing, hunting, hiking, and commercial uses should be consolidated within a single organizational entity. Permit rates should be adjusted to capture reasonable costs of maintaining the impacted resource. No permit fees will be assessed for activities related to cultural practices.

In practice, fees from hunting, hiking, fishing, and gathering permits do not comprise a significant source of revenue for the parks. They do serve a more important function in regulating and monitoring use of park resources. Estimated annual revenue from permit fees is approximately \$5,000.

1.6 IMPLEMENTATION STRATEGIES

◆ Recreation Residences

Recreation residence lots located within Kōke'e and Waimea Canyon State Parks are to remain in recreational use. The recreation residences have been occupied pursuant to month-to-month revocable permits issued by the BLNR since the expiration at the end of 2006 of previously held 20-year term leases.

On July 8, 2008, Act 223 was passed, requiring the Board of Land and Natural Resources to directly negotiate new leases with existing lessees or permittees of recreation residences.

The DSP is currently pursuing the following actions as directed by the BLNR:

- Enter into direct negotiations at a nominal rent for the lease of recreation residences to nonprofit organizations holding current leases or permits, in accordance with HRS, Section 171-43 or Section 171-43.1.
- Enter into direct negotiations for “one-time only” lease of recreation residences and lots at market-based rents to existing lessees or permittees of recreation use leases within the parks, pursuant to Act 223, and HRS, Section 171-44.
- Issue the remaining recreation residence leases by public auction with priority given first to residents of the island of Kaua‘i, second to residents of the state of Hawai‘i, and lastly to other interested parties regardless of residency.
- Retain two (2) cabins for State use.
- Other terms and conditions as may be prescribed by the Chairperson.
- All disposition processes are subject to review and approval of the Department of the Attorney General.
- Vacant lots, previously occupied, may be considered for a lease.

◆ **Phasing Plan**

The phasing plan is used to establish priorities for proposed master plan capital improvement projects and park management programs. The following criteria are used to prioritize projects:

- State Parks Mission – projects and

programs that are essential to fulfilling the State Parks mission to manage Hawai‘i’s outdoor resources for preservation, recreation, and education, e.g., maintenance of the area’s unique native ecosystems, vistas, trails, and historic-cultural landscape to ensure that public use does not compromise the integrity of the parks’ natural resources and intrinsic qualities.

- Natural Resource Protection and Management – projects and programs that focus on protection of native flora, fauna, and their habitats in the parks and surrounding natural areas, removal of invasive flora and fauna species, protection of significant historic and cultural sites and activities within the parks.
- Safety and Protection – projects and programs required to provide for the continued safety of park visitors, recreation residents, and staff, and that are necessary to protect park resources from imminent harm, e.g., fire breaks, emergency communication.
- Revenue Generation – projects and programs which will immediately generate revenue to support park operations and improvements, e.g., park entry station.
- Primary Visitor Attractions – park facilities and programs which attract and receive the largest number of visitors, e.g., Waimea Canyon Lookout, seasonal fishing and plum picking.

Table 1-4 presents a summary of estimated development costs by phase for master plan improvements. Development costs are broken down in **Appendix A**.

**Table 1-4
Master Plan Capital Improvement Projects Cost Estimate and Phasing**

PROGRAM	Phasing				Rec.	Total
	2007-2010	2011-2015	2016-2020	2021-2025	Res.	
CIRCULATION						
Entry Station	\$357,500	\$0	\$0	\$0	\$0	\$357,500
Arterial Roads	\$3,630,688	\$625,000	\$1,250,000	\$625,000	\$0	\$6,130,688
Collector Roads	\$299,300	\$333,333	\$333,333	\$333,333	\$0	\$1,299,299
Local Roads	\$183,840	\$155,000	\$150,000	\$150,000	\$630,000	\$1,268,840
Service Roads	\$25,000	\$106,500	\$25,000	\$25,000	\$0	\$181,500
Parking	\$416,000	\$2,173,610	\$507,000	\$1,372,700	\$0	\$4,469,310
Trails	\$444,700	\$301,808	\$613,853	\$560,973	\$0	\$1,921,334
Subtotal Circulation	\$5,357,028	\$3,695,251	\$2,879,186	\$3,067,006	\$630,000	\$15,628,471
OPEN SPACE						
Natural Resources	\$675,000	\$375,000	\$375,000	\$375,000	\$0	\$1,800,000
LAND USE						
Recreation Residences	\$0	\$0	\$0	\$0	\$165,000	\$165,000
Kanaloahuluhulu Meadow/Park Headquarters	\$71,800	\$2,370,500	\$1,725,300	\$325,000	\$0	\$4,492,600
Lookouts	\$44,000	\$2,191,000	\$1,644,000	\$1,183,500	\$0	
Picnic Facilities	\$0	\$0	\$67,000	\$663,500	\$0	\$1,030,500
Utilities	\$589,900	\$400,000	\$450,000	\$350,000	\$110,000	\$1,899,900
Subtotal Land Use	\$705,700	\$4,961,500	\$4,186,300	\$2,522,000	\$275,000	\$12,650,500
TOTAL	\$6,737,728	\$9,031,751	\$7,440,486	\$5,964,006	\$905,000	\$30,078,971

Note: Expanded cost estimate table is presented in Appendix A.

CHAPTER 2 INTRODUCTION

2.1 PURPOSE AND SCOPE OF THE MASTER PLAN

The objective of this study is to prepare a comprehensive Master Plan that will guide the management, enhancement and development of Kōkeʻe and Waimea Canyon State Parks to the year 2025. The master plan includes an analysis of activities within these Parks that impact adjoining State of Hawaiʻi lands, and an assessment of impacts to the Parks resulting from activities and uses in the adjoining State lands. An examination of leased and encumbered lands within the Parks' boundaries is included. Resources, public uses, issues and areas of concern extend across program boundaries and agency jurisdictions; therefore the master plan takes a regional approach to planning and management.

Preservation and management of existing natural resources and facilities, and perpetuation of the existing character of the parks by maintaining the area's unique native ecosystems, vistas, trails, and historic-cultural landscape are the primary goals of the Master Plan. The Division of State Parks (DSP), Department of Land and Natural Resources (DLNR), also wishes to preserve the unique historic character of Kōkeʻe and Waimea Canyon State Parks, a character that island residents and visitors cherish and have come to appreciate.

The planning process included a community-outreach effort through which community members and interested groups had the opportunity to participate in developing plan elements and commenting on the conceptual master plan alternatives. The community prefers to maintain the status quo.

DLNR is guided in this work by its mandate, set forth in Hawaii Revised Statutes (HRS), Section 184-6, which states:

“The department of land and natural resources shall preserve the parks and parkways in the state park system in their natural condition so far as may be consistent with their use and safety, and improve them in such manner as to retain to a maximum extent their natural, scenic, historic, and wildlife values for the use and enjoyment of the public.”

2.2 LOCATION

The Kōkeʻe and Waimea Canyon State Parks are two adjoining parks located on the west side of Kauaʻi. The parks were officially established in 1952 and are administered by the DSP, DLNR. In total, the two parks occupy 6,182.4 acres of land, with Kōkeʻe State Park encompassing 4,345 acres and Waimea Canyon State Park 1,837.4 acres.

The combined acreage is approximately 1.75 percent of the total land area on the island, and 40 percent of the State Parks acreage on Kauaʻi. The 6,175-acre Nā Pali Coast State Wilderness Park adjoins Kōkeʻe along a portion of the rim of Kalalau Valley, forming a continuous natural park landscape of nearly 12,500 acres. Access between Kōkeʻe and the Nā Pali Coast is not feasible however, due to the sheer valley cliffs (Chu, 1996).

Waimea Canyon State Park is located entirely within Waimea District. The Waimea-Hanalei District Boundary crosses Kōkeʻe State Park just south of mile marker 17 on Kōkeʻe Road. Lands surrounding the

parks consist primarily of State forest reserve, natural area reserve, and wilderness preserve lands administered by DLNR, Division of Forestry and Wildlife (DOFAW). These lands are actively managed by DOFAW for natural resource conservation, forest product development, hunting, and outdoor recreation. Access to DOFAW administered lands is via numerous unimproved 4-WD ridge roads that originate off of Kōkeʻe Road within the two parks.

The Department of Hawaiian Home Lands (DHHL) administers the Puʻu ʻŌpae Hawaiian Homes Land, which abuts the southern end of Waimea Canyon State Park. The primary access road to the DHHL property is Hāʻeleʻele Ridge Road, an unimproved 4-WD road that originates off of Kōkeʻe Road within the park boundary. Hāʻeleʻele Ridge Road also provides access to a segment of Kōkeʻe Ditch and to Puʻu ʻŌpae Reservoir.

Several county, state and federal agencies and private entities also operate facilities within the two parks. These include:

- NASA - operates a tracking station on Kaunuohua Ridge within Kōkeʻe State Park.
- U. S. Navy, Pacific Missile Range Facility - operates two radar stations, one on Kaunuohua Ridge within Kōkeʻe State Park, and one at the end of Mākaha Ridge Road within the Nā Pali-Kona Forest Reserve.
- Hawaiʻi Air National Guard - operates a radar tracking station within Kōkeʻe State Park and a microwave antenna site within Waimea Canyon State Park.
- Department of Education - operates the Kōkeʻe Discovery Center educational facility within Kōkeʻe State Park.

- The Kōkeʻe and Kekaha Irrigation Ditch Systems, including the Puʻu Lua and Kitano Reservoirs, are operated by a group of 5 permittees (Controlled Aquaculture Technology, Inc.; Syngenta Seeds, Inc.; Pioneer Hi-Bred International, Inc.; Gay & Robinson, Inc.; and Wally Johnson) under revocable permit from the State. The permit allows for access, operation and maintenance of the water transmission system and use of the water to serve diversified agricultural users in the Kekaha Agricultural Park.
- Hawaiian Telcom - operates a communications tower at Puʻu ka Pele, TMK: 1-4-01: 04, 16 and 17.
- State of Hawaiʻi, Department of Transportation retains jurisdiction of Waimea Canyon Drive from Waimea Town to the junction with Kōkeʻe Road, and retains jurisdiction of the Kōkeʻe Road continuation up to the entrance to Kōkeʻe State Park in the vicinity of the Halemanu Intersection.
- Kauaʻi County, Department of Public Works maintains Kōkeʻe Road from Kekaha to its junction with Waimea Canyon Drive within the park boundary.
- Kauaʻi Island Utility Cooperative (KIUC) has easements for power lines (former Kekaha Plantation electrical right-of-way) that start outside the Parks and serve users within the Parks.
- The Boy Scouts of America retains control of 29 acres of land in Puʻu ka Pele, acquired from the State (TMK: 1-4-01: 15). This facility is served by Park infrastructure.

2.3 GOALS FOR THE MASTER PLAN

Goal 1: Natural Resources - To protect, preserve, and restore the unique natural environments of Kōkeʻe and Waimea Canyon, enhance human understanding and

appreciation of Hawai‘i’s native ecosystems and introduced species, and ensure the continued existence of Hawai‘i’s unique flora and fauna for their own sake and for the benefit of Hawai‘i’s future generations.

Goal 2: Cultural Resources - To protect, preserve, and manage archaeological and historic sites and traditional cultural places within Kōke‘e and Waimea Canyon State Parks, and ensure the continuity of the traditional cultural values and practices that are unique to these parks.

Goal 3: Scenic Resources - To protect, enhance and interpret the scenic resources of Kōke‘e and Waimea Canyon State Parks and expand opportunities for visitors to experience the Parks’ scenic resources.

Goal 4: Outdoor Recreation Resources - To establish a broad range of outdoor recreational opportunities that are compatible with natural resources conservation and promotes heightened visitor awareness and appreciation of the parks’ natural and cultural resources and encourages the enjoyment of the outdoors in a safe and responsible manner.

Goal 5: Recreation Residences - To preserve, manage and interpret the legacy of the recreation residences in Kōke‘e and Waimea Canyon State Parks and promote the cultural landscape as part of the parks’ history.

Goal 6: Interpretation - To heighten visitor understanding, awareness and appreciation of the Parks’ natural, cultural, scenic, and recreational resources, and to promote preservation of these resources through public education programs and interpretive materials.

Goal 7: Park Infrastructure - To provide safe, economical, and dependable utility and infrastructure systems to facilitate visitors and users experiences while in the parks, and to ensure that valuable natural, cultural, historic, and scenic resources are not compromised by utility or infrastructure development.

Goal 8: Organizational Development and Management - To create a management structure that will ensure that operations at Kōke‘e and Waimea Canyon State Parks are financially self-sustaining, protect natural resources, and provide a high level of customer service. Also, to have in place a comprehensive program of education, prevention, enforcement, and control in order to respond to, and where possible, eliminate natural and man-made threats to public safety and the natural environment.

Goal 9: Park Expansion - To preserve lands contiguous with the Parks in order to preserve open space and natural resources, such as the views from and towards Waimea Canyon, Kekaha, and points beyond. To protect the scenic beauty of the area and prevent undesirable development, the acquisition of lands along Waimea Canyon Drive may be required.

2.4 REPORT ORGANIZATION

The master plan is organized into seven chapters as follows:

Chapter 1	Executive Summary,
Chapter 2	Introduction,
Chapter 3	Facility Inventory and Assessment,
Chapter 4	Existing Conditions and Assessment,
Chapter 5	Analysis,
Chapter 6	Alternatives, and
Chapter 7	Master Plan.

CHAPTER 3 FACILITY INVENTORY AND ASSESSMENT

3.1 OVERVIEW

This chapter presents an inventory and assessment of the existing facilities and infrastructure within the Parks. The assessment gives special attention to infrastructure and utility requirements of the recreation residences, park buildings, park lookouts, hiking trails, camp sites, and picnic areas. The purpose of this inventory and assessment is to document current conditions and propose facility and infrastructure improvements. A preliminary cost estimate to repair existing facilities is also included.

3.2 UTILITY SYSTEMS AND ROADWAYS

◆ WATER SYSTEM

Kōkeʻe and Waimea Canyon State Parks are serviced by three water systems, one for potable water and two for non-potable irrigation water.

Potable Water System

The DSP on Kauaʻi operates its own potable water system to service existing park facilities, including DLNR facilities, the recreation residences, Kōkeʻe Lodge and Natural History Museum, Puʻu Hinahina Lookout, Puʻu ka Pele Picnic area, the DOE’s Kōkeʻe Discovery Center, Navy, and NASA facilities. Existing potable water facilities (Public Water System No. 425) in Kōkeʻe State Park consists of two wells, pumps and chlorination system, a 200,000 gallon storage tank (elevation 3,760 feet above sea level (asl)) and a distribution system that includes most of the developed areas within the Park boundaries. See **Figure 3-1**.

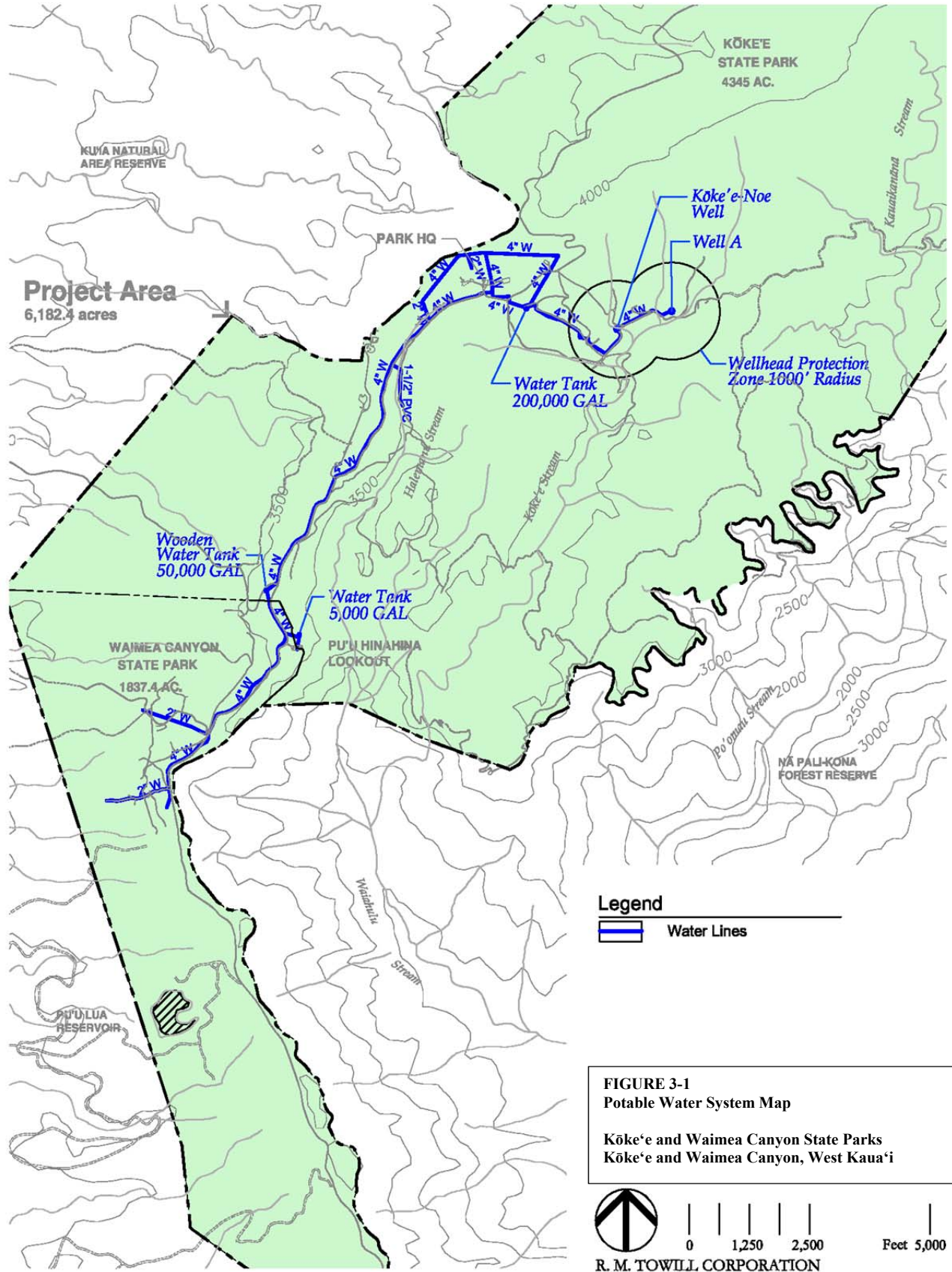
Prior to the installation of the well and storage system, potable water was taken from ʻElekeninui Stream and treated. The ʻElekeninui Stream potable water system, consisting of well and storage was abandoned. State Well No. 2-0739-01, is located at an elevation of 3,560 feet and has a pump capacity of 30 gallons per minute (GPM). A second well at approximately the same elevation has a pumping capacity of 40 gallons per minute.

The water from both pumps feed a 200,000 gallon storage tank located within the Kōkeʻe lease lots. The existing potable water system wells are located in a basin along Mōhihi Road in the vicinity of ʻElekeninui Stream. The wells are at a depth of approximately 39 and 150 feet below ground level. The existing source aquifer is a perched system. The water source is considered “perched” because the water is contained above an impervious rock layer which is a remnant of the caldera of the volcano that formed the island of Kauaʻi. Within this system, the maximum yield per well is estimated at 50 GPM (Commission on Water Resources Management, 2002).

Water distribution for the potable water system is primarily within the Kōkeʻe area. A water line feeds a 5,000 gallon tank (elevation 3,500 feet asl) at Puʻu Hinahina and a 50,000 gallon tank (elevation 3,580 feet asl) at Mākaha Ridge Road that services the lots in the Puʻu ka Pele area and the Navy’s Mākaha Ridge Road facility.

Potable water monitoring includes:

- Coliform monitoring program
- Lead and copper monitoring program



- Chemical monitoring by the Department of Health’s Safe Drinking Water Branch
- Phase II and Phase V monitoring program

The quality of the water from the wells is much better than the surface catchment system previously used and currently meets DOH standards based on monthly data. Traces of lead have been detected in the system and the Division of State Parks is currently working on reduction of the lead in the water by providing treatment.

The potable water system is designed to accommodate 2,000 persons and currently has 93 service connections (communications from State Parks). This number does not include all of the leased lots.

Based on available meter reading data a total of 12,918,024 gallons was used by metered users between January 1999 and January 2001. In addition, an average of 265,000 gallons per month was estimated to be used by the non-metered users, which include the Kōke‘e Lodge, its maintenance facilities, laundry, and the Kōke‘e Discovery Center. Average water usage (for 24 months) was estimated to be 803,251 gallons per month.

Pumping data (6 months, July 2001 to January 2002) indicate that an average of 1,408,333 gallons per month was pumped into the storage tank (47,000 gallons per day). Based on the supply (1,408,333 gallons per month) and the demand (803,251 gallons per month), there is approximately 605,082 gallons that is either being used by non-metered users and/or lost due to leaks in the system, or is the result of faulty meter readings. State Parks staff suggests that the pump meter reading is faulty because the meters measure pump activity and when no water is being pumped.

The metered users are charged \$0.35 per 1000 gallons used. The amount collected averages \$188 per month (538,251 gal. per month/1000 x \$0.35) or \$2,260 per year. In contrast, the County of Kaua‘i Water Department charges \$2.10 per 1,000 gallons below 20,000 gallons charged bi-monthly. Therefore the equivalent charge for the 803,251 gallons used, based on the County water rates, would be \$843 per month (803,251 / 1000 x \$2.10 / 2) or \$10,120 per year.

Water service to the Waimea Canyon Lookout is via a 10,000 gallon wooden storage tank and the Kōke‘e Ditch System. The water from the ditch is not treated and is used for non-potable water at the lookout restroom.

Water for the Kalalau Lookout is provided by a separate well operated by the Kōke‘e Air Force Station. The Air Force water system does not meet State standards for safe drinking water, thus is used only for non-potable applications at the lookout restroom. Pu‘u o Kila Lookout is not serviced by a water system.

Kōke‘e Irrigation System (See Figure 3-2)

The Kōke‘e -Waimea area has three ditch irrigation water systems: the Kōke‘e, Kekaha, and Waimea Ditch Systems. Each system played an important role in the development of agriculture in the “lowlands”.

The Kōke‘e ditch, completed in 1926, intercepts flow from the Mōhihi, Waiakoali, Kawaikōi, Kauaikananā, Halemanu and Kōke‘e Streams at a peak altitude of approximately 3,400 feet. The Kōke‘e system consists of a 21 mile collection and conveyance system including 48 tunnels averaging 1,000 feet in length, with the longest being 3,000 feet. The system also includes a 260 million gallon reservoir (Pu‘u Lua), a second 63 million gallon reservoir

(Pu‘u ‘Ōpae), and a third reservoir (Kitano Reservoir) located 2.5 miles south of the Pu‘u Lua reservoir. Between Camp 8, within the Alaka‘i Swamp, and Pu‘u Lua Reservoir, the ditch system draws a maximum capacity of 70 mgd. When the system appears to be reaching capacity, water is spilled off into Kauhao Stream to prevent overflow. Between Pu‘u Lua and Pu‘u ‘Ōpae and Kitano reservoirs, the ditch has a capacity of 26 mgd, with the Pu‘u ‘Ōpae segment accommodating up to 7 mgd and the Kitano segment carrying the remaining capacity of 19 mgd. The system was originally built to provide for the water needs of the sugar operations in the lowlands surrounding Waimea and Kekaha. See **Figure 3-2**, Irrigation Ditch System.

The Waimea Canyon Lookout restroom is provided with non-potable water from the Kōke‘e Ditch system via a 10,000 gallon wooden water tank.

The Waimea System, constructed in 1903, diverts portions of the flow of the Waimea River from an elevation of approximately 200 feet and travels through open ditches to the west side of the river for approximately 3 miles to the coastal plains north of Waimea town, and for another 4 miles to the west.

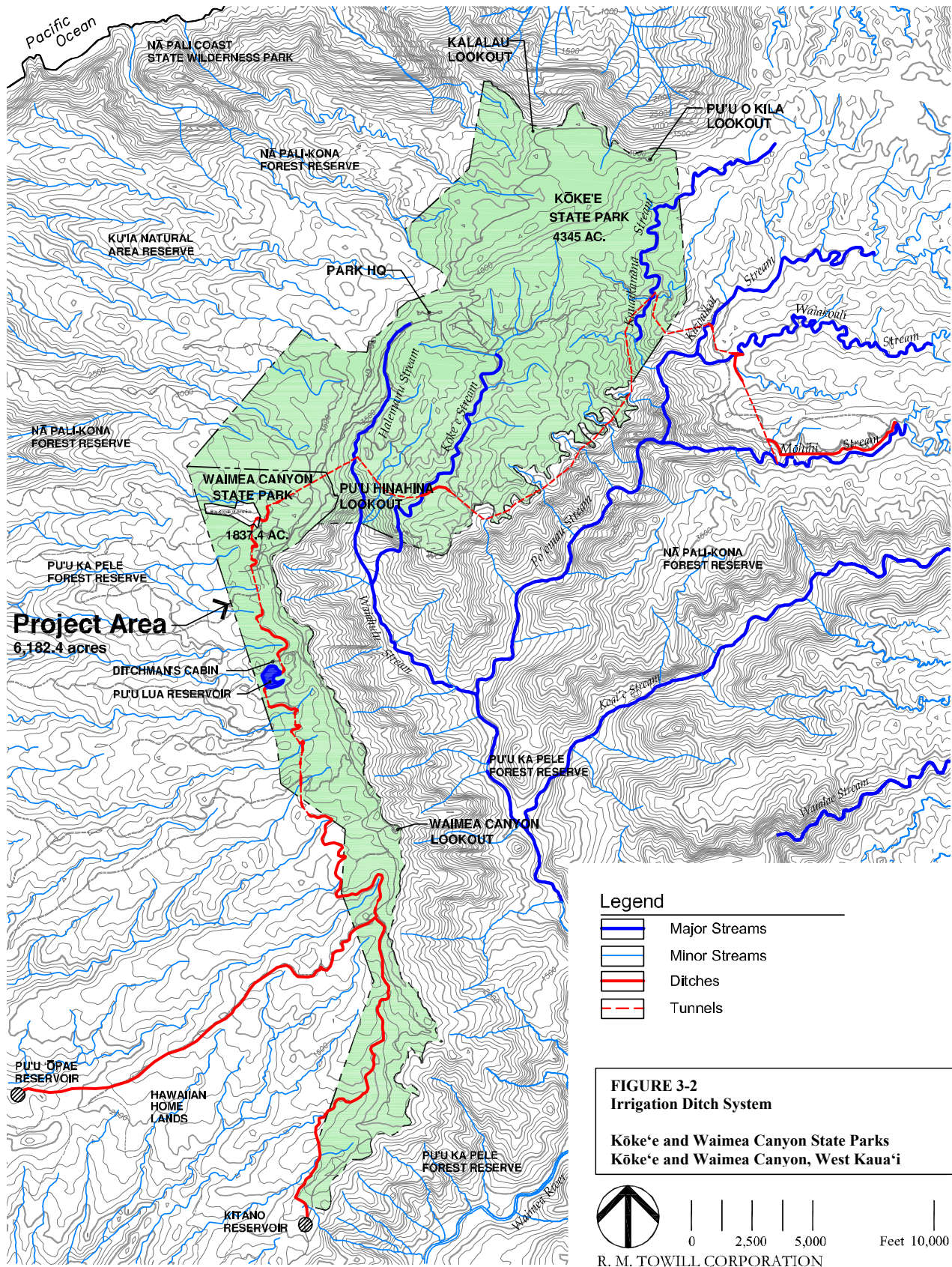
The Kekaha system, built in 1901, diverts water from the Koai‘e and Waiiahulu Streams and conveys the water to an irrigation system in Waimea. The irrigation water system currently serves the diversified agricultural users located in the Kekaha Agricultural Park. The agricultural users operate and maintain a portion of an existing water transportation system to take water from the Kōke‘e and Kekaha ditches.

Findings

The following is a summary of findings relating to the water systems in the Kōke‘e

area. Basic recommended improvements to the water system are also identified.

- The capacity of the existing well and storage system is not sufficient to meet the demand of existing facilities or future expansion.
- A non-potable water source, from ‘Elekeninui Stream (elevation 3,600 feet above sea level (asl)) is available, however a transmission system will need to be developed.
- Development of water features for the park can be considered through the use of the existing Kōke‘e Ditch system, expanding the ditch system to include additional reservoirs, or new ditch segments.
- Recreational opportunities for the non-potable water systems can be developed, i.e. fishing in streams and the use of Pu‘u Lua reservoir as a visitor attraction and interpretive site for viewing and learning about the Kōke‘e Ditch system.
- Many of the lateral lines of the system are old and in poor condition. A detailed analysis should be performed and necessary replacement/repair work commence as soon as possible.
- Potable water for the existing restrooms at the Waimea Canyon Lookout and Kalalau Lookout are needed.
- A replacement and backup sources of potable water are needed for the park to service existing uses (recreation residences, Kōke‘e Lodge and Natural History Museum, State cabins, CCC Camp), as well as provide additional capacity for park development. Water development is being pursued by the Engineering Division of DLNR.



- Establish a Wellhead Protection Zone of 1000 feet from cesspools for potable well sources.
- A non-potable water supply is necessary for firefighting purposes. According to the DOFAW, their fire engine water carrying capacity is 750 gallons and its pump operates at 1,500 gallons per minute. Their rescue truck carries 200 gallons and pumps at 125 gallons per minute. Thirty minutes of firefighting capacity provided by the engine would require a 45,000 gallon tank.
- Development of reservoir access at Pu‘u Lua and dip tanks in open areas for helicopters equipped with dip buckets is required for wild land fire control.
- Water meters should be installed for all major users - i.e. Kōke‘e Discovery Center, Kōke‘e Lodge, Kōke‘e Natural History Museum, etc.
- The water source and treatment systems might best be managed by outsourcing to a private operator.

◆ **ELECTRICAL, COMMUNICATIONS SYSTEMS, AND OTHER RELATED STRUCTURES**

Existing Power and Communications System

Primary electrical and telephone services are provided by public utility companies (KIUC and Hawaiian Telcom). See **Figure 3-3**. These services are available from overhead lines located along Kōke‘e Road and in the recreation residential areas. Service into the recreation residential areas do not necessarily follow the dirt roadways and in many cases cut through the forest in a somewhat random manner and without the

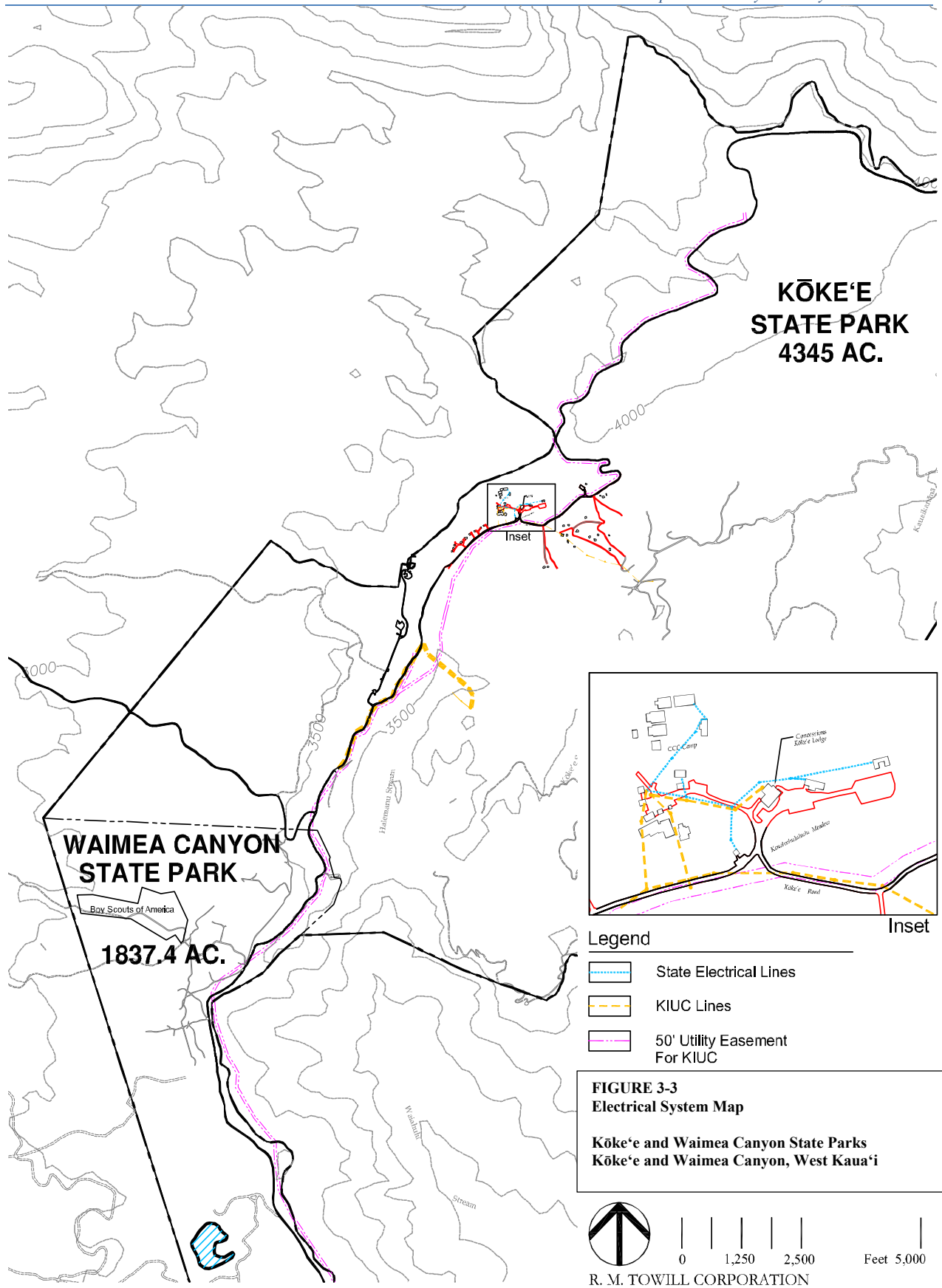
benefit of established easements. Currently, not all lease lots are connected to the power grid. The decision to connect to the power grid is a choice of the individual lessee. Public phone service is limited to pay phones at the Kōke‘e Lodge and at the Pu‘u ka Pele picnic area. Cellular phone coverage is unreliable through most of Waimea Canyon State Park, and unavailable in Kōke‘e State Park past the intersection of Kōke‘e Road and Halemanu Road.

Another power facility along the Kōke‘e Road is the KIUC substation located approximately one-half mile before the Kukui Trail.

Other Structures

Hawaiian Telcom Tower at Pu‘u ka Pele

The Hawaiian Telcom’s antenna stands high atop Pu‘u ka Pele. This repeater site provides services to the Pacific Missile Range Facility at Barking Sands and Kukui o Lono. The site also provides communications links for the NASA facility and the Navy facilities in the parks. The facility includes an equipment building (approximately 10 ft. by 15 ft.), electrical generator, and a parking lot for four vehicles. The building is located approximately 50-75 feet above the Kōke‘e Road grade. Approach to the building is via a concrete driveway. The building is screened from view from the roadway by existing vegetation. From the building, there are a series of steps (near vertical) to the top of Pu‘u ka Pele where the antenna is located. The elevation change from the building to the top of Pu‘u ka Pele is approximately 200 feet. A “raceway” for the communication lines is located adjacent to the walkway.



Past archaeological surveys of the area have found three sites at Pu‘u ka Pele that are now being grouped together and called the Pu‘u ka Pele Complex. The sites include the Ahuloulu Heiau and the remains of two separate groupings of house sites.

Kukui Communication Facility

This facility consists of a 180-foot high communication tower surrounded by several buildings that contain repeater equipment owned by federal, state and county agencies. This facility is located within a 1.25 acre parcel situated along the west side of Kōke‘e Road at about the 9 mile marker. The site contains three buildings. The main structure is approximately 12 feet by 15 feet. A parking area is located in front of the building and is large enough to accommodate 6 to 9 cars. To the east of the main building is a small trailer that is approximately 6 feet by 6 feet. To the west and at a lower elevation is another building which contains a generator.

Findings

- The Kukui Tower site has potential as an area for parking and as a trailhead for the Kukui Trail and Iliou Nature Loop Trail.
- Use of archaeological features at Pu‘u ka Pele as an interpretive site is problematic due to the presence of the microwave antenna tower. Also, the site is difficult to monitor. Drawing public attention to an isolated archaeological site subjects the site to the potential for vandalism and destruction.
- The existing Kukui tower is a visual intrusion into the landscape. The tower is visible from Pu‘u Hinahina and Waimea Canyon Lookouts. Mitigating this issue will require the cooperation of multiple agencies with jurisdiction over the site, including DLNR, and the U.S. Air

Force.

- Loss of power and communications create a safety hazard that may result from a tree or limb falling onto overhead power lines.
- Undergrounding of the power and communication lines is an expensive solution. An alternative to undergrounding the power and communication lines is to re-route lines to less visible areas.

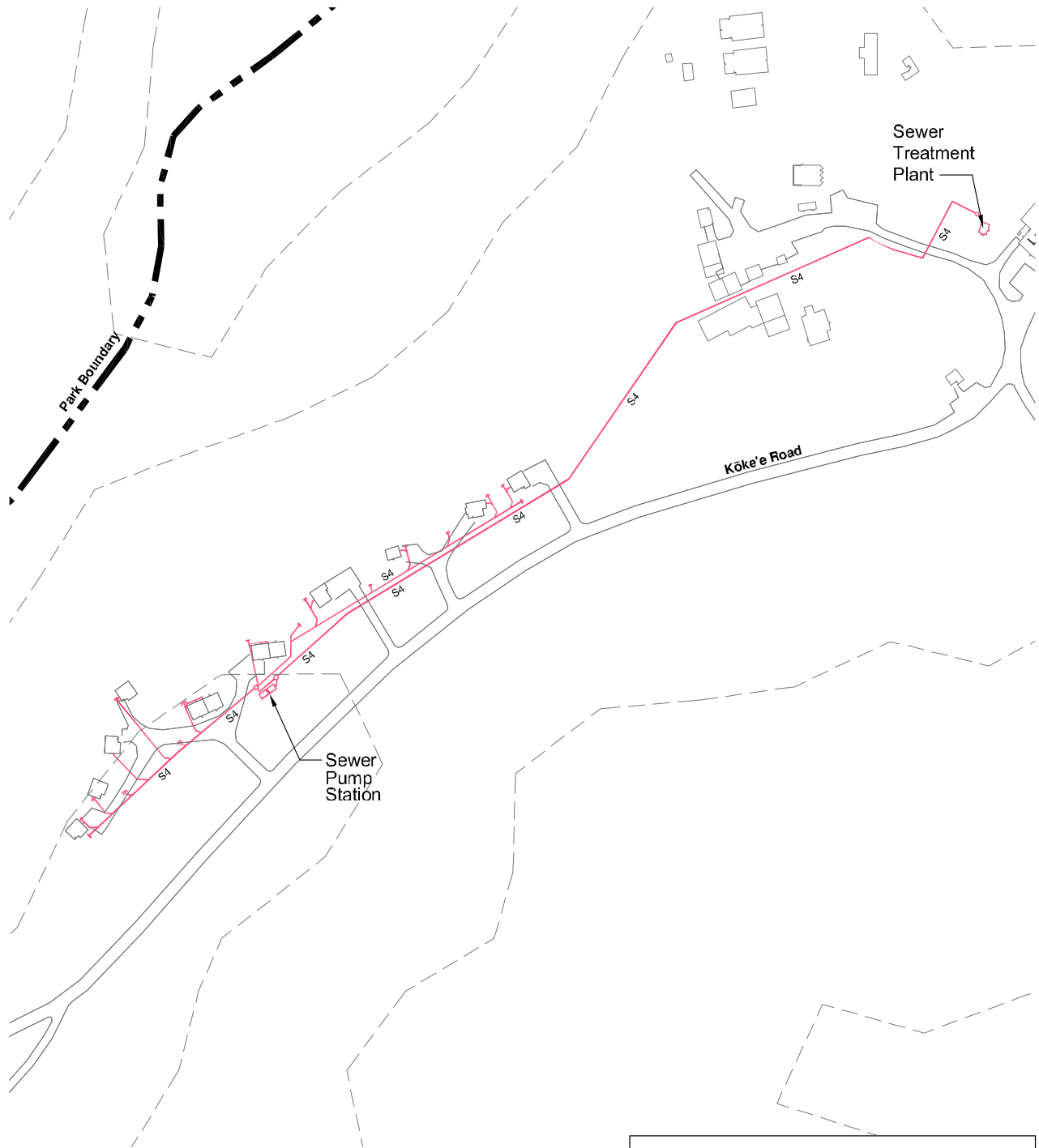
◆ SEWER SYSTEM

Existing Collection and Treatment

Cesspools are the primary method for disposal of sewage within the Waimea Canyon and Kōke‘e State Parks, and are presently utilized at all leased cabin lots. The only treated sewer system in the park is located near the Kōke‘e Lodge. The treatment system utilizes a leach field system with a design capacity of 12,000 gallons per day. Current utilization is approximately 3,000 to 4,000 gallons per day. See **Figure 3-4**.

The system services the Kōke‘e Lodge, the Kōke‘e Natural History Museum, the Kōke‘e Pavilion at Kanaloahululu Meadow, restroom in the camping area, and the 12 rental cabins. A pump station is located at the rental cabin complex to move the effluent to the treatment facility. In doing so, the problem of frequent pumping of the cesspools, and the potential for cesspool leakage in these areas has been alleviated.

The current system is designed to pump the effluent up to the leach field for treatment. During power outages, the emergency generator is used to run the system. During periods of high rainfall, the leach field cannot operate properly because the ground becomes saturated.

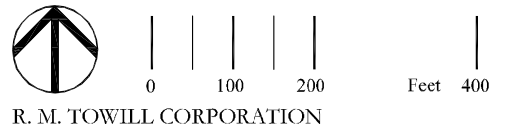


Legend

— Sewer Lines

S4 = 4" Sewer Line

FIGURE 3-4
Sewer Lines, Rental Cabins Map
Kōke'e and Waimea Canyon State Parks
Kōke'e and Waimea Canyon, West Kaua'i



The Environmental Protection Agency (EPA) instituted Underground Injection Control regulations on December 7, 1999 which prohibit the construction of new large-capacity cesspools. The ban on large-capacity cesspools, to be implemented on April 5, 2005, will impact the operations at the Park. A large-capacity cesspool is defined as “a system that has the capacity to serve 20 or more persons per day, such as a cesspool at a rest stop, crew quarters or school” (EPA 909-F-00-004, May 2000). The cesspools are being banned because of the “likelihood of releasing pathogens (disease causing organisms) and nutrients (such as nitrate) into the ground water.” **Figure 3-5** shows the location of known large capacity cesspools. The known facilities with large-capacity cesspools include: NASA facility, and the Air Force facility. In addition to these sites, private systems have been developed at the private camping sites operated by the YWCA, Methodist Camp, Boy Scout Camp, Hongwanji Camp, Seventh Day Adventist Camp, and the United Church of Christ Camp.

Another reason for the conversion of the existing cesspools to a treatment system is that cesspool failures could result in contamination of the ground water. The lots which are located near the water wells may pose a risk if there are failures of their cesspools. Therefore, a wellhead protection zone of 1,000 feet is proposed.

Currently, the Kōke‘e Discovery Center operates with three tanks for sewage waste disposal. The tanks have a combined capacity of 3,500-gallons. These are periodically pumped out. Grey water drains into a leach field.

Findings

- Lots that are located above the current treatment system in Kanaloahuluhulu Meadow may be at a sufficient elevation to collect and gravity feed to the treatment system.
- Leach field expansion may be required to handle effluent during periods of high and prolonged rainfall causing ground saturation by water. Because the potable water source for the Kōke‘e area is located down gradient of the buried caldera, and because lease lots have been developed up-slope of the drinking water source, use of cesspools at individual cabin lots in the Kōke‘e area should be discontinued unless alternative treatment systems are implemented, such as individual treatment systems.
- Plans to tie the Kōke‘e Discovery Center (DOE) into this sewer system have been formed but no timetable for implementation has been established.
- The remaining large user Kōke‘e lots should convert to individual wastewater treatment systems - septic tank systems as a condition of the 2005 lease renewals.
- Expansion of the leach field will be necessary to handle periods of high rainfall.

◆ **ROADWAYS**

The entire study area has approximately 69 miles of roads that are maintained by either the Department of Land and Natural Resources, the State Department of Transportation, County Department of Public Works, or the Navy. The road types (paved or unpaved), maintenance jurisdiction, condition, and recommended improvements are described below. See **Figure 3-6**.

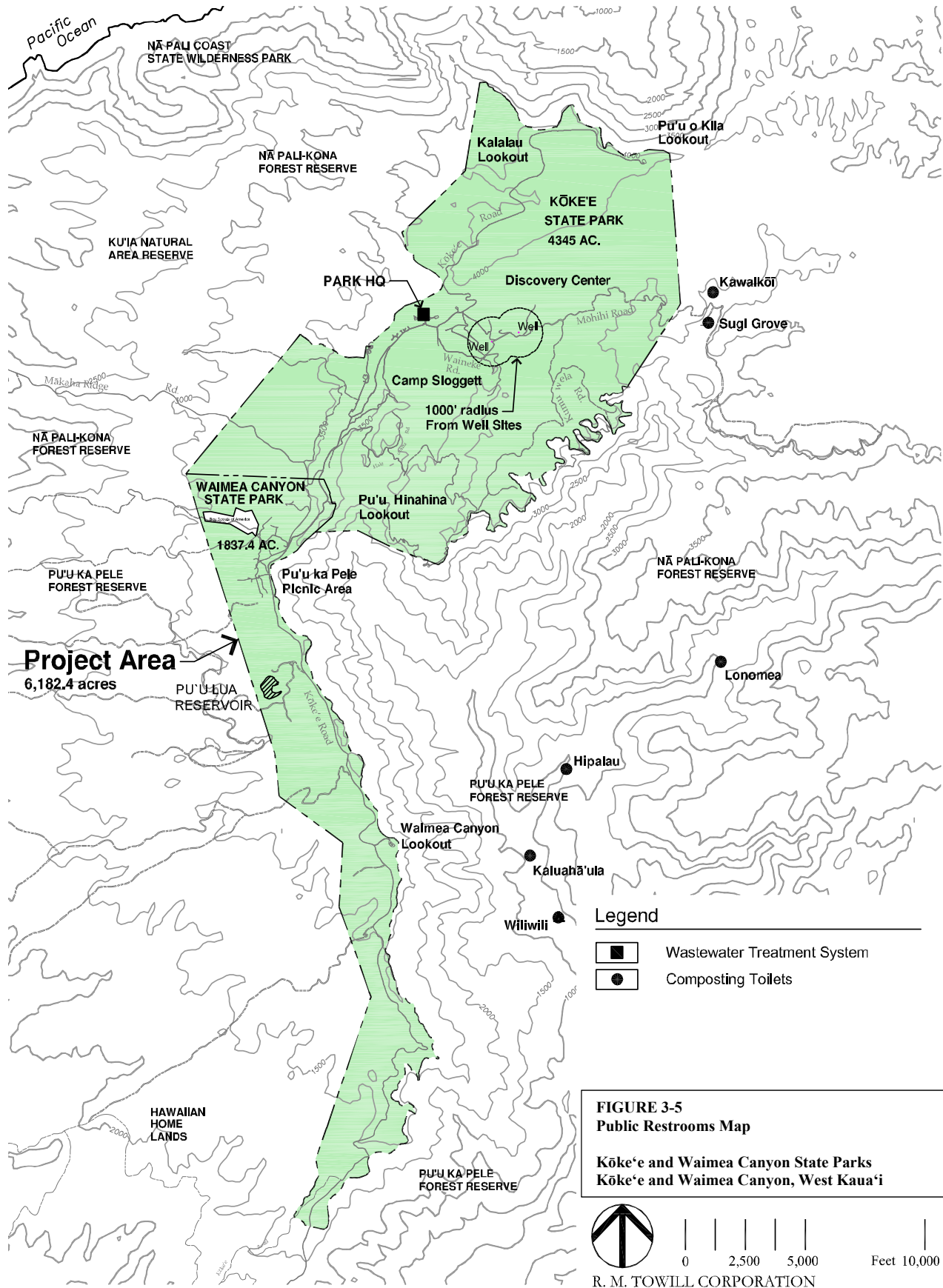
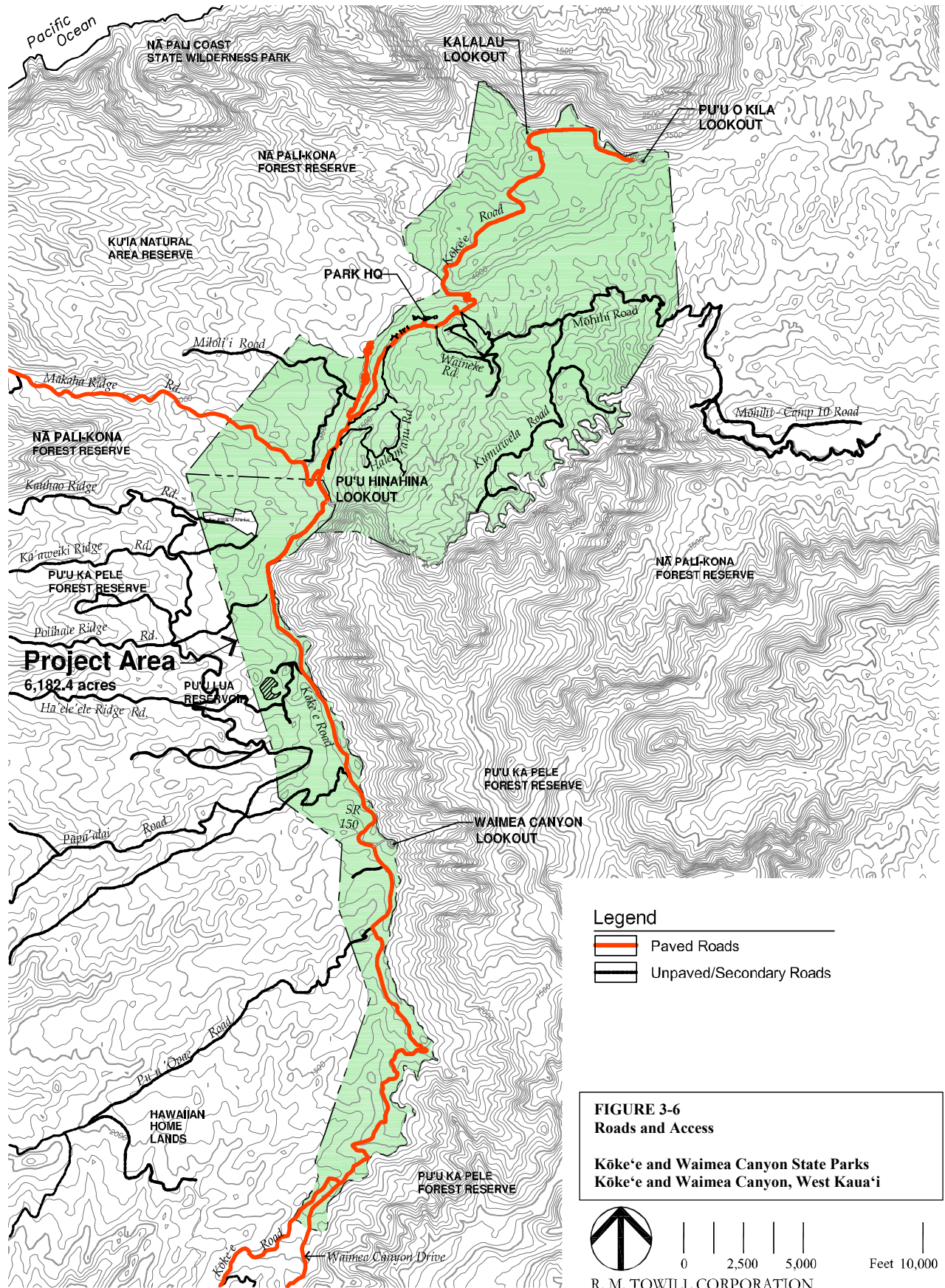


FIGURE 3-5
Public Restrooms Map
 Kōke'e and Waimea Canyon State Parks
 Kōke'e and Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION



Existing Paved Roadway (SR 550)

The drive from the Kaumuali‘i Highway into Waimea Canyon and Kōke‘e State Parks originate from two locations. The first and more convenient route from the east is via Waimea Canyon Drive (SR 550). Starting in Waimea town, the road climbs steeply for 7 miles where it intersects the Kōke‘e Road, just above the present park boundary (milepost 6.8). The alternate route, located to the west, is Kōke‘e Road. It starts its ascent from Kekaha and climbs through Waipio Valley at a less steep incline and is therefore the favored route for tour buses and other heavy vehicles. The roadway is asphalt with lanes averaging 10-11 feet. The road is not lighted and does not have paved shoulders, except at certain pull-off areas. Guardrails are located at various locations.

Both roads converge at a T-intersection near the 7 mile marker at an elevation of 2300 ft. This intersection is not lighted. Kōke‘e Road continues for another 11 miles through the parks and ends at the Kalalau Lookout (milepost 18). At the end of Kōke‘e Road, Pu‘u o Kila Road begins.

The Mākaha Ridge Road is the only other paved road within the study area. This road is approximately 4 miles long and connects with the Pacific Missile Range Facility (PMRF) at the end of Mākaha Ridge. The road is maintained by the military.

The drive along the Waimea Canyon Drive and Kōke‘e Road provides scenic vistas once one leaves Waimea town. The road skirts the western rim of the Waimea Canyon and in the process affords the visitor occasional views of the Canyon. At the 1 mile mark above Waimea Town, the visitor is afforded a view of the plains below that extend from Hanapēpē towards Mānā. As one continues to higher elevation (800+ feet), the views of Ni‘ihau becomes the center of attraction, next to the canyon

views. The vegetation along the drive changes from urban foliage to remnant sugar cane fields to a mixed forest of introduced trees. The first sign of native vegetation is apparent at the 7.5 mile marker (2,400-foot elevation) where koa trees (*Acacia koa*) can be seen interspersed within stands of eucalyptus. A mile further up the road, the forest is dominated by native trees with new growth koa and ‘ōhi‘a crowding a few interspersed eucalyptus trees. The majority of the drive through the park is flanked by a mixture of introduced and native tree species in varying dominance. The Kaunuohua Ridgeline at Halemanu is dominated by native trees and shrubs including pūkiawe and ‘ōhelo‘ai.

Kōke‘e Road is the main conduit in both Parks, providing primary access to all points within the parks and surrounding forest reserves and natural areas. The activity areas (lookouts, trailheads, picnic areas, Lodge, and access road intersections) form the major nodes along the roadway.

Maintenance of Paved Road Sections

Jurisdiction and maintenance responsibilities of the roadway system are split between the State Department of Transportation (DOT), Highways Division, the DLNR/State Parks Division, the Kaua‘i County/Public Works Department, and the Navy.

The County is responsible for Kōke‘e Road from Kekaha to the Waimea Canyon Drive intersection (7 mile marker). The State DOT is responsible for the entire length of Waimea Canyon Drive and Kōke‘e Road from its intersection with Waimea Canyon Drive to the southern boundary of Kōke‘e State Park. Jurisdiction and maintenance responsibilities for Kōke‘e Road and Pu‘u o Kila Road from the 14 mile marker to the end of the road at the Pu‘u o Kila Lookout is with the DLNR, State Parks (approx. 5 miles)

According to DOT officials, general

maintenance (i.e. resurfacing) is normally scheduled every 8 to 10 years. The Waimea Canyon Drive was resurfaced in July 2002. The DOT maintains a road crew that repairs potholes and trims vegetation along the roadway shoulders. The County maintained segment is also in good condition. Due to its lower elevation and dryer environment, less effort is needed to maintain the vegetation along the roadway shoulders.

The segment within Kōkeʻe State Park is maintained by the DSP. Currently, maintenance is limited to grass cutting, removal of hazardous trees, and pothole patching. Limited staffing and frequent rain make it difficult to patch the potholes on a timely basis.

The roadway from the Halemanu Road intersection to the Kanaloahululu Meadow is in good condition. There are no paved shoulders and the road is not lighted. The segment between the Kanaloahululu Meadow and Kalalau Lookout is in poor condition with several potholes that make driving hazardous during fog or heavy rain conditions. This segment of road also does not have any paved shoulders. The segment between the Kalalau Lookout and the Puʻu o Kila Lookout is in good condition. This section of the road is also without shoulders. DLNR staff has indicated that this latter segment of road cannot handle large vehicles such as tour buses because the road grade was not designed to accept the heavier load. However, this should not be a problem as large buses will not be permitted beyond Waimea Canyon Lookout.

Unpaved Roads

The majority of the Kōkeʻe study area is served via a series of unpaved dirt-gravel roads. An approximate total of 49.5 miles provide access to various parts of the study area, excluding driveways and service roads. The longest being the Mōhihi-Camp 10 road

covering approximately 8 miles. Of the 49.5 miles, approximately 10 miles of roads are used to access the lease lots.

Maintenance of Unpaved Road Sections

Of the total unpaved road sections, 10.5 miles is under the jurisdiction of the DSP and the remaining 39 miles is under the jurisdiction of the DOFAW. Maintenance of the unpaved roadways consists of patching the roadway with additional gravel when needed and occasional regrading. In addition, the drainage structures (swales, ditches, and culverts) are cleaned and vegetation cutback in order to keep rainwater from flowing across or along the roadway. This latter action causes the gravel surface to wash away causing potholes.

DLNR staff report that road maintenance is an ongoing activity. The consequence of not maintaining the roads, especially during the rainy periods is to risk complete deterioration of the road bed leading to regrading, or worse, reconstruction of the road. During the last four fiscal years (since 1999), very little has been expended to maintain the road network.

Roadway Conditions

A qualitative evaluation of the existing road network was performed as part of this project. The evaluation mainly entailed visual inspection of the road surface, no structural evaluations were performed, nor were the cross-sections of the roads analyzed. The evaluation examined the paved and unpaved roads and a nominal rating was assigned to the road. The rating is as follows:

- 1 - Good - no potholes, smooth riding surface, road well-drained.
- 2 - Fair - some ruts and potholes, worn or damaged surface, worn topping, patches with no gravel,

drainage features in need of maintenance.

- 3 - Poor - roadway potholed to sub base course, no gravel, drainage not functioning - water drains and causes ponding on the road.

In addition to the qualitative rating of the road, an inventory of road deficiencies and hazards was compiled. The measure examined safety enhancements, such as guardrails, increasing sight distances, and shoulders, and maintenance concerns, such as unmaintained drainage features.

The evaluation of the roads was based on a sampling of road network. Nearly 100 percent of the paved roads were examined and approximately 40 percent of the unpaved roads were examined. Based on the evaluations the following were concluded:

- Most of the DLNR segments are in poor and hazardous condition. The surface needs repaving or possible reconstruction, there is no center line stripe or markers, 16' pavement widths are narrow for two-way traffic, and there are no paved shoulders for most of the roadway. Pedestrians are forced to walk in the travel way because there are no sidewalks or shoulders. Most of the steeper and more heavily used unpaved roads are badly rutted and eroded, especially in the Kōke'e lots, Halemanu and Pu'u ka Pele areas. During rainfall events, water ponding and muddy conditions cause significant problems on the unpaved roads, making the depth of the potholes indiscernible. Maintenance of the dirt roads does not appear to be performed on a regular basis as drainage swales and ditches alongside the roads are overgrown with vegetation or are silted in.
- From 1986 to 1994, a total of 68 traffic

accidents were reported on Kōke'e Road with 2 fatalities. Another 32 accidents occurred along Waimea Canyon Drive/ Kōke'e Road with no fatalities. The statistics indicate that the majority of accidents involved a single car. Only one accident involved a pedestrian (MP 2000).

Parking Areas

Formal parking areas are principally associated with the developed areas in the park, namely, the lookouts, picnic area and Kanaloahuluhulu Meadow.

Most of the parking areas are designed for automobiles and small vans. The Waimea Canyon and Kalalau Lookouts are the exceptions where stalls have been created for large tour buses. The parking areas at the Lodge and Pu'u ka Pele picnic area are not paved, but are periodically graveled. The driveway and parking surfaces at the Pu'u ka Pele picnic area were showing signs of erosion damage and in need of new gravel during site visits in Fall 2002. Each of the parking areas is provided with parking stalls for persons with disabilities.

Nominal conditions using the roadway evaluation criteria at the parking areas are as follows:

- Good - Waimea Canyon Lookout, Pu'u Hinahina Lookout, Kalalau Lookout, and Pu'u o Kila Lookout.
- Adequate - Kōke'e Lodge area and Pu'u ka Pele Picnic Area during dry periods.

Parking capacity is inadequate at Kanaloahuluhulu Meadow, Waimea Canyon Lookout, Kalalau Lookout, and Pu'u o Kila Lookout.

Findings

The following is a summary of this section:

- The roadway provides a potential

medium for interpreting the changing vegetation zones, from the lowland environment affected by agricultural activities and coastal process, through mid-level mixed forests, to native-dominant rain forest.

- Center line and pavement edge night reflectors are installed on only limited segments of Kōke‘e Road, and cease altogether at Kanaloahululu Meadow.
- Installation of reflectors along the entire length of Kōke‘e Road and Waimea Canyon Drive would greatly improve safety, especially at night and during foggy or rainy conditions.
- Re grading and repair is needed at main dirt road segments. If performed periodically, this form of maintenance may be adequate for some of the less traveled roads. A more permanent treatment, such as AC paving should be considered at the roads that are more heavily utilized.
- Demand for parking is evident at the Kukui/Iliau Nature Loop Trailhead and at the Kōke‘e/Halemanu Road intersection. Currently, cars park on the unimproved shoulder. Parking space is particularly limited at the Kukui/Iliau Nature Loop Trailhead. Parking for the facilities identified should be evaluated to determine the number required and whether

parking can be accommodated at another location.

- Off-road parking accommodations should be planned in coordination with the trail interpretation program.
- Parking is inadequate at Waimea Canyon Lookout, Kanaloahululu Meadow, Kalalau Lookout, and Pu‘u o Kila Lookout. However, as a policy and resource preservation choice, the development of parking could also be kept at its current levels as a means of controlling the use of resources (land and water) and a means of keeping the visitor experience to one of wilderness versus urban development.

3.3 RECREATION RESIDENCES

◆ INVENTORY

A total of 150 recreation residence lease lots are located within Kōke‘e and Waimea Canyon State Parks (**Table 3-1**). The lease lots are grouped into three “neighborhoods”: Halemanu, Kōke‘e, and Pu‘u ka Pele. Field surveys of the recreation residence lease lots were conducted as part of a larger assessment of park facilities. The purpose of the investigations was to inventory the lease lots, evaluate architectural and historic significance of the recreation residences, and assess conditions of the structures on the lots.

Table 3-1
Summary of Recreation Residence Lease Lots in the Kōke‘e -Waimea Area

Location	Original 47 Lots	Occupied Lots*	Vacant Lots	Group / Nonprofit Lots	Total Lots*
Pu‘u ka Pele	0	50 (55)	7 (7)	5 (6)	62(57)
Halemanu	14	14 (14)	2 (2)	0 (0)	16(16)
Kōke‘e	33	41 (45)	25 (25)	2 (2)	68(62)
Total	47	105 (114)	34 (36)	7 (8)	146(135)

Occupied Lots = Lots with structures on them. Total Lots = Number of lots as determined by tax key number.
Sum of occupied, vacant, and group/nonprofit lots.

To complete the inventory of the recreation residences, the following tasks were performed:

- Prepare drawings of the building foot prints and improved areas for existing recreation residence lease lots within the parks.
- Photograph the exterior elevations where not impeded by physical constraints such as topography, vegetation, etc.
- Complete State Historic Preservation Office (SHPO) “Kōke‘e Historic Resources Inventory” form for each surveyed building.
- Evaluate existing buildings through visual examinations to determine if they are suitable for continued short-term and/or long-term lease or other adaptive park use.

Kōke‘e

The Kōke‘e area contains 69 subdivided recreation residence lots (**Figure 3-7**). Twenty-five lots in the Kōke‘e area are vacant and overgrown with vegetation making it difficult to identify and evaluate in the field. Thirty-three (33) of the currently leased lots are from the original 47 camp lots (**Figure 3-8**). Of these 33 lots, five are currently vacant.

The lots in the Kōke‘e area are generally a half-acre in size; however, a few lots are an acre or more. The larger lots tend to have recreation residences that are older and usually of higher architectural value according to the findings of the Historic Preservation Division. A concentration of lots is strung along a small ridge near the water tanks. The Kōke‘e lots are fairly well dispersed and integrated into the forest setting. Front yards are well-maintained and are often landscaped with lawns and colorful flower beds.

Table 3-2 shows the year the recreation residences were built by location. It is significant to note that a little more than 50 percent of the recreation residences were built prior to 1940.

Pu‘u ka Pele

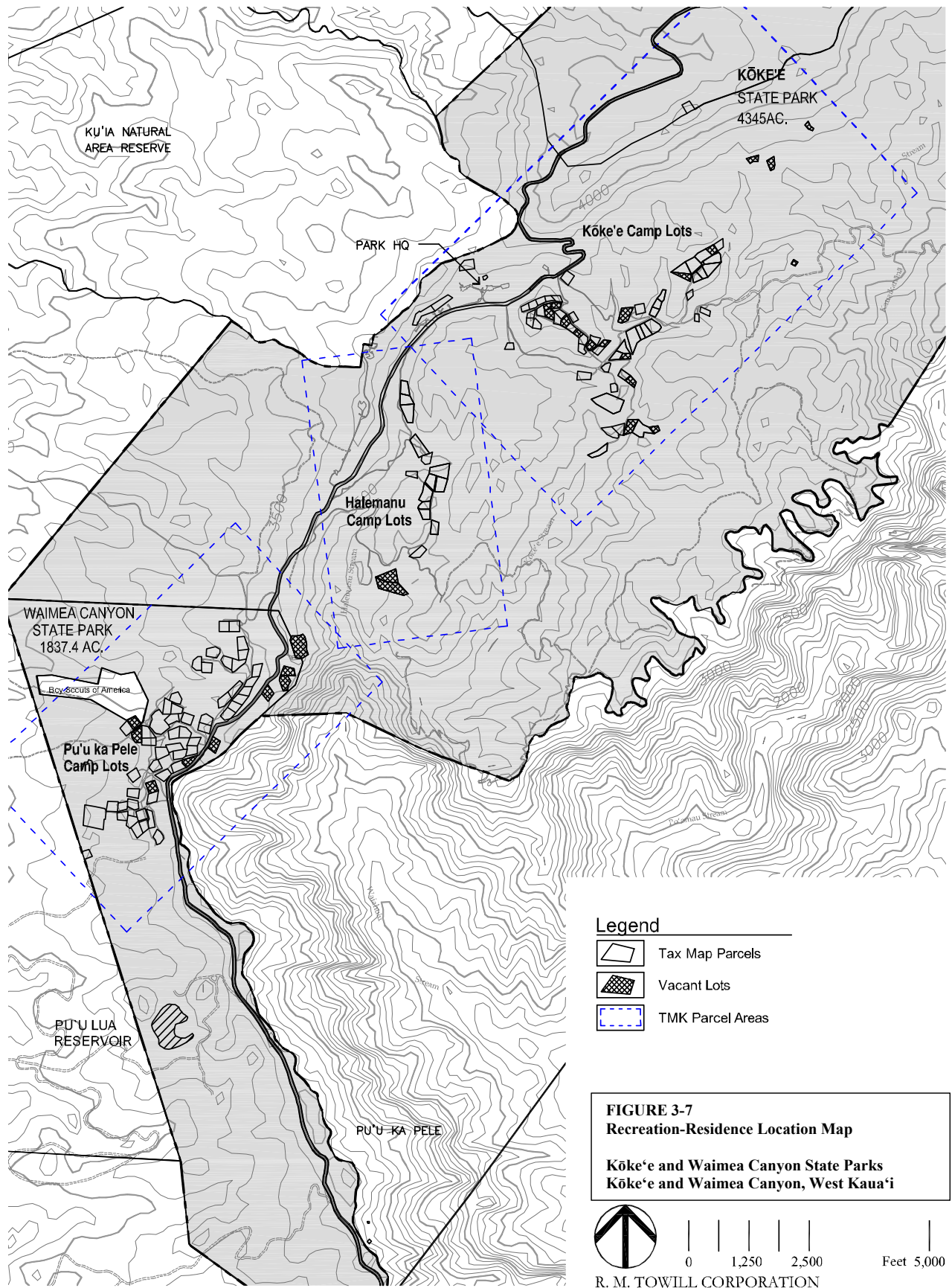
62 recreation residence lots are located at Pu‘u ka Pele. The Pu‘u ka Pele lots are generally one acre in size. Unlike the Kōke‘e area, the Pu‘u ka Pele lots are downhill from the main road and hidden by the forest. All Pu‘u ka Pele recreation residence lots are under lease except for 7 vacant lots. Four lots were taken out of lease near Pu‘u Hinahina. The remaining two lots are used by DLNR divisions.

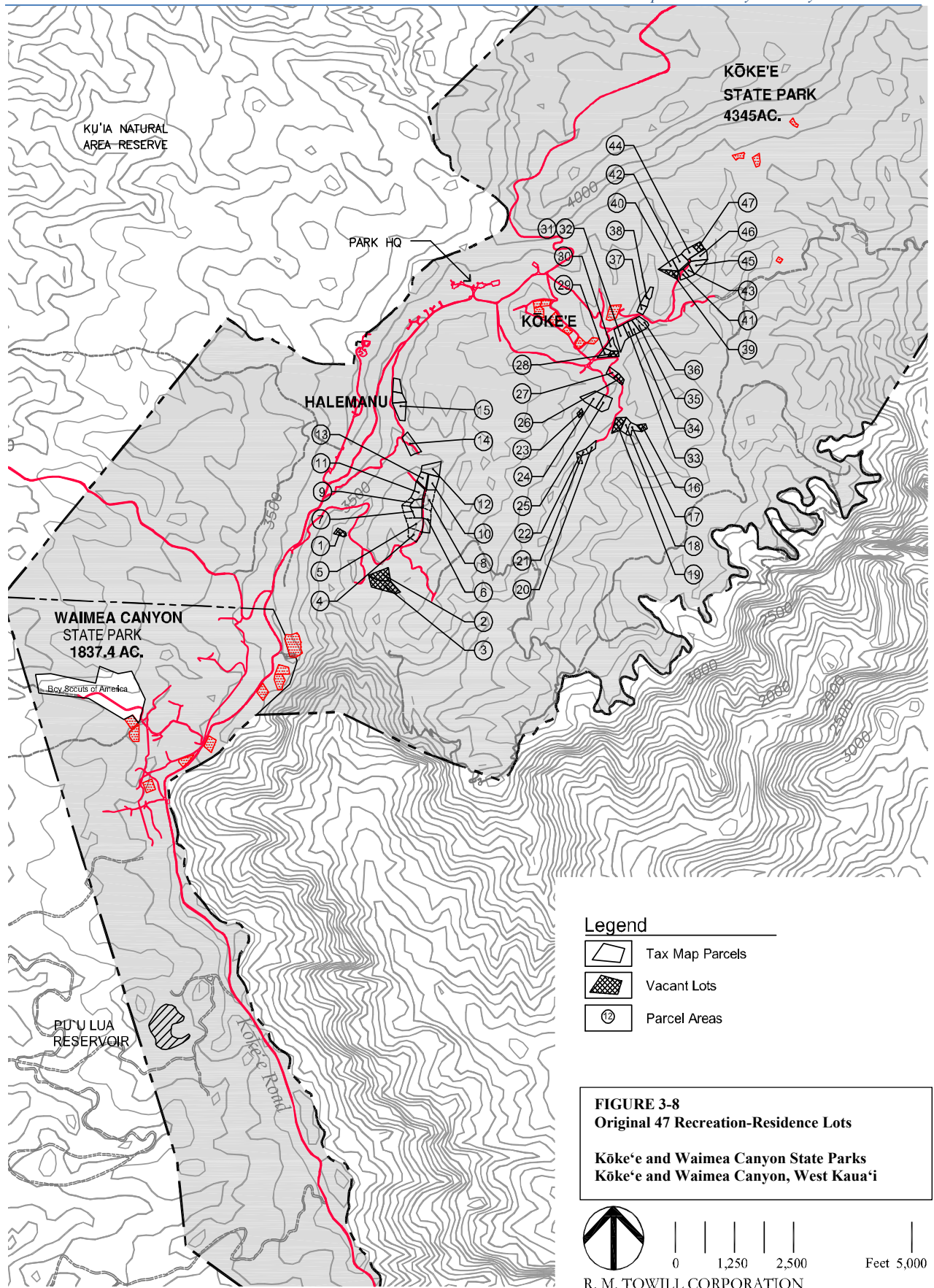
Halemanu

Halemanu Valley contains 16 lots, all but 2 are occupied. Over half the recreation residences in Halemanu Valley are considered to be architecturally significant by SHPD. Halemanu contained 14 of the original 47 camp lots. Of the 14 original lots, 8 lots are occupied, 4 lots have been extinguished, and 2 lots are vacant (formerly leased by V. Knudsen).

◆ BUILDING EVALUATION

An assessment was conducted to determine the preservation and historic value of the recreation residences within the two Parks. This assessment did not consider the re-use value, but focused on the historic value of the structure. The assessment included an evaluation of the historic value of the structure, building condition, the integrity of the structure and the preservation potential of the structure, considering the findings of historic value, building condition and integrity.





**Table 3-2
Number of Recreation Residences by Year Built and Location**

Year Built	Kōke‘e Lots	Halemanu Lots	Pu‘u ka Pele Lots	Total
1918-1929	13	6	7	26
1930-1939	7	8	12	27
1940-1949	3	0	14	17
1950-1959	14	0	8	22
1960-Present	8	0	13	21
Unknown	0	0	1	1
Total	45	14	55	114

Note: Vacant lots not included in totals. Inventory discrepancies due to limitations of available data.

Pu‘u ka Pele Camp Lots

Year Built	Historic Integrity Ratings					Total	Percentage of Total (N=55)
	5	4	3	2	1		
1918-1929	3	1	2	1	0	7	12.73%
1930-1939	2	3	4	1	2	12	21.82%
1940-1949	2	3	5	1	3	14	25.45%
1950-1959	0	3	2	1	2	8	14.55%
1960- Present	0	0	0	0	13	13	23.64%
Unknown	0	0	0	0	1	1	1.82%
Total	7	10	13	4	21	55	
Percentage of Total (N=55)	12.73%	18.18%	23.64%	7.27%	38.18%		

Halemanu Camp Lots

Year Built	Historic Integrity Ratings					Total	Percentage of Total (N=14)
	5	4	3	2	1		
1918-1929	2	3	0	1	0	6	42.86%
1930-1939	4	1	3	0	0	8	57.14%
1940-1949	0	0	0	0	0	0	0.00%
1950-1959	0	0	0	0	0	0	0.00%
1960- Present	0	0	0	0	0	0	0.00%
Unknown	0	0	0	0	0	0	0.00%
Total	6	4	3	1	0	14	
Percentage of Total (N=14)	42.86%	28.57%	21.43%	7.14%	0.00%		

Kōke‘e Camp Lots

Year Built	Historic Integrity Ratings					Total	Percentage of Total (N=45)
	5	4	3	2	1		
1918-1929	4	2	5	1	1	13	28.89%
1930-1939	4	1	1	1	0	7	15.56%
1940-1949	0	1	0	2	0	3	6.67%
1950-1959	1	5	3	0	5	14	31.11%
1960- Present	0	1	0	0	7	8	17.78%
Unknown	0	0	0	0	0	0	0.00%
Total	9	10	9	4	13	45	
Percentage of Total (N=45)	20.00%	22.22%	20.00%	8.89%	28.89%		

All Camp Lots Combined

Year Built	Historic Integrity Ratings					Total	Percentage of Total (N=114)
	5	4	3	2	1		
1918-1929	9	6	7	3	1	26	22.81%
1930-1939	10	5	8	2	2	27	23.68%
1940-1949	2	4	5	3	3	17	14.91%
1950-1959	1	8	5	1	7	22	19.30%
1960- Present	0	1	0	0	20	21	18.42%
Unknown	0	0	0	0	1	1	0.88%
Total	22	24	25	9	34	114	
Percentage of Total (N=114)	19.30%	21.05%	21.93%	7.89%	29.82%		

Based on the evaluation, nearly 75 percent of the buildings can be considered historic and deserving of preservation action. The evaluation is still subject to detailed architectural and structural evaluation to determine the overall requirements for current building and zoning codes.

Evaluation of Historic Significance***1983 Historic Inventory and Assessment***

An inventory of all recreation residences in the Kōke‘e, Halemanu Valley and Pu‘u ka Pele areas was performed by the DLNR in 1983. It was not an in-depth study, but rather a “curbside” visual assessment of the appearance of each recreation residence and its general site conditions. A total of 126

recreation residences were inventoried utilizing a “visual architectural rating system ranging from 1 to 5.” The definitions for each of the five ratings are described below.

The 1983 inventory found 51 recreation residences to have potential architectural moderate to high) significance. See **Table 3-3**.

The study did not assess the age of each structure nor did it delve into the more stringent criteria required to qualify for the State or National Historic Register. Attempts to register any of the recreation residences with the State and/or National Register of Historic Places would require further analysis.

**Table 3-3
SHPD Ratings of Architectural Significance**

Location	SHPD Rating						Total
	1	2	3	4	5	6*	
Pu‘u ka Pele Lots	8	4	15	17	4	0	48
Halemanu Lots	0	0	1	6	4	1*	12
Kōke‘e Lots	4	3	12	10	9	0	38
Total:	12	7	28	33	17	1	98

Note: SHPD rating of units from DLNR master list. A special rating of **6** was given to the Danford - Williamson Residence (TMK: 1-4-03: 13) to denote its exceptional architecture. A 6 rating was defined as: Large Plantation Estate with high historic value and significant architectural design integrity.

Criteria for Rating Architectural Significance:

The following key was established by the State Historic Preservation Division and used in rating each building’s potential historic significance in this inventory:

Level 5:

The building and site retain integrity with no significant changes evident. Changes made to the building were in-kind, sympathetic, or within period of significance (50+ years). Examples of changes might include in-kind re-roofing, board replacement, or railing replacement. Level 5 buildings are very good examples of Kōke‘e architecture (by retaining many character defining elements) or are architecturally significant.

The building and site have strong original relationship. Level 5 buildings might have more than one area of significance, for instance, the Rice Flats compound is associated with an important family in Kaua‘i’s history.

Level 4:

Level 4 buildings retain the same overall feeling of historic character and relationship with the site as Level 5. These buildings have no visual intrusions, however, the structures may lack outstanding architectural features.



**Photo 3-1
Historic Rating: 5
Halemanu, TMK: 1-4-03: 05**

Level 3:

Level 3 structures have small or easily reversible modifications such as inappropriate paint color or roofing material, or deck additions. These buildings might have new windows in inconspicuous locations or small additions done appropriately. Level 3 buildings would qualify as a contributing structure in a district, but may not be individually eligible for the State or National Register of Historic Places listing. These buildings are easily restored to level 4 or 5.

Level 2:

The integrity of the building and/or site is compromised by inappropriate changes such as large additions, aluminum sliding windows on front or major public facade, or the use of new “fancy” detailing that



Photo 3-2
Historic Rating: 4
Kōke‘e Lots, TMK: 1-4-04: 60



Photo 3-4
Historic Rating: 2
Kōke‘e, TMK: 1-4-04: 43

attempts to look historic but is not consistent with the rustic character. It may be possible to restore character to these buildings so that they are contributing, but not character-defining structures. Any change could move to Level 3 (qualifying for district) or Level 1 (ineligible).

large sliding doors). These buildings often have large additions to the front, utilize tile and/or vinyl siding. Level 1 buildings are difficult to restore. Level 1 buildings are considered “non-contributing structures” and are listed at the end of the inventory.



Photo 3-3
Historic Rating: 3
Pu‘u ka Pele, TMK: 1-4-02: 46

2003 Historic Inventory and Assessment

A recent survey of the Kōke‘e recreation residences was made by Dawn Duensing with Frank Hay on August 3-4, 2002. Duensing conducted fieldwork on Kaua‘i October 22 - 25 and November 8-12, 2002. Additional fieldwork was conducted on January 18 and 19, May 17- 21, 2003 and June 13-16, 2006. John H. R. Plews, long-time Kōke‘e resident also assisted in the fieldwork, accompanying the historian to most of the recreation residence sites in the State parks. He provided information about life at Kōke‘e and Pu‘u ka Pele, residents, and horticulture. Wendy Wichman and Mark Waterson also assisted with fieldwork.

Level 1:

These buildings have lost historic integrity and are considered “non-contributing” structures because of the loss of historic associations. Level 1 structures have major alterations and/or additions. Examples: Majority of windows and doors changed to modern types (most noted was the use of

Each building was assessed in terms of the following:

- Construction Date – According to the U.S. Secretary of the Interior’s criteria for the National Register of Historic Places, buildings must be older than fifty years to be



Photo 3-5
Historic Rating: 1
Pu‘u ka Pele, TMK: 1-4-02: 71

considered historic. For this inventory, buildings earlier than 1960 were considered to be potentially historic.

- Architectural style – Nearly all buildings featured vernacular architectural styles that emphasized simple construction methods and rustic details or “plantation”-style architecture.
- Architectural Features – Many features in the Kōke‘e area were rustic, elements such as porch railings built of ‘ōhi‘a branches or fireplaces built of native rock.
- Historic Index – the U.S. Secretary of the Interior’s criteria for the National Register of Historic Places requires that buildings must have historic integrity, which includes integrity of location, design, setting, materials, workmanship, feeling, and association. Each structure was evaluated for integrity and how the modifications impact integrity.

These guidelines helped in the assessment of whether or not a building could be considered a “contributing structure” in a potential historic district. Altogether, the recreation residences at Kōke‘e and Pu‘u ka Pele comprise a unique collection of early twentieth century vernacular structures. The majority of the recreation residences

maintain historic integrity in their design, setting, location, workmanship, feeling and association (**Table 3-4**).

Design Features of Kōke‘e Vernacular:

The significant character-defining architectural features of the recreation residences include:

- Design - The typical architectural style was simple vernacular, with rustic features that complemented the natural landscape of Kaua‘i’s upland forests at Kōke‘e.
- Construction methods and materials - Architectural styles were dominated by board-and-batten or vertical-board, post-on-pier construction. The recreation residences primarily feature six-light wood-framed sliding windows or wood-framed double-hung windows. The post-on-pier foundations may feature ‘ōhi‘a or log posts and rocks.
- Roofing - Roofs were traditionally gable, but by the 1920s some hipped roofs were used. Primary roofing material is corrugated metal, although the earliest houses appear to have been roofed with shake.
- Setting and Location - The recreation residences are set in the upland forests of Kōke‘e and Waimea Canyon State Parks and were originally part of the Nā Pali-Kona Forest Reserve and Pu‘u ka Pele Forest Reserve. These reserves, and later the state parks, were established to protect natural values and the Kaua‘i watershed.
- Rustic features and Craftsmanship - Rustic features included the use of ‘ōhi‘a (or other tree) logs and branches that were fashioned into porch railings. Native materials were also featured in rock fireplaces and chimneys. Native materials were sometimes used in

Table 3-4
Ratings of Historic Integrity – Duensing Report

Location	Rating*					Total
	1	2	3	4	5	
Pu‘u ka Pele Lots	21	4	13	10	7	5
Halemanu Lots	0	1	3	4	6	14
Kōke‘e Lots	13	4	9	10	9	45
Total Lots:	34	9	25	24	22	114
Percent:	30%	8%	22%	21%	19%	
Percent Contributing:			-----	66%	-----	

* Based on State Historic Preservation Division historic significance criteria.

Source: Dawn Duensing, 2003.

- foundations. Numerous unpainted recreation residences also add a rustic touch to Kōke‘e architecture.

Historic Resources Inventory worksheets and photographs were prepared for each potentially historic recreation residence and can be referenced in Duensing’s original report (2003). The inventory sheets are organized chronologically by Tax Map Key numbers. TMK: 1-4-03, which includes Halemanu Valley, is presented first since that area was the location of the earliest camp sites. TMK: 1-4-04 follows, which includes the Kōke‘e Camps and the Water Tank Lots. TMK: 1-4-02, the Pu‘u ka Pele Lots, is presented last. Buildings that cannot be considered potentially historic are listed as “non-contributing” structures at the end of the inventory.

Evaluation of Building Conditions

A visual evaluation of building exteriors was conducted during field investigations of the recreation residences in July 2002 and August 2004. 117 out of 143 recreation residence lots were inspected. The remaining lots were vacant.

Building interiors were not inspected. Building condition was assessed based on the exterior appearance of the main structure and roof. Signs of apparent damage, material and paint condition, and general

upkeep or neglect were noted in the overall evaluation. The building condition evaluation is presented for general information purposes. It is neither an assessment of structural integrity, nor an inventory of necessary building repairs. The findings of the evaluation are shown in **Table 3-5**.

◆ RENOVATION COST ESTIMATES AND GUIDELINES

The historic significance of the recreation residences is used to develop rough cost estimates for recreation residence renovations. The overarching goal in the process is to preserve and enhance Kōke‘e and Waimea Canyon State Parks’ cultural landscape by maintaining the historic character of the parks’ built resources. Therefore, the focus of proposed renovation work is to restore the historic value of individual structures and reinforce a vernacular design standard in existing, non-historic buildings. Towards this end, the historic integrity rating sets the precedent for setting renovation priorities.

Unit Inventory and Historic Rating

The historic value of the recreation residences, as determined by Duensing (2003) was used to determine initial capital improvement costs.

The following criteria were used to determine renovation categories:

Historic Rating 4 and 5 – By definition, these structures need little or no improvements in order to contribute significantly to the historic landscape (See **Photo 3-6**).

Historic Rating 3 – These structures are contributing and character-defining elements of the cultural landscape. They can be relatively easily restored to a high historic rating with renovation (See **Photo 3-3**).



Photo 3-6.
Historic Rating: 5
Very Poor Condition
Pu‘u ka Pele, TMK: 1-4-02: 76

Table 3-5
Building Condition

Location	Building Condition Rating				Total
	Good	Average	Poor	Very Poor	
Pu‘u ka Pele Lots	49	8	0	2	59
Halemanu Lots	11	3	0	0	14
Kōke‘e Lots	40	3	1	0	43
Total Lots:	100	14	1	2	117

Notes:

1. Building Condition determined by visual condition of main structure and roof.

2. Secondary consideration is structural upkeep

Good = Highly maintained building(s) and grounds. No visible signs of neglect.

Average = Periodic maintenance on building and grounds. Integrity can be obtained with minor work (painting, screen-window repair, weed control)

Poor = Low maintenance on building and yard, with major reconstruction integrity could be obtained.

Very Poor = Very low maintenance on building and yard, appears structurally unsound, signs of wood rot, demolition to be considered.

- Historic Rating 1 and 2 – These recreation residences contribute little or no historic value to the landscape. Some of the structures contain features of Kōke‘e vernacular architecture, and may become contributing elements of the landscape with modifications and renovation work. Some structures in this category are built in modern style, or without any reference to Kōke‘e vernacular features. Costs applied to these units cover renovation where Kōke‘e vernacular architectural design standards can be achieved or replacement where the building condition and historic value are low (See **Photo 3-7** and **3-8**).



Photo 3-7
Historic Rating: 2
Average Condition
Kōke‘e, TMK: 1-4-04: 10



Photo 3-8
Historic Rating: 1
Good Condition
Kōke‘e Vernacular Elements
Kōke‘e , TMK: 1-4-04: 08

Per unit costs are based on a comparison of costs to renovate comparable structures

elsewhere on Kaua‘i. Per unit costs (\$70,000) for non-contributing and low-value residences are based on cabin replacement costs utilizing standard “kit cabins”, with premiums added for transport, assembly in a remote location, and additional Kōke‘e vernacular architectural detailing. Renovation cost estimates for recreation residences are presented in **Table 3-6**.

Interior plumbing and electrical renovation requirements could not be determined through external visual inspection. Additional inspection of building interiors by a qualified contractor is required to determine costs for particular improvements.

Table 3-6
Renovation Cost Estimate *

Historic Value	No. of Units	Cost per Unit	Renovation Cost
1–Non-contributing	34	\$70,000	\$2,380,000
2–Low Value	9	\$70,000	\$630,000
3–Moderate Value	25	\$42,500	\$1,062,500
4–High Value	24	\$15,000	\$360,000
5–Very High Value	22	\$15,000	\$330,000
Total	114	--	\$4,762,500

Notes:

(1)Historic value based on field survey by Duensing (2003). See section on **Recreation Residence Lease Rents** in Chapter 7 for further details.

(2) Cost per unit based on current (2004) renovation costs for comparable structures on Kaua‘i.

(3) Renovation costs non-contributing and low-value units based on replacement cost utilizing a ‘kit cabin’ with additional premium for Kōke‘e vernacular detailing.

Off-site infrastructure and utility improvement costs are discussed in Section 3 of this report – Utility Systems and Roadways. Costs for these elements will ultimately depend on the overall planned improvement program for recreation residences. Considerations affecting off-site costs include the creation of “clustered” improvement areas, location in relation to wellhead protection zones, removal of

outlying lots from the inventory, and other factors.

The ultimate disposition of the 46 lots not included in the renovation inventory requires further planning. In order to establish and maintain a consistent Kōke‘e vernacular character in the parks’ built environment, these structures would have to be relocated or demolished.

Relocation costs, including trailer and truck fees are estimated at \$24 per square foot. Costs to clear and grub a lot, including removing foundations, slabs, piping, and water tanks, and filling cesspools, are estimated to be \$8,000 to \$12,000 per lot (consultation with Mike Faye).

3.4 PARK BUILDINGS

A field survey to inventory, assess, and characterize park buildings located within Kōkeʻe and Waimea Canyon State Parks was conducted in July 2002 as part of a larger assessment that included recreation residence lots. This section reports on findings related to park buildings only. Recreation residences are discussed in **Section 3-3**.

To complete the inventory of the park buildings, the following tasks were performed:

- Prepare drawings of the building foot prints and improved areas for existing buildings and auxiliary structures within the parks.
- Photograph the exterior elevations where not impeded by physical constraints such as topography, vegetation, etc..
- Complete State Historic Preservation Office (SHPO) “Kōkeʻe Historic Resources Inventory” form for each surveyed building.
- Evaluate existing buildings through visual examinations to determine if they are suitable for continued short-term and/or long-term lease or adaptive park use.

◆ STATE CABINS

Twelve rental cabin units, owned by the State, are operated and maintained by the Lodge. The cabins are arranged in a row towards the south of the Lodge. See **Figure 3-9**. The cabins are provided with direct access to the Kōkeʻe Road via unpaved

driveways. With the expanse of foliage that includes trees and shrubs, the cabins are screened from the roadway. The cabins, however, are within sight of each other.

The cabins are constructed of wood and have corrugated metal roofs painted red. The structures are not of a single style. Two of the cabins are a duplex model.

Rental rates for the cabin are approved by the BLNR. In 2008, the BLNR approved rates of \$65 per night for local residents and \$90 per night for visitors. An additional \$5 is charged per person after the first three people. The cabins are semi-furnished with beds, bedding, linen, a kitchen and utensils. The cabins are also provided with potable water, electricity and hot and cold running water. The Lodge, however, is not charged for water used. The Lodge reports that occupancy at the cabins is nominally 100%, or always filled. Busy periods are during holidays and fishing season.

◆ CCC CAMP

The Civilian Conservation Corps (CCC) camp in Kōkeʻe was built in 1935 to house workers as part of President Roosevelt’s effort to improve infrastructure while providing employment during the depression years.

This CCC facility, located to the northwest of the Kōkeʻe Lodge, still remains today, and was placed on both the National and Hawaiʻi Registers of Historic Places in 1996 (Site No. 30-06-9392). Members of the CCC were responsible for planting many of the mature tree stands found in the Kōkeʻe and Waimea Canyon State Parks. It was noted that in 1937, 1,000,000 Silver Oak trees were planted in the Nā Pali Forest Reserve by the Kōkeʻe Civilian Conservation Corps to control soil erosion.

In addition, many trails and roads were

constructed, including the Alaka‘i Swamp Trail. The plum orchards that were planted still yield fruit for the popular July plum season, and are still enjoyed by residents. In 1943 when the CCC was disbanded because of the outbreak of World War II, the Kōke‘e Camp became headquarters for men of the 443rd Aviation and Construction Battalion who constructed an alternative communications line through the Alaka‘i Swamp to Kaua‘i’s north shore. After World War II, the camp was used by community and church groups, and in 1966 the site was used by the Job Corps program until 1973. The camp was subsequently used by the Youth Conservation Corps until 1982.

The camp was used for interagency conferences following the destruction of Hurricane ‘Iwa in 1982. In the years following, the camp was abandoned. In 1990, the nonprofit organization Hui o Laka proposed camp renovations and established the Kōke‘e Natural History Museum administrative offices at the CCC Camp.

The building restoration was undertaken to preserve the “vernacular architecture” of Hawai‘i characterized by single-wall construction, site organization around a grassed clearing, and a close relationship to the natural environment evident in native building materials and the integration of tended forest plantings within the landscape.

Through efforts of Hui o Laka and the Division of State Parks, the CCC camp was placed on the State and National Register of Historic Places in 1996. These historic resources are further described in **Section 4.5**, Archaeological, Historic, and Cultural Resources and **Table 4-11**. The CCC Camp facilities are illustrated in **Figures 4-14** and **4-15**.

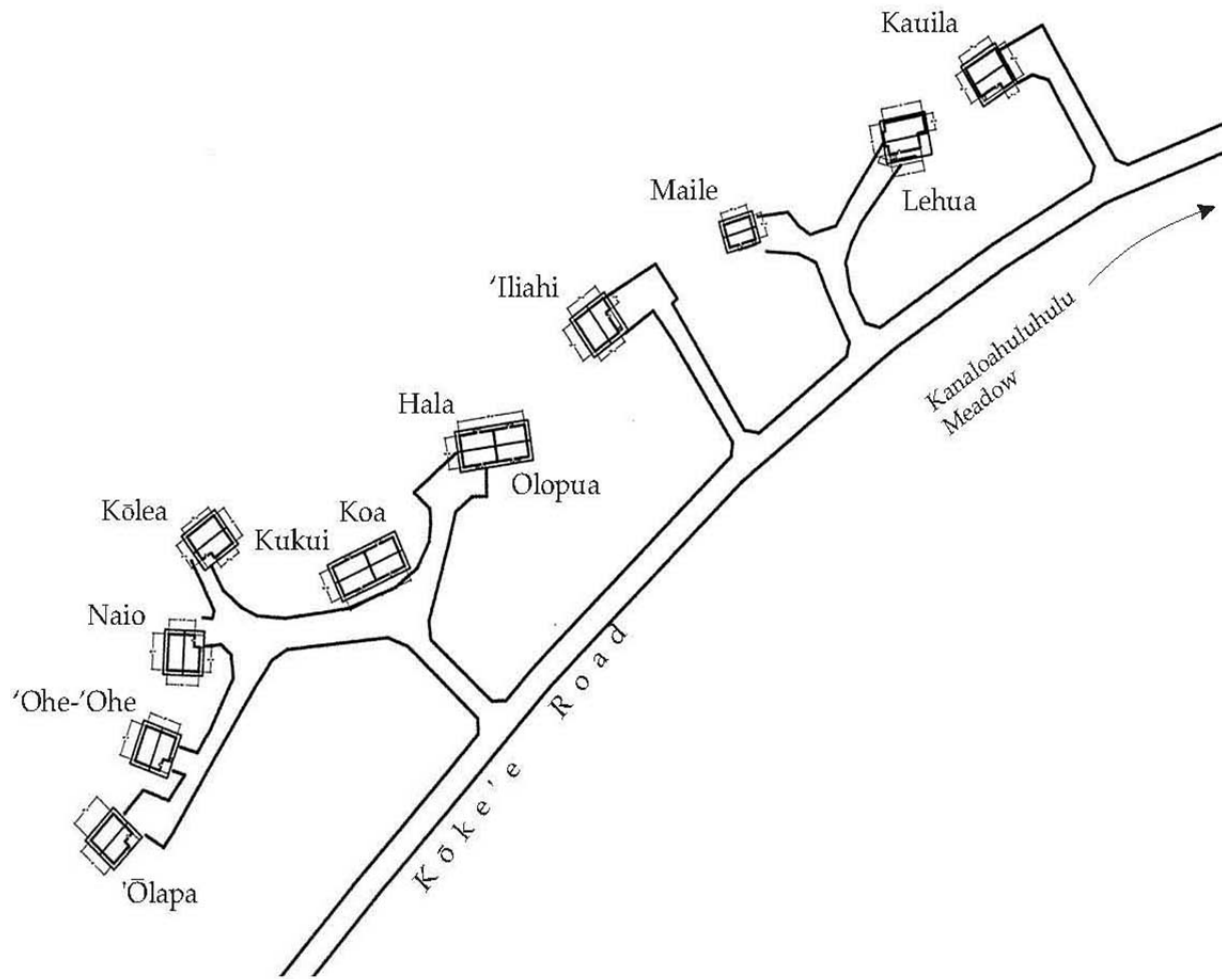
◆ KŌKE‘E LODGE AND KŌKE‘E NATURAL HISTORY MUSEUM

Kōke‘e Lodge

The Kōke‘e Lodge is a wood framed, single story structure with a low sloping roof of corrugated metal that was built in the early 1950s. A dining area, kitchen, gift shop and restrooms are located inside the building. In the early 1960s, the floor area enclosed comprised 1,210 sf. In the early 2000’s, the area enclosed was 4,500 sf with a dining area that sits around 60. Large glass windows permit views into Kanaloahuluhulu Meadow. Originally salvaged from World War II surplus material, the building may actually be older than its 1951 construction date.

Following the expiration of a twenty-year lease issued to Kōke‘e Ventures for the operation of a concession that includes 12 State-owned rental cabins, the “lodge” with a restaurant and retail facility, the Kanaloahuluhulu Ranger Station that is used as the Manager’s residence and a workshop/laundry building, the concession lease was issued to The Lodge at Kōke‘e, LLC. A thirty month lease was issued covering the period beginning in July 2004 through December 2006. The reason for the short-term lease was that the DSP planned to solicit a new concession bid that would tie into the direction and continuity of the other structures based on the parks’ Master Plan recommendations.

The initial bid amount was \$226,101 annually, payable monthly at \$18,841.75 or 20% of revenues from cabin rentals, 9% from restaurant sales, 14% from sales of alcoholic beverages, and 12% from retail/gift shop sales, whichever is greater.



Site Location: Kanaloahuluhulu
Tax Map Key Parcel: 1-4-01: 13

FIGURE 3-9
State Rental Cabins
Kōke'e and Waimea Canyon State Parks
Kōke'e and Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION



Photo 3-9
Kanaloahuluhulu Meadow Entrance Drive

In February 2005, the concessionaire requested a reduction in the rent. In spite of some basic improvements that were made to the cabins, the restaurant and retail items, the revenues for the first 6 months were equal to those of the past year. With increased costs, they were sustaining serious operational losses which were exacerbated by the condition of the structures. Although one of the conditions of the lease was that the Concessionaire, prior to executing the Concession Lease, inspect the Premises, and accepts the premises “as is where is.”, State Parks and the concessionaire agreed to a rent reduction of 3% of gross profits. Gross profits are gross sales less the cost of goods sold.

In 2006, the total amount collected was \$173, 417.50; in 2007, it was \$47,497.62, and for the period of January to September 2008, it was \$59,995.00. State Parks expenses for property repairs amounted to \$114,000. for a new roof, restroom renovations, and remodeling repairs.

Ranger Cabin (former)

In addition to the Lodge, the former Ranger cabin and adjacent facilities are part of the Lodge assets and contract. The Ranger cabin is used by the Lodge’s Resident Manager. The adjacent buildings are used for: a) wood storage, b) laundry for

housekeeping, and c) general storage. The Lodge personnel provide hiking, picnicking and camping information to visitors.

Kōke‘e Natural History Museum (Hui o Laka)

Hui o Laka operates the Kōke‘e Natural History Museum located at the Kanaloahuluhulu Meadow. The museum building was built at the same time as the Kōke‘e Lodge. Hui o Laka manages the facility in accordance with the Division of State Parks.



Photo 3-10
Kōke‘e Natural History Museum

The Museum building is approximately 2,000 square feet and constructed of wood on a post and pier foundation. The roof is corrugated metal and painted red. Towards the front of the building to accommodate persons with disabilities, the building has undergone some modification. Parking for persons with disabilities is in the front of the building. Parking for the site is shared with the Kōke‘e Lodge.

Since 1986, the Museum has been operating under an agreement with the Division of State Parks to “provide interpretive visitor services for Kōke‘e and Waimea Canyon State Parks.” The agreement was renewed for 20 years in 2006. The agreement further required the museum to operate for 365 days per year with no admission fees to be charged to the public.

The operation of the Museum is supported by retail sales, voluntary donations at the door, annual memberships, and grants.

The Museum annually sponsors a number of programs such as:

- A multi-week Interpretive Training Series each spring (since 1992).
- Excursion support for 2,000+ elementary students using volunteers and special curriculum, “Crow for Kōke‘e!” (since 1992).
- The Banana Poka Festival (since 1989).
- A guided hike series, “Wonder Walks” (since 1993).
- Overnight seminars/conferences for youngsters, adults, and families such as Forest Wise Camp, Elderhostel, Pacific Fiber Retreat, etc..
- Eo E Emalani I Alaka‘i, a historical commemorative festival held each fall (since 1988).
- Short-term residencies for volunteers working on Museum projects and/or programs.
- Short-term overnight accommodations for researchers and field scientists.
- Volunteer work days (at least 12), assisting with grounds, facilities, and programs.
- A lecture series by visiting researchers;
- Summer internship(s) for 1-2 secondary-early college students (since 1991).
- Exhibit production, brochures, posters, signs, and in-house newsletters.
- Educational workshops, such as Banana Poka basket making and Makaloa weaving. The Museum uses building number 2 at the CCC Camp for its administrative offices.

◆ **PARK HEADQUARTERS/RANGER STATION**

The Park HQ / Ranger Station building is located at the entrance to Kanaloahuluhulu Meadow. The building was constructed in

the early 1950s for park use. It is not a part of the historic CCC Camp.

The building is constructed with a hip, shake roof, shake siding, heavy timber structural elements and double-hung, pane-glass windows. It contains approximately 400 square feet of floor space. The interior includes a small kitchen, bathroom, and living and office space. A small, covered porch area at the entrance serves as an information kiosk where notices about park activities, weather conditions, and messages are posted. A small paved parking area in front of the building accommodates approximately 6 vehicles.

The building is used by the Division of Conservation and Resource Enforcement and Division of State Parks as a base of operations. The building is not staffed for public service.

◆ **BASEYARDS AND STORAGE FACILITIES**

The Division of State Parks operates two baseyards in the park. The first is located at Kanaloahuluhulu adjacent to the Kōke‘e CCC Camp. It consists of approximately ½ acre and contains 4 buildings and sheds. It is within the Kōke‘e CCC Camp historic boundary; however, the buildings are post-1950. The baseyard is used for storage of equipment, supplies, materials, and vehicles and is a non-secured facility. While its industrial appearance and use is out of character with the heavy visitor activities of the park HQ area, it is part of the historic scene.

The second baseyard is located on the Kaunuohua Ridge adjacent to one of the NASA facilities. The baseyard consists of a single metal building and exterior vehicle storage areas. Access is via a paved and secured (gated) roadway that is manned by the U.S. Navy. The site is hidden from public view.

An unpublished DLNR 1984 Management and Development Plan recommended that the baseyard near the Kōkeʻe CCC Camp be relocated due to its incompatibility with the HQ area. The rationale for moving the baseyard from the CCC Camp area is still desirable and should be pursued according to State Parks.

Expansion of the Kaunuohua Ridge baseyard is a logical relocation site. There is room for expansion without precluding the use of the ridge as a heliport. In addition, the site is serviced with a backup electrical system (generator) that insures a steady source of power. However, the federal government has a lease for this area and the U.S. Navy controls access to this site which in the past has been a problem. Both the U.S. Navy and NASA have leases and facilities at the Kaunuohua Ridge site, and it is unlikely that either facility would be relinquished in the foreseeable future. This aforementioned lease allows the Navy to control access in the baseyard which in the past has been a problem. DLNR support facilities are shown in **Figure 3-10**.

The Division of State Parks also has a facility that was used for storage adjacent to Waimeke Stream. This facility was being considered for restoration by a nonprofit invasive weed control organization. However, upon evaluation of the building's condition, it was determined unsuitable for restoration. As such, other sites will be considered for use by a nonprofit invasive weed control entity for operation of programs.

◆ NURSERIES

Awaʻawapuhi Trailhead

DOFAW operates a plant nursery for plant propagation and a plant acclimatizing facility on a three acre site. This site is used to propagate native species for outplanting

in the Kōkeʻe area. The facility is also used to grow plants at certain elevations and climate for outplanting. The area is fenced to keep animals out such as deer and pigs. The facility utilizes one of the former Army buildings and a warehouse (16 feet by 20 feet). The site also has a shed to house firefighting equipment.

Kalalau Rim Outplanting Site

This area is used to outplant native plants propagated in the nursery and is currently 9 acres. The site is fenced to keep animals out such as deer and pigs.

◆ HAWAIʻI AIR NATIONAL GUARD 150TH AC&W (KAHUAMAʻA FLATS)

The Hawaiʻi Air National Guard 150 AC&W (Aircraft Control & Warning) Squadron operates a site before the 18 mile marker, about 1/4-mile before the Kalalau Lookout on 11 acres of land leased from the State of Hawaiʻi. This facility is part of the air defense system in Hawaiʻi, providing 24-hour air surveillance of Hawaiian skies. Information fed by the 150th to a radar station at the top of Mt. Kaʻala on Oʻahu combines to encompass the entire western portion of the Hawaiian archipelago. Six other tenant organizations share the station: the U.S. Coast Guard, the Federal Aviation Administration, the U.S. Department of the Navy, the State of Hawaiʻi, Kauaʻi Electric Company, and Kauaʻi County. A nearby microwave antenna station (MAS), Kōkeʻe AS, supports communications and is considered part of the Kōkeʻe AFS installation.

Kōkeʻe AFS is located on a knoll, which rises approximately 40 feet from the lower portions of the installation, and is surrounded by forest. The antenna at the site is a dominant visual feature seen from the Kalalau Lookout and the Puʻu o Kila Lookout. During training exercises, overflow parking occurs on the outside of

the entry gate. Located immediately to the east of the installation is Kōkeʻe Road which is used year-round by tourists, hunters, military personnel, and other state park visitors. On average, there are 18 individuals on site at Kōkeʻe AFS during normal duty hours and 6 individuals on site at all other times.

◆ **KŌKEʻE MAS**

This facility occupies a triangular piece of land 1.25 acres in size and located within Waimea Canyon State Park near the Kukui Trail trailhead. The facility is adjacent to State Route 550, near mile marker 9, approximately 7.5 miles down the road from Kōkeʻe AFS. There are no on-site personnel at Kōkeʻe MAS (USAF, June 1997).

◆ **NASA - AT HALEMANU**

Kōkeʻe Park Geophysical Observatory (KPGO) is a site located just mauka of the 14 mile marker on Kōkeʻe Road. Housed in what was formerly a full-blown NASA Tracking Station, the KPGO has nothing to do with strategic defense. The Naval Observatory in Washington, D.C. has a charter from congress to monitor earth rotations and to check time standards.

Allied Signal Technical Service Corp. is under contract with NASA through the Goddard Flight Center to operate the facility and help fulfill the Naval Observatory's mission. The primary work of KPGO is to observe the dynamics of the earth, which is slowing each day. The KPGO collects data using radio astronomy. From the data, KPGO observes tectonic plate movements. Allied Signal also performs a second function at the old NASA Tracking Station. It monitors PEACESAT (Pan-Pacific Education and Communications Experiment

by Satellite), an old, blind weather satellite that no longer tracks weather, but has transponders that catch voices and bounces them around to more than 36 sites in the Pacific. The University of Hawai'i is the hub site for the project (Chu, May 1998).

◆ **NAVY**

The United States Navy's Pacific Missile Range Facility has three sites located within Kōkeʻe State Park: a telemetry control facility near the 14 mile marker on Kōkeʻe Road (Highway 550), and adjacent radar and instrumentation facilities on Kaunuohua Ridge above Halemanu. It operates a third facility at the end of Mākaha Ridge Road in the Nā Pali-Kona Forest Reserve.

◆ **DOE – KŌKEʻE DISCOVERY CENTER**

Kōkeʻe Discovery Center is located on Kōkeʻe Road, above the Meadow.. With funds from the 1991 Legislature and a federal grant, the environmental center was constructed in 1994 comprised of a main house and a bunk house that is able to accommodate 40 persons.

The Kōkeʻe Discovery Center Association (KDCA) was formed for the purpose of providing support and assistance to the development of environmental education programs at the Center, primarily for 4th and 5th grade students on Kauaʻi.

Funds from the KDCA are used for the purchase of appliances, furniture, hiring resource persons to conduct the environmental programs, facility improvements, and to pay the costs of bus transportation for the school groups who participate in the programs.

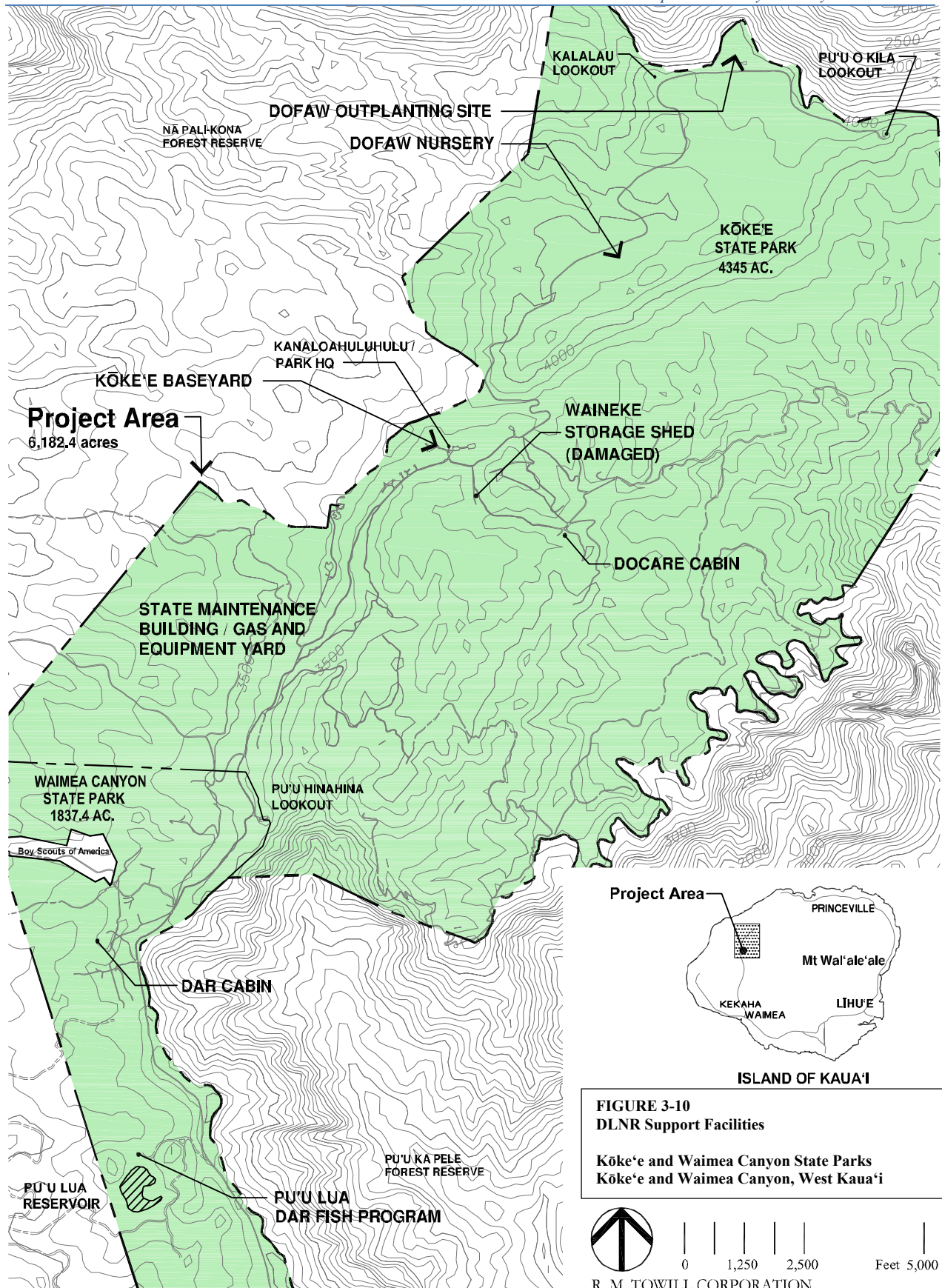
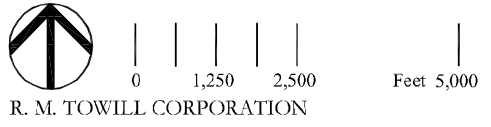


FIGURE 3-10
DLNR Support Facilities
 Kōke'e and Waimea Canyon State Parks
 Kōke'e and Waimea Canyon, West Kaua'i



As part of their long range plan, they would like to construct a greenhouse, pump shed and water tank so that the students can engage in the propagation of plants native and/or endemic to Kōkeʻe.

◆ FINDINGS

The following are the findings of this section:

- Relocation of the base yard from the Kōkeʻe HQ area is essential in facilitating the sewer system improvements (leach fields). Plans and funding for relocation should be given high priority.
- The base yard can be developed as part of the CCC Camp and function as an equipment and material storage area.
- The base yard operations can be a hazard to park users once the CCC Camp is functioning as a program site.
- Storage of flammable material could pose a hazard to other wooden structures in the area.
- All maintenance and storage activities should be relocated to the Kaunuohua site.
- Additional income is being generated by the concession truck at the Waimea Canyon Lookout. This function can continue and should be enhanced.
- Operations of rental cabins in the leasehold areas should be considered.
- The location of the Kōkeʻe Lodge and its proximity to the Kōkeʻe Natural History Museum should be enhanced via a covered walkway and the placement of picnic tables to encourage use.
- The lease terms for the Lodge should be a minimum of 10 years for operations only. If capital improvements are expected, then the lease term should be a minimum of 15 years.
- Additional cabins could be accommodated - doubling the number would not be a problem, according to the

current operator.

3.5 PARK LOOKOUTS

There are four primary public lookouts and one designated viewpoint within the Parks as follows: (See **Figure 3-11**)

- Waimea Canyon Lookout
- Puʻu Hinahina Lookout
- Kalalau Lookout
- Puʻu o Kila Lookout
- Waipoʻo Falls Viewpoint

◆ WAIMEA CANYON LOOKOUT

Waimea Canyon Lookout located between milepost 10 and 11 is the first formal and the most visited facility within the park boundaries. The visitor has had glimpses into Waimea Canyon from milepost 3, but there are only a limited number of places to park and view the canyon. There is a paved parking lot for 35 automobiles and 5 buses or vans, restrooms, and viewing areas. The site does not have a potable water system. The bus parking area is also located in an area that makes the area unattractive. The approach to the lookout area as well as the area itself is unattractive. Landscaping is sparse and appears to be unmaintained. Due to the terrain, access to the restroom is limited and the restroom is too close to the parking area. The grade to the top of the lookout is steep, limiting access to the lookout. The existing restroom is served by an individual wastewater system (IWS).

The Division of State Parks has allowed a private concessionaire to operate a lunch wagon at this location. The wagon sells refreshments, sandwiches, post cards, and small souvenirs.

- Waimea Canyon Lookout is the first, and often the only experience visitors have of the parks. Many visitors are unaware of the resources and amenities further up the mountain. Informational materials at Waimea Canyon Lookout

can correct this deficiency.

- Development at Waimea Canyon Lookout lacks cohesion. The facilities are comprised of many small elements that do not share a common identity, e.g., wheel chair ramp, water tank, granite bench on lookout platform, patchwork use of stone and concrete on steps, in complimentary design of new and old restrooms.
- Curb stops for buses located near the base of the stairway are a significant pedestrian tripping hazard.
- The lookout platforms and restroom are disconnected. Functionally, the area between them is the primary pedestrian space, yet it lacks facility and aesthetic improvements. There is no entry definition to the lookout platforms.
- Due to poor restroom layout, visitors tend to use the ADA restroom adjacent to the parking lot and will queue up there even when the other restrooms are vacant.
- Additional automobile parking stalls are needed for peak periods. However, the existing lookout area has limited space for expansion. A large, relatively flat area at the lookout driveway intersection with Kōkeʻe Road might offer space to develop additional parking area.
- Landscape improvements along walkways, approaches to the lookout area, and throughout the general vicinity would enhance the visitor experience.

◆ PUʻU HINAHINA LOOKOUT

The Puʻu Hinahina Lookout is located below milepost 14. This lookout also provides views of Waimea Canyon to the north, east, and south. The view south out of the canyon is panoramic. There is a parking area for approximately 35 automobiles and vans, restrooms, and two view platforms. The site does not have parking spaces for tour buses. At the Niʻihau viewing platform, the visitor

is provided with an interpretive sign describing the view. The approach to the main lookout area is unattractive and not landscaped.

Potential improvements at this facility include:

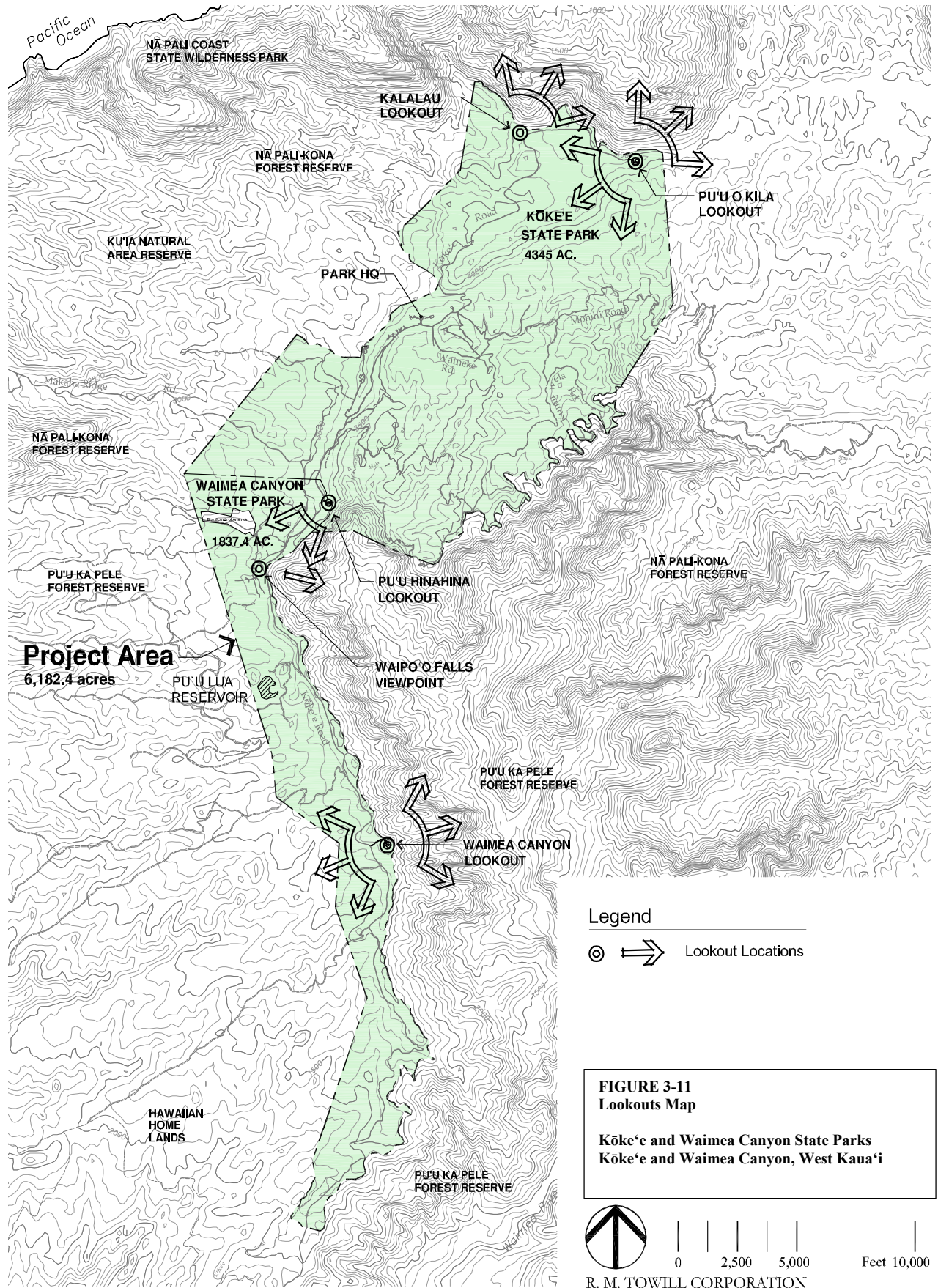
- The lookout has potential for picnic facility development.
- There is excellent potential to develop interpretive signage and other materials to describe the area's geology.
- Site distances are limited from the driveway exiting onto Kōkeʻe Road.
- The foot path approach to the lookout platforms needs to be renovated to correct uneven and eroded surfaces.
- Landscape improvements along walkways and the parking area would enhance the visitor experience and stabilize soils.

◆ PUʻU HINAHINA - MAKAI

This area was the location of four former recreation residences which were removed when the leases expired in 1985. The site provides an opportunity for viewing the Canyon and its environs and provides a picnicking opportunity in an intimate setting. An existing forest path could be enhanced to connect the site to facilities at Puʻu Hinahina Lookout. This site is presently used as a helicopter landing zone for DLNR operations.

◆ KALALAU LOOKOUT

The Kalalau Lookout at milepost 18 provides the visitor with a scenic vista of Kalalau Valley and a view of the ocean, nearly 4,000 feet below. The lookout, situated at the head of the valley provides excellent unrestricted views. The lookout area has a parking lot for approximately 25 cars and restrooms. The restroom facility is served by an IWS. This site also has picnic tables, however, the use of the area for



picnicking is limited due to the high rainfall and lack of potable water. An overflow parking area that can accommodate vans and buses is located approximately 100 yards from the main entrance towards the Pu‘u o Kila Lookout. Kalalau Valley is part of the Nā Pali Coast State Wilderness Park and is accessed from Hā‘ena on the north shore of Kaua‘i.

Needed improvements and/or opportunities at this facility include:

- The existing lookout area requires expansion and better paths.
- The lookout area could be partially renovated.
- Landscape improvements (i.e., grading, native plantings) to improve a large scarred / eroded area between the main (paved) parking lot and the picnic grounds.
- Improvements (i.e., pathway, signage) between the secondary roadside parking and the picnic area.
- Interpretive opportunities may focus on the surrounding native forest environment and native birds. Information, available at the park headquarters, should forewarn park visitors of the misty conditions that are often encountered at the lookout.

◆ PU‘U O KILA LOOKOUT

Pu‘u o Kila Lookout is located at the end of the road, milepost 19 at Kōke‘e State Park and is also the highest point in the park. It is a simple lookout facility consisting of a paved parking area that can accommodate approximately 25-30 cars and vans and a short but steep pathway leading to a two-tier lookout platform. The lookout provides another view of Kalalau Valley, Mount Wai‘ale‘ale, and views south and west. Due to the location of the viewing platform, conformance to ADA accessibility requirements poses a formidable challenge

and may require alternative viewing areas.

The lookout area also serves as the trailhead for the Pihea Trail that crosses the Alaka‘i Swamp. The first mile follows the rim of Kalalau Valley and provides spectacular views and opportunities to see native birds. No other amenities are provided.

Necessary improvements and/or opportunities at this location include:

- The parking lot pavement is in very poor condition. Planting islands are uncurbed. With the heavy rainfall in this area, some improvements to the islands should be performed to eliminate muddy runoff throughout the parking lot.
- Interpretive opportunities (i.e. native forest environment and views of Alaka‘i Swamp) and the cultural history of Kalalau Valley may be developed near this lookout location. A nature trail in the vicinity between the Kalalau and Pu‘u o Kila Lookouts has been proposed and would add to the attraction at this upper end of Kōke‘e State Park.

◆ WAIPO‘O FALLS VIEWPOINT

This viewpoint (across the road from the Pu‘u ka Pele Picnic Area) consists of a viewing area adjacent to the road. It has no parking other than a vehicular “pull off” onto an unimproved shoulder. The shoulder can accommodate 3-4 cars off the pavement, though its close proximity to the roadway is a potential hazard. There are few physical improvements except for a guard rail along the rim of Waimea Canyon. There is no signage, striping, or other traffic safety features to facilitate pedestrian crossing at the site.

In combination with other facilities nearby, the viewpoint has the potential of being further enhanced and utilized as a more prominent visitor facility. Improvements are

needed to mitigate the erosion occurring at the site. A low retaining wall and stairs (ADA) or similar type of improvements should be considered. Signage and shoulder improvements to better accommodate roadside parking and alert traffic to the presence of pedestrians is also needed.

◆ **LOWER WAIMEA CANYON VIEWPOINTS**

Waimea Canyon Drive offers several shoulder areas suitable for developing safe turnouts. A pull-out at a lower elevation site would enhance the parks' ability to visually present the complete story of west Kaua'i, from mauka to makai. Promising locations identified for further assessment include:

- Mile Marker 1.1, Elevation 360 feet
- Mile Marker 2.0, Elevation 920 feet
- Mile Marker 2.3, Elevation 980 feet
- Mile Marker 3.3, Elevation 1,100 feet
- Mile Marker 3.5, Elevation 1,300 feet
- Mile Marker 3.6, Elevation 1,310 feet
- Mile Marker 4.5, Elevation 1,480 feet
- Mile Marker 5.4, Elevation 1,800 feet
- Mile Marker 6.4, Elevation 2,260 feet

These sites have wide shoulder areas suitable for safe turnouts. Each of these locations offers views of Waimea Bluffs, Waimea Canyon and River, Menehune Ditch and Kekaha Ditch, taro cultivation, coastal settlements on the southeastern shoreline, sugar cane fields, and Ni'ihau.

The views tend to improve with elevation gain.

In addition to these nine sites, numerous other shoulder areas along Waimea Canyon Drive are used by park visitors and hunters as motor vehicle pull-outs. This has resulted in unsafe and eroded road shoulders and potentially unsafe traffic conditions. Measures to control or curtail shoulder parking in unsafe locations and address

related impacts include installation of signage and ground stabilization.

3.6 HIKING TRAILS, CAMP SITES AND PICNIC AREAS

◆ **EXISTING TRAILS**

Hiking trails in Kōke'e and Waimea Canyon State Parks are developed and maintained by the Division of State Parks and the Division of Forestry and Wildlife's Nā Ala Hele Program. See **Figure 3-12**, Hiking Trails Map, and **Table 3-7**, Hiking Trails and Trailhead Amenities.

Hiking in Kōke'e is a popular activity. A variety of trails offer dramatically different recreational opportunities to hikers. Views of Waimea Canyon, the Pacific Ocean, waterfalls, native forest or scented pine trees are such possibilities. A chance to see an endangered plant, taste a wild native strawberry, see native birds or just experience the forest await each hiker.

Trail maps and hiking information are available to hikers at the Kōke'e Natural History Museum. Many of the hiking trails are located in Kōke'e State Park and navigate through various portions of the area between the Kaunuohua and Kumuwela ridge areas. A few exceptions include the Awa'awapuhi-Nu'alolo Trails which loop together to explore the west sector of the park; the Pihea and Alaka'i Swamp Trails which enter the Alaka'i Swamp area; and the Iliau Nature Loop Trail that provides sweeping views of Waimea and Wai'ale Canyons.

All trails are not signed. Iliau Nature Loop Trail in Waimea Canyon State Park and the Nature Trail along the Kaunuohua Ridge behind Kōke'e Museum have plant name signs along their routes. The Awa'awapuhi Trail also has numbered markers keyed to a vegetation guide map; however, the map has long been out of print. According to The

Nature Conservancy (1996), other trails have good potential for development of interpretive materials and/or informational signage. Their recommendation cites Kaluapuhi Trail and Halemanu-Kōkeʻe Trail, as well as Waineke Road and Halemanu Road as candidates for such improvements.

In addition to dispensing trail information, Kōkeʻe Natural History Museum offers guided hikes during the school year to student groups along some trails and “Wonder Walks” for residents and visitors alike on a variety of trails. These hikes are conducted from June to September by staff and volunteer interpreters.

4-WD trails lead down to Sugi Grove and out along ridges from Waimea Canyon State Park into the forest reserve.

Commercial Activities

DLNR permits commercial tours on select public Nā Ala Hele (NAH) trails and access roads throughout Kōkeʻe State Park provided the commercial activity is conducted in an environmentally and culturally responsible manner. The selection of features eligible for commercial tour activities and the general condition for allowing tour activities is based on the following standards developed by the Nā Ala Hele Program:

- The offered trail or access road is currently managed and regulated by the NAH Program and is available for public use.
- There are no legal or jurisdictional impediments to trail, road access, and/or parking.
- The trailhead is accessible by small passenger vans and public parking will not be impacted by commercial vehicles.
- The trail or road resources will not be degraded by the commercial tour

activity.

- There are minimal impacts to local residents from allowing commercial tours.
- Commercial tours are limited to weekdays only, sunrise to sunset.
- Commercial tour activity is limited to a maximum daily capacity established by NAH.
- DLNR staff will be able to monitor the offered hiking program for environmental or social impacts. Commercial tours must be conducted by a guide.

◆ **CAMPING SITES**

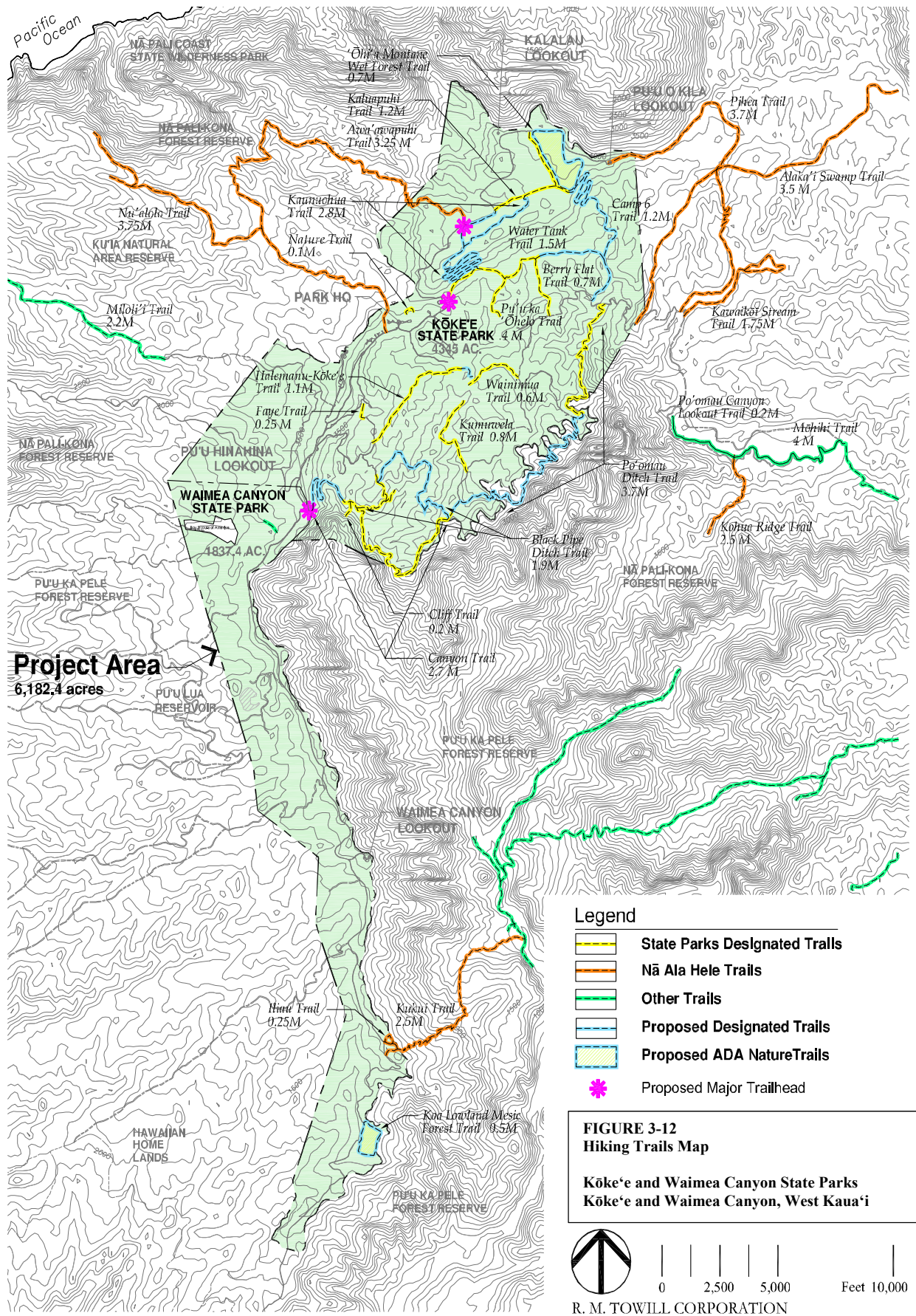
A total of eight group camping facilities accommodating up to 338 individuals currently exist within the park boundaries. A ninth facility, consisting of 12 state park cabin units sleeping up to 75 persons, is available for public use.

Nonprofit Group Camping

The Kōkeʻe area provides camping opportunities for individuals and groups in a number of settings from group living facilities in cabins provided by nonprofit organizations to individual tent sites.

A listing of these nonprofit groups includes the following:

- Hawaiʻi United Methodist Center, 3.05 ac./Puʻu ka Pele
- Hawaiʻi Association of 7th Day Adventists Mission, 4.06 ac./ Puʻu ka Pele
- Honpa Hongwanji, 1.06 ac./Puʻu ka Pele
- United Church of Christ, .5 ac./Kōkeʻe
- Kauaʻi YWCA, Camp Sloggett, 3.6 ac./Kōkeʻe
- Kauaʻi Christian Fellowship, .99 ac./ Puʻu ka Pele



**Table 3-7
Hiking Trails and Trailhead Amenities**

Trail Type And Name	Lead Agency	Mileage	Trail Features			
			Rest Rooms	Parking	Trail Interpretation	Shelter
<i>Nā Pali Overlook Trails- Trails lead to spectacular valley and cliff views along the northwestern coastline of Kaua'i</i>						
Honopū Route	NAH	2.2	No			
Awa'awapuhi	NAH	3.25	No	30	Yes	No
Nu'alolo	NAH	3.75	No	6	No	No
<i>Waimea Vista Trails- (Easy to difficult) provide dramatic vistas into Waimea Canyon. Drier conditions than forest or swamp trails.</i>						
Black Pipe	SP	0.75	No	Limited	No	No
Canyon	SP	2.7	No	Limited	No	No
Ditch	SP	1.5	No	Limited	No	No
Po'omau	SP	5.0	No	Limited	No	No
Po'omau Canyon Lookout		0.3	No	Limited	No	No
Kohua Ridge		2.5	No	Limited	No	No
<i>Forest Trails- An array of native plant material found in the forest to include 'Ōhi'a, Koa, Maile and Mokihana as well as introduced species including Redwoods and Sugi</i>						
Pu'u ka 'Ōhelo	SP	0.4	No	Limited	No	No
Berry Flat Trail	SP	0.7	No	Limited	No	No
Waininiua	SP	0.6	No	Limited	No	No
Halemanu- Kōke'e	SP	1.1	No	Limited	No	No
Kumuwela	SP	0.8	No	Limited	No	No
Faye Trail	SP	0.25	No	Limited	No	No
Kaluapuhi	SP	1.2	No	No	No	No
Nature Trail	SP	0.1	No	No	Yes	No
Water Tank	SP	1.0	No	Limited	No	No
<i>Alaka'i Swamp Trails- Provides access into the Alaka'i wilderness, a sunken caldera. Trails are often extremely wet along a boardwalk trail, slowing the hiking pace.</i>						
Alaka'i Swamp	NAH	3.5	Yes	Limited	No	No
Mōhihi-Wai'ale'ale Route	NAH	4.0	No	Limited	No	No
Pihea Trail	NAH	3.7	No	Yes	No	No
<i>Waimea Canyon Trail - Provides an opportunity to hike into the Canyon and point along the stream</i>						
Kukui Trail	NAH	2.5	No	Limited	No	No
Iliau Nature Loop Trail	NAH	0.25	No	Limited	Yes	No
TOTAL TRAIL MILES		42.05				

Source: DLNR and Hui o Laka

The Boy Scouts of America Aloha Council owns 29 acres of land adjoining the Pu‘u ka Pele recreation residences. The Boy Scouts should be contacted directly for use of their facilities.

These group camp facilities are typically barracks-type structures that are used seasonally to accommodate small groups of campers. Some are available to the public while others are available exclusively to members and invitees. The sites are in semi-isolated locations grouped together with the leasehold cabins. Reservations for these sites are handled by the respective organizations.

The most recently developed group camp facility is the Kōke‘e Discovery Center, constructed in 1994. It is located off Kōke‘e Road above Kanaloahuluhulu Meadow. This facility was built for the purpose of teaching environmental education to island students. The program is administered by the Department of Education (DOE). The facility can accommodate up to 40 students and has sleeping quarters, a kitchen, and outdoor activity areas. The program supplements classroom activities with students learning firsthand about the native forest ecosystem of Northwest Kaua‘i and participating in character building activities, science experiments, excursions-hikes into the area, and occasionally becoming involved in volunteer projects in the parks.

Operational and maintenance support is provided by the Kōke‘e Discovery Center Association (KDCA) and the DOE in maintaining and preserving the Center’s facilities to serve as a place for learning and exploration. The KDCA provides support in the form of fundraising and volunteers to help with staffing, supplies, equipment, and general maintenance and subsidizes bus transportation to the center for those who cannot otherwise afford it. A small nursery

to cultivate native plantings is planned for the Center to supplement the outdoor education programs.

During weekends and holidays, the public may make arrangements with the DOE to use the facilities.

Individual and Group Camping

Public camping accommodations are available at the northern end of Kanaloahuluhulu Meadow. This is the only tent campground available in Kōke‘e and Waimea Canyon State Parks. The campground is on “high ground” and not subject to the soggy soil conditions that plague much of the meadow. It comfortably accommodates 15 campers. A camping permit (\$5 permit, per night) is required. The paved parking and restroom makes this area very convenient and accessible. This campground, however, is small and may not be able to accommodate heavy camping demand. The site is located close to the main road, subject to traffic noise and activities that take place in Kanaloahuluhulu Meadow. During the winter season, the area is often cold and wet. The men’s restroom has only one toilet.

Several other areas within the parks have been identified as having good potential for campground development:

The existing Pu‘u ka Pele Picnic Area (also known as the Kā‘ana Picnic Area) is ideally suited for campground development. It is located in a dryer area of the park and contains some of the basic facilities that would be needed for campground development (pavilion, restroom, parking area). The site, however, would need to be enlarged from its present size (about 1 acre) to approximately 5 to 8 acres. The development of the Pu‘u ka Pele Picnic Area as a major campground may function well with other planned improvements (koa

forest reforestation, nature trail development) as well as the recommendations related to hiking trail linkages from the Pu‘u Hinahina Lookout area.

The Kumuwela campground would be a primitive campsite located deep into the forest, at the end of Kumuwela Road, a distance of over 2 miles from the main road. A small, flat clearing located near the edge of the canyon rim indicates that the spot is already infrequently used. Its remote location, lack of drinking water, and the condition of Kumuwela Road, poses the primary development constraints for this site. According to the 1984 Preliminary Draft Kōke‘e - Waimea Canyon State Parks Management and Development Plan, which first proposed development of this site, “The area could be closed in the winter, retaining the primitive facilities and the dirt road access for the summer camping season when use is three-to-four times greater than in the winter.” (Chu, May 1998)

Back-Country Camping

For the fit and adventuresome, backpacking and back-country camping is available in Waimea Canyon. The area is developed with shelters and camping areas for individual and small groups. Besides the shelters, each site is provided with a composting toilet. No other amenities are present.

A 15-acre meadow in Halemanu Valley has been identified as a potential major new campground for campers wishing to get away from the more traveled portions of the Parks. Citing its drier conditions and proximity to the scenic canyon, the Halemanu site would serve as an excellent base campground for hikers who wish to remain overnight in the forest while exploring the trails in the Kumuwela Ridge area. Limited improvements to facilitate the Halemanu camp site would include: a) A

detailed site study to determine the best campground location and layout; b) Improving the existing dirt roadway and establishing clearings for parking, camp sites and a central pavilion for cooking, washing, etc.; and c) Installation of a restroom.

The Sugi Grove Area has potential for development as a new primitive individual and group camping and picnicking area. Access to the site would be via the Camp 10 Road. In order for the site to become usable, potable water would be required as well as the development of a restroom and shelters.

Cabin Lodging

The Kōke‘e Lodge operates 12 cabins in 10 structures for rent to the general public. They have a combined capacity for housing 75 people. The cabins are provided with basic housekeeping furnishings, beds, kitchen, hot and cold running water, and a wood-burning stove. The wood can be purchased at the Lodge. The cabins are operated in a manner likened to a motel where renters can drive up to their respective units. The Lodge operates a laundry adjacent to the former Rangers Cabin. In addition, supplies and wood are stored adjacent to the laundry.

The Lodge notes that occupancy is nearly 100%. Fishing season and holidays have the highest demand for the cabins. Generally, these dates are booked nearly a year in advance and there is usually a waiting list. Rental rates for the cabin are approved by the BLNR. In 2008, the BLNR approved rates of \$65 per night for local residents and \$90 per night for visitors. An additional \$5 is charged per person after the first three people. There is a maximum of 6 people per cabin.

◆ PICNIC AND REST AREAS

There are 12 picnic facilities available in Kōkeʻe and Waimea Canyon State Parks and the surrounding forest areas. Eleven are shown on **Figure 3-13**. An additional picnic area located further down Mākaha Ridge Road in the Pine Forest Loop picnic area is not shown. Four picnic areas are located within the State Parks, three in Kōkeʻe and one in Waimea Canyon.

Kōkeʻe State Park

Kanaloahuluhulu – The most popular site is Kanaloahuluhulu Meadow, where tables near the road are often sought by residents and visitors alike to have a meal followed by a rest or play in the open meadow. Also at Kanaloahuluhulu Meadow, the stone pavilion with approximately 10 picnic tables accommodates large school groups or those who desire shelter from the elements.

The area also has a restroom, grills, potable water, and telephones. Parking, however, is inadequate. The proximity to the Lodge with its food and beverage also encourages picnicking when the weather is nice. Accessibility to persons with disabilities is limited because of the lack of paved walkways.

Kalalau Lookout – The Kalalau Lookout is another location that has uncovered picnic tables that are used by visitors and residents alike. This site also has adequate parking and a restroom. There are no shelters, potable water, or barbeque grills at this site.

Cliff Trail Viewpoint – An uncovered picnic table is located at the viewpoint at the end of the Cliff Trail. No other picnic facilities are developed at this location.

Waimea Canyon State Park

Puʻu ka Pele – The Puʻu ka Pele Picnic Area has picnic facilities primarily used by residents who come to hunt, gather or prefer

the quietness of the area. This picnic area has a restroom, adequate gravel parking, pay telephone, grills, and shelters for small family groups to larger groups.

Forest Reserve Picnic Facilities

Additional picnic facilities are maintained by DOFAW within the forest reserve areas. These include:

Camp 10 Road – Provides access to several picnic facilities in the neighboring forest reserves, including the Alakaʻi Picnic Area and Waikoali Picnic Area, both on Mōhihi Road, in the direction of Camp 10.

Kukui Trail – Facilities at the trailhead include two covered picnic tables approximately 1/8 mile from the trailhead. The tables are surrounded by koa trees and other native and non-native plants species, offering striking views into the canyon. There are no restrooms, water, trash, or communication facilities at this location. Parking is limited to the paved shoulder on Waimea Canyon Drive. There is no signage designating the site for picnic use.

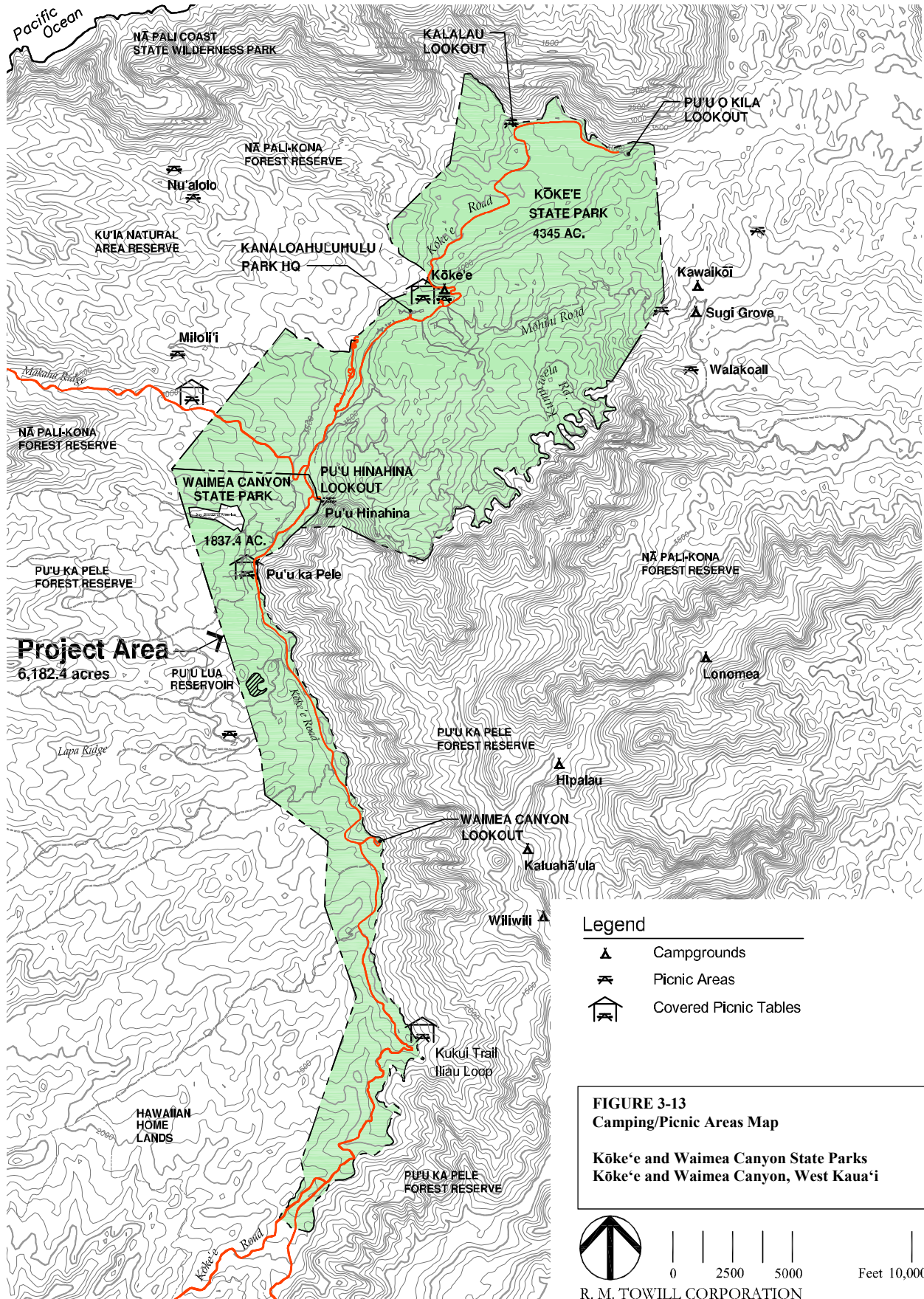
Mākaha Ridge Road – This site has unpaved parking, trash cans, picnic tables and a shelter. The site does not have a restroom, potable water, or communications.

Haʻeleʻele Picnic Area - This site has unpaved parking, trash cans, picnic tables and sheltered picnic tables. It is used mostly by hunters and local residents.

Nuʻalolo and Miloliʻi Picnic Sites – Picnic tables are provided on Nuʻalolo and Miloliʻi Trails for the convenience of recreational hikers and hunters. The locations have no other developed picnic facilities.

◆ FINDINGS

The following are general findings relating to hiking, camping, and picnicking:



- Parking areas at Pu‘u ka Pele should be paved and properly drained to prevent the accumulation of water during wet periods and to prevent soil erosion.
- One-Stop Permitting - Currently, visitors to the area are required to make reservations with the different agencies for different activities. The public would be better served by consolidating the permit process for different activities and different jurisdictions into a “one-stop” permit source.
- Nonprofit agencies should be required to provide open public rental periods for groups and families. These dates should be reported to the DLNR annually.
- The existing parking lots at Kanaloahululu Meadow and at the lookouts need to be repaired and resurfaced. Some lookout and trailhead parking areas need to be expanded to meet current levels of use.

3.7 BUDGETARY COST ESTIMATES

◆ COST FACTORS

Budgetary cost estimates have been prepared to fix, repair, reconstruct, renovate, demolish, update, or upgrade those items identified to be “broken.” Ongoing maintenance requirements are discussed at the end of this section. A summary of the cost estimates are shown in **Table 3-8**.

The cost estimates are based on returning an item to an “acceptable, not necessarily new” condition. Further, the cost estimates are to return the “broken” items to a serviceable level without consideration for future program development. Estimates were prepared in 2005. The methodology used to determine the cost of the repair, etc. included the following:

- Identification of work required.
- Identification of the cost to return the item to a serviceable level. Cost for each

item was reduced to a ‘unit cost’ to facilitate calculation.

- The total number of items in a similar condition.

The scope of the cost estimation was limited to existing facilities and no new work identified in the master plan was included. Further, cost savings that may be obtained from bulk purchases was not considered.

The following items were identified in the cost estimate:

Water system

- Source Development
- Storage
- Transmission

Sewer System

- Pump / Lift Stations
- Transmission
- Treatment
- Individual Treatment Systems

Roadways

- Paved Roads
- Unpaved Roads

Lookouts

Parking Lot Repaving

◆ RECREATION RESIDENCES

Renovation costs were estimated for the recreation residences described earlier in this section.

It is assumed that capital improvement costs for recreation residences will be borne by individual leaseholders and will not be a State expense. Estimated improvement costs are summarized in **Table 3-9**.

Table 3-8
Repair, Upgrade and Capital Budgets of DLNR Divisions on Kauaʻi
 (2005 figures. Cost excludes survey, design, and equipment costs.)

Division	Expense Category	Unit of Measure	Quantity	Unit Cost	Total	Notes
State Parks						
	New Well @ 50 gpm capacity	EA	2	\$15,000	\$30,000	Well drilling to 50' no equipment
	Well equipment - pumps	EA	2	\$15,000	\$30,000	2 pumps, fitting, etc.
	New Storage Tank @ 100,000 gals.	EA	1	\$171,000	\$171,000	Steel tank next to existing 200K tank
	New Tank Base for 100K gal. tank	SF	908	\$22	\$19,976	12" base for tank
	New Storage Tank @ 50,000 gals.	GAL	1	\$3	\$150,000	Steel tank
	New Storage Tank @ 10,000 gals.	GAL	1	\$3	\$30,000	Steel tank
	Tank Foundation 12" Concrete	SY	556	\$22	\$12,232	For 10,000 and 5,000 tanks
	Transmission Line 4" HDPE	LF	10,000	\$95	\$950,000	Kōke'e Lodge to Mākaha Road
	Transmission Line 2" HDPE	LF	12,000	\$40	\$480,000	Mākaha Road to Waimea Canyon Lookout
	Individual WW Treatment @ Lookouts	EA	4	\$24,000	\$96,000	Waimea Canyon, Pu'u Hinahina, Kalalau, Pu'u o Kila
	Leach field development @ Lookouts	EA	4	\$20,000	\$80,000	
	Water meters - flow meters	EA	4	\$5,000	\$20,000	At exits of water tanks
	Parking Lots					
	- Pu'u o Kila	SY	2,456	\$51	\$125,256	cold planing and pave 22,100 sf
	- Kalalau Lookout	SY	2,178	\$51	\$111,078	cold milling and pave 19,600 sf
	Roads					
	- Repave Roads (Halemanu to Pu'u o Kila)	SY	35,200	\$25	\$880,000	4 ft X 20 miles.
	- Drainage improvements along paved road	LF	42,240	\$4	\$168,960	4 miles x 2 ft.
	- Gravel Roads to serve houses	CY	105,621	\$17	\$1,795,559	Gravel 3" 10 miles of Rd x 12 ft.
	Building Demolition - Waikeke	SF	2,000	\$12	\$24,012	\$6 for demo; \$6 hauling and disposal
	Waimea Canyon Lookout	LS			\$60,000	Picnic area, landscaping, picnic tables, new restrooms
	Pu'u Hinahina Lookout	LS			\$40,000	New approach, picnic area and tables
	Kalalau Lookout	LS			\$50,000	New paths, picnic shelters, and tables
	Pu'u o Kila Lookout	LS			\$40,000	New paths, picnic shelters, and tables
	Forestry and Wildlife					
	- Gravel Roads	CY	15,256	\$38	\$579,728	39 miles of gravel road x 12 ft
	- Drainage improvements	LF	205,920	\$4	\$823,680	39 miles of gravel road - 2 sides
	-Parking lot for Kukui Trail 15 cars	SY	7,500	\$51	\$382,500	15,000 sf
	-Trailhead improvements at Meadow					
	TOTAL				\$6,963,504	
	Contingency @ 15%				\$1,044,526	
	Grand Total				\$8,008,030	

◆ MAINTENANCE FACTORS

Ongoing maintenance is a critical element to sustaining the values of the Parks and its facilities. Scheduled maintenance, both daily and periodic, should be part of the ongoing operations of the Parks. As an example, the sewer treatment system maintenance cost by a private contractor is \$18,000 / year (2001-2002). It is likely that with the conversion of the remaining large cesspools to a septic treatment system, this cost will increase. The alternative is to have Park personnel (at least 2 persons) be

certified to perform the maintenance work. Water treatment is also recommended to be handled by a private contractor. Additional pumps and storage tanks, the demands of the water testing, pump maintenance, and system maintenance will require certified maintenance personnel (at least 2 persons).

Gravel roads have been estimated to be approximately \$33,000 per mile. This cost includes equipment operator, dump trucks, graders, backhoe, bulldozer, and fill material. Road maintenance, on the other hand, is estimated at \$6,000 per mile and

includes equipment operator, laborers and dump trucks, graders, bulldozer, backhoe, and fill material.

Table 3-9
Estimated Renovation Costs
Recreation Residence

Condition	Count	Cost per Unit (000)	Total
Good	44	\$15	\$660,000
Moderate	22	\$42.5	\$935,000
Bad	39	\$70	\$2,730,000
Total	105	--	\$4,325,000

Notes:

(1) Condition based on historic rating (Duensing 2003). See section on **Recreation Residence Lease Rents** for further details.

(2) Cost per unit based on current renovation costs for comparable structures on Kaua‘i. Cost per ‘Bad’ unit based on replacement cost utilizing a ‘kit cabin’ with additional premium for Kōke‘e vernacular detailing (Plasch, 2004).

CHAPTER 4 EXISTING CONDITIONS AND ASSESSMENT

4.1 INTRODUCTION

This section describes the physical features and resources of Kōkeʻe and Waimea Canyon State Parks. This section further assesses:

- Physical condition,
- Zoological resources,
- Botanical resources,
- Archaeological and historic resources,
- Visual resources,
- Recreation resources,
- Park user information and demand,
- Management and operations, and
- Other uses within the Parks.

4.2 PHYSICAL CONDITIONS

◆ CLIMATE

The climate in Kōkeʻe and Waimea Canyon State Parks varies significantly with location, elevation, and topography. Climate throughout the Hawaiian islands is predominantly influenced by ocean-born trade winds, the effects of which are displayed dramatically on Kauaʻi. The steep windward slopes of Mt. Waiʻaleʻale and Wainiha Ridge force the moisture-laden winds upward, where changes in temperature and pressure cause rapid condensation, cloud formation, and heavy rain. This effect produces an annual average rainfall of 433 inches on Mt. Waiʻaleʻale (elevation 5,148 feet), and generated a record high of 666 inches in 1982. (www.soest.hawaii.edu; TNCH, June 1996) See **Figure 4-1**, Weather Map.

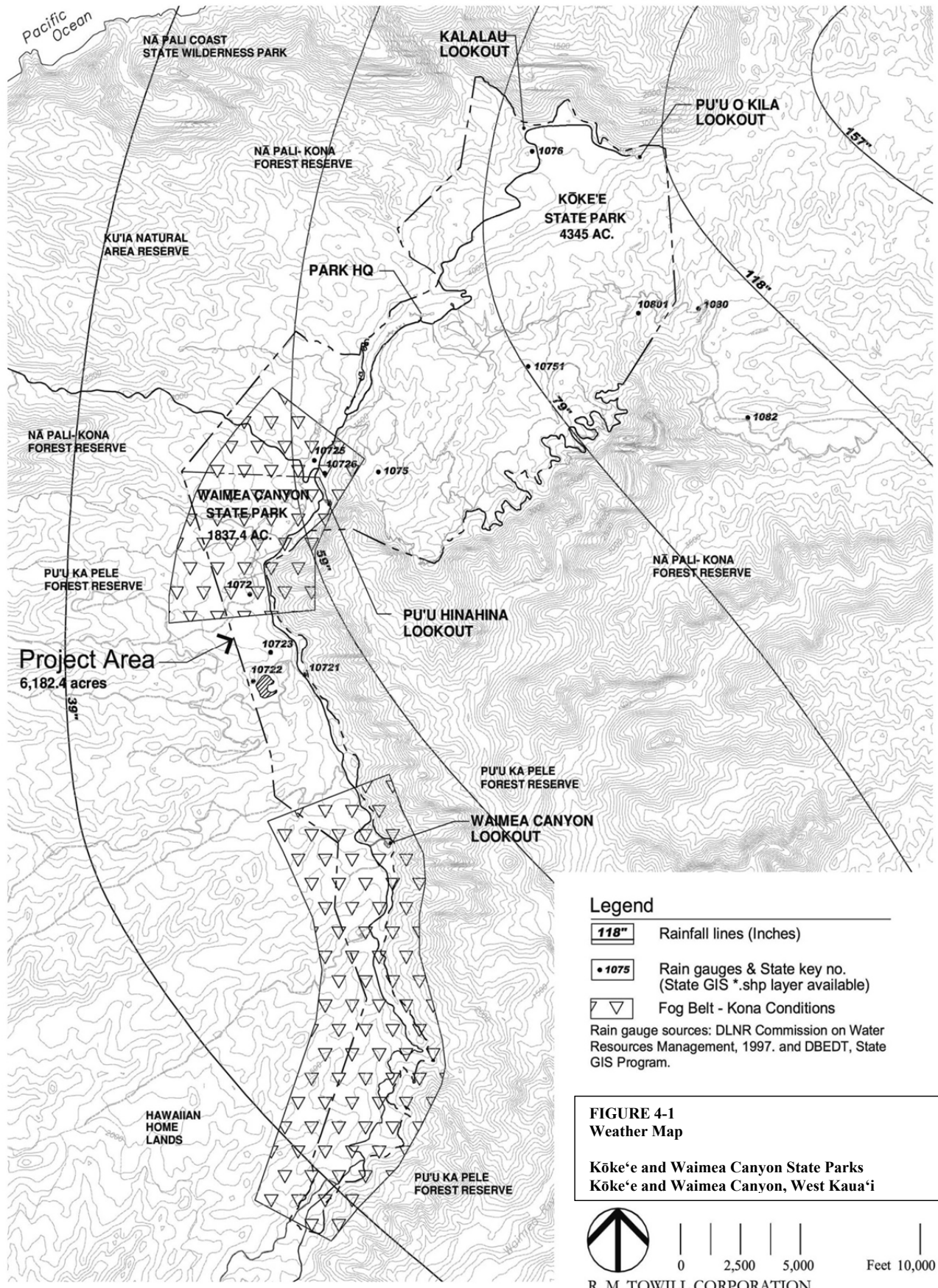
Moisture is quickly lost as the wind and clouds progress over the mountaintop. On the leeward slope, reduced moisture levels and changes in temperature and pressure

diminish cloud formation and result in a rapid decline in rainfall levels. In the approximately 8 miles between Mt. Waiʻaleʻale and Kanaloahuluhulu Meadow in Kōkeʻe State Park, the rainfall contour drops from 433 inches to 69 inches. Within the park boundaries, average rainfall varies from 118 inches at Puʻu o Kila Lookout (elevation 4,160 feet), to 59 inches at the Kōkeʻe State Park entrance (elevation 3,600 feet), to 39 inches at the entrance to Waimea Canyon State Park (elevation 2,100 feet). See **Table 4-1**.

Within the two parks are some of the most extreme moisture gradients in the world. Within a single scenic vista montane and wet forest covered ridges as well as dry, desert-like canyons and cliffs can be seen. Mt. Waiʻaleʻale and the wet interior of the Alakaʻi plateau are visible from Kōkeʻe and Waimea Canyon State Parks, as are the dry lowlands of Waimea Canyon.

Temperatures in Kōkeʻe and Waimea Canyon State Parks also vary greatly. The cool upland regions of Kōkeʻe regularly measure in the 60s (°F). The average recorded temperature in Kōkeʻe during the hottest month (August) is 71°F; during the coldest month (February) it averages 46°F. The highest temperature recorded at Kanaloahuluhulu Meadow is 90° F, and the lowest 19°F (DBED&T, 2001). Frost formation is common during the cooler months in the upper elevations of the park.

Temperatures in Waimea Canyon are warmer than the uplands and canyon rim. In the lower reaches of the Canyon, temperatures average in



**Table 4- 1
Temperatures and Rainfall Averages
Kanaloahuluhulu, Station 1075**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Min °F	47.3	46.9	48.7	50.4	51.3	53.2	55.0	55.4	53.4	52.9	51.3	48.6	51.3
Avg. °F	55.0	55.4	56.8	58.1	59.9	61.9	63.1	63.9	63.0	61.5	59.0	56.1	59.5
Max °F	62.8	63.7	64.9	65.8	68.4	70.7	71.2	72.3	72.1	70.3	66.7	63.7	67.6
Rainfall													
Avg (inches)	12.1	8.8	7.5	5.3	3.2	1.8	2.4	2.7	2.4	4.6	7.4	10.4	68.5

Source: Temperatures derived from NOAA National Climactic Data Center (NCDC) *TD 9641 Clim 81, 1961-1990 Normals*. 30 years between 1961 and 1990. Rainfall data derived from NCDC Cooperative Stations. 46 complete years between 1931 and 1995.

the mid-70s (8F) annually, with average maximum temperatures in the mid-80s (8F) and average lows in the mid-60s (8F) (DBED&T, 2001). Temperatures within the canyon exhibit a great deal of local variation, affected by floor elevation, canyon-channeled winds, shading, heat absorption in the rocks, and other factors.

During Kona wind conditions, fog belts commonly develop in two localized regions of the park:

- Starting at the 5-mile marker on Kōke‘e Road and extending just past Waimea Canyon Lookout.
- Starting approximately at the 12.5-mile marker and extending to the intersection of Kōke‘e Road and Halemanu Road.

The fog typically appears in the early morning hours, lifts by mid-morning, then reappears before noon, frequently lasting through the afternoon. Approximately 30-40 instances of Kona weather fog conditions occur each year.

Solar insolation gradients indicate the amount of solar energy that reaches the earth’s surface in a given area. Solar gradients are necessary in planning for the

parkland use of solar-powered devices, such as emergency phones, lighting, and water heating. Some of these technologies have proven very effective in remote areas where other energy sources are difficult to construct and maintain.

To attain best results, most devices for harvesting sunlight require solar insolation of greater than 130 calories / square centimeter / day (ca/sqcm/d). Solar insolation levels in Kōke‘e and Waimea Canyon State Parks range between 300 and 400 ca/sqcm/d (between 8.5 and 11.5 kilowatts per square meter per hour). All of the areas within Kōke‘e and Waimea Canyon State Parks receive sufficient solar energy to facilitate the use of solar-powered devices, as illustrated in **Figure 4-2**.

◆ **TOPOGRAPHY AND PHYSIOGRAPHY**

Waimea Canyon State Park is linear in shape, occupying a narrow ridge along the western rim of Waimea Canyon beginning at the 2,100-foot elevation, approximately 6-1/2 miles from the Kaumuali‘i Highway. It continues up-slope for approximately 7 miles past the Pu‘u ka Pele cabin lots and abuts the Kōke‘e State Park near the 3,600-foot elevation.

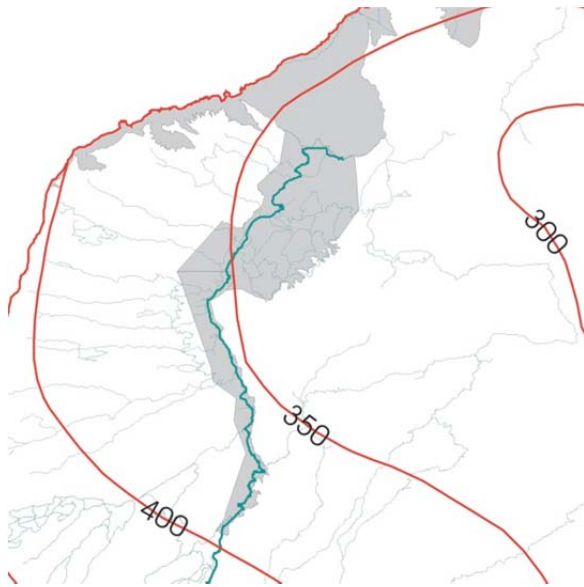


Figure 4-2
Solar Insolation Gradients in
Kōkeʻe and Waimea Canyon State Parks

Source: DBED&T, State GIS Program, from State Department of Planning and Economic Development, Energy Division "Sunshine Maps," 1985 (calories / square centimeter / day)

Waimea Canyon State Park lies within the Puʻu ka Pele Dissected Uplands physiographic division. This division is characterized by its irregular and rolling topography and numerous erosional gullies that drain primarily in a westerly direction. The eastern edge of the park is defined by the Waimea Cliff and Valley division, a highly-eroded land form that drops abruptly and dramatically to the canyon floor, forming the western wall of Waimea Canyon.

The most distinctive land form within Waimea Canyon State Park is Puʻu ka Pele. It is a sharp pinnacle perched along the upper edge of the canyon, though modest in stature when compared to the breadth of the canyon.

The adjoining Kōkeʻe State Park begins at an elevation of approximately 3,600 feet and continues for 4 miles in a mauka direction to

the edge of Nā Pali overlooking the Kalalau Valley, at an elevation of approximately 4,200 feet.

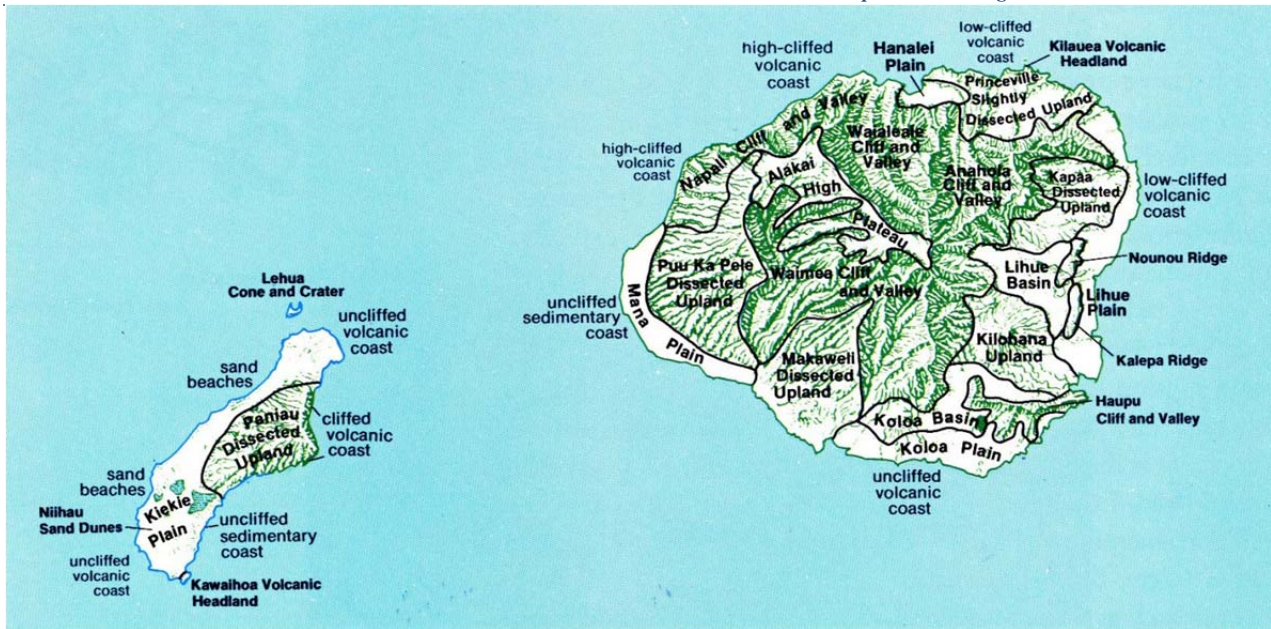
Most of Kōkeʻe State Park lies within the Alakaʻi High Plateau physiographic division. In Kōkeʻe State Park, this division is characterized by a diverse network of small ridges and streams that flow in a southerly direction towards Waimea Canyon. See **Figure 4-3**. Physiographic Types and **Figure 4-4** Major Land Forms.

General physiographic types within the project area include:

- **Cliff and Valley** – Area showing little evidence of former slope; with high, nearly vertical cliffs and amphitheater-headed valleys; some valley floors may be gently sloping.
- **Dissected Uplands** – Slopes cut by numerous major valleys; master drainage patterns established.
- **High Plateau** – High-elevation remnants of a large area of low relief formed by ponded lavas that filled the main caldera of the Kauaʻi volcano.
- **Plain** – Large area of low relief.

Distinct topographic and physiographic characteristics in Kōkeʻe State Park occur along two of its borders. The first occurs along Nā Pali, where the park overlooks Kalalau Valley. Steep cliffs dramatically separate the Alakaʻi High Plateau from the Nā Pali Coast and valleys. This formation is visible from the Kalalau and Puʻu o Kila lookouts (lookouts shown at extreme bottom of **Photo 4-1**).

The second physiographic feature occurs along the southern edge of Kōkeʻe State Park where Waimea Canyon abuts Kumuwela Ridge, marking the separation



**Figure 4-3
Physiographic Types**

Source: Atlas of Hawaiʻi, 2nd Edition, University of Hawaiʻi Press, 1983; and, MacDonald, Davis, and Cox, 1960.

between the Alakaʻi High Plateau and the Waimea Cliff and Valley formation. The Puʻu Hinahina Lookout and the Puʻu Hinahina Observation Point provide excellent opportunities to view this feature. Less dramatic, but important land forms within Kōkeʻe State Park include Kaunuohua and Kumuwela Ridges. These ridges frame the major use areas of the park on the west and east sides, respectively, and mark key geologic stages in the formation of the island. Kaunuohua Ridge is a moderately-pronounced land form, on which are developed several utility installations, including a NASA tracking station, Pacific Missile Range tracking station, and a DLNR baseyard. Kumuwela Ridge is parallel to the Kaunuohua Ridge but of minor visual significance. The area between these two ridges contains the Kōkeʻe and Halemanu cabin lots, as well as the main park facilities and most of the infrastructure improvements within the park (Chu, May 1998).

◆ **GEOLOGY**

Kauaʻi is one of the oldest of the Hawaiian Islands, and one of the most complicated geologically. It developed as a huge, circular shield volcano, gradually rising from the sea floor through the accumulation of thousands of thin basaltic lava flows. The eruptions giving rise to Kauaʻi are estimated to have begun late in the Tertiary period and finished before the end of the Pliocene (2 to 4 million years ago) (MacDonald, 1960; Logan, 1966).

Lavas that compose the island are divided into two main groups:

Waimea Canyon Basalts – older basalts that formed the original shield volcano and caldera in-fill. Includes Nāpali, Olokele, Makaweli, and Hāʻupu basalts.

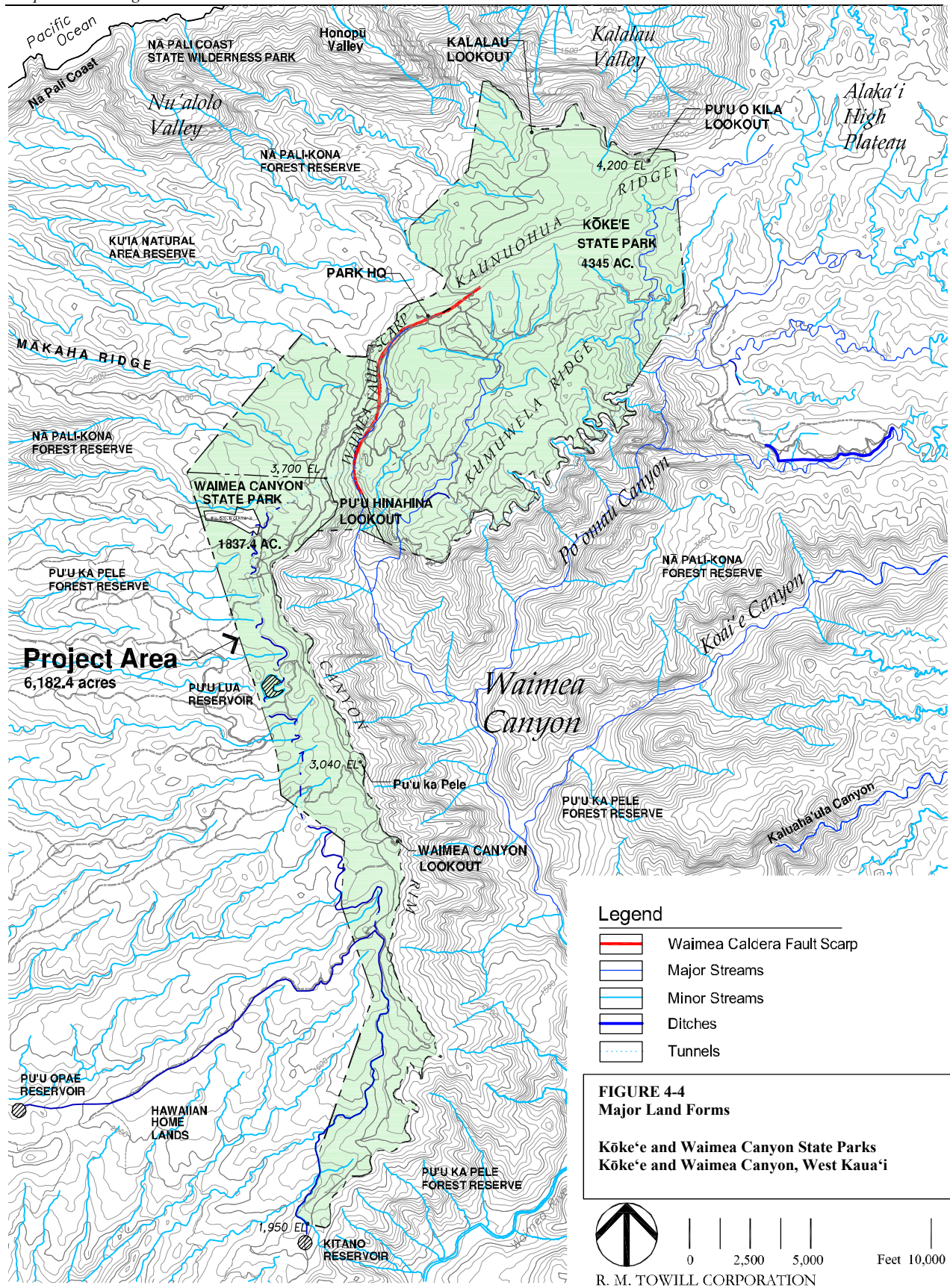




Photo 4-1
Aerial Oblique Photo
 Kōkeʻe (foreground) and Waimea Canyon
Looking Towards Waimea Town

Koloa Lavas – later stage lavas that in-filled the eastern and southeastern sides of the island following a period of volcanic quiescence and erosion activity. Includes Koloa lavas and Palikea breccia.

The summit of the original shield volcano formed a single, central dome, referred to as the Waimea Dome, from which radiated numerous deep valleys carved by erosional

forces. These original drainages are still evident in the valleys of Wainiha, Lumahai, and Hanalei on the northeast, Kalalau, Honopu, Nuʻalolo, and Mākaha on the northwest; and Waimea, Makaweli, Olokele, and Hanapēpē on the south.

The Waimea Dome, composed of Nāpali basalts, eventually collapsed to form the largest caldera found in the Hawaiian Islands (approximately 12 miles wide). The west wall of Waimea Canyon forms the Waimea Scarp, marking one edge of this ancient caldera.

Subsequent Waimea basalt flows filled in the major caldera-collapse with thick layers of erosion-resistant basalt rock to create the Olokele formation under the present day broad summit regions of Mt. Waiʻaleʻale, the Alakaʻi Swamp, and portions of Kōkeʻe State Park. The Waimea Scarp is buried in these flows through the Kanaloahuluhulu meadow area. The collapsed side of the fault lies to the east of the meadow and includes the area occupied by the Kōkeʻe and Halemanu cabin lots.

A later flow of Waimea basalt also partly in-filled the Makaweli Depression within the collapsed caldera. By redirecting the drainage from Mt. Waiʻaleʻale and the Alakaʻi, the Makaweli Depression was responsible for the erosion of Waimea Canyon. (McDonald, Abbott & Peterson, 1983; Reiners, Nelson, & Izuka, 1998)

Recent research (Blay & Siemers, 1997) has advanced an alternative theory to explain the geological formation of Kauaʻi and Niʻihau:

- Kauaʻi was formed by two, separate shield volcanoes, not one dome;
- Kauaʻi and Niʻihau were once a single island;
- The Nā Pali coast was largely formed by the collapse of a mile-wide section of the island into the ocean.

◆ SOILS

Information on soils comes primarily from the Soil Survey of Kauaʻi, conducted by the

U.S. Department of Agriculture Natural Resources Conservation Service, and the University of Hawai‘i, Agricultural Experiment Station (1972).

Soil Associations

Three general soil associations occur within the Kōke‘e and Waimea Canyon State Parks, as shown in **Figure 4-5**. These include:

Rough Broken Land / Mahana /Kōke‘e Association: This soil association is characterized by shallow to deep, very steep, rough broken land and deep, moderately sloping to very steep, well-drained soils that have a medium-textured to fine-textured subsoil.

Wai‘ale‘ale / Alaka‘i Association: This soil association is characterized by moderately deep, very steep, somewhat poorly-drained soils over moderately fine textured subsoil; and level to moderately steep, very poorly-drained organic soils over fine-textured material.

Rough Mountainous Land / Rough Broken Land / Rock Outcrop Association: This soil association is characterized by well-drained to excessively drained, very steep to precipitous lands on mountains and gulches.

Soil Types

A complex landscape of soil types occurs within the Kōke‘e and Waimea Canyon area, with each constituent providing evidence of Kaua‘i’s volcanic origin and the natural forces that ultimately shaped the unique terrain. Dominant soil types include the following:

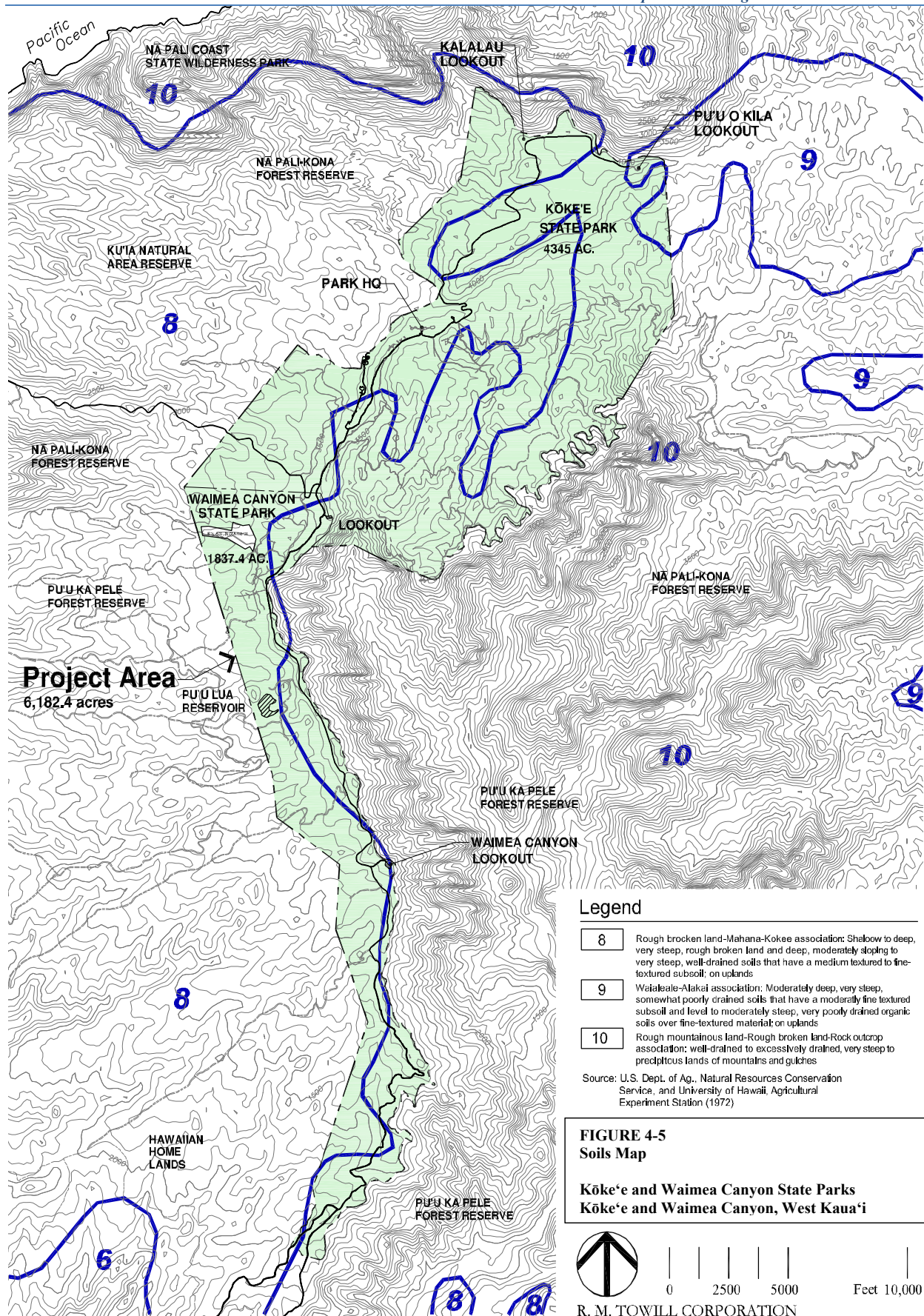
Kōke‘e Silty Clay Loam (KSKE, KSKF) is the predominant soil type within Kōke‘e State Park. It is present from Kaunuohua Ridge to Kumuwela Ridge, from Kahuama‘a Flat to Pu‘u Hinahina, and underlies Kanaloahuluhulu Meadow. This soil type is composed of material weathered from igneous rock mixed with volcanic ash. It developed through geologic erosion as in-fill in the crenulated ridge and valley terrain of the collapsed Waimea Dome.

The soil type is typically found, as at Kōke‘e State Park, within elevation ranges of 3,400 to 4,200 feet in areas receiving 60 to 70 inches of annual rainfall. It is characterized by well-drained, strongly acidic clay loam and silt loam soils on gently rising (0 to 35 percent) to very steep (35 to 70 percent) slopes. The subsoil is typically silty clay loam and silty clay underlain by soft weathered rock. Permeability of these soils is moderately rapid, runoff is medium to rapid, and the erosion hazard is slight to severe depending on slope. Kōke‘e soils support water supply, woodland growth, and wildlife habitat, with natural vegetation typical of montane forest types (‘ōhi‘a, koa, pūkiawe).

Kunuweia Very Gravelly Clay Loam

This soil type is geographically associated with Kōke‘e soils and are likewise formed of material weathered from basic igneous rock. Where Kōke‘e soils typically represent valley in-fill material, Kunuweia soil types are identified on ridge tops in nearly level to strongly sloping conditions. They are typically found at elevations ranging from 3,500 to 4,000 feet in areas with an annual rainfall of 70 to 150 inches.

Kunuweia soils are characterized as well-drained, strongly acidic soils consisting of



very gravelly clay loam containing fragments of ironstone. They are underlain by soft, weathered rock. Permeability is moderately rapid, runoff is slow and the erosion hazard is slight. Like Kōke'e soils, Kunuweia soils are identified with water bearing properties, and woodland growth.

Oli Silt Loam

Oli soils typically occur on the side of gulches. In Kōke'e and Waimea Canyon State Parks, they are found along the upper rim of Waimea Canyon from the area of Mōhihi and Kumuwela Ridge down approximately to mile marker 10. Oli soils are also present along the edges of the ridges that slope westward from the Waimea scarp, including the entire Pu'u Lua Reservoir area. This soil type is formed from volcanic ash deposited over igneous rock. It is typically found at elevations from 1,000 to 2,250 feet in areas with annual rainfall of 30 to 40 inches.

Oli soils are characterized as well-drained, strongly acidic, deep silt loam and loam underlain by slightly-weathered hard rock. In Kōke'e, Oli soils typically occur on steep slopes (30 to 70 percent slope) punctuated by rock outcrops. Permeability is moderately rapid, runoff is very rapid, and the erosion hazard is very severe.

Pa'aiki Loam

Pa'aiki soils are primarily found within Waimea Canyon State Park, alternating with Oli soils along the westward sloping crest of the Waimea Scarp. Pa'aiki soils underlie the Pu'u ka Pele cabin lots and major portions of the mesic forests that skirt the canyon rim down to Waimea Canyon Lookout.

Pa'aiki soils are formed from material weathered from igneous rock, volcanic ash, and ejected magma, and are geographically associated with Kōke'e and Oli soils. They are characterized as well-drained loam and

silty clay loam over clay subsoil, underlain by hard saprolite (weathered remains of intrusive igneous rock). Permeability in this soil is moderately rapid. Runoff is slow to rapid and the erosion hazard is slight to severe depending on the slope, which can be as steep as 70 percent.

Rock Outcrop and Rough Broken Land

Rock Outcrop refers to areas of predominantly exposed bedrock formed of basalt and andesite. It is found in conditions from gently sloping to precipitous and is the primary soil type identified within Waimea Canyon.

Rough Broken Land is characterized by very steep land broken by numerous, intermittent gullies located on steeply sloping (40 to 70 percent) mountainsides and in gulches. It is identified in Waimea Canyon State Park around the Kukui Trailhead area and other localized areas along the canyon rim. The soil type is variable, but generally not stony, although small areas of rock outcrop are common. Runoff is rapid and geologic erosion is active with associated colluvium and alluvium along gulch bottoms.

Slope

In addition to soil type, slope percentage must be considered when defining an area for developing recreational or sanitation facilities. In Kōke'e and Waimea Canyon State Parks, slopes from 0 to 35 percent and from 35 to 70 percent occur, the former creating a condition for medium runoff and slight to moderate erosion hazard; the latter creating a condition for rapid runoff and severe erosion hazard. Most of the areas with developed facilities, including the Kōke'e Lodge, CCC Camp, Lease Lots, and lookouts, fall into the 0 to 35 percent slope range.

◆ HYDROLOGY

Aquifer Systems

Aquifers in Hawai‘i have been identified and classified according to location, geology, and potential for development (Mink & Lau, 1992). Three different aquifer systems are identified underlying the two parks. See Figure 4-6.

Kōke‘e State Park lies within two different aquifer systems:

- Hanalei aquifer sector / Nāpali System
- Waimea aquifer sector / Waimea System

Waimea State Park lies within three different aquifer systems:

- Hanalei aquifer sector / Nāpali System
- Waimea aquifer sector / Waimea System
- Waimea aquifer sector / Kekaha System

All three aquifer systems are characterized as:

- High-level - fresh water not in contact with sea water.
- Unconfined - the water surface is in the upper surface of a saturated aquifer.
- Dike-contained - aquifers are confined in basaltic dike compartments.

All three aquifer systems have also been assigned a groundwater status code 21111. The five-digit code corresponds to five evaluation criteria: development status, useful purpose, salinity, uniqueness, and vulnerability to contamination. The code 21111 indicates that the groundwater has potential for development, is a source of drinking water, has a low salinity content (is fresh), is irreplaceable, and has high vulnerability to contamination.

Nāpali System - Aquifer Code 20204212

The numerous high-level dike compartments of the Nāpali formations are drained by springs and short, steep streams. Upland

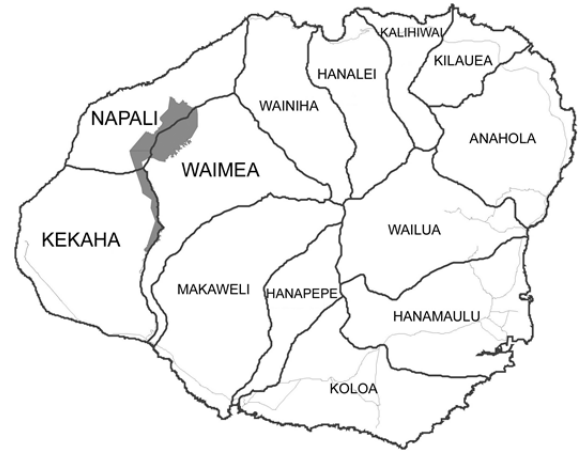


Figure 4-6
Aquifer Systems of Kaua‘i
Source: (Mink & Lau, 1992)

areas are cut by a number of short, stream valleys. High-level groundwater is impounded by basalt dikes that supply springs along the valley walls. In addition, perched water may exist in conditions where downward flow is restricted by less permeable strata. Although numerous dikes exist to capture groundwater, basal groundwater is not present in the high-level aquifer system. Groundwater flow is believed to follow the surface topography (CH2M Hill, 1996).

Waimea System - Aquifer Code 20302212

The Waimea aquifer system consists solely of the Waimea River drainage above the confluence with the Makaweli River. In the narrow lower valley, groundwater occurs as a basal lens in sediments. Most groundwater, however, fills high-level dike aquifers further inland. Groundwater discharges into springs, streams and the river. Waimea Canyon occupies the middle portion of an aquifer. Kōke‘e State Park lies at the upper limit.

Kekaha System - Aquifer Code 20301212

The Kekaha system is defined on its eastern boundary by the west wall of Waimea Canyon, which forms the drainage divide

between the Kekaha and Waimea systems. Within Waimea Canyon State Park, high-level dike aquifers occur in Nāpali lavas that are part of the southwest flank of the original Waimea Dome. At lower elevations, the groundwater occurs as a basal lens.

Surface Water

Surface water runoff from Nā Pali-Kona Forest Reserve, Alaka'i Wilderness Preserve and Kōke'e State Park are the principal contributors to the Waimea River watershed. Three primary streams originate from the Kōke'e State Park area. They are Halemanu, Kōke'e and Po'omau Streams. All three streams flow into the Waimea Canyon, where they merge to become the Waiahulu Stream, which in turn joins with other streams to form the Waimea River. See **Figure 4-7**.

The Halemanu Stream flows without interruption from Halemanu Valley into Waimea Canyon. The Kōke'e Stream is fed by four tributary streams B Waineke, Noe, 'Elekeni'iki and 'Elekeninui B that originate near the Kaunuohua Ridge. Flows from the Kōke'e Stream are diverted near Camp Sloggett into a small surface water pond. This water is piped to metal tanks, and in the past, has been utilized as domestic drinking water. Now, it is only used when well water is not available, and may be considered for other, non-potable purposes.

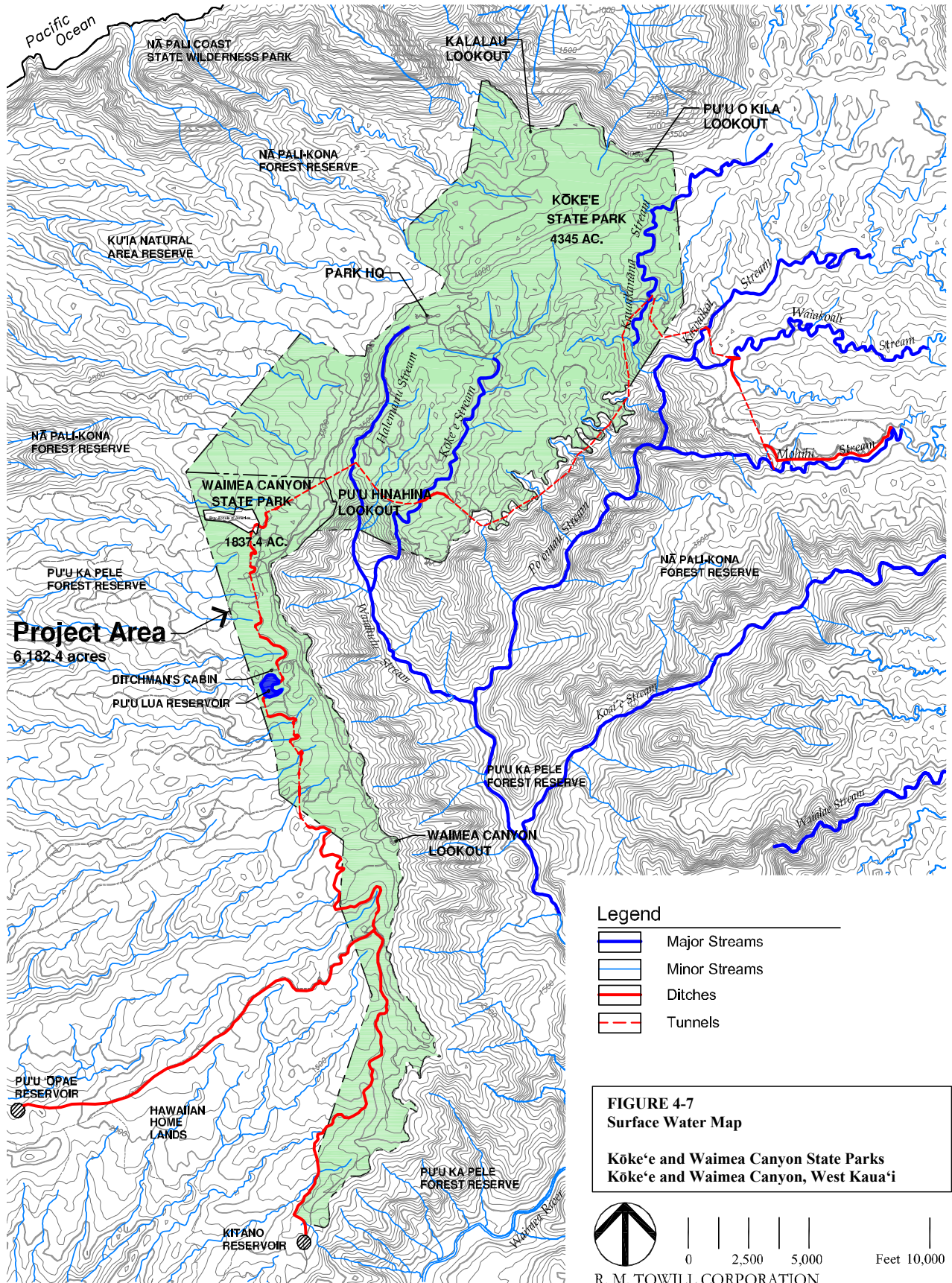
Flows from the Po'omau Stream, located towards the eastern edge of Kōke'e State Park, are partially dammed and diverted into an old irrigation ditch system that runs together with other streams originating outside the park. The ditch system consists of concrete channels, open earth ditches, tunnels, underground pipes and reservoirs. The system transports water to the Kekaha Agricultural Park, and to the Mānā Plain, where it is used to irrigate sugar cane fields.

Diversion of water from the Po'omau and Kōke'e Streams poses a potential environmental problem to the overall Waimea River watershed by reducing aquifer recharge in those areas and reducing flows through dependent stream ecosystems.

Surface water resources in Waimea Canyon State Park are limited to the Kōke'e irrigation ditch system and Pu'u Lua Reservoir. The ditch system leaves the park near the southern entrance and connects with both the Kitano and Pu'u 'Ōpae Reservoirs, before discharging into Waimea Canyon where it joins the river. Seasonal stream flows also occur in the valley drainages on the westward-facing slope during incidents of heavy rain, but these flows are intermittent and do not contribute to the Waimea River watershed.

Spring sources occur throughout the parks, with flows responding to rainfall levels. The Kōke'e Air Force Station (AFS) has developed one such spring as a potable water source. The AFS water system is shared with the restroom facility at Kalalau Lookout. Other small and privately-operated water sources utilizing wells and surface water are located in the Kōke'e, Halemanu, and Pu'u ka Pele Camp lot areas.

Administering the water system to the Kōke'e community is the responsibility of the DSP, DLNR. DSP operates, in essence, a mini "department of water" within Kōke'e State Park. This water management feature is unique to Hawai'i's State Parks. A licensed operator is required to monitor filtration systems daily if surface water is used as the source of potable drinking water. This position is not required if potable-quality groundwater can be developed as a drinking source. DLNR efforts to locate additional well sources are ongoing.



◆ **FINDINGS – INTERPRETIVE AND EDUCATIONAL OPPORTUNITIES**

Geologic Interpretation

Kōkeʻe and Waimea Canyon State Parks are uniquely situated to tell the geologic story of the formation of Kauaʻi. The parks contain examples of all of the key geologic stages of the island’s formation:

- Kalalau Valley and the western slopes are remnants of the original Waimea dome and first stage erosional period.
- The Waimea Scarp, Alakaʻi Swamp and Kanaloahululu tell the story of the dome’s collapse and subsequent in-fill.
- The eroded walls of Waimea Canyon reveal the layers of geologic history, from the earliest Nāpali basalt flows, to the post-collapse in-fill, to the last volcanic period of the Koloa lavas. Drainage from Mt. Waiʻaleʻale and the Alakaʻi display daily the erosional forces that continue to shape the island.

These geologic stories and opportunities to interpret them are visible from the lookouts at Puʻu o Kila, Kalalau, Puʻu Hinahina, and Waimea Canyon.

Soils

Soil characteristics are one of the keys to understanding fundamental environmental processes in the park region. They are of particular importance to water quality and water development issues:

- The strong acidity of the volcanic soils is imparted to groundwater sources and subsequently contributes to the deterioration of water lines and degradation of water supplies by dissolving heavy metals from the pipes.

- Groundwater quality is affected by soil permeability and other conditions, the underlying geology, and the location of potential pollutant sources (e.g., cesspools, leach fields, and industrial runoff).

Where soil conditions or terrain are unfavorable for proposed park land uses, planning objectives must be balanced against the costs of special design mitigation, soil reclamation, maintenance, and limitations on use.

Water Quality / Water Development

The potable water system serving most of the two parks is developed from within the caldera-fill Olokele formation. Some cabins in the Kōkeʻe and Halemanu area utilize private wells and/or spring water, which also draw from within the caldera. A potential health concern is created by the use of cesspools that drain into the caldera formation. An understanding of the geology underlying the park is thus important for planning wastewater systems and water source development.

Forest, Wilderness and Reserve Areas

Kōkeʻe and Waimea Canyon State Parks overlay and are surrounded by large tracts of forest, wilderness, and reserve areas containing some of the most pristine examples of native ecology in the state. Designated forest reserves, preserves, and natural areas within and adjacent to the parks include:

- Kuʻia Natural Area Reserve
- Hono o Nā Pali Natural Area Reserve
- Alakaʻi Wilderness Preserve
- Nā Pali-Kona Forest Reserve
- Puʻu ka Pele Forest Reserve
- Mokihana Game Management Area

Ku‘ia Natural Area Reserve occupies 1,636 acres of forest land ranging in elevation from 2,000 to 3,900 feet. The reserve contains one of the best examples of mesic forest remaining in the Hawaiian islands, as well as excellent examples of dry forest and shrubland environments. Rare elements such as the dwarf ‘iliau (*Wilkesia hobnyi* or Kaua‘i greensword) are still relatively abundant along the dry ridges of the reserve. The area is federally designated as critical habitat for threatened and endangered plants on Kaua‘i. The Reserve is traversed by the Nu‘alolo Trail; north of the Reserve is the Awa‘awapuhi Trail, and south is Miloli‘i Ridge.

Hono o Nā Pali contains 3,150 acres of mesic and wet forests, and riparian habitats along several perennial streams. The reserve protects numerous rare plants and aquatic animal species and is a possible nesting site for the Hawaiian Petrel (*Pterodroma sandwichensis*) and Newell’s Shearwater (*Puffinus auricularis newelli*).

The Alaka‘i Wilderness Preserve contains approximately 9,939 acres of high-elevation wet forest and bog habitat that is the watershed source for the streams of Waimea Canyon. The preserve is home to several extremely rare native forest birds, including ‘Akikiki (*Oreomystis bairdi*) and Puaiohi (*Myadestes palmeri*), the latter’s existence owing to an active captive breeding program conducted by the Division of Forestry and Wildlife. The Alaka‘i Wilderness is also the last known residence of the Kaua‘i ‘Ō‘ō (*Moho braccatus*), last seen in 1987, and the Kamao (*Myadestes myadestinus*) and ‘Ō‘ū (*Psittirostra psittacea*) both last seen in 1989, and now presumed extinct.

Note: Avian phylogenetic order and nomenclature follows *The American Ornithologists’ Union Checklist of North American Birds 7th Edition* (American

Ornithologist’s Union 1998), and the 42nd and 45th supplements to *Checklist of North American Birds* (Banks, et. al., 2000, 2002, 2003, 2004). Mammal scientific names follow *Mammals in Hawai‘i* (Tomich 1986). Plant names follow *Manual of the Flowering Plants of Hawai‘i* (Wagner et al. 1990). Place names follow *Place Names of Hawai‘i* (Pukui et al. 1974).

4.3 ZOOLOGICAL RESOURCES

A remarkable assemblage of endemic, indigenous and introduced animal species are supported by Kōke‘e and Waimea Canyon State Parks and the surrounding Natural Area Reserves, Forest Reserves and the Alaka‘i Wilderness Preserve. These include the sole endemic Hawaiian terrestrial mammalian species, the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), and sixteen endemic avian species or sub-species including 10 which are currently listed as threatened, endangered or candidate species under both the federal and the State of Hawai‘i’s endangered species programs (DLNR 1998, Federal Register 1999a, 1999b, 2001, 2002). Numerous indigenous migratory avian species have also been recorded within the parks. Additionally, 35 introduced bird species are seen regularly within the area.

Kōke‘e and Waimea Canyon’s faunal resources are discussed below. Threatened and endangered fauna known from Kōke‘e and Waimea Canyon State Parks are listed in **Table 4-2**.

**Table 4-2
Resident Threatened and Endangered Species
Kōke‘e and Waimea Canyon State Parks**

Common Name	Scientific Name	ST
COMMON BATS - Vespertilionidae		
Hawaiian hoary bat (‘ōpe ‘ape‘a)	<i>Lasiurus cinereus semotus</i>	E
PETRELS & SHEARWATERS - Procellariidae		
Hawaiian Petrel (‘ua‘u)	<i>Pterodroma sandwichensis</i>	E
Newell's Shearwater (‘a‘o)	<i>Puffinus auricularis newelli</i>	T
STORM-PETRELS - Hydrobatidae		
Band-rumped Storm-Petrel	<i>Oceanodroma castro</i>	C
DUCKS, GEESE & ALLIES - Anatidae		
Nēnē	<i>Branta sandvicensis</i>	E
Hawaiian Duck	<i>Anas wyvilliana</i>	E
RAILS & ALLIES - Rallidae		
Common Moorhen (Hawaiian Stilt)	<i>Gallinula chloropus sandvicensis</i>	E
Hawaiian Coot	<i>Fulica Americana alai</i>	E
STILTS & AVOCETS – Recurvirostridae		
Black-necked Stilt (Hawaiian)	<i>Himantopus himantopus knudseni</i>	E
THRUSHES – Turdinae		
Puaiohi (Large Kaua‘i Thrush)	<i>Myadestes palmeri</i>	E
CARDULINE FINCHES & ALLIES - Fringillidae		
‘Akikiki (honey creeper)	<i>Oreomystis bairdi</i>	C

Key to Table 4-2

ST	Status under the Federal Endangered Species Act of 1973, as amended
E	Endangered Species
T	Threatened Species
C	Candidate Species

◆ TERRESTRIAL MAMMALS

Only one native terrestrial mammal is known from the Hawaiian Islands, the Hawaiian hoary bat, or ‘ōpe‘ape‘a. This species is a resident of the parklands and surrounding areas and is frequently seen in areas of the park with nighttime lighting preying on insects attracted to the glow (Bellwood and Fullard, 1984 and USAF, June 1997).

Several introduced terrestrial mammals have become naturalized residents within the parks and surrounding areas. These include:

- Black-tailed deer (*Odocoileus hemionus columbianus*),

- Pig (*Sus s. scrofa*), and
- Goat (*Capra h. hircus*).

These species offer recreational and subsistence hunting resources for residents and visitors alike. When present in the pristine areas of the parks and refuges these ungulates pose grave threats to the native ecosystems and their components. Other terrestrial mammals known to reside within the study area include mice (*Mus domesticus*) and roof rats (*Rattus r. rattus*), Norway rats (*Rattus norvegicus*), and Polynesian rats (*Rattus exulans hawaiiensis*).

◆ BIRDS

Native forest and seabird species are important components of the ecosystem in Kōkeʻe and Waimea Canyon State Parks. Many of the common native species are seen within Kōkeʻe State Park. Nesting colonies of Hawaiian Petrel, Newell’s Shearwaters and Band-rumped Storm-Petrels are known to be present in areas addressed in this document. The former two are seen around Kōkeʻe Air Force Station near Kalalau Lookout during the breeding season. There is a resident Nēnē population living within the Kōkeʻe area. The existence of this population is the result of DOFAW’s Nēnē reintroduction program. Nēnē are commonly seen at the lookouts where they have learned to beg for handouts from visitors.

Table 4-3 lists avian species commonly seen within the study area. In addition to these regularly occurring species, a number of seabird species more commonly found in coastal areas are also possible. Additionally, a small number of the 80 odd accidental and extralimital migratory species recorded from the Hawaiian Islands over the years are also probable on an annual basis. For a complete list of these species refer to Pyle (2002) and Engilis et al. (2004).

The parks offer unique opportunities to view and enjoy Kauaʻi’s unique avifauna. Most of the lookouts and trails heading into the Alakaʻi provide access for bird watching and nature viewing. With careful observation and a modicum of good luck, a visitor to the park may stumble upon one of the following endemic species Kauaʻi ʻŌʻō, Kauaʻi Nukupuʻu, Kāmaʻo, ʻŌʻō and the Kauaʻi ʻAkialoa which are thought to have gone extinct over the last 30 years or so. Having fallen victim to the multiple threats posed by the reduction in habitat, disease and other

confounding perturbations.

◆ INVERTEBRATES

Thousands of species of native invertebrates, insects, spiders, and snails are found among native vegetation, litter, and other habitats. Most of the native habitats, including those found underground, support numerous species of endemic invertebrates. Many of these organisms have yet to be discovered and scientifically described (TNCH, 1996).

Much of the invertebrate research attention focuses on problematic insect species. The following are known from Kōkeʻe and Waimea Canyon State Parks: Two-spotted Leafhopper (*Sophonia*) is an alien pest insect affecting many native plants in the region. Native plants affected by the two-spotted Leafhopper include Uluhe fern, ʻŌhia, Naupaka (*Scaevola*), Hame (*Antidesma*), ʻĀlaʻa (*Pouteria*), and others (TNCH, February 1996).

Formosan Subterranean Termite (*Coptotermes formosanus*) – is present throughout Kauaʻi and is known to infest native Koa (*Acacia koa*) and other trees. They are suspected of being present in the forests of Kōkeʻe and Waimea Canyon State Parks (Dudley & Yamasaki, 2000).

Argentine Ant (*Linepithema humile*) – Argentine ants have established themselves in developed areas of Kōkeʻe and Waimea Canyon State Parks. They are observed in built areas and along trails, but have not yet been found within undeveloped areas of native vegetation. Argentine ants could become a potential danger to bird populations due to competition for available insect prey. In other areas of Hawaiʻi, they are found to have a significantly negative impact on native arthropods, including native plant pollinators (Cole et al. 1992; HNIS 1997).

Table 4- 3
Regularly Occurring Avian Species
Kōke‘e and Waimea Canyon State Parks

Common Name	Scientific Name	ST
PETRELS & SHEARWATERS - Procellariidae		
Hawaiian Petrel	<i>Pterodroma sandwichensis</i>	EE
Wedge-tailed Shearwater	<i>Puffinus pacificus chlororhynchus</i>	IB
Newell’s Shearwater	<i>Puffinus auricularis newelli</i>	ES
STORM-PETRELS - Hydrobatidae		
Band-rumped Storm-Petrel	<i>Oceanodroma castro</i>	CI
TROPICBIRDS - Phaethonidae		
White-tailed Tropicbird	<i>Phaethon lepturus dorothea</i>	IB
Red-tailed tropicbird	<i>Phaethon rubicaudai melanorhynchos</i>	IB
FRIGATEBIRDS - Fregatidae		
Great Frigatebird	<i>Fregata minor palmerstoni</i>	IB
HERONS – Ardeidae		
Cattle Egret	<i>Bubulcus ibis</i>	A
Black-crowned Night Heron	<i>Nycticorax nycticorax hoactli</i>	I
DUCKS, GEESE & ALLIES - Anatidae		
Nēnē (Hawaiian Goose)	<i>Branta sandvicensis</i>	EE
Hawaiian Duck (Koloa)	<i>Anas wyvilliana</i>	EE
FALCONS - Falconidae		
Peregrine Falcon	<i>Falco peregrinus</i>	EM
PHEASANTS and ALLIES - Phasianidae		
Chukar	<i>Alectoris chukar</i>	A
Erckel’s Francolin	<i>Francolinus e. erckelii</i>	A
Japanese Quail	<i>Coturnix c. japonica</i>	A
Red Junglefowl	<i>Gallus gallus</i>	A
Ring-necked Pheasant	<i>Phasianus colchicus</i>	A
NEW WORLD QUAILS - Odontophoridae		
California Quail	<i>Callipepla californica</i>	A
RAILS and ALLIES - Rallidae		
Common Moorhen (Hawaiian)	<i>Gallinula chloropus sandvicensis</i>	ES
Hawaiian Coot	<i>Fulica Americana alai</i>	EE
PLOVERS and LAPWINGS - Charadriidae		
Pacific Golden Plover (Kōlea)	<i>Pluvialis fulva, dominica</i>	IM
STILTS and AVOCETS - Recurvirostridae		
Black-necked Stilt (Hawaiian) Āe‘o	<i>Himantopus himantopus knudseni</i>	ES
SANDPIPERS and ALLIES - Scolopacidae		
Wandering Tattler	<i>Heterosceles incanus</i>	IM
Ruddy Turnstone	<i>Arenaria interpres</i>	IM
Sanderling	<i>Calidris alba</i>	IM

Common Name	Scientific Name	ST
GULLS, TERNS and ALLIES - Laridae		
Sooty Tern	<i>Sterna fuscata oahuensis</i>	IB
PIGEONS and DOVES - Columbidae		
Rock Dove	<i>Columbia livia</i>	A
Spotted Dove	<i>Streptopelia chinensis</i>	A
Zebra Dove	<i>Geopelia striata</i>	A
PARROTS and ALLIES - Psittacidae		
Rose-ringed Parakeet	<i>Psittacula krameri</i>	A
BARN OWLS - Tytonidae		
Barn Owl	<i>Tyto alba</i>	A
TYPICAL OWLS - Strigidae		
Short-eared Owl (Pueo)	<i>Asio flammeus sandwichensis</i>	ES
MONARCH FLYCATCHERS - Monarchinae		
‘Elepaio	<i>Chasiempis sandwichensis sclateri</i>	ES
LARKS - Alaudidae		
Skylark	<i>Alauda a. arvensis</i>	A
OLD WORLD WARBLERS - Sylvidae		
Japanese Bush-Warbler	<i>Cettia diphone</i>	A
THRUSHES - Turdidae		
White-rumped Shama	<i>Copsychus malabaricus indicus</i>	A
Puaiohi, Small Kaua‘i Thrush	<i>Phaoernis palmeri</i>	EE
BABLERS - Timaliidae		
Hwamei, Melodious Laughing Thrush	<i>Garrulax canorus</i>	A
SILVEREYES - Zosteropidae		
Japanese White-Eye (Mejiro)	<i>Zosterops japonicus</i>	A
MIMIC THRUSHES and ALLIES - Mimidae		
Northern Mockingbird	<i>Mimus polyglottos</i>	A
STARLINGS and MYNAS – Sturnidae		
Common Myna	<i>Acridotheres tristis</i>	A
EMBERIZIDS - Emberizinae		
Northern Cardinal	<i>Cardinalis cardinalis</i>	A
SALTATORS, CARDINALS and ALLIES - Cardinalidae		
Red-crested Cardinal	<i>Paroaria coronata</i>	A
BLACKBIRDS and ALLIES - Icteridae		
Western Meadowlark	<i>Sturnella neglecta</i>	A
CARDULINE FINCHES and ALLIES - Fringillidae		
House Finch	<i>Carpodacus mexicanus frontalis</i>	A
Kaua‘i ‘Amakihi	<i>Hemignathus Kauaiensis (stejnegeri)</i>	E
‘Anianiau	<i>Hemignathus parvus</i>	E
‘Akikiki (Honey creeper)	<i>Oreomystis bairdi</i>	E
‘Akeke‘e (Kaua‘i Akepa)	<i>Loxops caeruleirostris</i>	E
‘I‘iwi	<i>Vestiaria coccinea</i>	E
‘Apapane	<i>Himatione sanguinea</i>	E

Common Name	Scientific Name	ST
OLD WORLD SPARROWS - Passerinae		
House Sparrow	<i>Passer d. domesticus</i>	A
WAXBILLS & ALLIES - Estrilidinae		
Common Waxbill.	<i>Estrilda a. astrild</i>	A
Red Avadavat (Red munia)	<i>Amandava amandava</i>	A
Nutmeg Mannikin	<i>Lonchura punctulata topela</i>	A
Chestnut Munia (Black-Headed Mannikin)	<i>Lonchura malacca atricapilla</i>	A
Java Sparrow	<i>Padda oryzivora</i>	A

Key To Table 4-3

ST	Status
EE	Endangered endemic (i.e., native and unique to Hawai‘i) species.
IB	Indigenous (i.e., native to Hawai‘i, but also found elsewhere naturally) breeding species
ES	Endangered endemic sub-species
CI	Candidate indigenous species
IB	Indigenous breeding species
A	Alien (i.e., introduced to Hawai‘i by humans) species
EM	Endangered migratory species
E	Endemic resident species not currently protected under the ESA

Wasps – Numerous species of wasps, including immigrant species (*Diadegma blackburi*) and those deliberately introduced as biological control agents (*Eriborus sinicus* and *Meteorus laphygmae*), have become established in Kōke‘e State Park and the surrounding high-elevation areas. While endemic species still contribute the most to species diversity in the area, these invasives represent an increase in the number of wasp species that parasitize native moth (*Lepidoptera*) larvae (Howarth, Nishida, & Asquith, 1993; Henneman & Memmott, 2001).

Mosquitoes are seldom found in Kōke‘e or Waimea. However they do exist and are known carriers of avian pox and malaria, diseases which have proven destructive to Hawai‘i’s native forest birds.

4.4 BOTANICAL RESOURCES

In 1996, The Nature Conservancy of Hawai‘i (TNCH) conducted an inventory of the rare natural resources in Kōke‘e and Waimea Canyon State Parks. TNCH uses a global ranking system to assess the rarity of

a particular plant species. The ranking system is based on the number of wild populations known to exist globally, the condition of the habitat in which they are located, and the presence of threats to their existence. The global ranking system often correlates with federal “threatened and endangered” designations, but does not connote federal protection status.

Based on the global ranking system, TNCH identified 57 rare plants in Kōke‘e and Waimea Canyon State Parks, all but one of which are endemic to the Hawaiian Islands (TNCH, February 1996). Fifty-four of the rare plants are known from Kōke‘e State Park, and 6 are known from Waimea Canyon State Park. Thirty-nine of the plants are considered critically imperiled; that is, only 1 to 5 occurrences are known in the wild. The remainder typically has between 6 and 100 recorded occurrences in the wild. Twenty-one of the identified rare plants are federally listed Endangered, and four are federally listed Threatened (November 29, 1999, U. S. Endangered Species Act Listed and Candidate Species List).

An updated inventory of Kōkeʻe and Waimea Canyon State Parks botanical resources is being prepared for the Master Plan Environmental Impact Statement.

◆ INVASIVE SPECIES

Invasive Animals

Invasive animal species threaten the native ecosystems and their constituents directly through predation, physical disturbance of the habitat and resident species, indirectly through competition with native plants and animals, and through dispersal of seeds and diseases. Problem species include:

Invasive bird species include the Junglefowl, which has become emblematic of Kōkeʻe, and numerous passerines, as well as many species of gamebirds introduced to produce hunting resources for local residents and visitors. Junglefowl are carriers of avian malaria and small pox.

Feral ungulates, though valued as a hunting resource, pose a threat to native plants and habitat. Pigs, goats, and deer have caused significant damage to native plants and sensitive habitats through foraging, trampling, and facilitating weed invasion. Damage from feral ungulates is a concern in areas within the park boundaries where hunting is prohibited, and in the adjacent natural areas where native plant preservation programs are targeted.

To protect the Kuʻia Natural Area Reserve from the impact of pigs, goats and deer, the DLNR proposes to construct about 3.7 miles of steel mesh fencing to enclose approximately 150 acres of native habitat. The proposed fencing will provide a protected area for existing plant species and future restoration and outplanting projects. Concerned about the loss of access to prime hunting areas, local hunting groups have voiced opposition to the fencing project.

Invasive Plant Species

The rates of endemism of native plants on the upper northwest slopes of Kauaʻi are higher than the state average of 90%. Native flora species are threatened by invasive introduced plant species that have gained a foothold in the Kōkeʻe and Waimea Canyon region. The most prevalent plant pests in the Kōkeʻe and Waimea Canyon area are discussed in the following sections.

It is estimated that about 75% of the total acreage of Kōkeʻe and Waimea Canyon State Parks has native plants and with reasonable resources is “weedable”. These native areas, approximately 2,000 acres, often coincide with locations of endangered plants and are called Special Ecological Areas, or SEAs (a term attributed to a former Chief of Resources Management at Hawaiʻi Volcanoes National Park). The current Kōkeʻe Resource Conservation Program weeds about 200 to 300 acres per year.

Depending on the density of weeds, the costs vary between \$330 per acre in the Alakaʻi up to \$2,000 per acre in weedier areas of the Parks. With assistance from volunteers and contributed labor from other organizations, it could average \$800 per acre in the SEAs or \$1.6 million for the first year, following up into the future, costs would be about a third of that amount per year.

Incipient Invasive Species

Incipient species are alien plants that have not become established, but that pose a significant threat due to their aggressiveness, rapid rate of dispersal, and characteristics of killing off, crowding out, or otherwise displacing native vegetation. These plants have a good potential for being controlled and eliminated from sensitive areas, thus often are priority plants for eradication efforts. They include:

- Australian Tree Fern (*Cyathea cooperi*)
- Chinese Privet (*Ligustrum sinense*)
- Firethorn (*Pyracantha angustifolia*)
- Glory Bush (*Tibouchinia urvilleana*)
- Tree Privet (*Ligustrum lucidum*)

Established Invasive Species

Established species are alien plants that have become naturalized in the environment, even to the point of becoming emblematic of Hawai‘i (e.g. ginger). In many areas, they compose the majority of the vegetation type and no reasonable potential for eradication exists. These plants do pose a significant threat in areas of primarily native vegetation. Control efforts for these plants focus on containment and removal from native-dominant vegetation areas. Established species in the two parks include:

- Australian Blackwood (*Acadia melanoxylon*)
- Banana Poka (*Passiflora mollissima*)
- Blackberry (*Rubus argustus*)
- Black Wattle (*Acacia mearnsii*)
- Bush Beardgrass (*Schizachyrium condensatum*)
- Fire Tree (*Myrica faya*)
- Honeysuckle (*Lonicera japonica*)
- Ginger - Kahili (*Hedychium gardnerianum*)
- Ginger - White (*Hedychium coronarium*)
- Ginger - Yellow (*Hedychium flavescens*)
- Lantana (*Lantana camara*)
- Molasses Grass (*Melinis minutiflora*)
- Strawberry Guava (*Psidium cattleianum*)

◆ NATURAL COMMUNITIES

Natural communities are assemblages of plant and animal species that form an ecosystem under typical environmental conditions of temperature, moisture, and other factors. Natural communities are

characterized by elevation zone, moisture conditions, and dominant vegetation type.

Elevation Zones

Five major elevation zones are defined for the Hawaiian Islands: coastal, lowland, montane, subalpine, and alpine. Two elevation zones are identified in Kōke‘e and Waimea Canyon State Parks, as described in **Table 4-4**.

Moisture Zones

For each elevation zone, three moisture categories are defined. These are based on prevailing soil moisture due to rainfall, cloud or fog interception, soil drainage, groundwater or other substrate characteristics, and exposure to wind and sun. Moisture zones found in Kōke‘e and Waimea Canyon State Parks are described in **Table 4-5**.

Native Natural Communities

The Hawai‘i Natural Heritage Program identified four native natural community types and one subtype in Kōke‘e and Waimea Canyon State Parks, one of which is considered rare (TNCH, February 1996). Native Natural Community types are summarized in **Table 4-6**. Natural communities identified by TNCH are depicted in **Figures 4-8, 4-9, and 4-10**.

‘A‘ali‘i Lowland Dry Shrubland

‘A‘ali‘i (Hawaiian hopseed, *Dodonaea viscosa*) is a common, indigenous shrub species that forms the dominant constituent in a variety of shrubland communities. In Waimea Canyon State Park, it is found growing in stands codominated by Iliau (*Wilkesia gymnoxiphium*) along the canyon rim between 2,000 and 3,000 feet above mean sea level (msl). A notable example of the ‘A‘ali‘i/Iliau community is located at the head of the Kukui Trail. Companion plant

Table 4- 4**Elevation Zones of Kōke‘e and Waimea Canyon State Parks**

Zone Name	Elevation	Characteristics
Lowland	100 to 3,000 feet	Warm and mild conditions. Below the cloud zone. Frost-free zone. Includes the hottest and driest ecosystems in leeward settings. The majority of Waimea Canyon lies within this zone.
Montane	3,000 to 6,000 feet	Cloud-forming region, cooler temperatures, infrequent frost. Montane leeward settings such as Kōke‘e tend to be very wet due to mountain-induced (orographic) rainfall over montane summits.

Table 4-5**Moisture Zones of Kōke‘e and Waimea Canyon State Parks**

Category	Characteristics
Dry	<50 inches annual rain, or prevailing dry soil conditions.
Mesic	50-100 inches of annual rain, or prevailing moist soil conditions.
Wet	>100 inches of annual rain, or prevailing wet soil conditions.

Table 4-6**Native Natural Communities of Kōke‘e and Waimea Canyon State Parks**

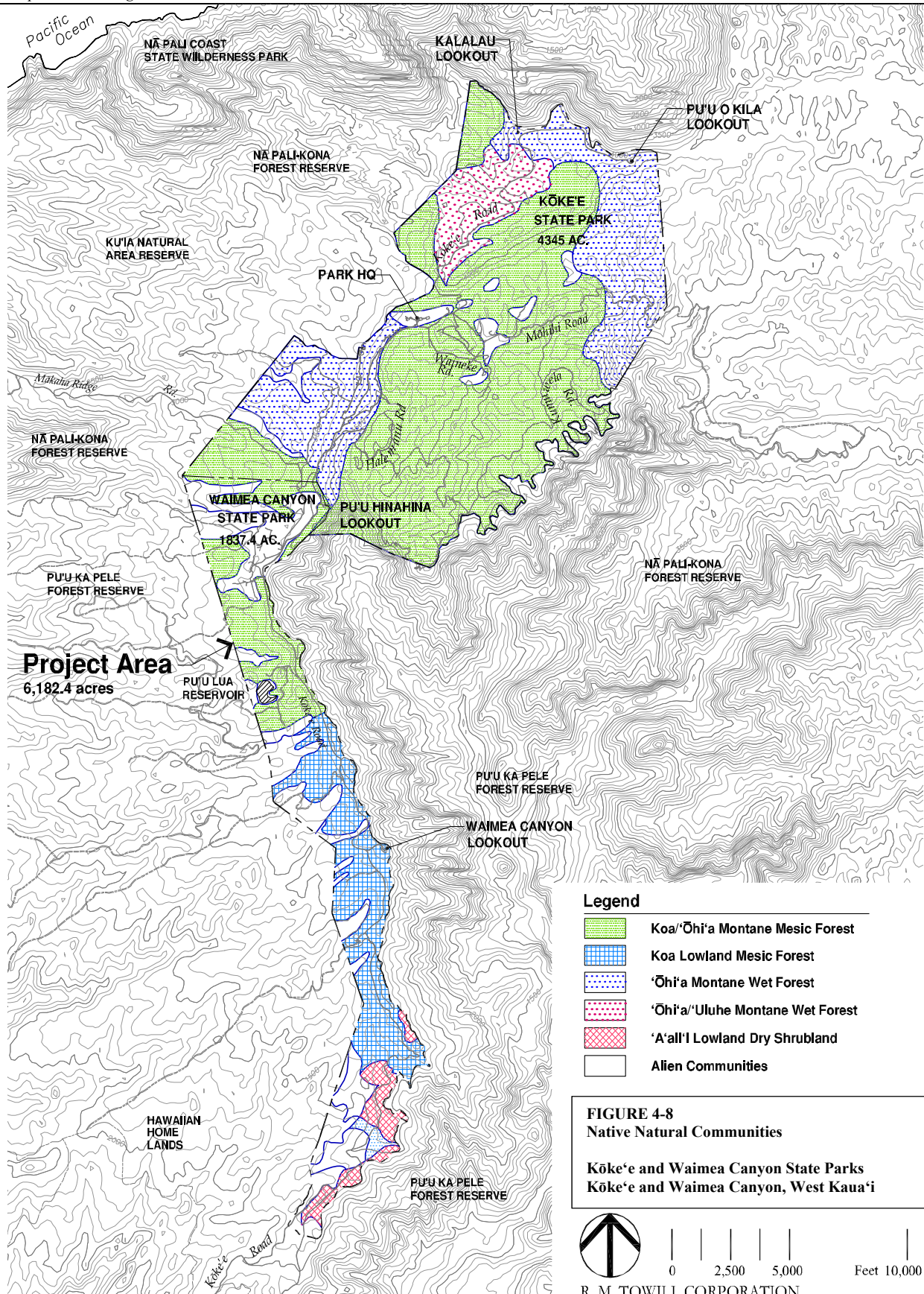
Native Natural Community	Global Rank
‘A‘ali‘i Lowland Dry Shrubland	G3
Koa Lowland Mesic Forest	G3
Koa /‘Ōhi‘a Montane Mesic Forest*	G1
‘Ōhi‘a Montane Wet Forest	G3
‘Ōhi‘a Montane Wet Forest - Subtype ‘Ōhi‘a / Uluhe Montane Wet Forest)	G3

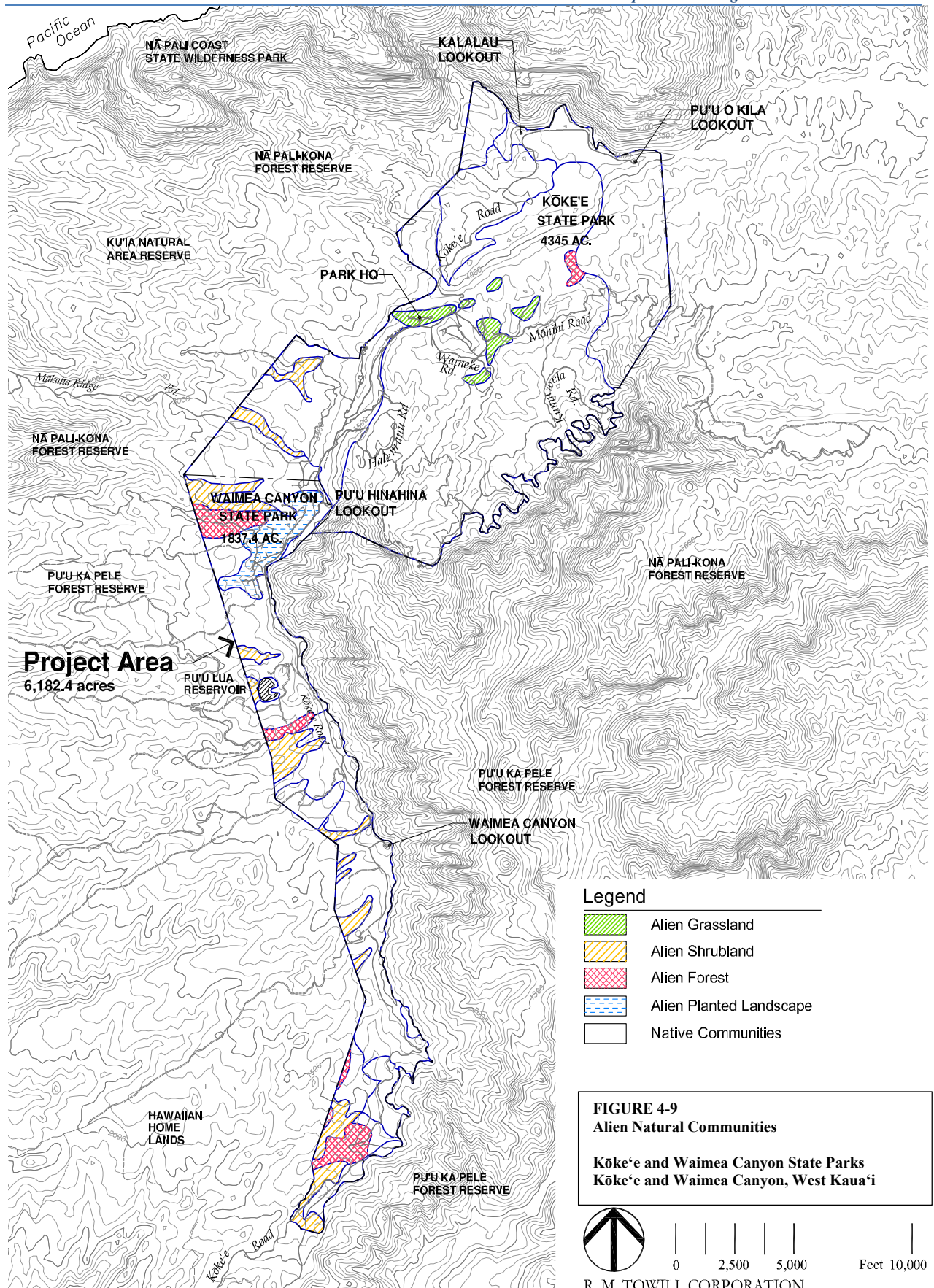
Key to Heritage Global Ranks:

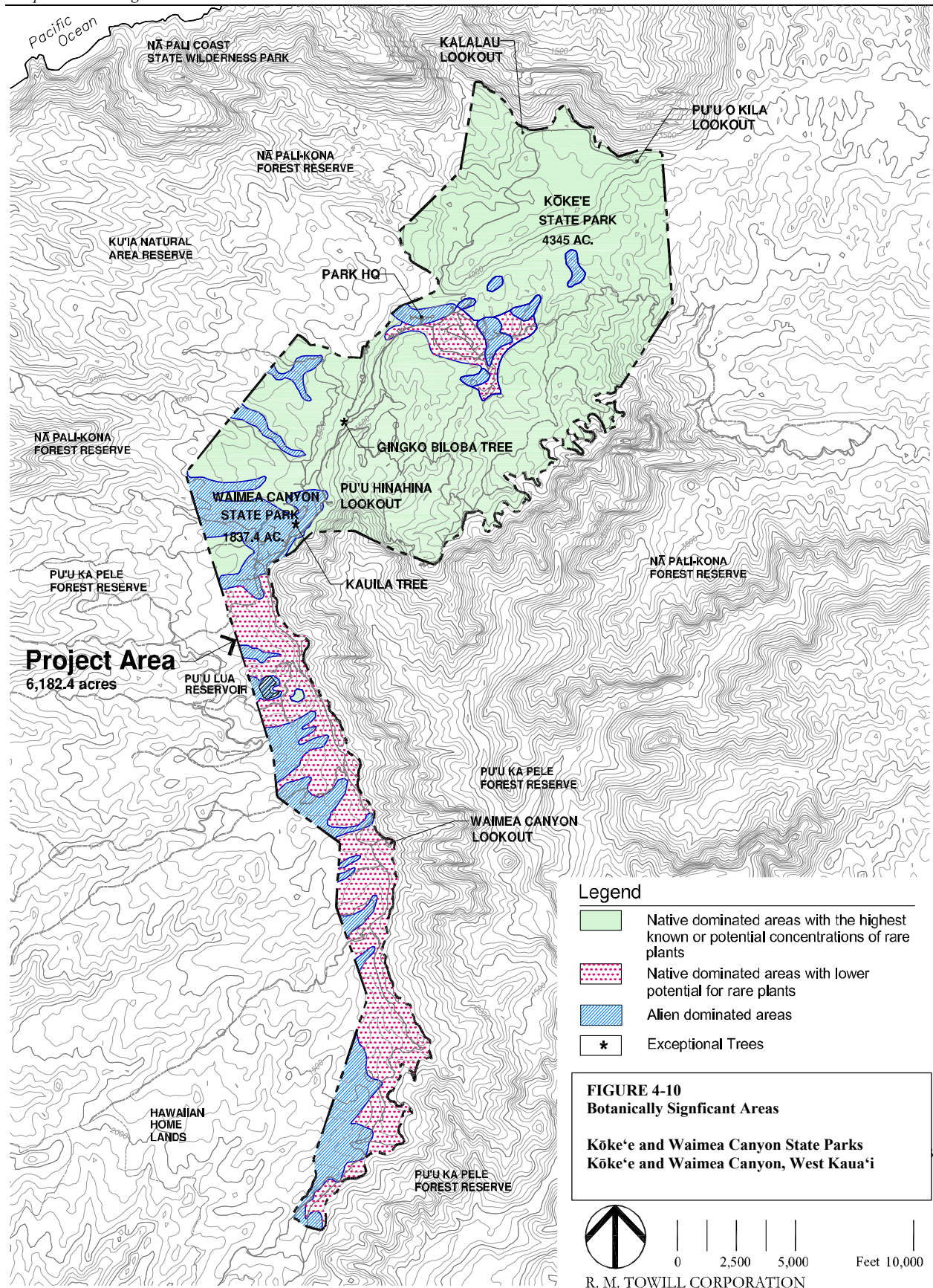
G1 = Critically Imperiled (1-5 Current Occurrences)

G3 = Restricted Range (21-100 Current Occurrences)

* Rare natural community type, tracked by HINHP.







species found in this community vary according to elevation and moisture levels, and include shrubs such as Pūkiawe (*Styphelia tameiameia*), ‘Īliahi (*Santalum ellipticum*), and ‘Ākia (*Wilckstroemia* spp.); grasses such as Kauwelu (*Eragrostis* spp.), Sedges such as *Carex* spp., and Lichens such as *Cladonia*. Major threats to ‘A‘ali‘i shrubland are posed by invasive, non-native plants, including Christmas berry (*Schinus terbinthifolius*), molasses grass (*Melinis minutiflora*), guava (*Psidium guajava*), koa haole and various other plants. Disturbance from fire and grazing animals have also done much to modify this native natural community type.

Koa Lowland Mesic Forest

Lowland mesic forest dominated by koa (*Acacia koa*) is the main forest type found between Kukui Trail and Pu‘u ka Pele in Waimea Canyon State Park. This is a relatively common lowland forest type. However, this forest type is known to harbor rare plant species and is recognized historically as an important habitat for rare forest birds that have since been forced to higher elevations.

In Waimea Canyon, the koa lowland mesic forest occupies the ridgetop along the canyon rim road between 2,500 and 3,500 feet elevation. Through this stretch, the koa forest displaces a lower-elevation zone dominated by stands of silk oak (*Grevillea robusta*) and eucalyptus before transitioning into the Koa ‘Ōhi‘a Montane Mesic Forest type at higher elevations. Small stands of transitional koa forest are also present on the southern boundary of Waimea Canyon State Park. Weed species noted in this forest type include *Lantana camara*, and strawberry guava (*Psidium cattleianum*).

Koa/‘Ōhi‘a Montane Mesic Forest

Montane forests dominated by Koa and ‘Ōhi‘a (*Metrosideros polymorpha*) form the

major forest type in the upper elevations of Kōke‘e and Waimea Canyon State Parks, occupying the landscape above lowland dry and mesic shrublands and forest, and below montane wet ‘Ōhi‘a-dominated forest. The canopy in this forest type may be open or closed, with taller koa trees growing above the ‘Ōhi‘a. The understory typically harbors a diverse array of native and endemic species, including Ala‘a (*Pouteria sandwicensis*), Po‘ola (*Claoxylon sandwicense*), Maua (*Xylosma Hawaiiensis*), and Mehame (*Antidesma platyphyllum*). In addition, plants that are typically found in drier areas, such as Mamane (*Sophora chrysophylla*), Naio (*Myoporum sandwicense*), Hō‘awa (*Pittosporum* spp.), Manena (*Melicope Hawaiiensis*), ‘Aiea (*Nothoestrum breviflorum*), and Pūkiawe (*Styphelia tameiameia*) are not uncommon. In undisturbed areas, the ground cover is dominated by native ferns, including Laukahi (*Dryopteris wallichiana*), and ‘Ama‘u (*Sadleria* spp.). Rare species of *Chamaesyce*, *Cyrtandra*, *Dubautia*, *Isodendron*, *Lobelia*, *Lysimachia*, *Melicope*, *Phyllostegia*, and others are also found in this forest type. Threats to the Koa/‘Ōhi‘a mesic forest include koa logging, invasion by alien weeds, and ungulates including feral pigs (*Sus scrofa*) and deer (*Odocoileus hemionus*).

‘Ōhi‘a Montane Wet Forest, and Subtype ‘Ōhi‘a / Uluhe Montane Wet Forest

This forest type is one of the most common wet forest communities in the Hawaiian Islands. It is typified by ‘Ōhi‘a-dominated overstory above a mix of fern and shrub species. This natural community is not considered rare, but is known to harbor rare plants, birds, and invertebrates. Plant species found in this forest type include Manono (*Hedyotis terminalis*), Mehame (*Antidesma platyphyllum*), Kolea (*Myrsine lessertiana*), Kawau (*Ilex anomala*), Kopiko (*Psychotria* spp.), and ‘Ōhi‘a ha (*Syzygium*

sandwicensis). Hapu‘u (*Cibotium* spp.), Mamaki (*Pipturus albidus*), Naupaka Kuahiwi (*Scaevola* spp.) and Na‘ena‘e (*Dubautia* spp.) are also found in the ‘Ōhi‘a montane wet forest. Major threats to ‘Ōhi‘a montane wet forest include ungulates, notably feral pigs and deer, and invasion by alien weeds, such as strawberry guava and blackberry.

Kōke‘e State Park also contains areas classified as ‘Ōhi‘a/Uluhe (*Dicranopteris linearis*) Montane Wet Forest, one of three recognized subtypes of this native natural community that share the common attribute of a dominant ‘ōhi‘a overstory.

The ‘Ōhi‘a/Uluhe subtype is characterized by a low ‘Ōhi‘a canopy over a dense mat of Uluhe interspersed with a variety of native trees and shrubs.

◆ SIGNIFICANT TREE STANDS

Two trees, one within Waimea Canyon State Park and one within Kōke‘e State Park, have been designated by the County of Kaua‘i as “Exceptional”, Chapter 22, Article 5, Kaua‘i County Code, 1987 (See **Figure 4-11**):

- Kauila (*Alphitonia ponderosa*) located at the eastern end of Kauhao Ridge, northwest of Kōke‘e Ditch gaging station, 3,300 feet elevation, TMK: 1-4-01: 03.
- *Ginkgo biloba* – also known as the Maidenhair Tree, located on Kaunuohua Ridge near Kōke‘e Road and Pacific Missile Range Facility power station, elevation 3,680, TMK 1-4-01: 13.

The *Ginkgo biloba* is the oldest living tree species and spanned the temperate forests more than 200 million years ago. A single tree can live as long as 1,000 years and grow to a height of 120 feet. Based on fossil

remains, its associated character has not changed for 150 million years.

In addition to the two “exceptional” trees, Kōke‘e and Waimea Canyon State Parks are home to several stands of trees that may be considered significant based on the following criteria:

- They form a key element of the cultural/historical landscape of Kōke‘e and Waimea Canyon region.
- They are linked directly to an historical event or activity.
- They are exceptional representatives of their species based on age, size, environmental context, and aesthetic.
- They serve as easily-identifiable landmarks for park users.

A process for evaluating and designating certain tree stands or individual tree specimens as significant should be developed by the Department of Land and Natural Resources to guide preservation and interpretation efforts. Candidate stands for such designation include:

Sugi Grove

Sugi grove consists of sugi pine (*cryptomeria japonica*) trees planted by the Civilian Conservation Corps. The grove is located just outside of the Kōke‘e State Park boundary on Camp 10 road.

Kanaloahuluhulu Meadow

Lining the open meadow are some of the largest specimens of redwood, black pine, sugi pine, and Monterey cypress found in the parks. These trees were also planted by the CCC. They constitute significant landmarks that define the meadow space at the heart of the park.

Fruit Orchard at Ranger Station

Remnants of a CCC experimental fruit orchard are located on the low slope between the Kōke‘e Ranger Station and the

CCC Camp. A handful of the original trees remain around the Park Headquarters building. Remaining species include apple, olive, Methley plum, and crabapple.

Tree Plantings at Lease Cabins

As a condition of the original campground and cabin leases, lessees were required to plant 50 trees on their leased property (Duensing 2003). A wide variety of tree seedlings, including redwood, Monterey cypress, eucalyptus, Methley plum, pear, and apple were provided by the Territorial Board of Agriculture and Forestry for that purpose. Remnants of these early forestry efforts constitute a distinct piece of the Kōkeʻe and Waimea Canyon story and have historic value within the cultural landscape of the parks.

Examples noted during field surveys for the cabin inventory and assessment are listed in **Table 4-7**.

◆ **TIMBER RESOURCES**

From July to September 1998, the Hawaiʻi Forestry and Communities Initiative (HFCI) timber survey crew conducted an inventory of publicly-held, non-native timber resources on Kauaʻi. The objectives of the inventory were to provide accurate forest type maps, estimate volumes of commercial timber resources, and assess timber losses sustained due to hurricane damage from Hurricanes ʻIwa (1982) and Iniki (1992). A majority of the timber resources are located on lands managed by DOFAW. The primary concentration of DOFAW-managed non-native timber is located within Puʻu ka Pele Forest Reserve, west of Kōkeʻe Road (State Route 550). Most of the remaining timber acreage is located within Nā Pali-Kona Forest Reserve and Waimea Canyon State Park. An inventory of timber resources is summarized in **Table 4-8**.

Non-native timber stands in these areas are located primarily on ridge tops with an east-west orientation, and within an elevation range of 1,000 to 3,500 feet. Average annual rainfall on these ridge tops ranges from approximately 30 to 55 inches, with rainfall positively correlated with elevation. The structure of vegetation communities in forested areas approximates Lowland Mesic Shrublands and Lowland Mesic Forests (Wagner et al., 1990). Excluding planted non-native species, overstory trees include Koa (*Acacia koa*) and ʻŌhiʻa (*Metrosideros polymorpha*). ʻAʻaliʻi (*Dodonaea viscosa*), Pūkiawe (*Styphelia tameiameiae*), Uluhe (*Dicranopteris linearis*), *Lantana camara*, Guava (*Psidium* spp.), Blackberry (*Rubus fruticosus*), Molasses Grass (*Melinis minutiflora*), and Ukiuki (*Dianella sandwicensis*) are common understory and groundcover species. Timber resources are shown in **Figure 4-11**.

The surveyed timber stands represent a readily accessible resource due to comprehensive road networks that would facilitate implementation of intensive forest management activities.

Access to Forest Reserves

Vehicular access to the timber zones is via paved roadways (Kōkeʻe Road and Mākaha Ridge Road), and a series of secondary, unpaved roads leading off from the paved highway. Kōkeʻe Road provides the primary access. There are approximately 40 miles of secondary roads. These are found on all of the main ridge tops. There is also a road that connects the ridges from Pāpaʻalai to Kauho along the 3,000-foot contour. These roads provide access to the public for hunting, recreation, and non-timber forest resource gathering; to DOFAW for forest protection, timber and resource management; and to other government agencies for resource management and protection activities. (DLNR, March 2000,

**Table 4-7
Cabin Sites with Noteworthy Tree Types**

Location	TMK	Tree Types Noted
Pu‘u ka Pele	1-4-02: 08	Fruit Orchard Landscape
	1-4-02: 31	Sugi Pines
	1-4-02: 60	Old Koa in Pasture Setting
	1-4-02: 61	Fruit Orchard Landscape
	1-4-02: 76	Fruit Orchard Landscape
Berry Flat	1-4-04: 03-10	Redwood, Monterey Cypress, Koa, ‘Ōhi‘a, Fruit Orchard in open pasture landscape.
Halemanu	1-4-03: 09	Sugi Pine, Monterey Cypress
	1-4-03: 10	Redwood

**Table 4-8
Timber Resources in the Pu‘u ka Pele Forest Reserve**

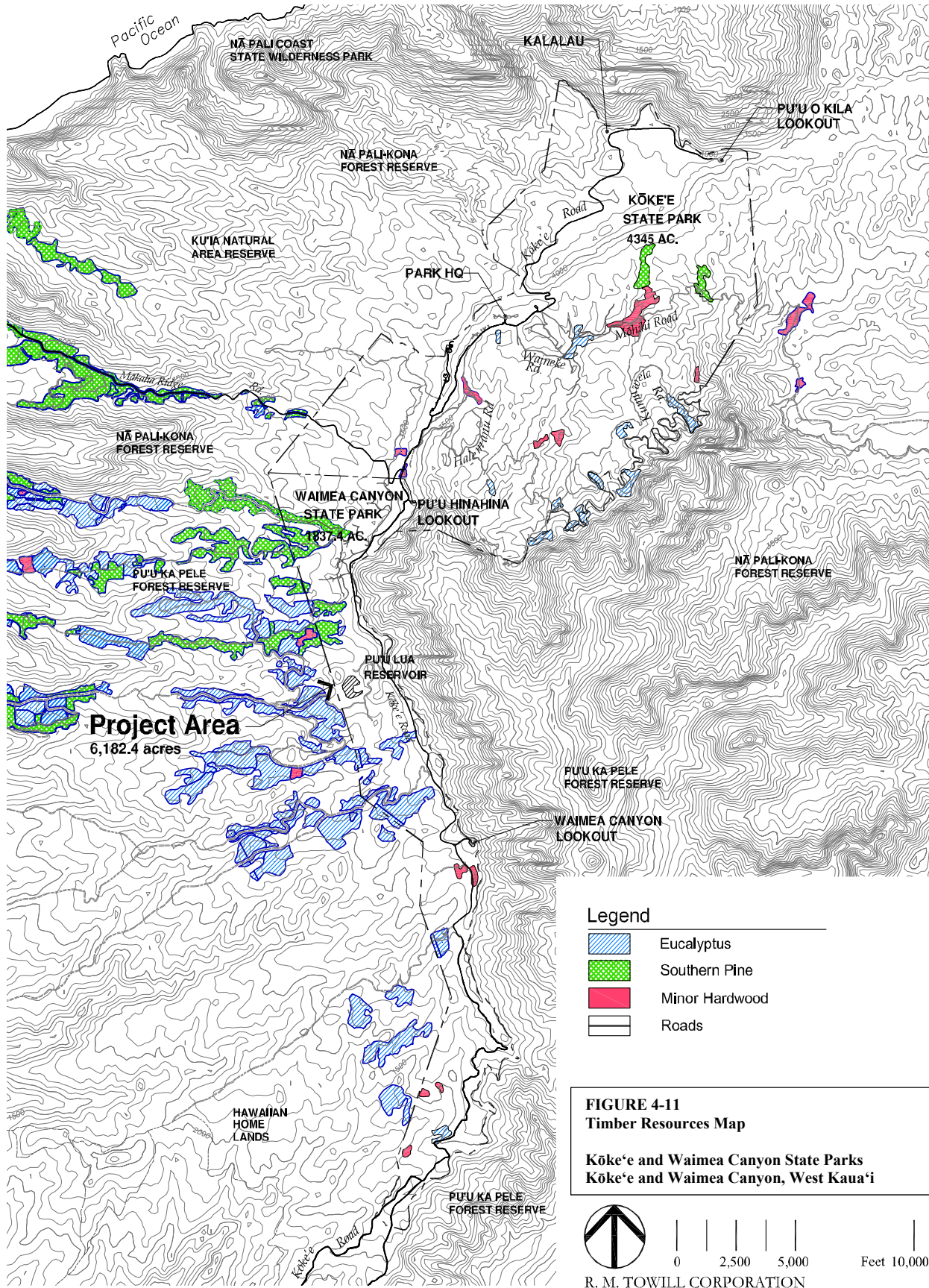
Tree Species	Acreage	Cubic Feet
Eucalyptus Robusta	408	715,285
Eucalyptus Salinga	431	722,397
Other/Mixed Eucalyptus	246	449,919
Total Eucalyptus	1,085	1,887,601
Slash Pine (<i>Pinus elliottii</i>)	345	731,175
Loblolly Pine (<i>Pinus taeda</i>)	128	417,723
Mixed Pines	195	208,650
Total Pines	668	1,357,548
Totals	1,753	3,245,149

(Draft Timber Management Plan).

Timber Management Plan

On January 14, 2005, the Board approved the establishment of the Kōke‘e Timber Management Area (KTMA) comprised of Pu‘u ka Pele Forest Reserve, Nāpali-Kona Forest Reserve south of and including Miloli‘i Ridge, Waimea Canyon and Kōke‘e State Parks, totaling 17,092 acres and a plan prepared for it by DOFAW and State Parks. The plan proposes to add active timber management to present management goals and to promote Kaua‘i’s forest industry development through the sustainable management of public lands. The plan includes 3 principal methods of forest management for the KTMA

- Sustainable commercial management of non-native timber plantation areas where harvesting would be followed by replanting with native species.
- Selective harvest of non-native timber plantation areas where harvesting would be followed by replanting with native species.
- Harvest of native trees for the purposes of fence and roadway maintenance, hazard maintenance, and the salvage of dead and dying trees.



The Board authorized DOFAW and State Parks to prepare an environmental assessment in compliance with Chapter 343, HRS; to conduct periodic solicitation of requests for proposals for the harvest of KTMA forest resources; the issuance of permits pursuant to 13-104-22 and 13-146-54, HAR for approved small scale forestry operations and the development of timber land licenses for large-scale forestry operations.

◆ **CRITICAL HABITAT**

Under the Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (USFWS) is charged with designating critical habitat for threatened and endangered species whenever it is determined to be prudent and determinable. Critical habitat is defined in the ESA as those areas of habitat that are known to be essential for an endangered or threatened species to recover and that require special management or protection. In critical habitat areas, all federal agencies must consult with the USFWS to ensure that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of the critical habitat. State, county, municipal and private actions that involve federal funding or a federal permit or license are also subject to USFWS review. The critical habitat designation has no impact on city, county, or state actions if there is no federal involvement.

A total of 83 endangered plant species have been identified on Kaua‘i and Ni‘ihau for critical habitat protection. The final, approved USFWS critical habitat boundaries related to the park are shown on **Figure 4-12**.

◆ **FINDINGS – INTERPRETIVE AND EDUCATIONAL OPPORTUNITIES**

Based on the inventory findings, TNCH recommended the following highlights for interpretive programming:

- Native Animals - Hawaiian hoary bat, forest birds, and insects.
- Native Plants and Natural Communities.
- Problem Alien Species.
- Climatic Diversity.
- Conservation Issues.
- Hawaiian Ethnobotany.

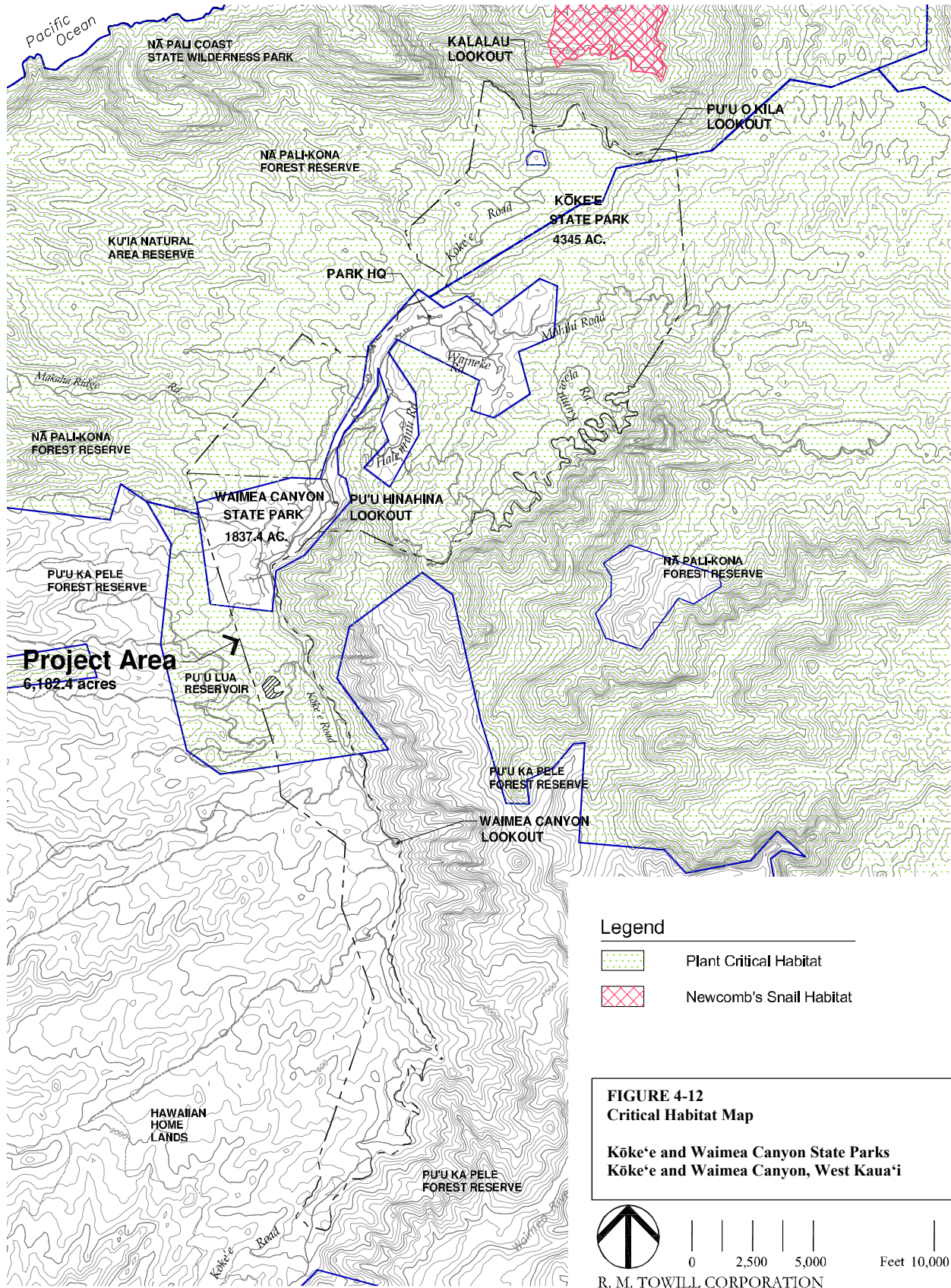
4.5 ARCHAEOLOGICAL, HISTORIC, AND CULTURAL RESOURCES

◆ **HISTORY OF KŌKE‘E**

Kōke‘e and Waimea Canyon State Parks contain a diversity of archaeological, historical, and cultural resources from both pre-contact (1778) and post-contact (1778 to present) periods.

Timeline of Historic Events

- | | |
|-----------|---|
| 1778 | Captain James Cook Lands At Waimea Bay, January 20, 1778. |
| 1792 | Captain George Vancouver Arrives at Waimea in March 1792, and is credited with releasing cattle that became Naturalized and were responsible for denuding the upland vegetation. |
| 1790-1840 | Sandalwood Trade – Waimea becomes a significant port for transporting sandalwood harvested from the uplands of West Kaua‘i. In 1818, King Kamehameha’s Ship Columbia recorded taking on a full cargo of sandalwood at Waimea. |
| 1820 | First Missionaries take up residence in Waimea. |
| 1824 | Kaua‘i’s Chiefs rebel against Kamehameha II and are defeated. |
| 1835 | William French sets up first sugar mill operation in Waimea. It fails after two years. |



- 1840- Whaling Period – Waimea serves as a
 1871 minor provisioning port for the whaling fleet. Upland forests provide timber and other resources required by the ships.
- 1845- Great Mahele. Waimea ahupua‘a
 46 retained as Crown Lands.
- 1856 Valdemar Knudsen leases 100 square miles of crown lands near Waimea, including Kōke‘e and the West Kaua‘i uplands.
- 1864 Chinese rice farmer Pah On arrives in Waimea. Rice cultivation introduced to Waimea Valley.
- 1868 Valdemar Knudsen builds mountain cabin at Halemanu, site of Hawaiian bird catcher’s thatched hut. In subsequent years he invites friends and relatives to establish summer camp/retreats in the Halemanu/Kōke‘e area.
- 1871 Queen Emma makes trek from Waimea through the Alaka‘i to “Kilohana of Hana”, at the edge of Wainiha Valley.
- 1878 Waimea Sugar Mill Company founded.
- 1884 H.P. Faye, nephew of Valdemar Knudsen, starts his sugar plantation at Mānā and sinks first artesian irrigation well for sugar plantation in Hawai‘i.
- 1890 Valdemar Knudsen completes eradication of Vancouver’s wild cattle from his leased lands.
- 1893 New government of the Republic of Hawai‘i establishes the Board of Agriculture and Forestry to oversee the management and protection of Hawai‘i’s forests and watersheds.
- 1898 Kekaha Sugar Company founded. Valdemar Knudsen dies.
 Leong Pah On, buys abandoned rice mill near Waimea Landing (at site of Waimea Library), expanding to compete with Honolulu Mills and becomes the richest man in west Kaua‘i.
- 1899 Oldest Japanese temple, Higashi Hongwanji, on Kaua‘i built in Waimea Mill Camp by temple builders from Japan.
- 1901 Kekaha Ditch completed.
- 1903 13 Mile Olokele Ditch and Tunnel Irrigation System completed for \$360,000, with Michael O’Shaughnessy as Engineer. Korean and Filipino labor immigration begins.
- 1904 Territory of Hawai‘i, Board of Commissioners of Agriculture and Forestry (BCAF) recognizes the significance of the Waimea uplands on water resources.
- 1907 Acting Governor A. L. C. Atkinson signs proclamation dedicating 60,540 acres of Waimea uplands and Nā Pali lands for the creation of the Nā Pali-Kona Forest Reserve. Construction of the Waimea Ditch completed.
- 1910 Waimea Sugar Mill Co. bought by Kekaha Sugar Company.
- 1912 Earliest written reference to public recreational camp areas at Kōke‘e: 1912 Division of Forestry report to the BCAF regarding forest conditions on Kaua‘i. The report identifies the mountain camp at Halemanu as one of several valleys that offered “extremely attractive” camp sites.
- 1916 Proposal for public camp sites at Kōke‘e generates public attention when the topic is frequently discussed in the pages of *The Garden Island* and by the Kaua‘i Chamber of Commerce.
- 1918 Knudsen lease expires on Kōke‘e and Halemanu lands. Territory of Hawai‘i takes over management of the forest lands. Territorial Forester Charles S. Judd surveys and stakes out 47 summer camp sites at Kōke‘e and Halemanu in June 1918. The Pu‘u ka Pele Forest Reserve, encompassing 4,900 acres, is established by the Territorial Government.
- 1919 415 acres of the Pu‘u ka Pele forest is set aside by the Territorial Government for use as a public park. County of Kaua‘i completes road improvements to Pu‘u ka Pele.
- 1920 Knudsen lease on Pu‘u ka Pele lands expires. Construction of 500kw hydroelectric plant on Olokele Ditch. Himalayan Blackberry introduced to

- Kōkeʻe by plantation manager Dave Larsen.
- 1921 First trout fishing in Kōkeʻe.
- 1922 230 acres of land added to Puʻu ka Pele camp lands at the request of the County of Kauaʻi.
- 1923 Construction of the Kōkeʻe Ditch system begins in order to open the hills above Kekaha to sugar production. 300 acres is added to the park.
- 1927 Kōkeʻe Ditch system completed.
- 1928 Large-scale reforestation of West Kauaʻi uplands begins. Plantings over the years include indigenous species – Acacia, Kauaʻiensis, Kukui, Loulu Palm, and Acacia Koa; and introduced species – Eucalyptus, Paper Bark, Fire Bush, Ironwood, Black Wattle, Monterey Cypress, Silk Oak, Sugi and Black Pine, and others.
- 1929 Army Air Corps helps reforestation efforts by air-dropping seeds over Kōkeʻe, Puʻu ka Pele, and Nā Pali.
- 1935 Civilian Conservation Corps Camp constructed in Kōkeʻe at Kanaloahuluhulu. CCC begins period of extensive forestation and trail development throughout the upland region.
- 1938 YWCA Camp Sloggett founded on camp lot formerly leased to Henry Digby Sloggett.
- 1939 Kauaʻi’s game warden releases 250 jungle fowl in Kōkeʻe for recreational hunting.
- 1941 WWII – Kōkeʻe essentially closed to recreational use for duration of the war. Military constructs all-weather road to Kōkeʻe.
- 1945 Waimea Sugar Mill ceases operations.
- 1946 CCC Camp transferred to the Territory of Hawaiʻi for recreational use.
- 1947 All-weather road to Kalalau Lookout completed.
- 1949 Division of Territorial Parks created, though not funded until 1956.
- 1951 27 new lease lots, The “Water Tank Lots”, added adjacent to the original Kōkeʻe lots.
- 1952 Kōkeʻe Territorial Park established.
- 1953 Kōkeʻe Natural History Museum founded by the Kauaʻi Historical Society.
- 1953 Hui o Laka founded by Joseph Souza, Isabel Faye, and Ruth Knudsen Hanner.
- 1954 Kōkeʻe-Hāʻena Road construction pushes 4 miles from Kalalau Lookout into the Alakaʻi Swamp before being abandoned as economically infeasible.
- 1959 Hawaiʻi Becomes 50th U. S. State. Air National Guard constructs radar installation adjacent to Kalalau Lookout.
- 1960 U.S. Navy constructs Pacific Missile Range Facility on Kaunuohua Ridge above Halemanu. The site is shared with NASA Telemetry Station developed in support of the Mercury Program.
- 1964 Alakaʻi Wilderness Preserve established. U.S. Navy constructs Mākaha Ridge Road.
- 1965 Waimea Canyon State Park is established. State signs lease with National Guard for Kalalau radar installation constructed in 1959.
- 1981 Kōkeʻe Leaseholders Association founded.
- 1985 All recreation leases in Kōkeʻe and Waimea Canyon State Parks expire. Amid much acrimony, high emotion and tension, State conducts public auction to re-lease 111 leases. In the wake of the auction, several cabins are lost to demolition, fire, and dismantlement by former leaseholders.
- 1990 Hui o Laka establishes administrative offices in the CCC Camp and begins restoration work on the facilities.

(Duensing, 2003; Joesting, 1988; Wenkam, 1967; Wichman, 2001; Yent, 1995)

◆ **TRADITIONAL/LEGENDARY SITES**

“Boiling Pots”

The “boiling pots” were noted by a Kaua‘i resident during the first public master plan meeting. According to the resident, the boiling pots are holes in the rocks at the top of Waipo‘o Falls that were used to put babies in while the mothers dyed kapa or did other chores at the stream.

Papu is the name given to the pin-hole lookout just upslope from Waimea Canyon Lookout at approximately the 10.75 mile mark. The site is associated with the legend of the Menehune Papu, the King’s messenger, who was waylaid by robbers at this spot, and thrown to his death with a bundle of fish he carried for the King. According to legend, the scent of rotting fish fills the area during certain times of the full moon, and the site is still visited by the ghost of Papu, who tries to lure visitors over the cliff edge (Wichman, 2001).

Pu‘u ka Pele

Pu‘u ka Pele is the name of the prominent hill on the Waimea Canyon rim just past mile marker 11 as noted in **Table 4-9**. The area is the legendary site of an ancient Hawaiian village founded by Ola, the ruling chief of Waimea in 600 A.D. The area was used for harvesting forest resources, notably koa trees for use in making canoes, paddles, and other implements. A trail is said to have existed between Pu‘u ka Pele and Waimea village to facilitate the transport of canoe logs to the workshops on the coast. (Ibid.) The Pu‘u ka Pele area contains rich archaeological sites as noted in **Table 4-9**.

Kā‘ana

The lookout across the road from the Pu‘u ka Pele picnic area sits atop Kā‘ana (sadness) Ridge. According to legend, the spirits of the newly dead would assemble here before beginning their journey down

the ridge to the sea (Ibid.).

Halemanu (Bird House)

Halemanu (Bird House) is the name given to the valley area at the entrance of Kōke‘e State Park. The name refers to an ancient house site used by the Kia Manu (bird catchers) who trapped forest birds to harvest feathers for making cloaks worn by the chiefs. The area is also the site of the first mountain cabin in the region, built by the Knudsen family in the late 1800s. The Knudsen cabin was purportedly built on the site of the old bird catcher house and incorporated beams from the original thatch structure in the cabin construction (Duensing, 2003; Wichman, 2001).



Photo 4-2
Knudsen Cabin at Halemanu (Bird House)
Circa 1895

Pohakuwa‘awa‘a

Pohakuwa‘awa‘a is a large, furrowed stone located on the east side of Kaunuohua Ridge overlooking Kapuka‘ōhelo between Nu‘alolo and Awa‘awapuhi Valleys. The location is misplaced on the USGS map: the stone is not located on the peak of the ridge, but further down the flank towards

Kanaloahuluhulu. This rock marks the boundary point of the ahupua‘a of Kalalau, Waimea, Awa‘awapuhi and Nu‘alolo) Trails (Wichman, 2001).

Bennett recorded a number of overland trails that connected the uplands of Kōke‘e with the Nā Pali valleys (1931). The Kamaile Trail descended into Nu‘alolo Valley from the Kōke‘e uplands. Remnants of a trail connecting the Kōke‘e uplands with Kalalau Valley also exists, though the trailhead, located in the vicinity of Kalalau Lookout, is known to few people. Also, according to Bennett, “There was a path said to have been built by King ‘Ola, that led from the Waimea delta up the canyon to Kōke‘e, over the Alaka‘i Swamp, where it is said to have been paved with sticks (kipapa), and thence down Maunahina Ridge into Wainiha by way of Kōke‘e.” This may be the path reportedly taken by the Reverend Hiram Bingham in 1821 when he traveled from Waimea to Hanalei.

◆ ARCHAEOLOGICAL RESOURCES

There are four recorded archaeological sites in Waimea Canyon State Park and one recorded site in Kōke‘e State Park. The archaeological evidence recorded to date tends to support the idea that the upland area contained within the two parks was used largely as a resource gathering zone with limited habitation. Archaeological surveys conducted in the region include:

- In 1906, Thomas Thrum conducted an island-wide survey of heiau sites. Two sites were recorded in Kōke‘e: Ahuloulu Heiau and Kaunu‘aiea Shrine.
- In 1928-29, Wendell Bennett recorded two house site complexes on or near Pu‘u ka Pele crater (Bennett, 1931).
- In 1993, state archaeologist Nancy McMahon conducted reconnaissance survey along Ridge Road in the Kōke‘e

Uplands. She recorded a single site

- (State No. 50-30-05-499) during the survey, interpreted to be a sweet potato planting area, at the end of Polihale Ridge Road outside of the project area.
- In 1993, Alan Carpenter recorded a site near the Waimea Canyon lookout interpreted to be a temporary habitation likely associated with canoe-making. The uplands of Waimea Canyon were known for harvesting and working logs for canoes.
- In a 1994 survey of Kahuama‘a Flat in Kōke‘e State Park, archaeologists Alan Carpenter and Martha Yent noted few archaeological sites. The area surveyed is generally thought to have been a resource gathering zone rather than an area of permanent habitation. Their report cites legends that suggest this type of use.
- In 1994, Martha Yent conducted a reconnaissance survey of the Kukui radio communication facility in Waimea Canyon State Park and discovered no archaeological sites or features.
- In 1994, Martha Yent conducted an archaeological reconnaissance survey of the former Army campsite near the Awa‘awapuhi trailhead. The survey identified one abandoned, standing concrete building and two concrete foundation slabs associated with the Army Camp, circa 1940-1950s. No other significant features were recorded.

Other archaeological surveys conducted in the study area include:

- 1978 reconnaissance of Kukui Trail by Francis Ching;
- 1982 reconnaissance of the Kōke‘e hydropower project by Martha Yent; and
- 1990 survey of USN Radio Telescope Project Area in Waimea by Paul H. Rosendahl.

These surveys did not result in the discovery

of previously unidentified archaeological sites. Sites recorded as a result of these surveys are listed in **Table 4-9** and shown on **Figure 4-13**.

◆ **POST-CONTACT HISTORIC RESOURCES**

Sites within the two parks that are listed on the National and State Register of Historic Places are presented in **Table 4-10**. In addition to these sites, numerous historic sites throughout the two parks have potential value for preservation and interpretation. These include:

Park Buildings

CCC Camp - The Civilian Conservation Corps camp, located at Kanaloahuluhulu Meadow, played a significant role in the development of Kōkeʻe and Waimea Canyon State Parks. The CCC Camp originally consisted of 9 wooden buildings situated around a grassed quadrangle. Outside of this compound were a garage facility, a cook’s house, a maintenance complex, and a ranger’s house. Seven of the wooden buildings around the compound remain. The camp facilities are currently being restored by Hui o Laka. **Table 4-11** provides a description of the CCC Camp buildings with a key to the map in **Figure 4-14**. **Figure 4-15**, displays the Historic Register Boundaries of the historic CCC Camp.

Kōkeʻe Lodge and Natural History Museum

These two wooden structures were developed in the early 1950s from relocated buildings moved from the former Army camp at Awaʻawapuhi trailhead (described below).

Kanaloahuluhulu Ranger Station

The Kanaloahuluhulu Ranger Station is a small wooden building located at the western end of the meadow. It was built in

1954 for park purposes and is currently used as office space for Kōkeʻe State Park personnel.

WWII Army Camp

(Survey conducted by Yent in October 1994.) This camp was built in the early 1940s on Kaunuohua Ridge and was dismantled in the 1950s. The campsite is approximately 1.5 miles northeast of the CCC camp site. The Army Camp consisted of 5 major buildings along a dirt roadway off the paved Kōkeʻe Road, with an additional 4 outlying buildings. One concrete building remains along with the slabs of two other buildings. One of the wooden buildings was relocated and now houses the Kōkeʻe Natural History Museum at Kanaloahuluhulu Meadow. No subsurface archaeological deposits or features other than those associated with the camp have been identified at this site.

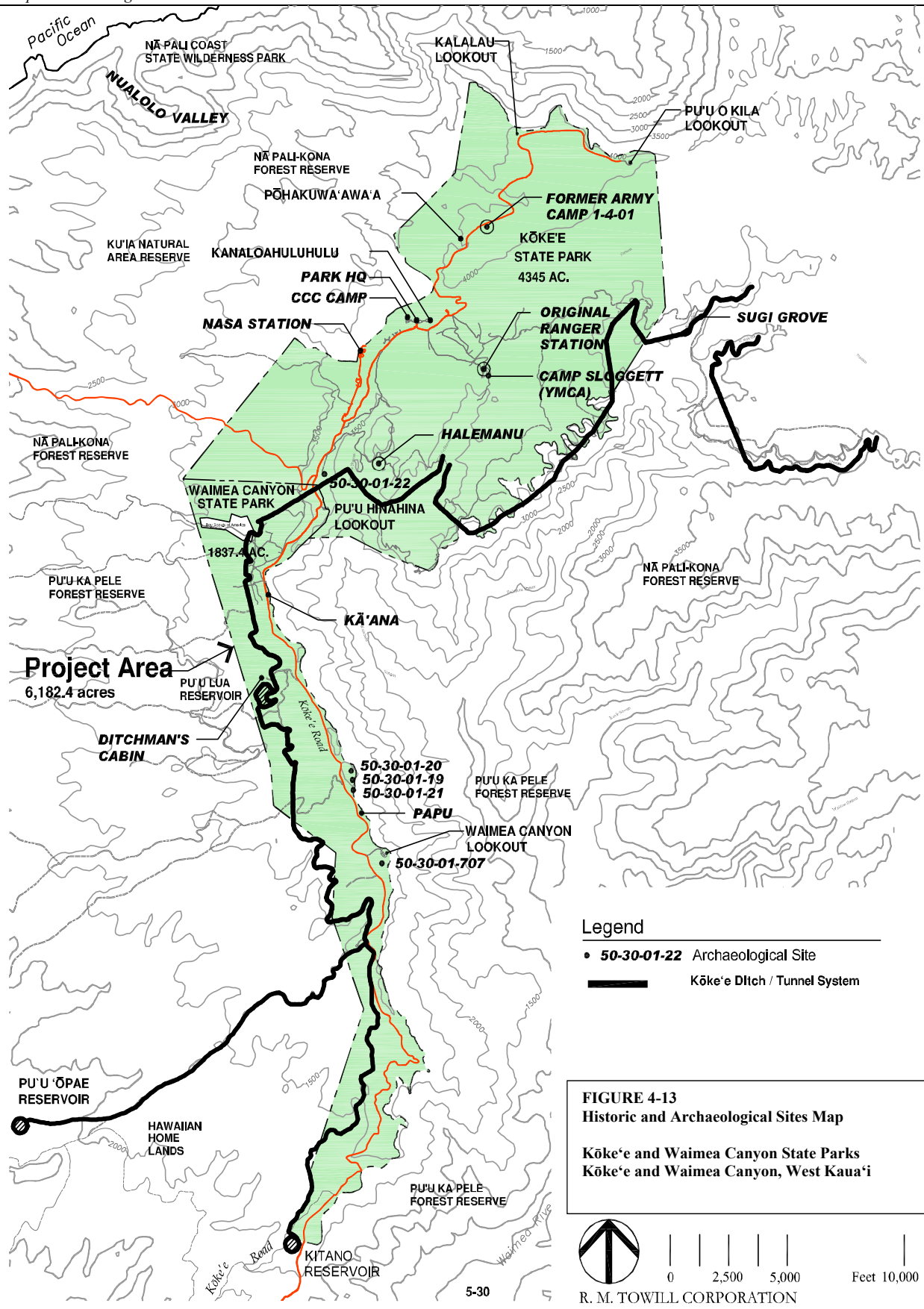
Camp Sloggett - YWCA

In 1925, Henry Digby Sloggett and his wife Etta Wilcox Sloggett obtained one of the original recreation residence lease lots in the Kōkeʻe area on which they constructed a family cabin. Etta’s sister, Elsie Wilcox, started the YWCA of Kauaʻi in 1922, so it was appropriate that after Henry Sloggett’s death in 1938, the Sloggett children donated the camp to the YWCA for use as a camp.

The camp is comprised of three main buildings: administration / commissary building with dormitory, and an outdoor, covered pavilion for gatherings. The original Sloggett family cabins were integrated into the camp facilities, housing the commissary, administrator’s office, counselor sleeping quarters, and caretaker’s cottage. A screened and covered mess hall was built between the original main residence and the caretaker’s cottage. A large dormitory building of recent construction is located on the west side of the complex across a large open lawn area.

Table 4-9
Recorded Archaeological Sites within Kōke‘e and Waimea Canyon State Parks

State No.	Site Description
50-30-01-19	<p>Ahuloulu Heiau – (Thrum, 1906; Bennett, 1931). This heiau consists of a walled enclosure, the outside dimensions of which are 37 by 41 feet. The walls are 4 feet wide and badly broken. In front of this structure is a flat area about 50 by 50 feet without paving or boundaries. At the back of the enclosure, there is a paved platform 8 by 12 feet. This platform is backed by a large rock containing several plugged-up holes that might have been used as a depository for umbilical cords.</p>
50-30-01-20	<p>Pu‘u ka Pele House Site – (Bennett, 1931). This site consists of house sites around the crater of Pu‘u ka Pele. The remains of 7 house sites are indicated by stones in line forming a terrace with a flat space behind. Some of these house sites measure 30 by 20 feet. A platform, interpreted to be a possible religious feature, is located at the top of the pu‘u at the site of the microwave antennae. The platform measures 30 by 30 feet, is slightly terraced, and is recorded to contain river stones and coral. Pu‘u ka Pele is associated with canoe making activities. The location also figures in one of the Pele legends.</p>
50-30-01-21	<p>House Site – (Bennett, 1931). Located towards the sea from Pu‘u ka Pele on the north side of the road, the site consists of a series of house sites on top of a flat ridge, the edge of which is lined with stones for 50 feet or more. The site is crossed by several divisions. Fireplaces consisting of four or more stones placed in a rectangle are in evidence on several of these divisions.</p>
50-30-01-22	<p>Kaunu‘aiea Heiau – (Thrum 1906, Bennett, 1931). Also identified as (<i>Kaumuaiea heiau</i>). This heiau was located in a small clearing above Halemanu in the forest of Miloli‘i on the Kaunuohua Ridge. It is identified by Thrum as a small shrine. The name means literally, “the small shrine built of ‘aiea wood”. ‘Aiea is a native holly (<i>Ilex anomala</i>). The shrine is presumed to have existed at the current site of the NASA facility.</p>
50-30-06-707	<p>Temporary Habitation Site – (Carpenter and Yent, 1993). This site is located at Waimea Canyon Lookout. It consists of a single row of stones on 3 sides on a level area about 80 meters southwest of the men’s restroom at the lookout. The stone outline measures approximately 3 meters by 5 meters. The site is probably a temporary habitation site related to the logging of wood for canoes.</p>



Legend

- 50-30-01-22 Archaeological Site
- Kōke'e Ditch / Tunnel System

FIGURE 4-13
Historic and Archaeological Sites Map
 Kōke'e and Waimea Canyon State Parks
 Kōke'e and Waimea Canyon, West Kaua'i

0 2,500 5,000 Feet 10,000

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Table 4-10

National and State Registers of Historic Places at Kōkeʻe and Waimea Canyon State Parks

Site Number	Site Name	Tax Map Key	Hawaiʻi Register	National Register
30-01-19	Ahuloulu Heiau Complex, Puʻu ka Pele	1-2-01: 03	6/3/81	–
30-06-9392	Civilian Conservation Corps Camp, Kōkeʻe	1-4-01:13 (por.)	9/3/96	12/20/96
30-06-9395	Camp Sloggett, Kōkeʻe	1-4-04: 33	8/31/91	8/5/93
Outside Park Boundaries				
30-06-33	Taro Terrace and House Sites	1-5-01: 02	6/3/81	–
30-06-35	Waimea Valley Complex	1-5-01: 02, 17	6/3/81	–

Source: State Historic Preservation Division

Ditch and Tunnel Irrigation System

The Kōkeʻe-Waimea Ditch System area has three ditch irrigation water systems: the Kōkeʻe, Kekaha, and Waimea Ditch Systems. Each system played an important role in the development of agriculture, and in particular the sugar industry, in the lowland regions surrounding Waimea and Kekaha.

Towards the end of the nineteenth century, the pioneering days of sugar cane planting were drawing to a close. The streams and artesian wells that supported initial cultivation could not meet the demands of the growing acreage envisioned by the nascent industry. As planting expanded and additional lands close to Waimea and Kekaha were claimed for sugar, additional sources of water were required.

Early sugar enterprises in the region, including the Waimea Sugar Mill Company (founded 1876), began constructing a series of ditches to transport irrigation water from Waimea Valley to the dry Mānā area. In 1898, Hans P. Faye, nephew of Valdemar Knudsen, incorporated the Kekaha Sugar Company and began operations on lands leased from the Territory of Hawaiʻi. Faye turned his eyes towards the uplands of

Kōkeʻe and the Alakaʻi and saw the water he needed to grow sugar. Kekaha Sugar Company engineers translated his ideas into the Kōkeʻe-Waimea Ditch System.

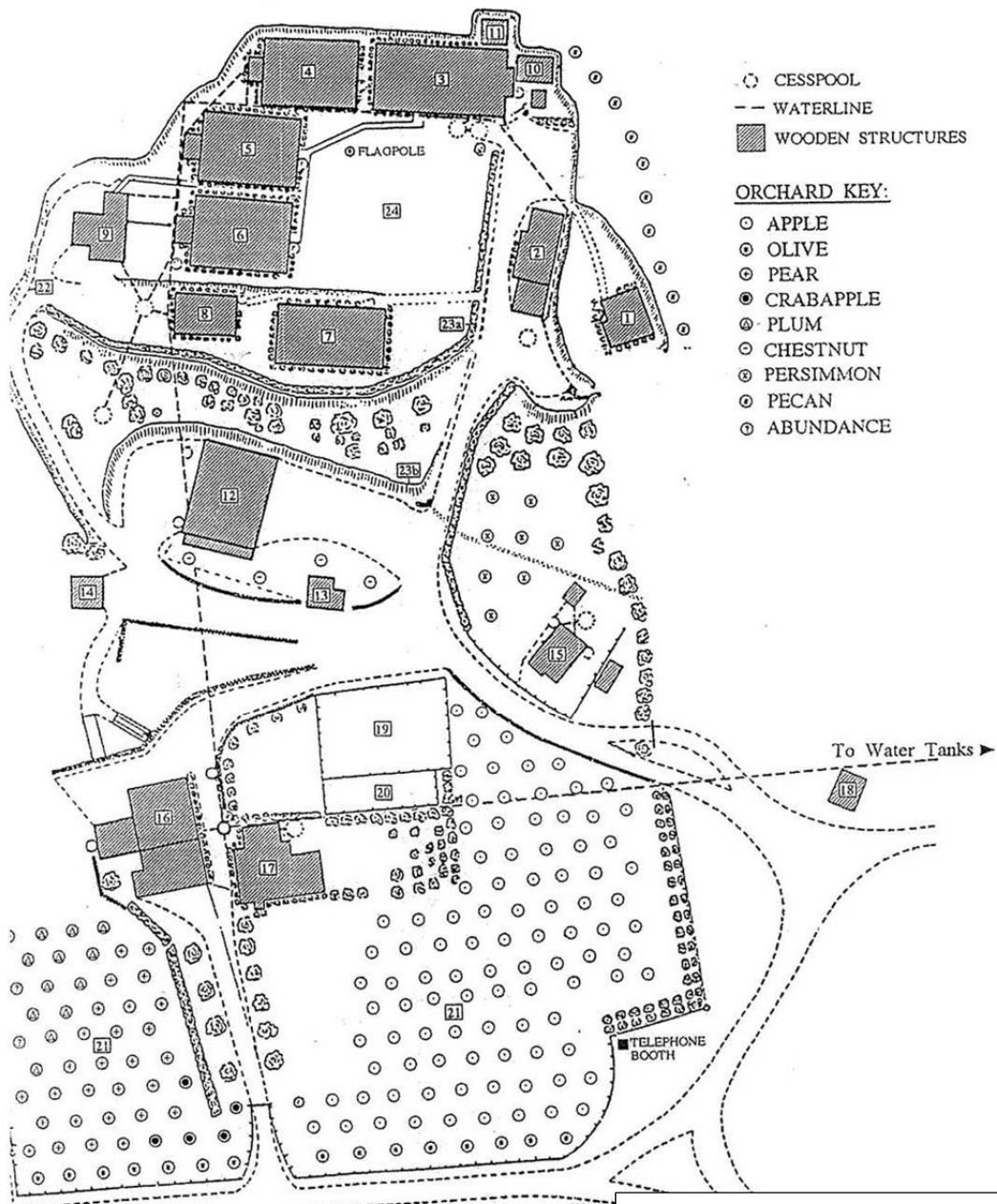
In 1901, the first ditch segment, the Kekaha Ditch, was completed. The Kekaha Ditch diverts water from the Waimea River, 1 mile downstream from the Waiʻalaie Stream in Waimea Valley and conveys the water to the network of fields in the Mānā Plain. In 1907, the Waimea Ditch System was completed. The Waimea System diverts portions of the flow of the Waimea River from an elevation of approximately 200 feet and travels through open ditches to the west side of the river for approximately 3 miles to the coastal plains north of Waimea Town, and for another 4 miles to the west.

The real push into Kōkeʻe's uplands began in 1923 when Kekaha Sugar, which by now had acquired the Waimea Sugar Mill Company, started construction of the Kōkeʻe Ditch System. Over the next four years, roads were built by hand across Kōkeʻe to the headlands of Mōhihi Stream deep in the Alakaʻi Swamp. When completed in 1927, an elaborate system of small dams, ditches, and tunnels was in place to intercept flows from the Mōhihi, Waiakoali, Kawaikōi,

Table 4-11
Buildings of the CCC Camp

Bldg. No.	Name	Current Status	Current Use
1	Executive Residence (Workmen's Quarters)	Renovated	Visiting Researcher's Residence
2	Administrative Building (Hunters Lodge)	Renovated	Museum Offices
3	Mess Hall	Renovated	Kitchen, Dining Room, Library
4	Barracks C	Partially Renovated	
5	Barracks B	Existing	
6	Barracks A	Existing	
7	Recreation Hall	Demolished 1982	
8	Foreman's Residence	Partially Renovated	State Parks Crew Cabin (Mokihana Cabin)
9	Bath House	Partially demolished	
10	Supply Building (Cook's Quarters)	Partially renovated	Restroom and Cabin
11	Cooler Room	Existing	
12	Garage and Tool Shed	Demolished	
13	Gas House	Existing	
14	Generator Plan	Existing	
15	Cook House and Garage	Demolished	STP and Leach Field
16	Tool Shed and Workshop	Built ca. 1931-32, existing and expanded	Wood Storage
17	Ranger's House	Built 1930, renovated	Kōke'e Lodge - Res. Manager
18	Wood Shed	Demolished	
19	Garden	Grassed	
20	Chicken Coop	Demolished	
21	Orchard	Partially existing	
22	Waterline	Existing	
23a	Wall on S and E sides of the Quadrangle	Partially existing	
23b	Wall on slope	Existing	
24	Quadrangle Flagpole	Existing	Open grassy area

Source: Environmental Assessment for the Joseph M. Souza, Jr. Resource Center and Field Station, Kōke'e State Park, 1996.

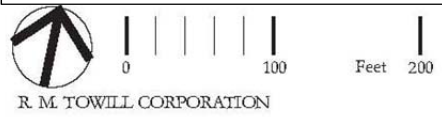


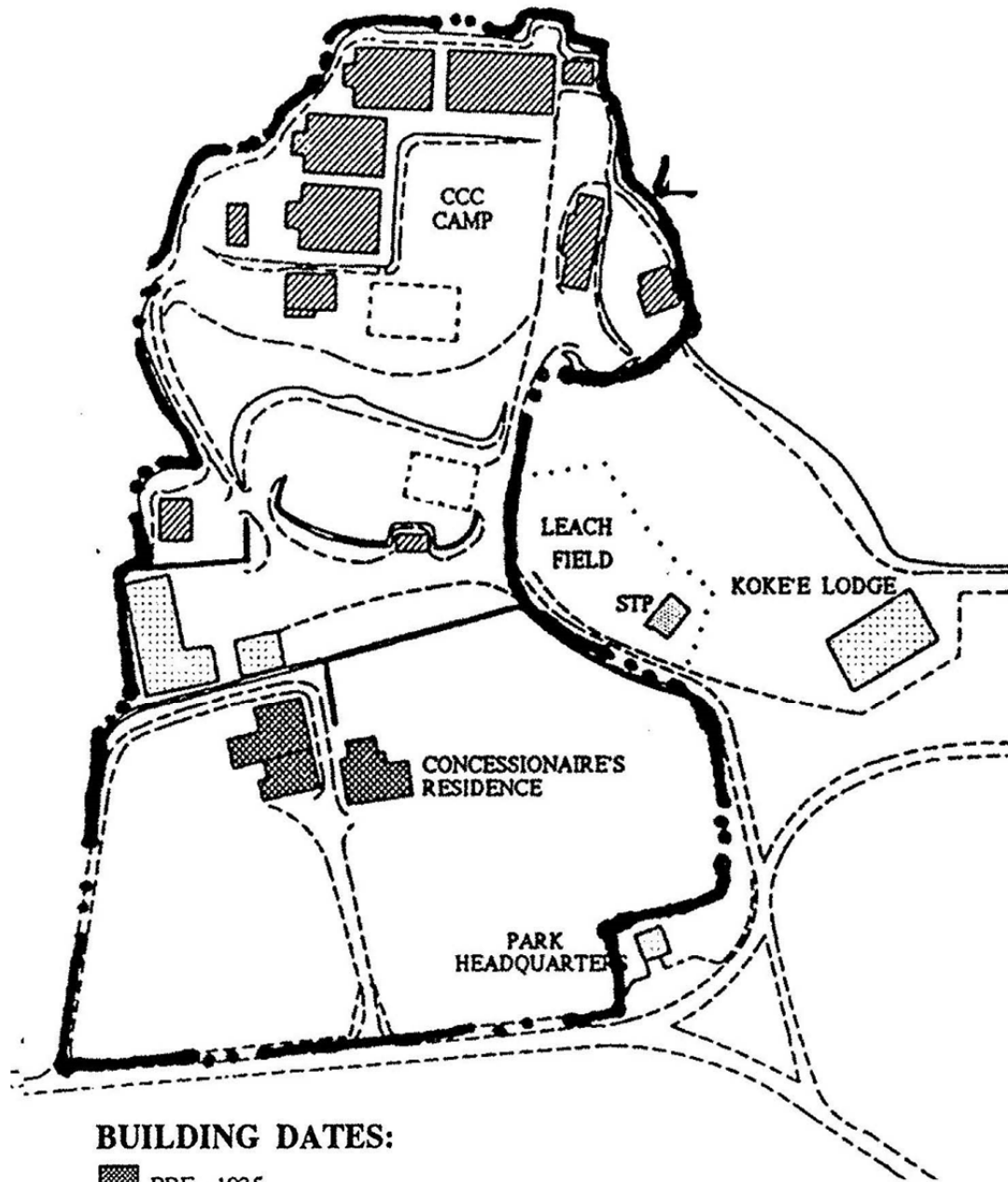
- CESSPOOL
 - - WATERLINE
 - WOODEN STRUCTURES
- ORCHARD KEY:**
- APPLE
 - OLIVE
 - PEAR
 - CRABAPPLE
 - PLUM
 - CHESTNUT
 - PERSIMMON
 - PECAN
 - ABUNDANCE

Redrawn from original map of 1938.
 Building numbers correspond to
 description in attached Table 4-11.





Source: Preliminary Master Plan for Renovation of
 the Old CCC Camp as an Environmental Resource
 Center for Hawaii and the Pacific at Kōke'e State
 Park, Kaua'i, Hawai'i. Draft, October 1993.

FIGURE 4-14
Kōke'e CCC Camp
Kōke'e and Waimea Canyon State Parks
Kōke'e and Waimea Canyon, West Kaua'i





BUILDING DATES:

-  PRE - 1935
-  1935-1938
-  POST-1950
-  DEMOLISHED

Source: Preliminary Master Plan for Renovation of the Old CCC Camp as an Environmental Resource Center for Hawaii and the Pacific at Kōke'e State Park, Kaua'i, Hawai'i. Draft, October 1993.

FIGURE 4-15
Kōke'e CCC Camp Boundaries
 Kōke'e and Waimea Canyon State Parks
 Kōke'e and Waimea Canyon, West Kaua'i



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Kauaikananā and Kōkeʻe Streams and convey the irrigation water to Kekaha Sugar Company fields around the towns of Waimea and Kekaha.

For additional discussion on the historic significance of the Kōkeʻe and Kekaha Ditch Systems, see the *Significance Determination and Treatment for Cultural Landscapes* section, *Criteria F*, below.

Recreation Residences

The heritage of Kōkeʻe State Park as a valued retreat from the urban environment is exemplified by the recreation residences. The recreation residences are loosely clustered into three forested neighborhoods and represent the “residential villages” of the parks. The neighborhoods are picturesque, consisting of wooden cabins with weathered facades, metal roofs, wide porches and chimneys. They are strung together along meandering dirt roads with narrow dirt driveways.

Kōkeʻe and Waimea Canyon State Parks contain 114 recreation residences leased to private parties. Some of these structures date back to the early 1900s. The State Historic Preservation Division evaluated and ranked the historic value of each of the recreation residences in 1983 and again in 2001. A full inventory of the individual recreation residences and description of the historic ranking criteria and findings is provided in the Facilities Assessment Report, submitted under separate cover. See **Figure 4-16**, Original 47 Camp Lots, and **Figure 4-17**, Recreation Residence Lease Lots.

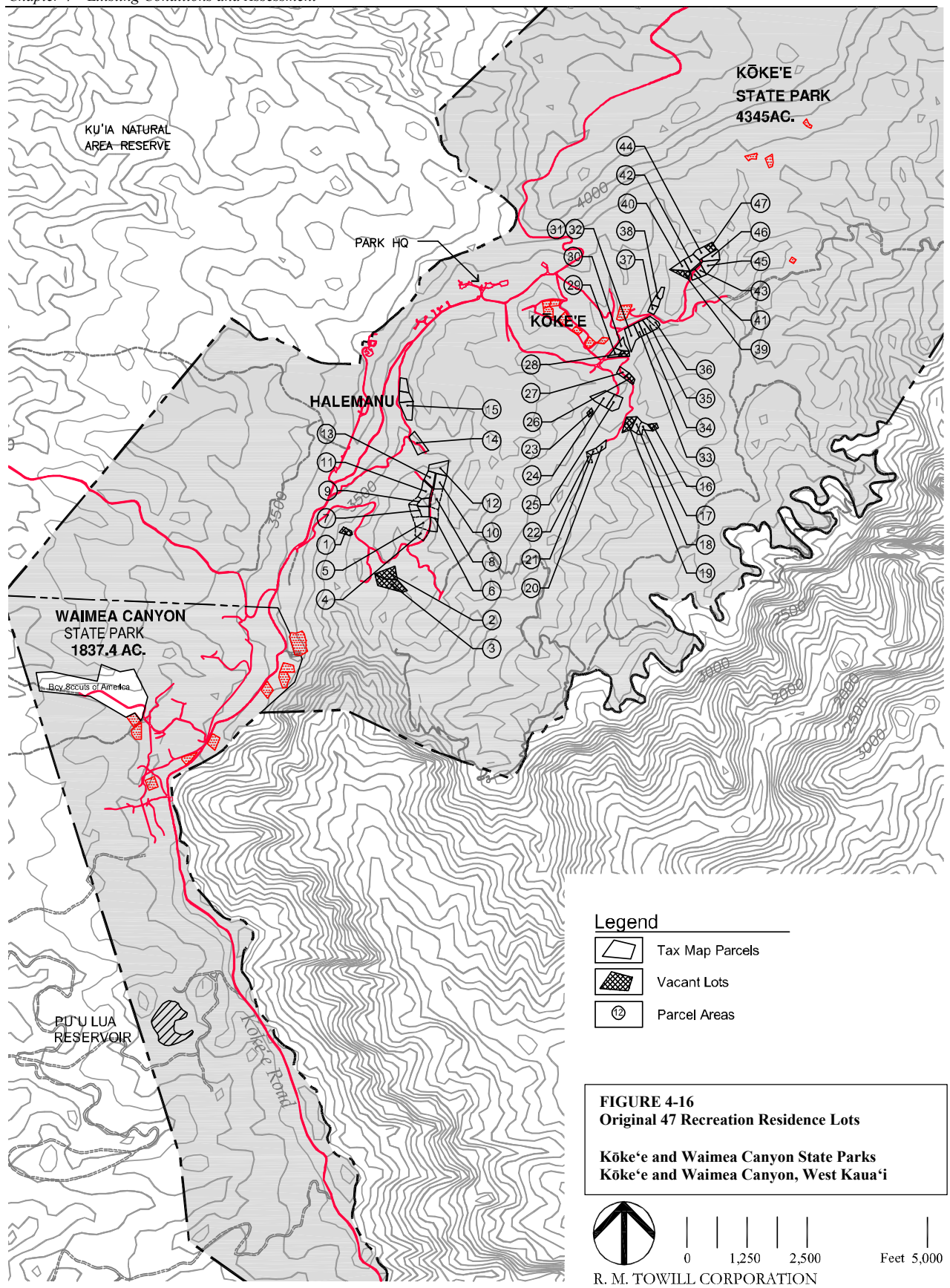
The tradition of recreation residences in the park, their architectural character and the landscape plantings that they introduced has created a unique setting not duplicated by any other park in the State Parks system.

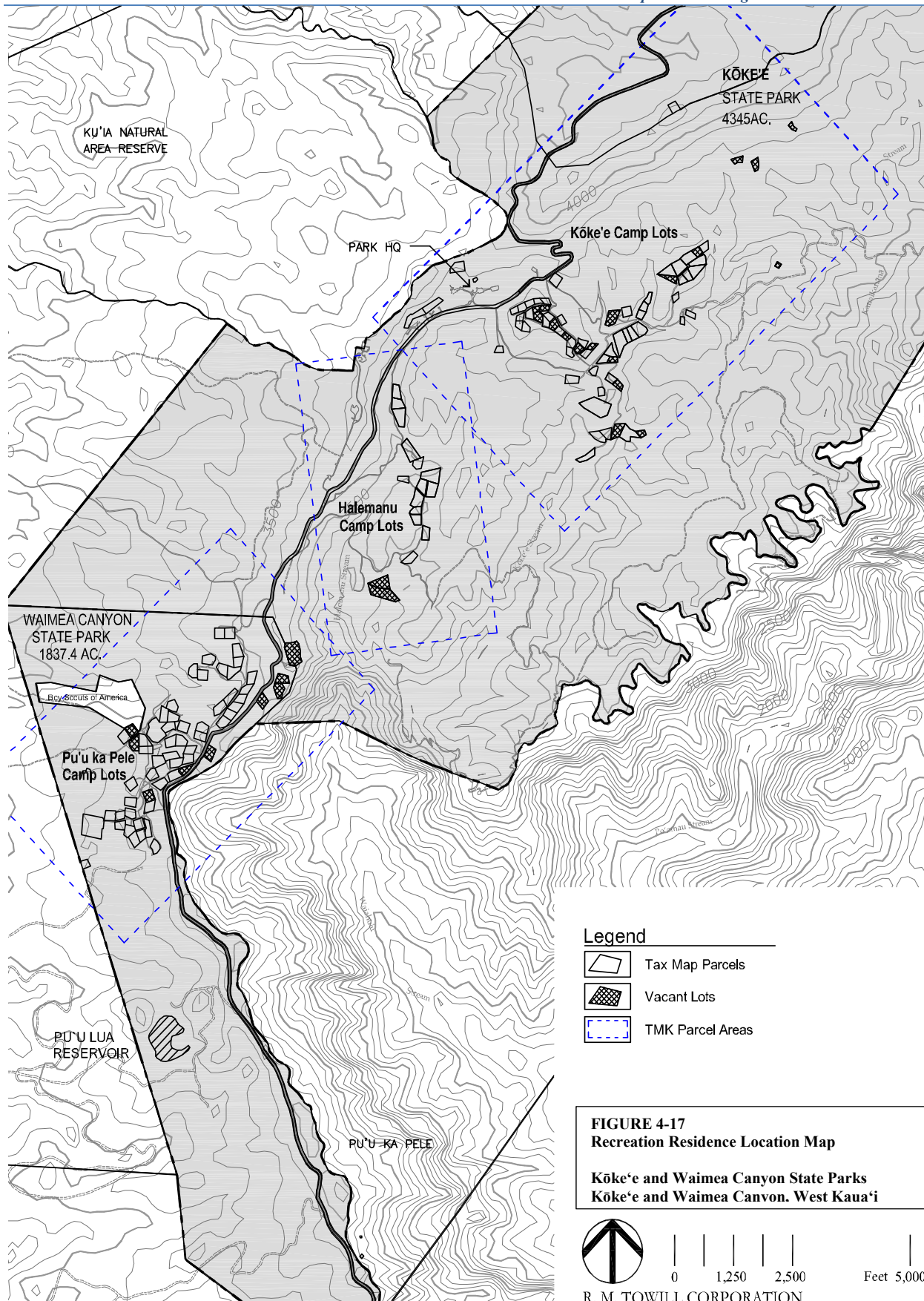
Architectural Design and Evolution at Kōkeʻe and Puʻu ka Pele Camps

Vernacular architectural styles with rustic elements were established at Kōkeʻe during Valdemar Knudsen’s tenure on the land in the late 1800s. The earliest permanent structures, which might be appropriately labeled as “Kōkeʻe rustic”, reflected common vernacular styles in Hawaiʻi circa 1900. Later buildings, primarily those constructed after the late 1920s, were also vernacular, but were markedly different from the earlier Kōkeʻe camp buildings.

In the earliest days of camping in the Kōkeʻe area, a variety of temporary and permanent structures were built. Valdemar Knudsen’s earliest shelter at Halemanu was a Hawaiian thatched house. By 1868, Knudsen had built a larger, more permanent structure constructed of wood for his family’s summer house. When others began coming to the Kōkeʻe area to enjoy Knudsen’s mountain retreat, a canvas tent or shelter often served as the typical camping structure. Photographs show that campers built all types of canvas shelters, including octagonal tents, “pup” tents, and gable-roofed tents, often using available tree branches to support the canvas walls. Earlier architectural styles continued to be utilized as well. A 1913 photograph showed a lanai/shelter with a Hawaiian thatched roof, which was adjacent to Knudsen’s tennis court. An early photograph depicted a kitchen tent.

Early photographs of Kōkeʻe and Halemanu demonstrate that a “Kōkeʻe rustic” architectural style was well developed by 1900. This “Kōkeʻe rustic” architectural style consisted of unpainted cabins built of board-and-batten, post-on-pier construction. The cabins were often small and featured gable roofs that appeared to be shake covered. Photographs indicate that six-light





wood-framed sliding windows were prevalent, but multiple-light double-hung windows were also used. Most of the architectural features of these early buildings at Kōke‘e were also common elements in Hawai‘i’s agricultural housing during the same period.

Certain rustic architectural features unique to Kōke‘e developed by the early 1900s as well. One of the most conspicuous rustic elements in Kōke‘e architecture were the ‘ōhi‘a logs and branches that were fashioned into porch railings. Another simple feature was window openings (often without glass) that were closed by a wooden “flap” that swung up from beneath the window. Fireplaces and chimneys constructed of native rock were prominent rustic elements. Some post-on-pier foundations utilized the readily available rocks and/or tree logs rather than cut lumber.

Cabins that fit the traditional “Kōke‘e rustic” architectural style includes the unpainted board-and-batten structures in Rice Flat that date to the 1920s, especially the older cabins on TMKs: 1-4-04: 16, 17, and 19 (**Photo 4-3**). Other illustrations of this early rustic style are the structures at TMK: 1-4-04: 09 (circa 1923) in Kōke‘e, and in Halemanu, at TMK: 1-4-03: 03 (circa 1922) and TMK: 1-4-03: 05 (circa 1931). A fine example at Pu‘u ka Pele is the small cabin located at TMK: 1-4-02: 76, that was probably built circa 1923.

Many of the earliest Kōke‘e cabins may have been small structures that were no more than shelters and sleeping quarters. Many cabins were not equipped with indoor plumbing when the Kōke‘e Camps were first established by the Territory of Hawai‘i in 1918. Outhouses and sometimes kitchens were separate facilities. Showers were built in streams.



Photo 4-3
“Kōke‘e Rustic” Board and Batten
Architecture
Rice Flat, (TMK: 1-4-04: 19)

The absence of plumbing as well as electricity was partly due to a “simple life in the country ethic”, but also because the cabins were used only during the summer months prior to WWII.

Prior to WWII, the cabins were used only during the dry summer months. Part-time use did not justify the high costs of utility and infrastructure development. To a certain extent, the absence of electricity and water also reflected an intentional “simple country life” experience that is still evident in many of the cabins today, despite the availability of utility service.

Water service was provided at Pu‘u ka Pele in the 1920s. Electricity would not be delivered to the Kōke‘e area until the 1960s. Elements of the rustic lifestyle are still evident. The cabins at Makaweli Flats do not have electric service. The Wilcox Cabin (TMK: 1-4-04: 12) has neither water nor electric service and relies on an adjacent stream for water. Several cabins in this study were noted as having outdoor bathing areas with a bathtub, shower, or furo. A few had functional wood-burning water heaters, even though the cabins had electricity.

By the end of the 1920s, some buildings were being constructed of tongue-and-groove vertical-boards rather than board-and-batten. The newer summer residences were often larger than the earlier board-and-batten cabins. These houses often featured hipped roofs and a combination of double-hung windows with a few six-light sliding windows. Buildings such as the Līhu‘e Plantation Company Ltd. cabin, circa 1925 (TMK: 1-4-02: 48) (**Photo 4-4**), or the house at TMK: 1-4-02: 23, circa 1930, were typical of the vertical-board vernacular houses that emerged by the mid 1920s.



Photo 4-4
Hip Roof and Double-Hung Windows
Līhu‘e Plantation Company Cabin
(TMK: 1-4-02: 48)

Other fine examples of the houses built during this time period are the structures on TMK: 1-4-02: 52, 1-4-02: 45, and 1-4-02: 54. It is important to note that many board-and-batten structures continued to be built at Kōke‘e.

Over the decades a wide variety of vernacular structures were built at the Kōke‘e and Pu‘u ka Pele Camp Lots. Some houses, as an example, those at TMK: 1-4-02: 32 and TMK: 1-4-02: 30, are unique in Kōke‘e. These vernacular buildings used the typical board-and-board construction, but also included unique architectural details

such as larger windows and/or attic vents. A handful of Kōke‘e cabins are shingle clad, although at least two of these buildings were originally vertical board and covered with shingles after 1983 (TMK: 1-4-04: 14 and TMK: 1-4-04: 43).

As a general rule, cabins and houses at Kōke‘e were vernacular in style and built using vertical-board or board-and-batten construction until the end of the 1960s. Not until the late 1980s were houses using modern materials and building styles constructed. Some of these newer building styles are likely a result of the readily available and relatively inexpensive materials such as T1-11 siding and aluminum-framed windows and sliding doors. Stricter building codes may have also dictated what types of materials were permitted in new construction.

Changing Needs and Building Modifications

Over the years various modifications have been made to the Kōke‘e cabins. Perhaps the most noticeable alteration is the addition of large decks, some of which are façade length or wraparound and are a major portion of the relative house size. Many of these decks were built in a contemporary style typically found in urban subdivisions rather than the traditional Kōke‘e rustic architectural style, which often was a porch with ‘ōhi‘a railings. Another modification common to many houses is the replacement of original windows with plate-glass windows or sliding-glass doors. The use of these larger windows most likely reflects the desire to allow more light into cabins with small windows and overhanging eaves, which can be quite dark during Kōke‘e’s frequent rainy weather. It is also likely that some of the windows were replaced with readily available, cheaper windows after hurricane or storm damage. One other very obvious change at Kōke‘e is the addition of satellite

dishes. These dishes provide a sharp, modern contrast to the old rustic cabins and also reflect the changing nature of activities at the Kōkeʻe camps.

While older cabins have been substantially altered in many cases, it is also important to note that some cabin owners have renovated and/or enlarged their cabins with in-kind repairs or sympathetic additions that have little impact on the historic character of the structure. A good example of a large addition added to an older cabin without impacting the historic character of the original cabin is the Plews Cabin, TMK: 1-4-04: 16, located in Rice Flat. The Plews built an unpainted addition on the back of the original 1920s structure. Since the addition complements the original structure and is not visible on the older structure’s public façade, the original structure maintains its historic integrity. Another case of a new building that complements the adjacent 1920s cabin is the Wichman Cabin located at TMK: 1-4-04: 17, which is also part of Rice Flat. The cabin at TMK: 1-4-03: 05 has a porch that is not an in-kind replacement, but is very similar to the earlier porch and complements the building’s rustic architectural style.

Exceptional Architecture at Kōkeʻe

Two houses at Kōkeʻe are exceptional architectural examples, the Danford House (TMK: 1-4-03: 13), circa 1938 (**Photo 4-5**) and the Hagino House (TMK: 1-4-04: 40), circa 1937 (**Photo 4-6**). Both houses are large and in great contrast to the small rustic cabins at Kōkeʻe.

The Danford House was built in the Tudor style and is a fine example of outstanding architecture. It features fine architectural details such as dormers, French doors with divided lights, and a rock chimney. The house has awning windows and a Hawaiian-style double-pitched roof with flared eaves.

The “Hawaiian-style double-pitched roof” design is attributed to C. W. Dickey, who modeled his double pitched, usually hipped, roofs on the traditional high pitched, thatched roof forms found in early Hawaiian architecture. Many of Dickey’s roofs also featured flared eaves. The interior highlights include an open-truss ceiling. The Danford House was built by a notable Kauaʻi family that camped at Kōkeʻe as early as 1907 during Knudsen’s tenure on the land. The architectural form of the Danford House is remarkably similar to the Caleb E. S. Burns residence in Līhuʻe, which was designed by well-known Hawaiʻi architect C. W. Dickey in 1933.



Photo 4-5
Danford House
(TMK: 1-4-03: 13)

The other exceptional house at Kōkeʻe was built in a more vernacular style, but like the Danford House, features fine architectural details and a much grander style than the average Kōkeʻe cabin. The Hagino house also has a Hawaiian-style double-pitched roof with flared eaves. It features large sliding windows on the front façade and a lovely “Kōkeʻe-style” rustic porch with ‘ōhiʻa railings.

Recreation Residence Landscape

Typologies

The residents of Kōkeʻe and Waimea Canyon State Parks modified the landscape around their camp lots and residences following a variety of influences. The most significant effects perpetrated upon the surrounding vegetation were arguably the result of two requirements of the lease: one, that leaseholders maintain an ample fire break around their cabins, thus necessitating clearing away forest vegetation; and two, that leaseholders plant a minimum of 50 trees on their property in conjunction with early forestry efforts.



Photo 4-6
Hagino House
(TMK: 1-4-04: 40)

Although the earliest leases for the Kōkeʻe Camps forbid campers to import alien plants without the consent of the territorial forester, it appears that the Territorial Forestry Division instead encouraged campers to help with reforestation. Supervising and approving campers' planting activities would probably have been an impossible task. Contemporary accounts report that campers were expected to plant fifty trees on their property, and evidence shows that

they mostly planted as they pleased. Indeed, gardening was a popular pastime at Kōkeʻe. It is uncertain when the government began supplying water to the Kōkeʻe Camps, although a water system was provided by the County of Kauaʻi to the Puʻu ka Pele lots in the 1920s. Prior to the development of a water delivery system, gardening was usually done adjacent to streams where roses, pansies, dahlias, and other flowering ornamentals could thrive, even during the dry summer months. Hydrangeas were frequently planted alongside the cabins as roof runoff would keep them watered and growing. Methley plum trees, introduced to Kōkeʻe by Kauaʻi forester J. MacDonald, became a favorite landscaping item for many cabin owners. The Civilian Conservation Corps also contributed by providing residents with seedlings of a variety of species, including California redwood, Sequoia, Eucalyptus, Sugi and Black Pine, and various fruit trees, including apple, plum, pear, peach, and others.

Over time, the activities of the mountain residents have produced a mosaic of several distinct landscape typologies. Though each typology expresses a different relationship with the land, there is an apparent shared landscape characteristic of open lawn space defined and accented with natural and introduced tree plantings. This landscape feature is emblematic of Kōkeʻe and evident throughout the public space and camp lots within the two parks. It is most prominently reinforced by the open meadow space and monumental trees of Kanaloahuluhulu.

Forest Clearing Landscape – This landscape type is representative of the recreation residence origins in the early forest camps and hunters cabins. It is characterized by the cabin set within a small, grassed clearing from which the forest has been beaten back, but remains dominant (**Photo 4-7**). Surrounding vegetation is



Photo 4-7
Forest Clearing Landscape
TMK: 1-4-04: 12

generally comprised of dense, untended, natural forest constituents. Landscape improvements are minimal. Planted trees are typically used to define lot entry drives and property boundaries. Tended vegetation (typically ornamental ti, ginger, hydrangea, and similar plants) are limited to the immediate perimeter of the cabin.

Woodland Park Landscape – This landscape type suggests a forested park in which scattered trees are set within a meadow-like environment to create a naturalistic woodland appearance. This landscape represents the integration of the forest through both selective clearing and introduced tree plantings. Trees are typically left untended. Planted trees are used also to define entry ways and property boundaries (**Photo 4-8**).

Orchard Landscape - This landscape type developed from agricultural experimentation conducted by the Civilian Conservation Corps at Kanaloahuluhulu Meadow. Fruit trees, including varieties of plum, pear, cherry, peach and apple, were provided to early recreational residents to assist in meeting annual planting quotas under the terms of the early camp lot leases. In this landscape, the forest is cleared to



Photo 4-8
Woodland Park Landscape
TMK: 1-4-04: 53

create open space for orderly plantings of fruit trees in rectangular or triangular rows. The landscape is controlled and the lot displays a functional organization of space with built elements – residences and peripheral utility structures – sited for the convenience of agricultural activities. Ornamental vegetation is typically limited to the periphery of built elements. In some examples, orchard plantings are incorporated within woodland park and cottage garden landscape typologies. (**Photo 4-9**).



Photo 4-9
Orchard Landscape
TMK: 1-4-04: 19

Cottage Garden Landscape – This landscape type is suggestive of a formal,

English garden style and may reflect early park residents' identification with cultural roots from both sides of the northern Atlantic. In this landscape, the forest is beaten back to create controlled, ornamental space. Characteristics include carefully tended flower and vegetable beds set within well-manicured lawns surrounding the residence. The natural forest may be represented within the landscape by carefully groomed specimens of trees or shrubs (**Photo 4-10**).



Photo 4-10
Cottage Garden Landscape
TMK: 1-4-04: 16

◆ CULTURAL/SEASONAL TRADITIONS

Kōkeʻe and Waimea Canyon State Parks have long been the site of social gatherings with a variety of functions: recreation, religious practice, art and dance, resource collection, and community festivals. In addition, for countless residents of Kauaʻi, the park has served as a “classroom” for handing down traditional practices related to hunting, resource gathering, and crafts. All of these activities instill value in the Parks as a living cultural landscape with direct and ongoing links to pre- and post-contact histories and traditions. Cultural events associated with Kōkeʻe and Waimea Canyon State Parks are listed in **Table 4-12**.

◆ CULTURAL / HISTORIC LANDSCAPE

Defining the Kōkeʻe Cultural Landscape requires identifying the various elements of the built and natural environment that make up the area, and characterizing the significance of each to the overall landscape. The cultural landscape is shaped through human activities and actions, planned and unplanned, over time. It is a reflection of the tangible and intangible values people hold in a place. This section reviews significant actions, people, and events that have taken place over time and identifies the elements that define the nature of the Kōkeʻe Cultural Landscape.

Defining the Cultural Landscape

Cultural Landscapes are defined by the National Park Service (NPS) as “a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or persons or exhibiting other cultural or aesthetic values” (NPS, 1994). The NPS recognizes four general types of cultural landscapes: historic sites, historic designated landscapes, historic vernacular *landscapes*, and *ethnographic landscapes* (Ibid.). The NPS does not believe each of these environments to be mutually exclusive as each area defined may share components of another.

A historic landscape “includes residential gardens and community parks, scenic highways, rural communities, institutional grounds, cemeteries, battlefields, and zoological gardens. They are composed of a number of character-defining features which, individually or collectively contribute to the landscape’s physical appearance as they have evolved over time” (Ibid.).

“*Historic Designed Landscape* is a landscape that was consciously laid out

by a landscape architect, master gardener, architect, or horticulturist according to design principles, or an amateur gardener working in a recognized style or tradition. The landscape may be associated with a significant person(s), trend, or event in landscape architecture; or illustrate an important development in the theory and practice of landscape architecture. Aesthetic values play a significant role in designed landscapes. Examples include parks, campuses, and estates.”

“**Historic Vernacular Landscape** is a landscape that evolved through use by the people whose activities or occupancy shaped that landscape. Through social or cultural attitudes of an individual, family or a community, the landscape reflects the physical, biological, and cultural character of those everyday lives. Function plays a significant role in vernacular landscapes. They can be a single property such as a farm or a collection of properties such as a district of historic farms along a river valley. Examples include rural villages, industrial complexes, and agricultural landscapes.”

“**Historic Site** is a landscape significant for its association with a historic event, activity, or person. Examples include battlefields and presidents house properties.”

“**Ethnographic Landscape** is a landscape containing a variety of natural and cultural resources that associated people define as heritage resources. Examples are contemporary settlements, religious sacred sites and massive geological structures. Small plant communities, animals, subsistence and ceremonial grounds are often components.”

The methodology developed by the NPS for evaluating a cultural landscape begins with analyzing the landscape in order that changes over time can be understood. This may be accomplished by overlaying the various period plans with the existing conditions plan. Based on these findings, individual features may be attributed to the particular period when they were introduced, and the various periods when they were present (Ibid.).

It is during this step that the *historic significance* of the landscape component of a historic property and its integrity are determined. “*Historic significance*” is the recognized importance a property displays when it has been evaluated, including when it has been found to meet National Register criteria. A landscape may have several areas of historical significance. An understanding of the landscape as a continuum through history is critical in assessing its cultural and historic value. In order for the landscape to have integrity, these character-defining features or qualities that contribute to its significance must be present” (Ibid.).

“**Integrity** is a property’s historic identity evidenced by the survival of physical characteristics from the property’s historic or pre-historic period. The seven qualities of integrity are *location, setting, feeling, association, design, workmanship and materials*. When evaluating these qualities, care should be taken to consider change itself. For example, when a second-generation woodland overtakes an open pasture in a battlefield landscape, or a woodland edge encloses a scenic vista. For situations such as these, the reversibility and/or compatibility of those features should be considered, both individually, and in the context of the overall landscape. “Together, evaluations of significance and integrity, when combined with historic research,

Table 4-12
Seasonal Events Associated with Kōke‘e and Waimea Canyon State Parks

Event Description	Calendar
<p>Banana Poka Round-Up Kōke‘e Museum’s annual forest education fair featuring Hawaiian music, environmental exhibitions, forest craft workshops, and family activities.</p>	May
<p>Methley Plum Picking Season Pickers have favored sites to which they return year after year. The plum is a favorite for use in making cracked seed, umeboshi (Japanese salted plum), jams and jellies. Methley plum trees were originally planted in 1935 by the Civilian Conservation Corps.</p>	Late June, early July
<p>Trout Fishing Season</p>	August - September
<p>Eo e Emalani Alaka‘i Festival Commemorating Queen Emma’s 1871 Visit to Waimea Uka and the Alaka‘i. Hosted by Hui o Laka. Event includes performances by hula halau, music, and food.</p>	October
<p>Hunting Seasons</p>	Year-round on weekends and holidays

documentation of existing conditions, and analysis findings, influence later treatment and interpretation decisions” (Ibid.)

Significance Determination and Treatment for Cultural Landscapes

The assessment of significance evaluates the qualities associated with the project area in accordance with guidance provided by the Department of Interior and Chapter 6E, Hawai‘i Revised Statutes, and the Hawai‘i Administrative Rules (13-8). “The significance in American (Hawaiian) history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- That are associated with events that have made a significant contribution to the

- broad patterns of our history; or
- That are associated with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That yielded or may be likely to yield, information important in prehistory or history”.

In addition, Hawai‘i Administrative Rules provide for two additional criteria as follows:

“(E) Environmental impact, i.e., whether the preservation of the building, site, structure, district, or object significantly

- enhances the environmental quality of the State; and
- (F) The social, cultural, educational, and recreational value of the building, site, structure, district, or object, when preserved, presented, or interpreted, contributes significantly to the understanding and enjoyment of the history and culture of Hawai‘i, the Pacific area, or the nation.”

Table 4-13 summarizes the significance evaluation criteria and denotes its applicability to areas within the Kōke‘e and Waimea Canyon State Parks.

Criteria A - Significance in American (Hawaiian) history, architecture, archaeology, engineering, and culture that are associated with events that have made a significant contribution to the broad patterns of our history.

The history of the Waimea- Kōke‘e region abounds with events that serves as milestones in the evolutionary development of Kōke‘e and Waimea Canyon State Parks. Significant cultural periods and events in the area include:

- Early Hawaiian use of forest resources: Koa for canoes, birds, sandalwood, firewood.
- First Western Contact. Captain James Cook visits Waimea. Captain George Vancouver releases cattle into the wilds.
- Early market exploitation of forest resources: Sandalwood trade and whaling industry both created demand for forest products that led to changes in the natural landscape.
- Cattle ranching in west Kaua‘i uplands: 1855, Valdemar Knudsen begins cattle ranching in Waimea- Kōke‘e region. Forest devastation from grazing and fire.
- 1871 - Queen Emmalani travels to Kōke‘e and across the Alaka‘i.

Table 4-13
Historic Significance Assessment

Criteria	Region	Kōke‘e	Halemanu	Pu‘u ka Pele	CCC Camp	Kanaloa-huluhulu
A Association with events in history	■				■	
B Association with significant persons	■	■	■	■		
C Embody distinctive characteristics of type, period or method of construction	■	■	■	■	■	
D Area yielded or likely to yield information on history or pre-history	■			■		
E Environmental impact enhanced	■				■	■
F Social, cultural, educational, and recreational value	■				■	■

- Development of mountain retreats/summer homes in the Kōkeʻe and Puʻu ka Pele uplands starting with Valdemar Knudsen’s summer camps. Leases for “summer camp” lots started by the Territory of Hawaiʻi in Kōkeʻe in 1917.
- Sugar industry growth results in rapid development of irrigation ditch systems and expansion of agricultural lands.
- Early forestry efforts by Territorial and County foresters, and the Civilian Conservation Corps spurred by concern for watershed protection
- Development of military facilities – Air National Guard, Missile Defense; NASA, Mercury mission and space exploration during the Cold War period results in changes to Kōkeʻe and Waimea Canyon landscape.
- Park Creation – Territory and State of Hawaiʻi recognize the unique value of Kōkeʻe and Waimea Canyon.
- Period of emerging environmentalism reflected in increased interest in conservation, resource protection, historic preservation, and outdoor recreation.

Criteria B - Significance in American (Hawaiian) history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that are associated with the lives of persons significant in our past.

The following are persons that contributed to the history of the Waimea Canyon and Kōkeʻe State Parks:

- Valdemar Knudsen
- Queen Emma

- Joseph M. Souza
- H.P. Faye
- Charles S. Judd

Criteria C - Significance in American (Hawaiian) history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

The Kōkeʻe and Puʻu ka Pele Camp lots achieve state and local significance in the areas of social and recreation history as well as architecture. The architectural inventory of the Kōkeʻe and Puʻu ka Pele Camp lots conducted as part of this study indicates that eighty-one structures may be considered potentially historic. These buildings, taken together as a possible historic district, have historic integrity and meet the Secretary of the Interior’s National Register significance criteria A and C.

Historic properties that meet criterion A “are associated with events that have made a significant contribution to the broad patterns of our history.” The development of recreational tracts for summer homes (“camping” as it was historically termed in Kōkeʻe) played an important role in Hawaiʻi’s social and recreation history. Started by outdoor enthusiast Valdemar Knudsen, but later modeled on the recreation residence areas in the U. S. National Forest Service, the summer camps at Kōkeʻe and Puʻu ka Pele are the only such areas in Hawaiʻi. The territorial government,

later the State of Hawai‘i, allowed public land to be leased to private individuals and organizations for leisure activities and refreshment of the human body and spirit.

The camps served as retreats from everyday life and provided relief from Hawai‘i’s hot coastal climates by means of an invigorating, cool mountain climate with numerous recreational opportunities. Over

the years, local residents and organizations took advantage of outdoor activities, including hiking, swimming, hunting, trout fishing, and fruit picking. Some of these pursuits, especially trout fishing and plum picking, became uniquely identified with Kōke‘e.

Historic properties that meet criteria C “embody the distinctive characteristics of a type, period, or method of construction or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components lack individual distinction.”

Many of the cabins and houses built at Kōke‘e have the distinctive characteristics of rustic vernacular architecture developed primarily between the 1870s and the 1960s. Individually, most of these buildings lack distinction and have a relatively simple architectural style. Taken together, many of the cabins become a distinguishable entity that represents a significant architectural achievement. Eighty-one cabins may be considered potential historic structures representing late nineteenth century and early twentieth century rustic vernacular architectural styles in Hawai‘i.

Altogether, the cabins at Kōke‘e and Pu‘u ka Pele comprise a unique collection of early twentieth century vernacular structures. The majority of the cabins maintain historic integrity in their design, setting, location,

workmanship, feeling and association.

The significant character-defining architectural features of the cabins include:

Construction Methods and Materials –

Architectural styles were dominated by board-and-batten or vertical-board, post-on-pier construction. The cabins primarily feature six-light wood-framed sliding windows or wood-framed double-hung windows. The post-on-pier foundations may feature log posts and rocks.

Design - The typical architectural style was simple vernacular, with rustic features that complemented the natural landscape of Kaua‘i’s upland forests at Kōke‘e.

Roofing - Roofs were traditionally gable, but by the 1920s some hipped roofs were used. Primary roofing material is corrugated metal, although the earliest houses appear to have been roofed with shake.

Rustic Features and Craftsmanship -

Rustic features included the use of ‘ōhi‘a (or other tree) logs and branches that were fashioned into porch railings. Native materials were also featured in rock fireplaces and chimneys. Native materials were sometimes used in foundations. Numerous unpainted cabins also add a rustic touch to Kōke‘e architecture.

Setting and Location - The cabins are set in the upland forests of Kōke‘e and Waimea Canyon State Parks and were originally part of the Nā Pali-Kona Forest Reserve and Pu‘u ka Pele Forest Reserve. These reserves, and later the State Parks, were established to protect natural resource values and the Kaua‘i watershed.

Criteria D - Significance in American (Hawaiian) history, architecture, archaeology, engineering, and culture is

present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, that have yielded or may be likely to yield, information important in prehistory or history.

Much of the study area has not been thoroughly investigated to determine if important historic information of the area still remains or has been lost. A few archaeological sites have been identified during previous studies, however, they were limited in scope and were site-specific.

Anecdotal information presented by past visitors to the area such as Captain James Cook, Captain Vancouver, and reports by Handy and Handy suggest that the area was populated, and in traditional Hawaiian fashion, the land was used from the mountains to the sea. Handy and Handy also note from historical records that the Waimea Canyon included a number of villages of the “kua‘āina”.

Though limited, the Parks’ archaeological resources add depth to the history of Kōke‘e and Waimea Canyon and can be used to enhance visitors’ understanding of the region and enjoyment of their park experience. The collection of stories prepared by Fredrick Wichman, “Touring the Legends of Kōke‘e,” provides another rich resource for understanding the history of the area.

The significance of the trail network in the area can be traced back to early Hawaiians and their use of footpaths as a means of transportation and communication throughout the island. Forest resources are an important feature of the historic landscape because of the tradition of canoe building attributed to the area. The large

stands of koa in the vicinity were reported by Captains Cook and Vancouver. The specialized Hawaiian practice of gathering feathers for the capes of the Ali‘i is also documented in the accounts of Valdemar Knudsen. The features about Pu‘u ka Pele and history relating to the “canoe builders” requires further research.

Criteria E - Significance in American (Hawaiian) history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and whether the preservation of the building, site, structure, district, or object significantly enhances the environmental quality of the State.

Whenever large expanses of space can be unified into a whole, the value of the entire space is enhanced beyond the sum of its parts. In the Kōke‘e and Waimea Canyon State Parks, several ahupua‘a could be administered as a single unit. Treated as a single unit, the area can be viewed as an educational tool, to teach geology, ecology, biology, zoology, biodiversity, communications, architecture, engineering, history, and more.

The area as a unit also provides opportunities for recreation from a coastal environment, to a mid-level forest environment, to a rain forest environment. Further, the entire area presents opportunities to recreate in different climate zones from the hot and dry coastal area, to a cool temperate zone (1,000 feet to 2,000 feet elevation) to colder climate zones that reach 4,000 feet in elevation.

Finally, the maintenance of the two parks as a single planning unit also maintains the biological bio-diversity of the area.

Kaua‘i’s forests contain plant and animal species not found on the other islands. The uplands around Kōke‘e contain the most intact and pristine examples of native mesic forest to be found anywhere in the state (TNCH, 1996; DLNR NARS Program, 2003).

Criteria F - Significance in American (Hawaiian) history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and the social, cultural, educational, and recreational value of the building, site, structure, district, or object, when preserved, presented, or interpreted, contributes significantly to the understanding and enjoyment of the history and culture of Hawai‘i, the Pacific area, or the nation.

There are three outstanding features of the Parks that define periods in Hawaiian history that embody works of architecture, engineering, and landscaping:

- Kōke‘e Ditch System,
- CCC planted tree stands, and
- Cabins, including the CCC Camp, of the plantation era.

The Kōke‘e Ditch System made possible the extensive growing of sugar cane in the Waimea and Kekaha area and was regarded as an engineering accomplishment. The entire system, with its power generation stations, is unique among all of Hawaiian sugar plantations. The Kōke‘e ditch, completed in 1926, intercepts flow from the Mōhihi, Waiakoali, Kawaikōi, Kauaikananā, Halemanu and Kōke‘e Streams at a peak altitude of approximately 3,400 feet. The Kōke‘e system consists of a 21-mile collection and conveyance system including 48 tunnels averaging 1,000 feet in length, with the longest being 3,000 feet. The

system also includes a 260 million gallon reservoir (Pu‘u Lua), a second 63 million gallon reservoir (Pu‘u ‘Ōpae), and a third reservoir (Kitano Reservoir) located 2.5 miles south of the Pu‘u Lua reservoir. Between Camp 8, within the Alaka‘i Swamp, and Pu‘u Lua Reservoir, the ditch system draws a maximum capacity of 70 mgd. When the system appears to be reaching capacity, water spills off into Kauhao Stream to prevent overflow. Between Pu‘u Lua, Pu‘u ‘Ōpae, and Kitano Reservoirs, the ditch has a capacity of 26 mgd, with the Pu‘u ‘Ōpae segment accommodating up to 7 mgd and the Kitano segment carrying the remaining capacity of 19 mgd. The system was originally built to provide for the water needs of the sugar operations in the lowlands surrounding Waimea and Kekaha. See **Figure 3-2, Irrigation Ditch System.**

The Waimea Canyon Lookout restroom is provided with non-potable water from the Kōke‘e Ditch system via a 10,000 gallon wooden water tank.

The Waimea System, constructed in 1903, diverts portions of the flow of the Waimea River from an elevation of approximately 200 feet and travels through open ditches to the west side of the river for approximately 3 miles to the coastal plains north of Waimea town, and for another 4 miles to the west.

The Kekaha system, built in 1901, diverts water from the Koai‘e and Waiahulu Streams and conveys the water to an irrigation system in Waimea.

The era of the CCC on Kaua‘i is important, not only for what the program stood for, but for the work accomplished by the persons who served in the program. As noted earlier, the program was responsible for all of the major planted stands of introduced

tree species in Kōkeʻe, which restored much of the forested landscape from one that was eroded from overgrazing and fires.

The leasehold cabins in Kōkeʻe include a variety of architecture examples with origins in the construction practices of the early Hawaiian plantation period. The single-wall construction that was used throughout the island and reproduced in Kōkeʻe and Waimea Canyon was appropriate for the Hawaiian environment. Currently, these unique homes are giving way to the modern double-wall construction with paneled siding and gypsum interior panels. The preservation of the homes in Kōkeʻe would be a means of preserving a part of Hawaiʻi's past that is quickly disappearing throughout the islands.

Treatment Criteria

Prior to undertaking work on a landscape, a treatment plan or similar document should be developed. The four primary treatment plans identified in the Secretary of the Interior's Standards for the Treatment of Historic Properties, include:

Preservation - defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Rehabilitation - defined as the act or process of making possible a compatible use for a property through repair, alterations,

and additions while preserving those portions or features that convey its historical or cultural values.

Restoration - defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Reconstruction - defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location (NPS, 1994).

◆ FINDINGS

Management Plan

The State Historic Preservation Division (SHPD) currently has little oversight of the interpretive programs and plans undertaken by Hui o Laka. A park-wide Archaeological and Historic Resource Management Plan would set priorities, establish standards for interpretive materials, and ensure accuracy and consistency across program elements.

Interpretive Programs

The SHPD recommends the following locations for interpretation:

- Puʻu ka Pele
- Puʻu Lua Ditchman's Cabin
- Kōkeʻe Ditch System
- CCC Camp
- Select recreation residences (based on

SHPD historic ranking and other factors as described in the Facility Assessment Report, under separate cover)

Other sites identified by the public and Kōke‘e Interagency Task Force members for possible preservation and interpretation include:

- Kōke‘e Museum and Lodge
- The 150th Air Battalion Station at Kalalau
- Kōke‘e Lee’s House
- “Boiling Pots” at the top of Waipo‘o Falls

An interpretation program may include development of signage, brochures, guided tours, and educational programs. Additionally, sites selected for interpretation will have to be assessed for infrastructure requirements, including parking, pathways, restrooms, and Americans with Disabilities Act standards.

Preservation / Promotion of Cultural Events

Traditional cultural events and activities that occur at the park should be preserved and promoted to ensure the continuity of the Parks’ value as a living cultural landscape.

Some of the cultural activities identified with the Parks occur without promotional efforts, such as resource gathering, hunting, and fishing. These activities are dependent primarily on environmental conditions and the availability of plums, maile, pigs, deer, trout and other resources of interest. Opportunities exist to preserve and enhance these activities through improved natural resource management. Examples include:

- Expand the fish stocking program, extend the fishing season to a year-round activity and promote the Parks as a fishing destination.

Manage the stock of plum trees and replace old and declining trees in non-native forest areas.

- Expand outplanting programs for native plants typically sought by collectors for traditional practices.

Other activities are dependent on the organizational and educational efforts of individuals or groups and would not exist without continued support. For example, Hui o Laka has been the principal host for the Queen Emma Festival and conducts classes in traditional crafts through the Kōke‘e Natural History Museum. Events and programs like these enhance the identity of the Parks and enrich the experience of park goers. As such, some oversight is recommended to ensure consistency of content and contextual relevance to the Kōke‘e and Waimea Canyon region.

Additional suggestions from the public for promoting the cultural significance of Kōke‘e and Waimea Canyon State Parks include:

- Developing facilities and promoting the park as a location for retreat/gathering of world spiritual leaders.
- Promoting the Parks as a movie location.

Cultural Landscape

The following are general observations of the cultural landscape of the Kōke‘e and Waimea Canyon State Parks:

- The natural and introduced vegetation of the area helps to define the environment.
- The rural - wilderness character defines the general ambiance of the area
- The buildings define historic periods of social and economic change in Hawai‘i.
- The scenic views offered by the Parks are a positive attraction for the area.
- Outdoor recreation opportunities in a wildland setting provide activities for

- local residents and visitors alike.
- Invasive plants and animals threaten the natural and cultural landscape.
- Uncontrolled improvements made to properties degrade the historic integrity of the cultural landscape.
- Poorly maintained facilities degrade the integrity of the cultural landscape.
- The cultural landscape as a living environment is expressed through seasonal festivals and traditional events.
- Many of the current residents of Kōkeʻe and Waimea Canyon have living memories of the early days of the region and of the development of the Parks.

4.6 VISUAL RESOURCES

◆ PRIMARY SCENIC VIEWS

Primary scenic views within Kōkeʻe and Waimea Canyon State Parks are described in terms of visual resources and the park facilities developed to allow visitors to experience them. Primary scenic views and facilities are shown in **Figure 4-18**.

Visual Resources

Waimea Canyon

Waimea Canyon is the primary visual resource of its namesake park, and the major attraction for visitors. The Canyon’s dramatic, multi-hued cliffs and expansive, plunging depths have aptly earned it the nickname “Grand Canyon of the Pacific”. The Canyon offers a front-seat view of Kauaʻi’s natural history, from the upland watershed, through the erosion-carved walls and canyon floor, to the distant alluvium of Kauaʻi’s coastal region. A continuum of habitat types are evident through the canyon elevations, and many of the constituent plant and animal species are commonly seen. Numerous waterfalls and hints of streams are visible in the recesses of the canyon’s many valleys. Most prominent among them is Waipoʻo Falls, which though not often

flowing in strength, has become emblematic of the visitors’ experience in the Parks.

Kalalau Valley

Kalalau Valley provides unreachable views of the Nā Pali Coast framed by verdant, corrugated precipices that scrape the clouds. Distant remnants of stone terraces can be detected among the red rocks that punctuate the valley slopes. Frequent rainfall charges numerous waterfalls on the valley walls, most notably Davis Falls, located on the distant wall from Kalalau Lookout.

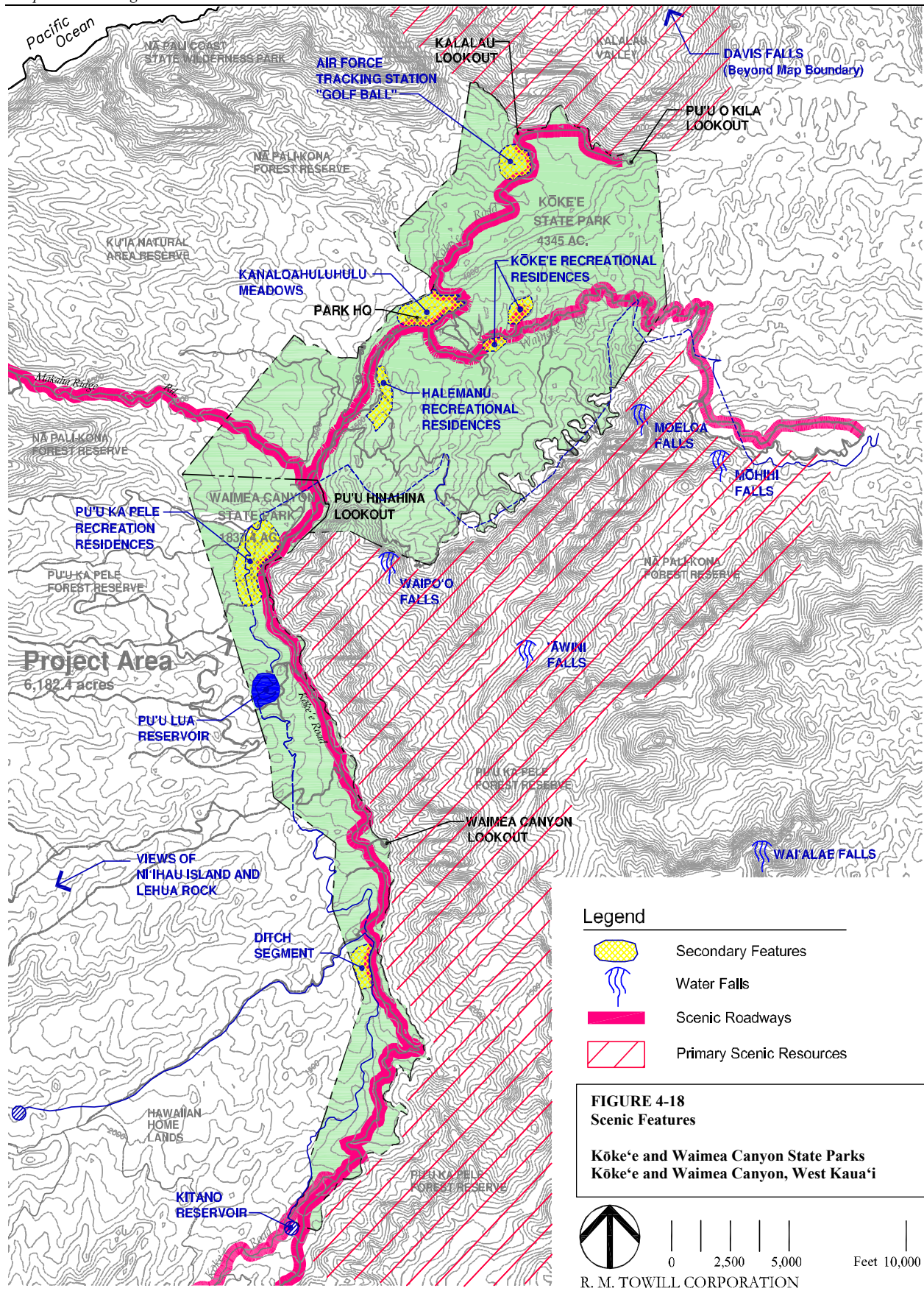
Numerous marine and forest birds can be seen flying in among the rich vegetation and strong drafts. The lush greenery of the valley and often wet conditions at the site are in striking contrast to the dry landscape of Waimea Canyon and well illustrate the Parks’ wide range of habitat and weather conditions.

Niʻihau Island

Niʻihau Island and adjacent Lehua Rock are visible from numerous sites in the park as a striking interruption on the southwestern horizon. Their deceptively close proximity to Kauaʻi from the elevated vantage of Kōkeʻe and Waimea Canyon State Parks dramatically illustrates another aspect of Kauaʻi’s island formation. Marine haze frequently obscures Niʻihau, creating an element of mysteriousness to accompany the story of Hawaiʻi’s “forbidden island”.

Alakaʻi Plateau

The Alakaʻi Plateau occupies the furthest upland views from Kōkeʻe and Waimea Canyon State Parks. The constant cloud cover and rich green hues attest to the Alakaʻi’s role as the source of water and origin of the erosional forces that continue to shape Waimea Canyon and the lowland regions.



Facilities

Waimea Canyon Lookout

Waimea Canyon Lookout is the most heavily visited site in Waimea Canyon State Park. It offers 360-degree views from the upper platform that include the canyon, the Alaka‘i Plateau, Mt. Wai‘ale‘ale, Pe‘ape‘a summit, Ni‘ihau, and the south and west coast of Kaua‘i. The audience at this location includes group tours, individual day visitors, amateur naturalists, campers, and hikers. Many bus tours stop here regularly every day, with pronounced increases on days when cruise ships are in port.

Recommended interpretive techniques include kiosks near the parking lot. Given the large, consistent audience, this would be a good location to provide interpretive staff to interact with visitors and provide an introduction to the region. Interpretive material at this site should provide an overview of key themes of the entire park system: natural resources and processes, geology, history, and recreational activities.

With views spanning from the Alaka‘i plateau and Mt. Wai‘ale‘ale to the canyon floor and dry lowland regions, this location should provide interpretation of the natural communities in the region, including a contrast of the warmer, drier lowland shrublands and the wet forests at higher elevations.

The erosional forces that shaped Waimea Canyon are on excellent display in the surrounding canyon rim. The Kōke‘e Stream empties into the canyon and provides a good subject for interpreting the effects of streams on the landscape, as well as offering a link into interpreting the unique formations underlying the headwater sources of the Alaka‘i Swamp and Mt. Wai‘ale‘ale.

Interpretation of the geologic formation of Kaua‘i should be linked at this site to

interpretive material at Kalalau Lookout and Pu‘u o Kila Lookout. Together, these sites offer views of geologic features that tell nearly the complete story of the volcanism and erosional forces that shaped the island.

Pu‘u Hinahina

Pu‘u Hinahina is one of the most popular lookouts in the two parks. It offers distant views of Waimea Canyon, the Alaka‘i Plateau, Mt. Wai‘ale‘ale, and the south shore of Kaua‘i.

The audience at this location includes tour buses, individual visitors, amateur naturalists, and hikers. Recommended interpretive techniques include kiosks and signs that build on the interpretive themes from Waimea Canyon Lookout.

The processes of orographic rainfall and moisture gradients can be interpreted when the The Alaka‘i is visible on clear days.

On the opposite canyon rim, the forest exhibits dieback sections, offering a good example to discuss dieback as a normal forest ecosystem process.

Signs of goats are evident throughout the barren terrain of the canyon. The theme of feral ungulates and their effect on native vegetation can be developed effectively at this location.

Kalalau and Pu‘u o Kila Lookouts

The interpretive opportunities at Kalalau Lookout are shared by nearby Pu‘u o Kila Lookout. The audience includes tourists, amateur naturalists, and hikers. Kiosks and/or interpretive staff are the most appropriate interpretive devices for these lookouts.

A nature trail near the Kalalau Lookout would be an excellent place to interpret

montane wet forests. Topographic diversity and geologic history are also evident, from the Kalalau Valley floor to the precipitous cliffs, razor edges, and stone spires of the valley rim, to the inland expanse of the Alaka‘i Plateau and Mt. Wai‘ale‘ale.

Waipo‘o Falls Viewpoint

Visitors stopping to picnic at the Pu‘u ka Pele picnic area are most likely to be local residents. Stopping for viewing at the roadside viewpoint should not be encouraged due to hazards posed to traffic and erosion damage caused by parking on the shoulder. Additionally, no safe crosswalk exists between the picnic area and the viewpoint. Appropriate interpretive materials include a small kiosk at the picnic site describing the Waimea Valley formation, and plans for a koa reforestation program in the area.

Honopu, Awa‘awapuhi and Nu‘alolo Valleys

Moderately strenuous ridge trails lead to spectacular views of these Nā Pali Coast valleys. The likely audience for these views include the more adventurous hikers, amateur naturalists, and those with an interest in Hawaiian history. Views at the ends of these trails reach deep into the history of Hawai‘i, particularly at Nu‘alolo Valley which was once densely cultivated in taro to support a substantial resident population.

Interpretation of the history, archaeology, and ethnobotany of the original inhabitants of the valleys, and their resource link between the ocean and mountains are recommended. Interpretive opportunities at these trails also include native flora and fauna, and native natural communities. The presence of goats along the ridges provides an opportunity for discussing ungulate control.

Because of the wilderness character of these trails, interpretive facilities should be limited to the trailhead and major junctions. Trail guide brochures would be a good means of educating visitors about the features found in this area.

◆ SECONDARY SCENIC VIEWS

Secondary scenic resources within the Kōke‘e and Waimea Canyon State Parks include:

Scenic Roadways

The 18-mile Waimea Canyon Drive and Kōke‘e Road (State Route 550) possess scenic attributes that deserve special recognition and where necessary, protection from visual impacts. The entire length of these roadways are designated as scenic roadway corridor in the Kaua‘i County General Plan.

Waimea Canyon Drive - This road follows the rim of the Waimea Canyon from Waimea town to the intersection with Kōke‘e Road inside the entrance of Waimea Canyon State Park. The road offers unparalleled views of the lower canyon regions. Numerous turnouts along the drive provide vantage points from Mt. Wai‘ale‘ale to the canyon floor and the numerous taro farms alongside the Waimea River. Sections of the Kōke‘e Ditch system are also visible. To the west, the long, sloping flanks of Kaua‘i’s original shield volcano guide views to the coastal areas of Kekaha and Polihale, and offer distant views of Ni‘ihau and the Pacific.

Numerous sites along this roadway provide opportunity for development of improved lookouts. Interpretive themes could take advantage of these sites as transition zones between the inhabited coasts and the rural upland areas to tell the story of Kaua‘i’s social transformation as written in the

agricultural landscape.

Kōkeʻe Road - Kōkeʻe Road cuts through several distinctive forest communities on its way to the upper elevations of the park. Lined with both native and exotic plant material, this lengthy drive establishes a subtle and lasting impression of the park and its natural setting. The view from the road is enhanced by the rolling terrain and lateral views into Waimea Canyon and distant views of the south and west coast of Kauaʻi, and of the island of Niʻihau. The scenic experience starts below the 8-mile marker near the Hunter Checking Station and continues for approximately 10 miles to Puʻu o Kila Lookout at the end of the road.

Scenic Locations and Features

Kanaloahuluhulu Meadow - The meadow, located near the Kōkeʻe State Park headquarters, is the primary developed open space of the park. Its size and contrast to the thick surrounding forest makes the meadow a distinct and important landmark, and the natural central gathering place for activities in the Kōkeʻe region.

Puʻu Lua Reservoir- Puʻu Lua Reservoir is located in an isolated, rustic setting. The site offers scenic views of the reservoir as an open water feature in contrast to the dense forest surroundings. The ditch inlet creates a picturesque waterfall into the reservoir. Distant views of west Kauaʻi are visible through the trees along the impoundment.

Other Features

Numerous scenic views of sites that highlight the Parks' natural and historic resources are afforded from turnouts and short walks adjacent to the roadway. These include:

Ditch Views - Views of the Kōkeʻe Irrigation System are embedded throughout the park landscape, providing a tangible

sense of history within the natural environment.

Tree Stands - Trees are one of the primary visual cues to ecological changes within the park. The dominant tree types within the different vegetation zones not only provide aesthetic scenery, they also provide a narrative of Kōkeʻe's history as the forest landscape shifts between introduced and native species. Significant tree stands and natural communities are discussed in **Section 4.4**.

Air Force Tracking Station - The “golf ball” antennae housing is an imposing feature that challenges Kōkeʻe State Park's wilderness character. The feature dominates the inland view from Kalalau Lookout, and is a distinct feature in the otherwise natural vista from Puʻu o Kila Lookout and various spots on Kōkeʻe Road.

4.7 OUTDOOR RECREATION RESOURCES

Kōkeʻe and Waimea Canyon State Parks were created to provide Hawaiʻi's residents and visitors an opportunity to experience the rich natural resources of Kauaʻi's upland regions. Throughout Kauaʻi's post-contact history, and possibly before, the canyon and mountain environments have drawn visitors seeking rest and recreational outlet from life at sea-level. The cool uplands offer relief from the heat. The varied topography of Kumuwela, Waimea Canyon Rim, and the leeward ridges provides an array of experiences for hikers, from quiet country walks, to wilderness challenges for the more adventurous. Soothing breezes and the soft grass of Kanaloahuluhulu are an invitation to family campers. Diverse plant and animal communities attract naturalists, researchers, hunters, fishermen, gatherers, cultural practitioners and others.

◆ FISHING

The Division of Aquatic Resources (DAR) manages fishing resources and recreational fishing activities within Kōkeʻe and Waimea Canyon State Parks. The DAR operates a fish hatchery at Puʻu Lua Reservoir. In 2002, DAR released 40,000 rainbow trout into Kōkeʻe State Park’s streams, ditch system, and reservoir. DAR typically releases 20,000 fish each year and anticipates an initial natural loss of 20 % of the total stock. Released fish have an average life span of 2 years. During the 2002 fishing season, 1033 anglers reported to the fishing check-in station and recorded a total catch of 1,937 fishes for the season.

The Kōkeʻe Public Fishing Area includes designated streams, reservoirs, and ditches in Kōkeʻe State Park, as shown in **Figure 4-19**. The principal fishing areas are located west of Kōkeʻe Road centered around Puʻu Lua Reservoir. Designated streams include Koaiʻe, Mōhihi, Waiʻalae, Kawaikōi, Waikoali, Kōkeʻe, and Kauaikananā Streams and the entire ditch system. Fishing is prohibited in Kōkeʻe Stream and its tributaries above Camp Sloggett.

Fishing is permitted with a valid Freshwater Game Fishing License. Fishing licenses are obtained from the DLNR office in Līhuʻe, and the DLNR main office in Honolulu. Money from fishing licenses goes into a special fund. The license permits an individual to fish during the open fishing season beginning on the first Saturday in August and continuing for a period of 16 consecutive days, and then only on weekends and holidays for the remainder of August and September. The season provides a total of approximately 30 days of fishing each year unless otherwise suspended by the Division of Aquatic Resources, DLNR.

Fishing is one of the most popular seasonal events in Kōkeʻe and Waimea Canyon State Parks. There is strong public support for expanding the season and developing year-round fishing resources. To have year-round fishing, a change is required in Hawaiʻi Administrative Rules (HAR), Title 13, Subtitle 4, Fisheries, Chapter 64 - Kōkeʻe Public Fishing Area, Kauaʻi.

◆ HUNTING

DOFAW manages public hunting on all forest reserve lands on Kauaʻi by the regulation of hunting seasons, bag limits, and hunting methods. Rules related to hunting within Kōkeʻe State Park are contained in HAR Chapters 122 and 123 of Title 13, pertaining to public hunting on Kauaʻi. Enforcement of hunting regulations is the responsibility of DOCARE.

Game animals hunted within the Kōkeʻe and Waimea Canyon region include:

Mammals:

- Feral Pigs (*Sus scrofa*)
- Feral Goats (*Capra hircus*)
- Black-tailed Deer (*Odocoileus hemionus columbianus*)

Birds:

- Ring-necked Pheasant (*Phasianus colchicus*)
- Erckel’s Francolin (*Francolinus erckelii*)
- Black Francolin (*Francolinus francolinus*)
- Chukar (*Alectoris graeca*)
- Spotted Dove (*Streptopelia chinensis*)
- Zebra or Barred Dove (*Geopelia striata*)

Public hunting is permitted within certain areas of Kōkeʻe and Waimea Canyon State Parks, and throughout the surrounding forest reserves and natural area reserve. Hunting area boundaries are shown in **Figure 4-20**. Hunting areas within Kōkeʻe and Waimea

Canyon State Parks are listed in **Table 4-14**.

Hunting activities are limited to the fall and winter months of September and February (bow and arrow hunting only, no dogs); October through November and March and April (bow and arrow or knife hunting only, dogs permitted). Hunting in all forest reserve areas is restricted to weekends and State holidays only.

◆ RESOURCE GATHERING

Many people use the forest to gather plant materials for a variety of purposes. Gathering Methely plums is allowed by permit only. This popular fruit is characterized by a deep red color at maturity. The flesh is sweet, while the skin is bitter. It is a favorite as a fresh treat and for use in making cracked seed, umeboshi (Japanese salted plum), jams and jellies. Pickers have favorite sites to which they return year after year.

Pockets of Methley plum trees are found along the road to the Kalalau Lookout from Kōkeʻe State Park Headquarters. The trees were planted in 1955 by the Civilian Conservation Corps. The plum trees along the road from Kalalau Lookout to Puʻu o Kila Lookout were planted in 1954 when the road was constructed. In Kōkeʻe today, they range across a variety of trails in the study area with families having special places they like to pick. The season for plum picking traditionally starts in late June or early July.

Permits are also required to pick maile, mokihana, ferns, dead wood and other plant material, including weeds such as banana poka. Permit applications are available at the Division of State Parks office in the state building in Līhuʻe. There are no permit fees for resource gathering for traditional or cultural uses. The purpose of the application is mainly to inform people where *not* to go

and about resource conservation efforts. Maile and mokihana gathering normally occurs in the area above the Puʻu ka Pele cabins.

◆ HIKING

The Division of State Parks and DOFAW, under their Nā Ala Hele Program develop and maintain the hiking trails in Kōkeʻe and Waimea Canyon State Parks. Trail facilities are described in detail in the Facility Assessment Report, submitted under separate cover. Trails are shown in Figure 4-21 and listed in Table 4-15.

◆ PICNICKING AND REST AREAS

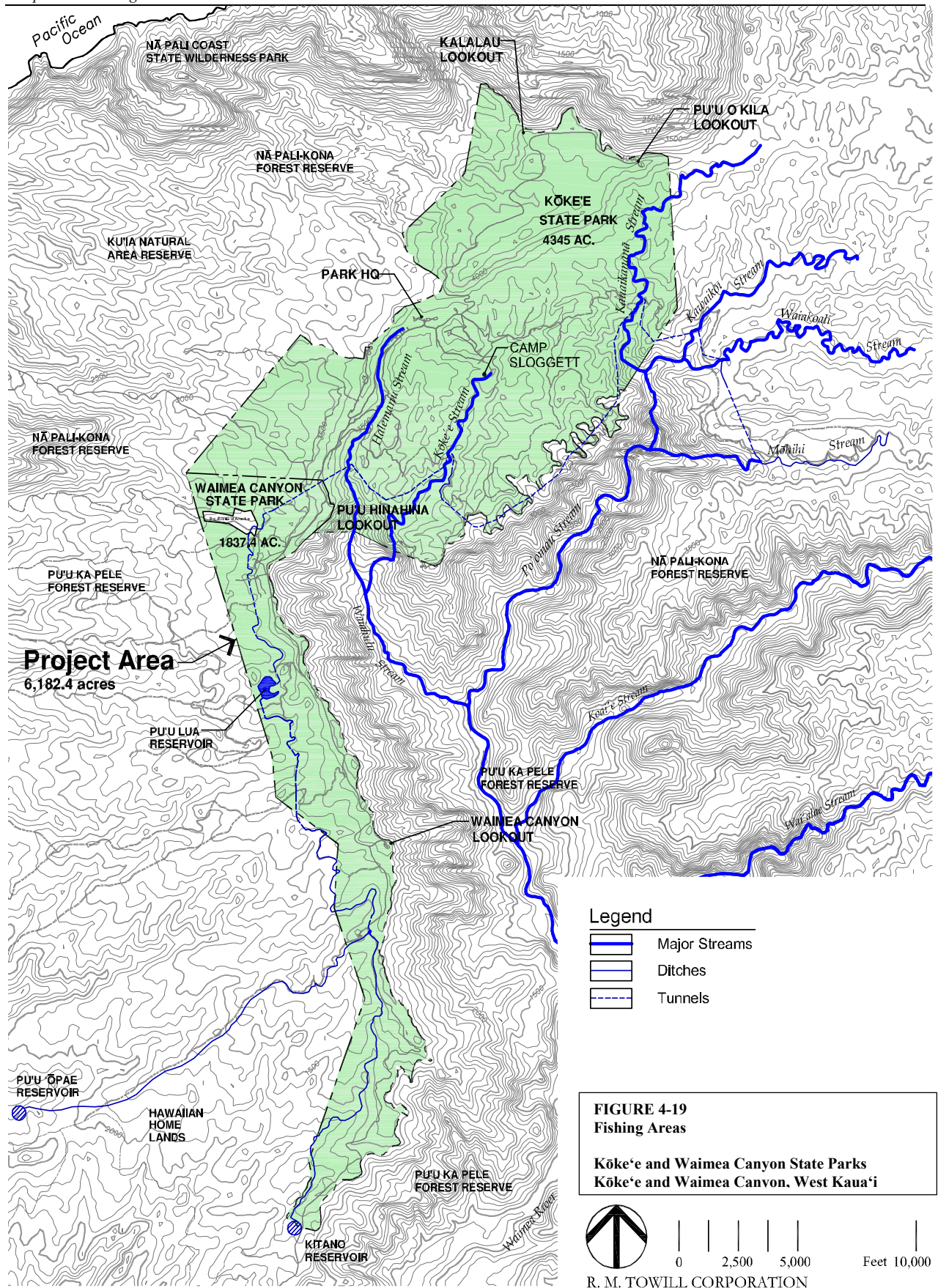
Picnic facilities are described in detail in the Facility Assessment Report, submitted under separate cover.

◆ CAMPING

Camping opportunities in Kōkeʻe and Waimea Canyon State Parks include backcountry camping, individual tent camping, individual cabins, and group camping in developed campground facilities. Camping facilities are described in detail in the Facility Assessment Report, submitted under separate cover. Campsites and picnic areas are shown in **Chapter 3, Figure 3-13**.

◆ EQUESTRIAN USE

All trails within Kōkeʻe and Waimea Canyon State Parks are closed to equestrian use. Several lease cabins are developed with private stables; leftover from the old days when horseback riding was a more common form of travel in the mountains. Nearly all of the trails in Waimea Canyon State Park and the lower regions of Kōkeʻe State Park are well-suited for horseback riding. Two trails in particular are popular with hunters and recreational equestrians:



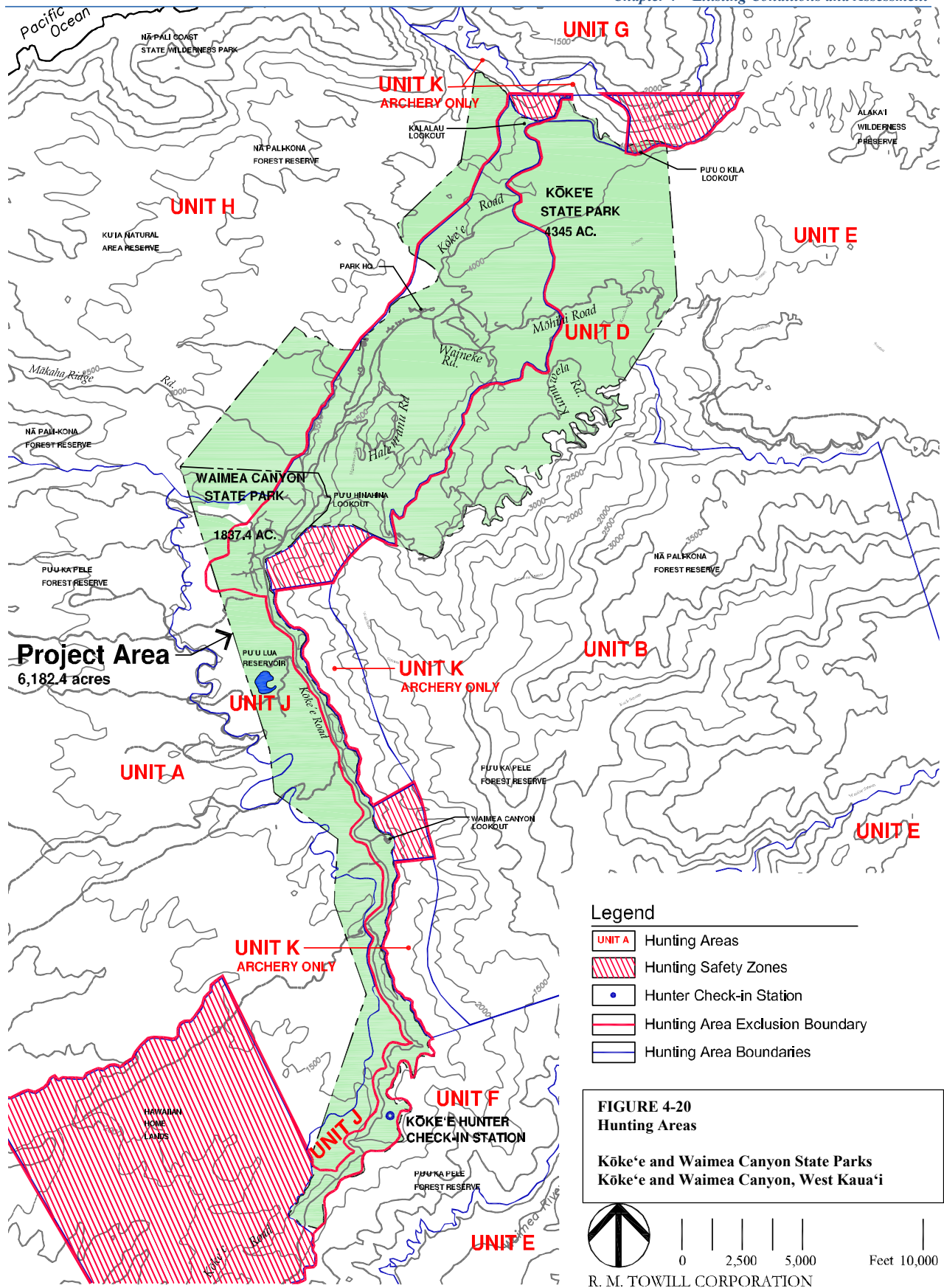


Table 4- 14

Hunting Areas in the Kōke'e and Waimea Canyon Region

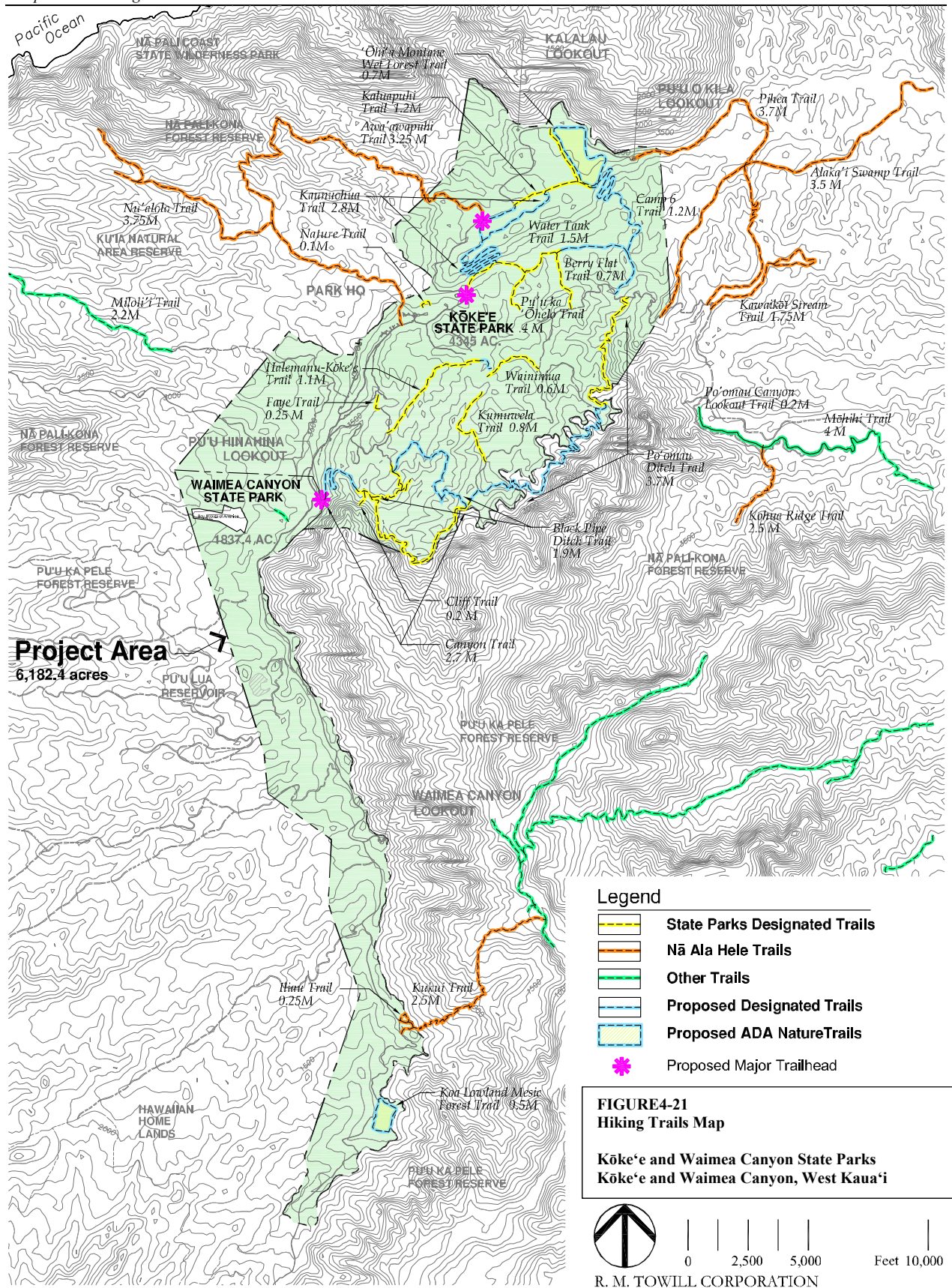
Hunting Unit	Game Animals	Permitted Method	Special Conditions
A	Pigs / Goats / Deer All Game Birds	Rifles, Muzzle Loaders, Bow and Arrow	Dogs not permitted
B	Pigs / Goats All Game Birds	Rifles, Hand Guns, Muzzle Loaders, Bow and Arrow	Dogs permitted October through February only.
D	Pigs	Bow and Arrow, Dogs and Knife	State Park. Firearms prohibited.
E	Pigs / Goats All Game Birds	Rifles, Hand Guns, Muzzle Loaders, Bow and Arrow, Dogs and Knife	Dogs permitted for pig hunting only.
F	Pigs / Deer All Game Birds	Bow and Arrow, Dogs and Knife	State Park. Firearms prohibited. Dogs permitted for pig hunting only.
G	Pigs / Goats	Bow and Arrow	State Park. Firearms prohibited. Dogs not permitted.
H	Pigs / Goats / Deer All Game Birds	Rifles, Hand Guns, Muzzle Loaders, Bow and Arrow, Dogs and Knife	Dogs permitted for pigs. November through June only.
I	Pigs / Deer All Game Birds	Bow and Arrow	State Park. Firearms prohibited. Dogs not permitted.
J	Pigs / Goats	Bow and Arrow	State Park. Firearms prohibited. Dogs not permitted.

Source: HAR, Title 13, Chapter 122 - Rules Regulating Game Bird Hunting, Chapter 123 - Rules Regulating Game Mammals.

Table 4- 15
Trails of Kōke‘e and Waimea Canyon

Trail	Miles
Nā Pali Overlook Trails	
Honopū Route	2.2
Awa‘awapuhi	3.25
Nu‘alolo	3.75
Pihea	3.7
Miloli‘i	2.2
Waimea Canyon Vista Trails	
Black Pipe	0.75
Canyon	2.7
Ditch	1.5
Po‘omau	5.0
Po‘omau Canyon Lookout	0.3
Kohua Ridge	2.5
Cliff	0.2
Kukui	2.5
Iliau Nature Loop	0.25
Forest Trails	
Pu‘u ka ‘Ōhelo	0.4
Berry Flat	0.7
Waininiua	0.6
Halemanu- Kōke‘e	1.1
Faye	0.25
Kumuwela	0.8
Kaluapuhi	1.2
Nature	0.1
Water Tank	1.0
Alaka‘i Swamp Trails	
Alaka‘i Swamp	3.5
Mōhihi-Wai‘ale‘ale Route	4.0
Kawaikōī	1.75
Total miles	46.2

Note: List includes both designated and non-designated trails. See Table 5-1 for designated trails.



Kukui Trail in Waimea Canyon State Park provides access to the canyon floor, numerous bottom land trails, and several major hunting areas. There are no equestrian facilities at the trailhead, nor parking facilities for trailer parking.

Nu‘alolo Trail in Kōke‘e State Park provides equestrian access to the Ku‘ia Natural Area Reserve and Hunting Unit H. There is limited space for trailer parking in a small, undeveloped parking lot at the trailhead.

Proposed facility improvements at these trailheads are described in the Facility Assessment Report, submitted under separate cover.

The Kōke‘e Lodge concession contract formerly included operation of a riding stable, however facilities are not currently maintained at the lodge for this function.

◆ **BICYCLING**

Off-road bicycling is currently prohibited within Kōke‘e and Waimea Canyon State Parks. Numerous conflicts with mountain bike use, including damage to trails and sensitive ecological areas, erosion, introduction of seed and plant material, encounters with hikers and hunters, and noise that frightens game in hunting areas, are cited as the reasons for prohibiting mountain bikers from park trails and natural areas. The prohibition is announced on a sign posted at the entrance of Waimea Canyon State Park on Kōke‘e Road and Waimea Canyon Drive.

Mountain biking is allowed in certain areas within the State Forest Reserves. **Table 4-16** lists the trails and roads open to non-motorized vehicle use, including bicycles, within the forest reserves of western Kaua‘i. All of these roads are accessed through

Kōke‘e and Waimea Canyon State Parks. Mountain bikers access Waimea Canyon Trail from Waimea town. All other trails in the State forest reserves are closed to all wheeled vehicles.

◆ **MOTORIZED VEHICLE USE**

Commercial motorized recreational vehicle use is currently not permitted on the unimproved dirt roads within the two State Parks. 4-WD vans were permitted in the past to operate tours of Camp 10 Road and other remote road sections under commercial license. Due to the damage to the roads by commercial tour vans, lack of funding for maintenance, and liability concerns, off-road tours are no longer permitted within the Parks.

Table 4-16
Forest Reserve Trails and Roads Open to Mountain Bike Use

Location	Miles
Trails:	
Waimea Canyon Trail	11.50
Roads:	
Papa‘alai Road to Contour Road	1.25
Contour Road	6.25
Lapa Loop Road	3.50
Hā‘ele‘ele Ridge Road	6.50
Kepapa Spring Road	1.25
Polihale Ridge Road	5.25
Kā‘aweiki Ridge Road	4.25
Kauhao Ridge Road	5.00
Pine Forest Drive	1.25
Mākaha Arboretum	1.00
Miloli‘i Ridge Road	7.30
Mōhihi-Camp 10	4.00
TOTAL	58.30

Off-road motorcycle riders regularly trespass into the park, particularly at lower elevations near the entrance to Waimea Canyon State Park and via Waimea Canyon Trail. Illegal motorcycle use is credited with

destroying ground cover, causing erosion, creating unauthorized trails, spreading weed species, disturbing native birds and game animals, and conflicting with hunters and hikers using the Parks. Enforcing prohibitions on motorcycle use within the park is difficult due to their mobility and the large areas in which they are known to operate.

◆ NATURE STUDY

The unique environment and diverse plant and animal life found in Kōkeʻe and Waimea Canyon State Parks attract many amateur naturalists. Trails throughout the parks provide access to the complete inventory of natural communities, geologic formations, and climatic zones within the parks, and provide an opportunity to encounter rare and endangered plants and animals that inhabit the area.

Interpretive facilities at the parks are limited given the rich natural resources found in the region. Trails that provide interpretive signage include:

- Awaʻawapuhi Trail
- Nature Trail
- Iliau Nature Loop Trail

◆ FINDINGS

Bicycling

Representatives of mountain biking groups have requested access to the park, and development of designated mountain biking trails. A suggestion was made to designate mountain biking tracks within timber groves where native natural communities are not likely to be impacted.

The dirt roads of Kōkeʻe, Halemanu, and Puʻu ka Pele provide a pleasant environment for recreational bicycling, but are not being promoted for such use. It would be difficult to regulate different classes of recreational

bicyclers to allow low-impact recreational uses while prohibiting high-impact mountain biking.

Commercial tour operators conduct downhill bicycling on Kōkeʻe Road, (State Route 550). All downhill bicycling operations are staged within the State right-of-way, and are outside of the jurisdiction of the Division of State Parks.

Interpretive Signage

The condition of signage on these trails varies and should be re-evaluated by a qualified botanist. Signs on the Iliau Nature Loop Trail are in particularly poor condition, often being illegible, and in some cases, indicating plants that no longer exist. Guide pamphlets used to interpret coded signs on the Awaʻawapuhi Trail are currently out of print.

4.8 PARK USER INFORMATION AND DEMAND ASSESSMENT

◆ PARK – RECREATION – VISITOR SURVEY

On Kauaʻi, State Parks lands and historic sites occupy a total of 13,727 acres of land. Of this total area, approximately 130 acres are developed with visitor facilities. In 2003, approximately 3,155,300 visitors were recorded to have visited these parks (HTA Survey, January 2004).

Total statewide population and visitor arrivals are shown in **Table 4-17**. The State’s population shows a modest increase between 2001 and 2002. In 2003, the State will once again post a modest increase in population. Visitor arrivals, unlike resident population, show a decrease of 598,000 visitors between 2000 and 2001, an 8.6 percent drop. In 2002, there was an increase in visitor arrivals by 102,400 persons. Visitor projections made by the Department of Business Economic Development and

Table 4-17
Population and Visitor Forecasts

Economic Indicators	2000	2001	2002	2003	2004	2005	2006
	(Actual)	(Actual)	(Actual)	(Forecast)	(Forecast)	(Forecast)	(Forecast)
Total population (thousands)	1211.5	1,227.0	1,244.9	1,261.1	1,273.7	1,286.4	1,299.3
Visitor arrivals (thousands)	6,948.6	6,350.4	6,452.8	6,484.3	6,956.2	7,108.1	7,250.8

DBED&T, Quarterly Forecasts, June 2003

Table 4-18
Average Visitor Census, By Counties and Islands: 2000 And 2001

County or island	2000			2001		
	Total	Domestic	International	Total	Domestic	International
State total	168,637	123,441	45,196	158,242	118,106	40,136
O'ahu	84,910	51,186	33,724	79,700	50,315	29,385
Hawai'i County	21,831	18,325	3,506	21,063	17,394	3,669
Kaua'i County	18,041	16,254	1,787	16,830	15,345	1,485
Maui County	43,854	37,676	6,178	40,651	35,053	5,598
Maui	41,819	35,817	6,002	38,724	33,330	5,394
Moloka'i	904	837	67	831	721	110
Lana'i	1,131	1,022	109	1,096	1,002	94

DBED&T, Tourism Research Branch, *Annual Visitor Research Report* (annual) and records----
State Data Book, Table 7.06 (2001)

Table 4-19
State Parks Acreage and Visitors

Park Location / Name	Total Acres	Developed	Visitors 2000	Visitors 2004
Kōke'e State Park	4345.0	55	304,000	303,900
Waimea Canyon State Park	1837.4	10	345,000	430,700
Total	6182.4	65	649,000	734,600

DBED&T, Data Book 2001 and Hawai'i Tourism Authority, 2004

Table 4-20
Activity Participation of Visitors by Island (Kaua‘i Sample) 2001

Activity	US West Visitors		US East Visitors		Japan Visitors	
	Statewide Percent	Kaua‘i Percent	Statewide Percent	Kaua‘i Percent	Statewide Percent	Kaua‘i Percent
Sightseeing	92.6	88.9	90.4	85.6	93.8	81.8
Recreation	90.6	88.5	86.0	78.5	76.4	21.6
Entertainment	54.7	45.2	66.3	46.7	54.9	20.4
Shopping	96.4	86.7	94.3	81.9	98.7	21.0
Culture	79.4	74.9	85.7	62.1	51.1	21.4
Transportation	93.6	85.7	90.9	78.9	91.4	11.5

DBED&T, Visitor Survey 2001

Tourism (DBED&T) suggest that the visitor levels will not reach 2000 levels until 2004.

Average visitor census for the state and counties are shown in **Table 4-18**. In 2000 and 2001, Kaua‘i’s average daily visitor census was 18,041 persons and 16,830 persons, respectively. The change in the number of visitors between 2000 and 2001 represents a 6.7 percent reduction in park visitors. **Table 4-19** shows the total number of visitors to the parks for the years 2000 and 2004. In the two years surveyed, approximately 649,000 persons were recorded to have visited both parks.

Table 4-20 shows the results of an “activity participation” survey conducted by the Department of Business, Economic Development and Tourism. The survey examined six areas: sightseeing, recreation, entertainment, shopping, culture and transportation. The sightseeing activity category asked if persons participated in helicopter or plane tours; boat, submarine or whale watching; tour bus excursions, private limousine-van tours, and self-guided trips. The recreation activity questioned whether persons participated in swimming, sunbathing, or beach activities; snorkeling, scuba diving; jet skiing, parasailing, or

windsurfing; golf; running, jogging, fitness walking; gym or health spa; backpacking, hiking, camping; or sport event or tournament. The entertainment category included lunch, sunset, dinner, evening cruise; lounge act or stage show; or nightclub, dancing, bars or karaoke. Shopping included department stores; designer boutiques; hotel stores; swap meet; discount outlet stores; convenience stores; or duty free. Cultural activities included historic sites; museum, art gallery; Polynesian shows, luau; art or craft fair; or festivals. The modes of transportation used included trolley; public bus; taxi or limo; or rental car.

The data suggests that mainland visitors participate in most activity categories at the same rate as the statewide average. The Japanese visitors, however, only participate in sightseeing at the statewide rate, other activity categories suggest much lower rate than statewide averages. Significant is the transportation category which is about 10 percent of the statewide average.

Table 4-21 shows the average incomes of the visitors to Hawai‘i and Kaua‘i. The data suggests that the Kaua‘i visitor tends to be middle class to upper middle class with a

higher level of income. Kaua‘i’s profile is on par with the State averages.

◆ PARK USER SURVEYS

The compilation of comprehensive data to assess the demand being placed on the Parks’ resources is an important planning objective. The more specific the information, the more valuable it is for plan making. The information collected above represents a more macro scale accounting of park visitation. **Table 4-19** suggests that Kōke‘e and Waimea Canyon State Parks received approximately 734,600 visitors in 2004. In 2001 and 2003, surveys were conducted by the Division of State Parks to ascertain the level of use the park was getting. **Table 4-22** is an accounting and projection of vehicles arriving at the Waimea Canyon Lookout and a count of visitors. The State Parks staff annualized the information collected and projected the number of vehicles and visitors at 153,300 and 527,973, respectively. As part of the survey, an hourly tally of visitors to the Waimea Canyon was taken. The results of the survey are shown in **Table 4-23**. Based on the survey, the data shows that the peak in visitors was between 10 a.m. to 1 p.m. with another peak between 3 and 4 p.m.

The information collected is useful in program planning and accommodation planning. Knowing when to expect visitors, park officials can project periods when demand will be placed on park resources, such as water use.

Visitor arrival patterns (**Table 4-23**) correspond closely with trail utilization, as shown in **Table 4-24**. The information that was collected further suggests that usage on the Canyon Trail requires further monitoring to ensure that the trail is maintained and that excessive use, or peak-hour crowding, does not diminish the user experience. **Table 4-25** indicates that a large percentage of the

visitors to the Waimea Canyon Lookout were traveling further into the Park and into

the Kōke‘e area. It was noted in the 2004 Hawai‘i Tourism Authority survey that 73 percent of the visitors to the Kaua‘i parks were first time visitors. Important to Waimea and Kōke‘e is the fact that the top three reasons cited by visitors and residents for visiting the parks are outings with family, scenic views, and hike trails/walk.

Other Users / Uses

In addition to overseas visitors to the Parks, there are a number of resident visitors to the Parks that are there for other reasons. Hui o Laka annually draws resident visitors to the Parks to take advantage of programs it offers. In its most recent operating year, 2001-2002, the organization recorded the following:

- School Excursion Support (10 months):
113 Adults
976 Children
- Audubon Christmas Bird Count:
35 Volunteers
- Custom Hikes:
68 Participants
- Wonder Walks Guided Hike (25 hikes):
267 Hikers
- Emalani Festival:
2,600 Participants
- Kōke‘e Resource Conservation Program:
9,141 Volunteer days
(59% local, 41% visitors)
4,220 Overnights at the CCC Camp

◆ TRAFFIC COUNTS

Table 4-26 shows the findings of a vehicular survey conducted in June 2001. The vehicle counts were conducted at the Waimea Canyon Lookout.

◆ FINDINGS

User and use information is lacking for most

**Table 4-21
Percentage of Visitors by Income Level and Island (2001)**

<u>Income</u>	<u>State Percent</u>		<u>Kaua‘i Percent</u>	
	<u>2001</u>	<u>2004</u>	<u>2001</u>	<u>2004</u>
Under \$15,000	0.7		0.9	
15,000-25,000	1.6		1.6	
25,000-30,000	1.9		1.8	
30,000-35,000	1.9		1.0	
35,000-40,000	3.0		4.0	
40,000-45,000	4.3	16	1.7	8
45,000-50,000	5.1	18	3.6	43
50,000-70,000	16.9	-	16.0	
70,000-100,000	26.1	38	24.1	41
100,000-125,000	15.2	29	21.1	41
125,000-150,000	7.0		7.0	
150,000 or more	16.3		16.6	

DBED&T, Visitor Survey, 2001 and Hawai‘i Tourism Authority, 2004

**Table 4-22
Visitor Attendance Waimea Canyon Lookout (June 2001)**

<u>Type</u>	<u>Day</u>	<u>Annualized</u>
Average Vehicles	420	153,300
Visitors	1447	527,973

Table 4-23
Hourly Visitor Survey at Waimea Canyon Lookout (June 2001)

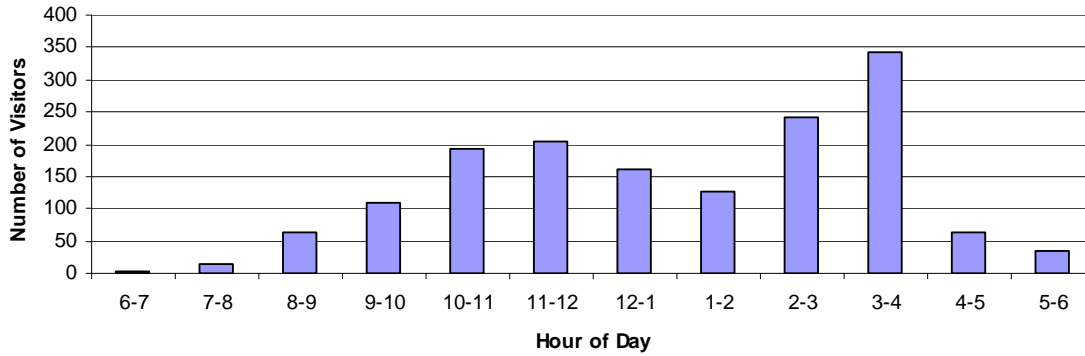


Table 4-24
Hiker Trail Utilization by Time (March 2003)
Location

Time	Canyon Trail	Cliff Trail	Black Pipe	Kumuwela	Awa‘awapuhi	Total
9-10	8	0	0	0	2	10
10-11	7	0	3	2	6	18
11-12	26	0	0	2	5	33
12-1	20	0	2	0	0	22
1-2	16	2	0	0	2	20
2-3	14	2	0	0	0	16
3-4	2	2	0	0	0	4
Total	93	6	5	4	15	123

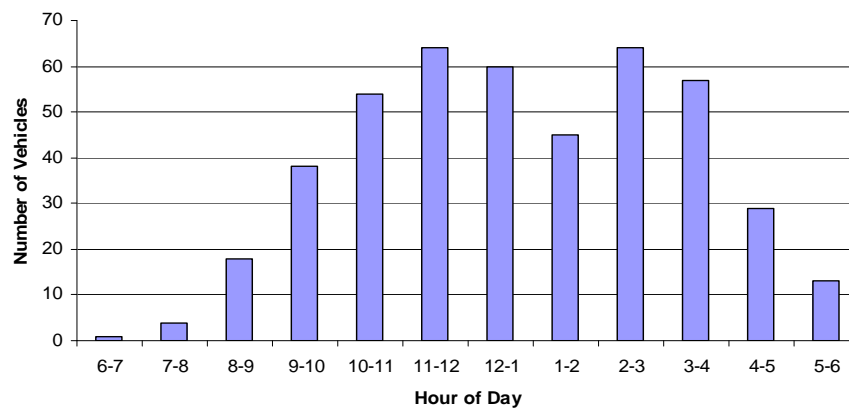
Div. of State Parks, DLNR, 2003

Table 4-25
Percentage of Visitors and Resident Park Utilization (June 2001)

	Waimea Canyon Lookout Only	Continuing to Kōke‘e State Park
Visitor	32.3	62.7
Resident	1.3	3.7
Visitors (HTA)	93	
Residents (HTA)	7	

Div. of State Parks, 2001 and Hawai‘i Tourism Authority, 2004.

Table 4-26
Hourly Vehicle Survey at Waimea Canyon Lookout
(June 2001)



activities in the Parks and study area. Most of the information obtained is anecdotal as regular data collection is not undertaken. In order to ascertain if a resource is being stressed, use data should be collected.

Public Use / Demand

Data collection should be established for the following:

- Total number of vehicles (annual vehicle type)
- Quarterly (or minimally semi-annually) User Data for:
 - Hikers by trail
 - Campers by location
 - Hunters by area
 - Fishermen by location
 - Visitors to each lookout
- Visitors to the Kōke'e Museum
- Visitors to the Kōke'e Lodge
- Visitor nights at the cabins

User Limits

98 Establishing user limits is an ongoing process of:

- Monitoring level of use;
- Establishing an acceptable level of use (before the value is diminished);
- Restricting, limiting, or otherwise regulating activity when the demand

level is reached.

The basis of establishing limits is largely dependent on the resource in question. For some resources, an absolute number limit can be imposed, i.e. “bag limits”. The bag limit sets a number which can be adjusted to ensure sustainability of the resource.

Other activities are more difficult to measure, such as the number of hikers or hunters on a given trail or within an area.

The measure can be varied and subjective, such as 1) number of hikers on the trail – to enhance the wilderness experience, 2) safety – to minimize risks, 3) resource protection – to minimize impacts to the environment, 4) enjoyment quotient – meeting individual hiker objectives.

Certain activities also, by their nature, pose a potential conflict to other users, as in the case of hunters and hikers.

4.9 DLNR OPERATIONS AND MANAGEMENT

This section discusses:

- overall organizational objectives of the operating division,
- administration, operations and maintenance,
- sources of revenue,
- operational budgets, and
- other users and uses at the Kōkeʻe and Waimea Canyon State Parks and the areas surrounding the Parks.

Generally, except for the Division of Boating and Ocean Recreation and the Historic Preservation Division, all other DLNR divisions operate within Kōkeʻe and Waimea Canyon State Parks.

◆ ORGANIZATIONAL OBJECTIVES

This section discusses overall objectives of the operating division, operations and management of the Kōkeʻe and Waimea Canyon State Parks and the areas surrounding the Parks. Personnel on Kauaʻi who directly provide services or direct programs are shown in **Figure 4-22**, DLNR Organizational Chart. The organization chart indicates the operational level at which each person functions, i.e. Branch, Section, or field specialist. The responsibilities of each Division centers about their primary mission described below.

Division of State Parks

The State Parks Division is responsible for providing the public with a program for: planning, developing, and managing outdoor recreation areas; and operation, restoration, acquisition, interpretation and maintenance of State Parks including historical and archaeological sites, and scenic and natural resources.

Land Division

The Land Division is responsible for

managing unencumbered State-owned lands in ways that will promote the social, environmental and economic well-being of Hawaiʻi's people and for insuring that these lands are used in accordance with the goals, policies and plans of the State. Lands that are not set aside for use by other government agencies are the responsibility of the division. These lands are made available to the public through fee sales, leases, licenses, grants of easement, rights-of-entry, month-to-month tenancies or kept as open space areas.

Historic Preservation Division

The State Historic Preservation Division develops and maintains a comprehensive program of historic preservation to promote the use and conservation of historic properties for the education, inspiration, pleasure and enrichment of the citizens of Hawaiʻi. The Division works to preserve and sustain reminders of earlier times which link the past to the present. SHPD's three branches, History and Culture, Archaeology, and Architecture, strive to accomplish this goal through a number of different activities.

Division of Conservation and Resources Enforcement

The Division of Conservation and Resources Enforcement is responsible for enforcement activities of the Department of Land and Natural Resources. The division, with full police powers, enforces all State laws and rules involving State lands, State Parks, historical sites, forest reserves, aquatic life and wildlife areas, coastal zones, Conservation districts, State shores, as well as county ordinances involving county parks. The division also enforces laws relating to firearms, ammunition, and dangerous weapons.

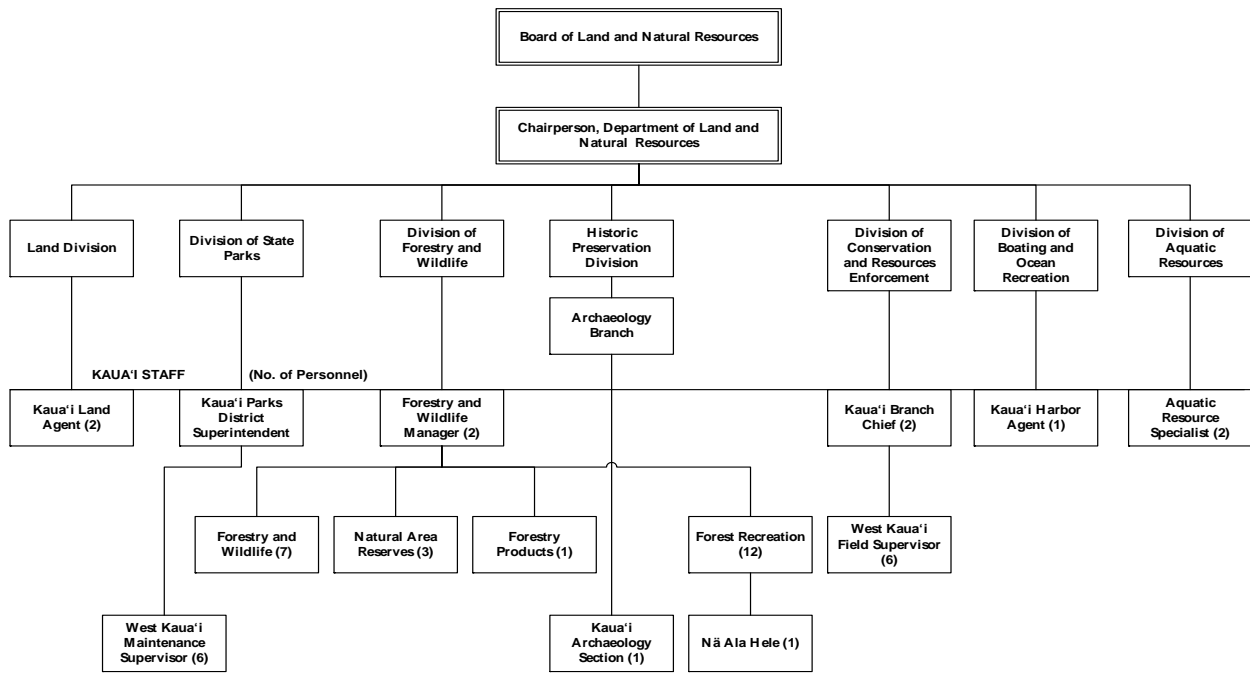


Figure 4-22
DLNR Organizational Chart - Kaua'i District

Division of Aquatic Resources

The Division of Aquatic Resources manages the State’s marine and freshwater resources through programs in commercial fisheries and resource enhancement; aquatic resources protection, enhancement and education; and recreational fisheries. Major program areas include projects to manage or enhance fisheries for long-term sustainability of the resources, protect and restore the aquatic environment, protecting native and resident aquatic species and their habitat, and providing facilities and opportunities for recreational fishing consistent with the interests of the State Division of Forestry and Wildlife.

Division of Forestry and Wildlife:

The Division of Forestry and Wildlife is responsible for the following:

- Ensure water quality and quantity through management of watersheds. Prevent rapid runoff of storm flows and soil erosion. Improve water infiltration

into soil.

- Encourage forestry activities on private land.
- Increase public awareness of wildfire prevention.
- Train, equip and maintain wildfire fighting forces.
- Coordinate fire control efforts with other emergency response agencies.

Natural Resources:

- Protect native ecosystems in specially designated areas.
- Expand research and monitoring of native species.
- Control noxious weeds and feral animals.
- Balance natural area protection and human use goals.
- Protect Threatened and Endangered (T&E) plants in their habitats
- Encourage T&E plant protection through partnerships and education.

- Recover T&E species through propagation and planting.
- Develop and manage sanctuaries. Identify and control factors causing species decline.
- Propagate rare species for reintroduction in their native habitats.

Outdoor Recreation:

- Enrich recreation for all ages through trails and facilities. Establish coastal and mountain trail networks.
- Preserve archaeological and ecological values of trails.
- Encourage a private/public State trail system.
- Expand volunteer programs.
- Develop access for more hunting opportunities. Research native and non-native animal interactions. Promote awareness of hunting's benefit to habitats. Establish more dedicated game management areas.

Forest Products:

- Manage forest products with environmental awareness.
- Create job opportunities in rural areas.
- Inform the public about sound forestry practices.
- Encourage private development and maintenance of forest resources.
- Involve communities in forestry projects in their region.
- Provide forestry support to interested private landowners.
- Develop a "green seal" trademark for Hawaiian woods.
- Attract investors for the forest industry in Hawai'i.

Public Information and Education:

- Meet public demand for environmental information.

- Promote awareness of all division programs.
- Expand outreach to the public and educators.
- Encourage volunteer involvement.
- Continue Kaulunani-Hawai'i, the Beautiful Program.
- Promote the Forest Stewardship cost-sharing program. Create reserves with the Natural Area Partnership Program.

◆ ADMINISTRATION, OPERATIONS AND MAINTENANCE

Administration, operations and maintenance functions of six divisions are discussed below. The Divisions of Historic Preservation and Boating and Ocean Recreation were not discussed because they do not maintain a presence at the Parks. Responsibilities are summarized in **Table 4-27**.

State Parks (DSP)

The program and maintenance functions of the Division of State Parks include the following:

- **Lookouts** - provide interpretation and maintenance of grounds and facilities;
- **Camping** - provide campgrounds and administer a camping permit program;
- **Hiking** - provide interpretation and maintenance of hiking trails within the Parks boundaries;
- **Roads** - provide maintenance of paved and unpaved roads;
- **Potable Water System** – be responsible for source development, storage, transmission and distribution;
- **Sewer System** – be responsible for collection, treatment and disposal, including maintenance of cesspools;

**Table 4-27
DLNR Divisions Activity Summary at Kōke‘e
DLNR Divisions**

Activities	DSP	DOFAW	DAR	DOCARE	SHPD	LD
Hiking	X	X				
Camping	X	X				
Interpretation	X	X				
Fishing			X			
Hunting		X				
Law Enforcement				X		
Resource Gathering	X	X				
Property Management	X					X
Archaeology	X				X	
Forest Products	X	X				
Maintenance	X	X	X			
Outdoor Recreation (other)	X	X				

P = Primary responsibility; S = Supporting functions

- **Contract Administration** – administer contracts and agreements of concessions, facilities, and infrastructure
- **Picnic Facilities** – maintain picnic facilities within the Parks boundaries;
- **Permit Administration** – administer permits for special functions at the Parks; and permits for collecting and gathering activities in the Parks.

Operationally, the DSP does not conduct programs and activities for the public on its own behalf. Much of the information, education and interpretation functions are administered by the Kōke‘e Natural History Museum. This condition is largely due, in part, to not having on-site personnel to carry out program activities.

Staff “assigned” to the Parks primarily do maintenance tasks and are assigned to other State Parks on the island.

Forestry and Wildlife (DOFAW)

The DOFAW activities are developed around four program areas: 1) forest products; 2) natural resources; 3) outdoor recreation; and 4) forestry. The program and maintenance functions of DOFAW include the following:

- **Maintenance** – maintaining grounds and facilities, including provision of informational signage;
- **Camping** - providing campgrounds and administering a permit program;
- **Hiking** - providing interpretation and maintenance of hiking trails for both the general public and commercial tours;
- **Roads** - providing maintenance of paved and unpaved roads;
- **Forest Products** – development of a forest products program of planting, care, harvesting and post harvesting activities;

- **Permit Administration** – permit collecting and gathering activities in the forest.
- **Contract Administration** – administration of contracts and agreements of concessions, facilities, and infrastructure;
- **Picnic Facilities** – maintenance of picnic facilities within the forest reserves; and
- **Hunting** – providing education and permitting activities for hunting activities including habitat management;

Ku‘ia Natural Area Reserves (NAR)

DOFAW oversees conservation efforts within the Ku‘ia Natural Area Reserve, located on the western slope of Kaunuohua Ridge adjacent to Kōke‘e State Park. Management efforts focus on controlling the encroachment of non-native plants and animals which threaten the natural biota in the reserves.

DOFAW recently proposed to construct about 3.7 miles of steel mesh fencing to enclose approximately 550 acres of the Reserve, to protect this area from the impact of introduced ungulates, such as pigs, goats and deer. Browsing and trampling by these animals destroys individual plants and damages native forest systems by destabilizing soils, hastening erosion, and facilitating weed invasion. In addition to protection of existing plant species, the proposed fencing will provide a protected area for future restoration and outplanting projects.

Construction involves clearing a six-foot corridor through vegetation for the fence line and putting up steel wire-mesh fencing. Anticipated long-term impacts include reduction in acreage available for hunting and an increase in rare and endangered species populations and an overall benefit to

native ecosystems. Impact mitigation includes constructing gates or pass-through to ensure continued public access into and through the natural area reserve, conducting surveys along the route to ensure that no biological or cultural resources are impacted by construction, and by instituting procedures to prevent the introduction of alien plants and insects during construction.

Kalalau Rim Plant Sanctuary

Approximately 145 acres of land along the rim of Kalalau Valley between Kalalau and Pu‘u o Kila Lookouts are set aside for a plant sanctuary, managed by DOFAW through a Memorandum of Agreement with the Division of State Parks. The facility includes the installation of fences to deter feral pig and goat access through the area and manual weeding out of non-native plant species. Long-term plans include construction of a boardwalk or fenced walkway to guide visitors through the area on an interpretive trail.

Timber Plantations

DOFAW is responsible for management of all timber plantations within the State Forest Reserves.

In the early 1980s, a map of each county was prepared to delineate areas where DOFAW has primary fire responsibility, areas where it will respond mutually with other firefighting agencies, and areas totally out of its jurisdiction. DOFAW automatically responds to fires that occur in its area of primary fire responsibility. In areas designated for mutual firefighting responsibility, DOFAW assists with fire control only if requested to do so by the Kaua‘i Fire Department. In areas outside of its jurisdiction, DOFAW will respond to fires only under extreme conditions and only when notified through appropriate channels.

Aquatic Resources (DAR)

The principal activity of this division at the

Parks is the administration of the freshwater fishing program. The program administrator is stationed on O‘ahu. The two program staff are responsible for maintaining the fish stock (feeding and caring for equipment) and administering freshwater fishing rules and regulation. Funds collected by the program through license fees are directed to a special fund.

DAR manages all activities related to fisheries within the Parks. DAR facilities include an administrative office/cabin at Pu‘u ka Pele and a mobile supply shed for fisheries supplies at Pu‘u Lua Reservoir. DAR also monitors fish checking stations located throughout the Parks.

Conservation and Resources Enforcement (DOCARE)

The Enforcement Officers assigned to West Kaua‘i are responsible for enforcement of

the rules and regulations of the DLNR. There are five enforcement officers assigned to West Kaua‘i. Daily activities of the enforcement officers are to investigate complaints, serve citations for rule infractions, conduct patrols, and inspections.

The division, with full police powers, enforces all State laws and rules involving State lands, State Parks, historic sites, forest reserves, aquatic life and wildlife areas, Conservation districts, as well as county ordinances involving county parks. The division also enforces laws relating to firearms, ammunition, and dangerous weapons.

Land Division (LD)

LD administers all of the leasehold lots (residential, commercial, and nonprofit groups), with the exception of the recreation residence leases. They collect lease rents, approve planned improvements, collect delinquent rents, and generally administer the terms and conditions of the leases. The

program of the LD is administered by a single Land Agent.

The Land Division is responsible for managing unencumbered State-owned lands. The Division, in cooperation with the Office of Conservation and Coastal Lands, also oversees Conservation District Use Permit requirements for development and activities within the Parks.

State Historic Preservation Division (SHPD)

SHPD maintains records of:

- Archaeological sites in Kōke‘e and Waimea Canyon State Parks.
- Historic sites listed on the National and State Register of Historic Places.
- Inventory and historical value assessment of all park structures, including leasehold properties.

The SHPD currently has no active preservation or interpretive programs within the two parks.

◆ SOURCES OF REVENUE

This section summarizes the source of revenue for the various DLNR Divisions that have a presence in the Parks and surrounding lands. The revenue for each Division, by funding sources and types of funds, are shown in **Table 4-28**.

State Parks

The Division of State Parks is funded from two primary sources: the State General Fund and the State Parks Special Fund. Funds for the Special Fund are generated from the following sources:

- The Park Concession, e.g. Kōke‘e Lodge. The concessionaire is required to pay 3% of their gross profit which is equal to profit less the cost of goods sold.
- Lunchwagon Concession. The concession pays a minimum guaranteed

- rent or a percentage of income.
- Camping Permits are for individual or group camping. The fee is \$5 per night per permit.
- Water service fees. The Park collects 35 cents per 1,000 gallons of water used from the leaseholders.
- Lease Rent. Lease rents collected from the leaseholds are included in the special fund

Wildlife Revenue Fund, federal funds, and the State Fuel Tax. Funds for the Fuel Tax are earmarked for the Nā Ala Hele program. The distribution, by percentage, of funds by sources is as follows:

General Funds	27.6%
Special Funds	39.8%
Special Rev. Funds	2.5%
Federal Funds	24.2%
Fuel Tax	<u>6.0%</u>
Total	100.0%

Forestry and Wildlife

The Division of Forestry and Wildlife is funded from five primary sources: the State General Fund, Forestry Special Funds,

Table 4-28
Sources of Revenue of DLNR Divisions on Kaua‘i (Preliminary)
 (FY 2002, excludes capital expenditures)

Item	DLNR Divisions				
	DSP	DOFAW	DAR	DOCARE	LD
General Fund	\$141,220	\$211,640	\$55,000	\$135,000	\$45,000
Special Fund	\$8,350	\$302,342	\$15,000		\$20,000
Federal Funds	\$27,610	\$181,405			
Gas Tax	\$4,200	\$45,351			
Other Special Funds	\$22,060	\$22,676			
Special Legislation	\$800	\$0			
Total	\$204,240	\$763,414	\$70,000	\$135,000	\$65,000
Total All Divisions					\$1,237,654

Ecotourism

DLNR permits commercial tours on select public Nā Ala Hele (NAH) trails and access roads within Kōke‘e and Waimea Canyon State Parks with the requirement that the commercial activity is conducted in an environmentally and culturally responsible manner. The selection of features eligible for commercial tour activities and the general conditions for allowing tour activities is based on the following:

- The offered trail or access road is currently managed and regulated by the NAH Program and is available for public use.
- There are no legal or jurisdictional

impediments to trail, road access, and/or parking.

- The trailhead is accessible by small passenger vans and public parking will not be impacted by commercial vehicles.
- The trail or road resources will not be degraded by the commercial tour activity.
- There are minimal impacts to local residents from allowing commercial tours.
- Commercial tours are limited to weekdays only, sunrise to sunset.
- Commercial tours must be conducted by a guide.
- Commercial tour activity is limited to a

maximum daily capacity established by NAH.

- DLNR staff will be able to monitor the offered features for physical or social impacts.

Aquatic Resources

Funds for the operations of the fishing program comes from two sources: 1) State General Fund (for personnel), and 2) Special Fund (for supplies and maintenance).

Land Division

Funds for the operations of the LD activities

are from the State General Fund.

◆ **OPERATIONAL BUDGETS**

This section summarizes the operating budgets of the various DLNR Divisions that have a presence in the Parks and surrounding lands. The budgets for each Division are summarized by expenditure categories, e.g. labor, equipment, etc., and are shown in **Table 4-29**.

Table 4-29
DLNR Operating Budgets (Preliminary)
 (FY 2002, excludes capital expenditures)
DLNR Divisions

Item	DSP	DOFAW	DAR	DOCARE	LD
Labor	\$141,220	\$755,856	\$55,000	\$135,000	\$45,000
Janitorial Supplies	\$8,350				
Water System Maintenance	\$27,610				
Waste Disposal Fees	\$4,200				
Road Maintenance	\$22,060				
Electricity	\$800				
Telephone	\$1,510				
Vehicle Service & Maint.	\$6,200				
Fuel (gas and diesel)	\$9,820				
Misc. Supplies	\$8,330				\$20,000
Minor Repair and Maint.	\$18,400				
WW Treatment System	\$18,112				
Total	\$266,592	\$755,856	\$55,000	\$135,000	\$65,000
Total All Divisions					\$1,277,448

4.10 OTHER USERS AND USES

U.S. Fish and Wildlife Service (USFWS)

The USFWS does not operate any facilities within Kōke‘e or Waimea Canyon State Parks. They are involved in the parks through partial grant funding of the Kōke‘e Resource Conservation Program. KRCP is a cooperative project administered through Hui o Laka, in association with the Kōke‘e Natural History Museum and the Kaua‘i State Parks District office.

Kōke‘e and Waimea Canyon State Parks also fall within Critical Habitat areas designated by the USFWS.

Several federal agencies operate facilities within the two parks. These include:

NASA

NASA operates a tracking station on Kaunohua Ridge within Kōke‘e State Park.

U.S. Navy, Pacific Missile Range Facility

The U.S. Navy operates two radar stations, one on Kaunuohua Ridge within Kōkeʻe State Park, and one at the end of Mākaha Ridge Road within the Nā Pali-Kona Forest Reserve.

Department of Hawaiian Home Lands

The Department of Hawaiian Home Lands (DHHL) administers lands within the Puʻu ʻŌpae Hawaiian Home Lands. These lands are accessed via Pulehu Ridge Road, an unimproved 4-WD road connected to Kōkeʻe Road within the Waimea Canyon State Park Boundary. DHHL has plans to develop the property for homestead residents and is interested in using the Kōkeʻe Ditch system water for this purpose.

Hawaiʻi Air National Guard

The Hawaiʻi Air National Guard operates a radar tracking station within Kōkeʻe State Park and a microwave antennae site within Waimea Canyon State Park.

Department of Education

The Department of Education operates the Kōkeʻe Discovery Center educational facility within Kōkeʻe State Park.

Fire Department, County of Kauaʻi

Kōkeʻe and Waimea Canyon State Parks are designated as a Fire Management Co-Response area. Under this designation, primary responsibility for fighting fires within the park boundaries falls to the Kauaʻi Fire Department (KFD). DOFAW will respond to fires within the parks only at the direct request of the KFD, but retains primary firefighting responsibility for

Conservation lands outside the Parks, including the forest reserves, natural area reserves, and wilderness preserve.

Requests for DOFAW assistance must come from the Kauaʻi Fire Department through the County Civil Defense to State Civil

Defense to DOFAW. The DOFAW Administrator or State Protection Forester will then contact the respective DOFAW Kauaʻi Manager who will then mobilize his resources to assist the County Fire Department.

Police Department, County of Kauaʻi

Primary law enforcement within the parks is the responsibility of the DLNR, Division of Conservation and Resources Enforcement.

Kōkeʻe Lodge

Kōkeʻe Lodge represents the greatest revenue-generating potential in Kōkeʻe and Waimea Canyon State Parks. The concession agreement between the State of Hawaiʻi and Kōkeʻe Ventures includes the following mandatory and optional operations:

Kōkeʻe Lodge Operations:***Mandatory***

- Inn (restaurant)
- Cabin rentals (12 units, 2 duplexes)

Optional

- Gift Shop
- Service Station
- Camping, Fishing Equipment Rentals
- Film, camera, postcards, etc.
- Alcoholic Beverage Service

Hui o Laka

Hui o Laka is a nonprofit organization that administers activities at the Kōkeʻe Natural History Museum and CCC Camp. Programs they are involved with include:

- Restoration of the CCC Camp
- Kōkeʻe Natural History Museum
- Eo e Emalani Alakaʻi Festival
- Banana Poka Round-Up

Kōkeʻe Natural History Museum

The Kōkeʻe Natural History Museum is administered by Hui o Laka. It is open every day, year-round. The museum offers interpretive exhibitions and programs

highlighting Kōkeʻe’s unique environment. During the summer, museum staff conduct a guided, interpretive hike program called “Wonder Walks”. The museum also runs a gift shop featuring guides, maps, and books about Hawai‘i’s history and natural resources.

Kōkeʻe Resource Conservation Program

The Kōkeʻe Resource Conservation Program (KRCP) was established in early 1998 by Katie Cassel, Resource Conservation Specialist. It is the primary program dedicated to invasive plant control operating within Kōkeʻe State Park.

KRCP integrates a strong educational component in their conservation program and places an emphasis on strengthening the network of local citizens, large-scale private landowners, community organizations, state government agencies, and federal land management agencies with similar interests. The program plans to expand its permanent staff in order to make use of all the volunteer resources and to cover more areas in the Parks.

Ceatech HHGI Breeding Corp.

Operates the Kōkeʻe Irrigation Ditch system under lease from the State to serve diversified agricultural users in the Kekaha Agricultural Park.

Verizon Hawai‘i

Operates a communication tower at Pu‘u ka Pele.

Downhill Bicycling

One ecotourism company offers downhill bicycle tours in Kōkeʻe and Waimea Canyon State Parks. The tours are restricted to the roadway right-of-way.

◆ ADA ACCESSIBILITY REQUIREMENTS

The Americans with Disabilities Act of

1990, as amended (ADA), is a civil rights law that prohibits discrimination on the basis of disability. The ADA requires that all buildings, facilities, and sites shall conform to applicable federal, state, and county accessibility guidelines and standards. Section 103-50, HRS, requires all State of Hawai‘i or County government buildings, facilities, and sites to be designed and constructed to conform to the Americans with Disabilities Act Accessibility Guidelines, the Federal Fair Housing Amendments Act, and other applicable design standards as adopted and amended by the Disability and Communication Access Board. The law further requires all plans and specifications prepared for the construction of State of Hawai‘i or County government buildings, facilities, and sites to be reviewed by the Disability and Communication Access Board for conformance to those guidelines and standards.

ADA Accessibility Guidelines (ADAAG) for Outdoor Developed Areas are currently being developed by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board). The new guidelines are to be issued as ADAAG 16, and will apply to newly constructed and altered recreation facilities and outdoor developed areas. Standards contained within ADAAG 16 are developed around the following basic principles:

- Protect resources and the environment.
- Preserve experience.
- Provide for equality of opportunity.
- Maximize accessibility.
- Be reasonable.
- Address safety.
- Provide Equivalent Experience of Major Park Themes.

Proposed accessibility guidelines for outdoor areas recognize that both the quality

of the environment and the nature of the outdoor experience may be significantly altered or harmed by the imposition of accessibility enhancing facilities, equipment, or technologies. Many environmental factors, including terrain, vegetation, hydrology, and soils, influence the ability to provide fully accessible facilities. Departures from the standards are allowed where compliance would:

- Cause substantial harm to cultural, historic, religious, or significant natural features or characteristics;
- Substantially alter the nature of the setting or the purpose of the facility, or portion of the facility;
- Require construction methods or materials that are prohibited by Federal, State, or local regulations or statutes; and
- Not be feasible due to terrain or the prevailing construction practices.

In such instances where outdoor facilities cannot be made accessible, efforts will be made to provide an “equivalent experience”. Equivalent experience may be in the form of an alternate facility that provides a similar environment, view, or interpretive encounter. For example, Kalalau Lookout provides a view of Kalalau Valley similar to the view from Pu‘u o Kila. Where access is not possible, an equivalent experience may also be provided through an interpretive program that presents the experience through alternate media, such as audio-visual displays, written material, and interactive displays involving other senses. Major themes embedded in the Kōke‘e and Waimea Canyon experience will serve to focus development of an “equivalent experience” program. These themes include:

- Historic and Cultural Landscape
- Geologic Story
- Natural Resources and Processes

- Wilderness

Alterations and Maintenance

With respect to outdoor facilities, it is important to distinguish between alterations, as defined in the ADA, and routine repair and maintenance. In outdoor settings, trails, picnic areas, and campgrounds require routine upkeep to maintain the original purpose, intent, and design of the facility. Such maintenance and repair is exempt from the ADA accessibility requirements triggered by “alterations” to existing facilities.

Trails

Certain categories of trails are not to be developed for ADA accessibility due to potential impacts to the natural setting, or to risk factors associated with the trail category, such as precipitous terrain. An inventory of trail conditions and experiences will be conducted to meet the following objectives:

- Define categories of trails:
 - Wilderness / Backcountry
 - Nature / Interpretive
 - Accessible
- Define trailhead. The trail and all related facilities within the first 500 feet of the designated accessible trailhead must be ADA compliant.
- Identify linkages to other program areas along with accessibility requirements.
- Trailhead interpretive facilities must include copies of the same interpretive elements provided on the trail.

DLNR – Transition Plan for Compliance with ADA Requirements

DLNR Self-Evaluation and Transition Plan for Compliance with the Requirements of Title II of the Americans with Disabilities Act of 1990, as amended (October 2002) will guide in planning park facilities.

◆ **FINDINGS**

Management functions within the Parks are often overlapping and confusing from the standpoint of the park user. For example, permits for forest resource collection and for commercial activities within the parks and adjoining lands are required from both the DSP and DOFAW, respectively. DSP does not issue commercial user permits in the Parks. Fishing and hunting permits are issued by DAR and DOFAW, respectively, but are not available at the Parks. Similarly, camping permits are not available at the Parks. A one-stop permit counter at the Parks would simplify the park user experience and strengthen the parks' identity. Smoother and more intuitive permitting processes that meet user expectations might lead to greater numbers of permits issued and, subsequently, more fees taken in. Additional recommendations include:

- Cooperation on island is a benefit to the visitors to the Parks.
- The various operating DLNR Divisions on Kaua'i operate with different missions and objectives that have statewide implications.
- Interpretation functions within the Parks are divided between several Divisions without a common goal.
- The visitor does not know who to turn to for information.
- Single maintenance functions of roads.
- Adjusting fee schedule for water services.
- Install water meters for all users.
- Create new revenue sources.

4.11 DEVELOPMENT PLANS AND LAND USE CONTROLS

◆ **STATE LAND USE PLANS AND POLICIES**

Hawai'i State Plan (HRS 226)

Objectives, policies, and implementing

actions identified in the Hawai'i State Plan that specifically or generally affect Kōke'e or Waimea Canyon State Parks are as follows:

Objective

Plan, develop, and promote recreational activities and facilities in mauka and other areas to provide a wide range of alternatives.

Policy

Plan and develop campsites, picnic facilities, equestrian paths and other recreational amenities at Kōke'e and Waimea Canyon State Parks.

Implementation Action

Subject to availability of funds, a planning start date was scheduled for fiscal year 1991-92.

Objective

Increase access to State Forest Reserve lands over federal property, leased State lands, and other government lands.

Policy

Assure access to recreational areas in Forest Reserve lands.

Implementation Action

Initiate discussions with the military and other federal agencies that restrict access over their lands to Forest Reserve areas.

Work with the water departments to open up selected watershed areas and resource subzones for hiking, hunting, bird watching, and freshwater fishing (which would not jeopardize the water supply).

Objective

Assure adequate support for priority outdoor recreation programs and facilities.

Policy

Explore alternative funding strategies and resources.

Implementation Action

Establish more user fees to supplement regular appropriations and help cover operations and maintenance cost. Increase existing user fees.

Objective

Explore innovative ways to manage and maintain recreation resources.

Policy

Increase recruitment and mobilizing of volunteers for community work days and renovation projects. Target businesses, nonprofit organizations, youth/teen groups, and community associations, etc.

The objectives, policies and implementing actions noted above provide a broad basis for pursuing park improvements. In addition to specifically identifying both Kōkeʻe and Waimea Canyon State Parks, strong emphasis is placed on efficiency in management and maintenance practices, the importance of revenue generation and the utilization of volunteers, nonprofit organizations and other community groups.

◆ COUNTY OF KAUAʻI

General Plan for the County of Kauaʻi

Objectives, policies, and implementing actions identified in the Kauaʻi General Plan that specifically or generally affect Kōkeʻe or Waimea Canyon State Parks are as follows:

Section 2 - Vision for Kauaʻi 2020***Community Values***

- Protection, management, and enjoyment of our open spaces, unique natural beauty, rural lifestyle, outdoor recreation and parks.
- Access to and along shorelines, waterways and mountains for all. However, access should be controlled where necessary to conserve natural resources and to maintain the quality of

public sites for fishing, hunting, recreation and wilderness activities valued by the local community.

- Recognition that our environment IS our economy, our natural capital, the basis of our economic survival and success.
- Balanced economic growth promoting good jobs and a strong economy, without sacrificing our environment or our quality of life.
- Preservation of our cultural, historical, sacred and archaeological sites.
- Appreciation and support for the traditions of the Native Hawaiian host culture and the many other cultural traditions and values that make up the Kauaʻi community.
- Protection of Kauaʻi's unique character.

Section 3 - Caring for Land Water and Culture***Heritage Resource Maps***

Kōkeʻe and Waimea Canyon State Parks are identified as Heritage Resources on the *Kauaʻi General Plan Heritage Resources Island Map*. Kōkeʻe Road and Waimea Canyon Drive are identified on the map as scenic roadway corridors.

The Heritage Resources Map depicts resources that are important to the County of Kauaʻi and that are intended to be conserved.

Scenic Views

- Preserve public views that exhibit a high degree of intactness or vividness. Intactness refers to the integrity of visual patterns and the extent to which the landscape is free of visually intruding man-made elements. Vividness refers to the memorability of the view, caused by contrasting landforms which create striking and distinctive patterns.
- Preserve the scenic qualities of mountains, hills, and other elevated landforms.

- Preserve the scenic quality of lowland/open space features.

Historic and Archaeological Resources

Preserve important archaeological and historic sites and provide: (1) a buffer area between the site and adjacent uses; and (2) public pedestrian access, as appropriate to the site.

Native Hawaiian Rights

The County recognizes the rights of native Hawaiians and the laws concerning lands and waters that are established through the State Constitution, State and Federal laws, and State and Federal court decisions:

- Native Hawaiian water rights provided under the State Water Code, HRS, Chapter 174C.
- Kuleana lands, water rights and access rights provided under the Kuleana Act of 1850, as recognized in current statutes, rules and court decisions.
- Konohiki and ho‘āina fishing rights provided under the 1839 Law of Kamehameha, as modified by subsequent legislative acts and court decisions.
- Traditional and customary rights of Native Hawaiians, such as for access and gathering, provided under the State Constitution and Hawai‘i Revised Statutes, as interpreted by the courts (i.e., the PASH case).
- Burial rights provided under the Hawai‘i Historic Preservation Act and the federal Native American Graves Repatriation Act.
- Preservation of historic properties and archaeological resources provided under the federal Archaeological Resources Protection Act of 1979; the National Historic Preservation Act of 1966; and the Hawai‘i Historic Preservation Act.

Section 4 - Developing Jobs and Business

Visitor Industry

Alternative Visitor Programs and Facilities

The County of Kaua‘i encourages the development of alternative visitor accommodations, such as B&Bs, vacation rentals, inns, cabins, and retreat centers, as a means of promoting locally-owned business, and providing unique experiences for visitors to learn about Hawai‘i from a community setting.

Visitor Impact on Parks and Natural Resource Areas

- Encourage the development of public-private partnerships involving the County and the Department of Land and Natural Resources in order to manage and improve Kaua‘i’s valuable parks and natural areas.
- Manage parks and natural resource areas according to the following policies, in order of priority:
 - (1) Conserve resources
 - (2) Provide for use by the general public, i.e. individuals, families, ohanas.
 - (3) Allow for group use (including commercial tours and equipment rentals) within conservation limits.
- To enhance the visitor’s experience of Kaua‘i and to provide meaningful jobs and income to Kaua‘i residents, the County shall develop or support development of the following programs by Federal, State, or private agencies:
 - (1) Regional visitor centers to provide guidance and assistance to visitors, as well as information about the region, its history and culture
 - (2) First-person interpretation of natural areas, historic and archaeological sites, traditional agricultural and cultural practices, towns and communities.
 - (3) Study and practice of Native

- Hawaiian and other ethnic cultural traditions and languages, including the development of cultural learning centers.
- Improve facilities, maintenance, and management of activities at State and County parks. Specific actions include:
 - (1) Commit the necessary resources to ensure adequate levels of park maintenance, repair, and hygiene and to improve signage and interpretation of natural and cultural features.
 - (2) In resource parks that receive heavy visitation, such as Kōkeʻe, plan and improve specific areas to support larger numbers of visitors; manage other areas for moderate or low use, based on conservation objectives. Prepare and update master plans for major parks.
 - (3) Clearly define roles and responsibilities in managing commercial recreational activities among County and State agencies, in order to provide efficient and effective licensing and regulation. Eliminate overlap between State and County agencies, or between DLNR divisions, and streamline management by making a single State or County administrative unit primarily responsible for all activities within a specific park.
 - State and County agencies should work together to provide efficient and effective management, licensing and regulation of commercial activities within public lands and waters.
 - To pay for better park maintenance and needed improvements to programs and facilities, the State should develop dedicated tax or user fee income from out-of-State visitors. Such income should be restricted for use in State Parks and reserved for the purpose of improving State Parks and facilities.
 - To secure adequate long-term funding

for major resource parks such as the Waimea Canyon - Nā Pali Coast Complex, the State should explore the feasibility of securing federal funds to support major parks.

Agriculture

The policy calls for preserving important agricultural lands as an essential resource base. It also calls for conserving irrigation systems for existing and potential future agriculture and aquaculture use.

Section 5 - Preserving Kauaʻi's Rural

Character

Open Lands

- Preserve, maintain, or improve the natural characteristics of non-urban land and water areas that:
 - (1) are of significant value to the public as scenic or recreation resources;
 - (2) perform essential physical or ecological functions important to the welfare of surrounding lands, waters, and biological resources; or
 - (3) form a cultural, historic, or archaeological resource of significant public value.
- Such lands shall remain open and free of development.

Scenic Roadway Corridors

In the Kauaʻi General Plan, the policy on scenic corridors generally pertains to preservation values along the most heavily traveled routes in urban areas. However, Kōkeʻe Road and Waimea Canyon Drive are identified as scenic corridors on the *General Plan Heritage Resources Map*. Relevant General Plan policies include the following:

- In planning, designing and constructing highway and road improvements, transportation agencies shall balance conservation of the area's natural, historic, and scenic qualities with transportation objectives.

- Manage the development of lands within scenic corridors to conserve open space and scenic qualities.
- Develop appropriate programs and/or land use regulations to conserve unique qualities and scenic values along designated corridors.

Section 6 - West Side Planning District

Kōkeʻe and Waimea Canyon are significant assets to the West Side Community Planning District and the island community as a whole. A selection of the unique resources associated with the parks includes:

- Mountains for hunting and gathering maile and mokihana;
- Ancient Hawaiian sites, rich heritage and history; and
- Camping grounds and trails.

Kōkeʻe and Waimea Canyon State Parks could support increased visitors and new business opportunities on the West Side. However, park roads, wastewater disposal, trails, and other infrastructure needs to be upgraded to support expected increases in use.

Economic opportunities created by the visitor traffic through West-side towns enroute to Kōkeʻe and Waimea Canyon State Parks include:

- outdoor recreation and cultural tours; and
- lodging and visitor accommodations.

The slopes and crest of the bluffs above Waimea town shall be preserved free of buildings. Views of the bluffs from the highway shall be preserved.

County of Kauaʻi Zoning and Land Use Regulations

Kōkeʻe and Waimea Canyon State Parks are located entirely within the State Conservation District. County zoning does not apply.

CHAPTER 5

ANALYSIS

5.1 PURPOSE

The purpose of this report is to analyze the information compiled in the Background Research and Inventory Assessment Report (BRIAR) and Facilities Assessment Report (FAR). This Analysis Report will identify issues, problems, constraints and opportunities related to the Kōkeʻe and Waimea Canyon State Parks and the adjoining game management areas, forest reserves, and Natural Area Reserve.

The study area is shown in **Figure 1-1**. The findings of this report will be used to develop three alternative conceptual master plans for the parks. The three alternatives will be evaluated through a public review process. Comments on the alternatives will be incorporated into a “preferred alternative” that will be presented to the Board of Land and Natural Resources for approval as the basis of the Master Plan.

◆ OBJECTIVES

- Document the findings of the background research and facility assessment reports.
- Identify the issues, problems, opportunities, and areas of concern that will be addressed in the Master Plan through literature research and interviews with key stakeholders.

◆ METHODOLOGY

Data and information for this analysis phase was obtained from literature searches and interviews. Initially, four (4) methods to approach the assignment were reviewed:

- Original scope of work developed for the project;
- Review of comments obtained from the public, DLNR agencies, County of Kauaʻi, and individuals.

- Review of the “limits of acceptable change” (LAC) methodology; and,
- Review of the recreation opportunity spectrum (ROS) process.

The Scope of Work and comment solicitation process are discussed below. The LAC and ROS methodologies are addressed in **Section 5.10**.

Scope of Work

The scope of work prepared for the Master Plan identified the following resource categories to be addressed: 1) natural resources, 2) cultural and historic resources, 3) scenic resources, 4) outdoor recreation resources, and 5) other issues identified by agencies and the public. During the course of the project four more categories were added: 1) recreation residences, 2) infrastructure, 3) organizational development and management, and 4) costs and revenues.

Each resource is addressed in terms of its condition-fragility, resource limits (capacity), public use and user limits (socially acceptable densities), issues, opportunities and constraints related to protection, management, restoration, development, enhancement, and interpretation.

Recommendations are developed for a best management approach to meet the goals for each resource category. Where available and applicable, financial information is presented to support the recommendations.

Special development guidelines (from available standards, DLNR staff recommendations, and public input) are proposed to guide plan development.

Kōkeʻe Interagency Task Force

The following information resulted from the Kōkeʻe Interagency Task Force meeting of August 8, 2002. In response to a request by the

Master Planning Team, the DLNR Divisions identified goals and objectives for Kōkeʻe and Waimea Canyon State Parks and the surrounding areas. Agency representatives were asked to identify issues that are of interest or concern to their agencies, keeping in mind the potential for shared Department-wide or Division-wide objectives. This exercise resulted in the following list of issues:

- Limits of Acceptable Change (LAC) - determining carrying capacity, defining a limit and identifying a process to stay within the limits;
- Recreation - (1) identifying recreation uses of agencies, (2) establishing goals for the future, (3) mitigating existing and potential conflicts, (4) expanding interpretation and education programs;
- Organizational development - establishing a super agency to coordinate park management functions, (e.g. Kōkeʻe Regional Authority);
- Natural resource management;
- Native habitat protection and restoration;
- Consumable resource management to ensure sustainable yields (e.g., hunting, gathering, fishing, timber, etc.);
- Historic / cultural resource preservation and interpretation;
- Wildland environmental management;
- Scenic values;
- Leaseholds / Recreation Residences;
- Infrastructure and utilities;
- Revenue enhancement and administration;
- Emergency management.

This list provides a broad framework for analyzing park needs and pursuing park improvements. Task Force concerns about specific park operations, resources, and uses are included in the analysis, and form the core of the issues, opportunities, and constraints listed under each resource category.

In addition to concern about the management of Kōkeʻe and Waimea Canyon State Parks

extensive physical resources, strong emphasis was also placed on efficiency in management and maintenance practices, the importance of revenue generation and the utilization of volunteers, nonprofit organizations and other community groups.

Public and Agency Comments

During the data collection phase, comments on the direction of the Master Plan were solicited from the public and government agencies. The Division of State Parks also provided comments obtained prior to the start of the Master Planning process. The comments received are organized by topic and presented unedited in **Appendix A** of the previously submitted Analysis Report. The comments are consolidated and contribute to the lists of *Issues, Opportunities and Constraints*, and *Recommendations/Best Management Approach* sections under each resource category.

◆ **RESOURCE GOALS AND VALUES**

This section organizes the findings into eight (8) categories:

- Section 5.2 Natural Resources
- Section 5.3 Historic, Archaeological, and Cultural Resources
- Section 5.4 Scenic Resources
- Section 5.5 Outdoor Recreation Resources
- Section 5.6 Recreation Residences
- Section 5.7 Infrastructure
- Section 5.8 Organizational Development and Management
- Section 5.9 Costs and Revenue

Each section is subdivided into goals, resource values, analysis, and recommendations. The analysis portion of the study is based on research and comments from the Kōkeʻe Interagency Task Force, interested agencies and organizations, and the general public. The analysis presented in this report correlates with the first two steps in the LAC process. The

LAC process is further discussed in **Section 5.10**.

Goals

In order to frame the master planning process, overall goals for the Kōkeʻe and Waimea Canyon State Parks and for each resource category were set by the project team. The goal setting process evolved through an evaluation of the mission and goal statements of each of the DLNR divisions. Goals were developed for each of the resource categories after a review of the values, issues, concerns, and problems that were raised during the data collection phase of the project.

Values

In recognition of the unique environmental resources and rich natural heritage existing in the uplands of western Kauaʻi, Kōkeʻe and Waimea Canyon State Parks were established. This section identifies the resource values associated with specific attributes of the parks. Defining these values is a key step towards identifying planning opportunities and constraints and protecting the integrity of the two parks.

◆ **RESOURCE ANALYSIS**

Resource categories are identified within each major topical area. For example, Outdoor Recreation Resources includes the categories: hiking, camping, picnicking, fishing, hunting, and gathering, among others. Each resource category is analyzed in terms of resource conditions, limits, issues, opportunities, and constraints. A list of planning recommendations follows the analysis for each resource category.

Condition / Fragility (Stressors)

Resources are described in terms of their general condition and their fragility in the face of typical or known stressors. Stressors vary greatly according to the resource. They may include activities, environmental conditions, or trends that threaten or degrade the resource of

interest. For example, stressors to native plants may include ungulate foraging, habitat degradation by ungulates, human traffic, invasive weeds, or the absence of pollinators. Stressors to a scenic resource may include intrusive structures or the obvious presence of automobile or helicopter traffic. Stressors are a likely subject on which to focus when developing a resource monitoring program.

Resource Limits

Resource limits refers to a particular resource's inherent ability to exist and sustain its value to the Parks. For example, for biological resources this refers to environmental factors affecting the ability to reproduce or maintain a certain population range. For natural resources such as water, resource limits refer to source limits and water quality parameters. Not all resources have apparent limits. For instance, scenic resources are inherently limitless; however they may be limited in their ability to provide a complete picture of the park's history: while from a user's standpoint, the scenic resource that could tell a story may not be accessible.

Public Use / User Limits

Public use / user limits are key concepts in the LAC process. Determining user limits involves a combined assessment of human demands for park resources, and resource capacity to endure the impacts of use and maintain a specified desired condition. In the LAC process this typically pertains to natural resources and outdoor recreation resources. However, the concept can be applied to other essential park features, including historic resources, infrastructure, recreation amenities and lodging.

Public use demands may be derived from sources, such as user surveys, cabin rental records, permit and license records, and concession receipts. User impacts are determined by monitoring resource conditions over time. Monitoring involves a wide variety of methods that depend on the resource, use context, health indicators, threat origins,

available technology, and schedule. Methods can include the use of monitoring transects, inventory surveys, direct measures such as wellhead levels or user head counts, and many other techniques.

User limits are established by deciding what impact levels are acceptable for a particular resource based on a desired baseline condition. For example, in the case of water use, the limit is set by the sustainable yield of the water source.

Issues, Opportunities, and Constraints

A list of issues, opportunities, and constraints are identified for each resource. The list consolidates and summarizes comments received from the public, from interested organizations, and from the Kōkeʻe Interagency Task Force. A symbol code (□, ●, C) is used to differentiate *issues*, *opportunities*, and *constraints* within the list.

Recommendations /Best Management Approach

Recommendations for protection, restoration, development/enhancement, interpretation, and management of park resources are presented at the end of each resource section. The recommendations represent a range of alternatives to address opportunities and constraints identified in the background research, and through input from task force members and the public.

At this planning stage, the list of recommendations may include contradictory or mutually exclusive solutions to park issues. During development of the master plan alternatives, recommendations listed in this analysis report will be further screened and sorted according to the various alternative development themes.

5.2 NATURAL RESOURCES

◆ GOALS

To protect, preserve, and restore the unique environments of Kōkeʻe and Waimea Canyon, enhance human understanding and appreciation of Hawaiʻi’s native ecosystems and introduced species, and to ensure the continued existence of Hawaiʻi’s unique flora and fauna for their own sake and for the benefit of Hawaiʻi’s future generations.

◆ VALUES

Wilderness Values

Kōkeʻe and Waimea Canyon State Parks provide a gateway to the outdoors for residents and visitors alike. The Parks are surrounded by large tracts of forest, wilderness, and reserve areas containing some of the most spectacular land forms and pristine examples of native ecology and ecosystems in the state. The Parks serve as a classroom for environmental education, provide an overlay for residents and visitors and offer quiet and isolated areas for personal retreat, and provide a setting for recreational enjoyment and physical challenge.

Geological Values

Kōkeʻe and Waimea Canyon State Parks contain excellent examples of all of the key geologic stages of the island’s formation, views of which are readily accessible from four key park lookouts.

Botanical Values

Kōkeʻe and Waimea Canyon State Parks contain rich botanical resources valued for a variety of purposes:

- Unique and pristine examples of native habitats and constituent plant species (endemic, indigenous, and Polynesian-introduced), including rare and endangered species, are valued for purposes of preservation, conservation, and education, as well as for their intrinsic value. These parks are the only known habitat for many rare

species, many of which are included in the Plant Extinction Prevention Program, while others may have no official designation as of yet due to their rarity. In many cases, these plants can be found along trails and other areas where human interactions could occur. Native plants are also valued as an ethnobotanical resource, providing information about early Hawaiian subsistence, medical practices, crafts, and other cultural activities and gathering activities.

- Historic plants, including species related to canoe building, CCC forestation and fruit tree plantings, and recreation residences' trees and gardens are valued as part of the cultural landscape of Kōke'e and Waimea Canyon and contribute to telling the story of the Parks.
- Forest Resources - plums, maile, ferns, mokihana, banana poka, and other plants continue to be collected for food, crafts, ornamentation, and other cultural practices.
- Forestry Products - The Parks contain and provide access to commercial stands of timber and native hardwood, such as koa.

Wildlife Values

- The parks are home to numerous rare and endangered bird species. Native birds known from the parks and surrounding areas are valued for purposes of preservation, conservation, and education, as well as for their intrinsic value.
- Many known as yet undiscovered native insects inhabit the Parks. Native insects are valued for their ecological role. They function as pollinators for native flowering plants, as a food source for native birds, and as agents in breaking down organic matter on the forest floor.
- Game animals have all been introduced to the Kōke'e and Waimea Canyon environments and are one of the primary threats to native ecosystems. These animals are also valued for hunting in limited areas

of the Parks and throughout the surrounding region.

In areas where hunting is not allowed, the game animals proliferate as there are no methods in place to control their population.

Environmental Values

The forests of Kōke'e and Waimea Canyon are the primary watershed for settlements and agricultural lands of west Kaua'i and form a protective blanket that provides incalculable ecosystem services, including the absorption of rainwater and reduction of sedimentation and runoff. The health of the forests are critical to the supply and the quality of water in the streams, irrigation ditches, and aquifers in the region. This water is an essential resource for agricultural lands and towns of West Kaua'i.

◆ CLIMATOLOGICAL RESOURCES

Conditions / Fragility (Stressors)

Kōke'e and Waimea Canyon State Parks and the surrounding natural areas encompass an extraordinary range of climatic conditions, from record rainfall levels on the Alaka'i plateau to the dry lowlands of Waimea Canyon. For planning purposes, there are virtually no stressors on climatic resources, other than air quality impacts from vehicle exhaust and airborne dust. Chief planning issues relate to identifying climatic zones and localized weather conditions in order to properly design and program facilities to take advantage of the many climatic experiences offered within the Parks. Understanding the climatic regimes within the Parks and the interplay between these regimes and native ecosystems is critical to managing the ecosystems in the face of the impacts of global climate change.

Resource Limits

Not applicable.

Public Use / User Limits

Native forests play an important role in the climatic regimes of the Parks through their

function in attracting condensation and moisture and creation of cloud cover. Park use could affect climatic conditions if it negatively impacts the health of these forests. Concurrently park uses and facility designs are affected by localized climatic conditions within the Parks. User limits pertain primarily to the number of automobiles that can be permitted within the Parks without affecting air quality. In localized areas where traffic is heavy or ventilation is blocked, higher concentrations of exhaust emissions and resulting air quality impacts may result.

Issues, Opportunities, and Constraints

- Air quality may be impacted in localized areas by the presence of large numbers of automobiles, buses, or heavy equipment use.
- Deforestation or loss of forest cover will lead to changes in precipitation and aquifer recharge.
- Diesel exhaust from idling buses parked at the lookouts adversely impacts air quality at these prime destination points. At Waimea Canyon Lookout, bus parking is located in the middle of the primary pedestrian travel way between the restrooms and lookout and adjacent to the concession truck. The operation of buses at this location degrades the visitors' experience by exposing them to the compounded effects of vehicle exhaust, dust, and heat.
- Heavy rains create dangerous driving conditions on unimproved roads and frequently results in strandings of 2-WD visitor vehicles.
- Kōkeʻe and Waimea Canyon State Parks span nearly the entire range of climatic conditions experienced on Kauaʻi, from hot, sunny lowlands, to cool, cloud-shrouded uplands.
- Kōkeʻe and Waimea Canyon State Parks provide one of the few opportunities for residents and visitors on Kauaʻi to experience a higher-elevation cool mountain climate.

- C Clouds can develop quickly in the upland regions, creating blinding conditions for motorists and helicopters.
- C During Kona wind conditions, fog belts are known to form at two low- to mid-elevation locations: one on Kōkeʻe Road between the 5-mile marker, 11-mile marker, and one immediately downslope of the Puʻu ka Pele picnic area extending up to the intersection of Kōkeʻe Road and Halemanu Road.

Recommendations / Best Management Approach

- At Kalalau Lookout, develop interpretive materials about the role of Pacific Ocean weather patterns and their effect on Hawaiʻi's environment. Highlight the climatic changes between the Kōkeʻe uplands and the valley floor.
- At Waimea Canyon Lookout, develop interpretive materials about cloud formation above Mt. Waiʻaleʻale and declining rainfall contours on leeward slopes. Include also, description of fog belt formation at lower elevations.
- Designate bus parking away from main pedestrian travel ways and gathering areas to reduce exhaust impacts.
- Redesign the Waimea Canyon Lookout parking to relocate bus parking away from pedestrian area between the lookout platforms and restrooms.
- Design park facilities, e.g. sheltered picnic facilities and kiosks, appropriately for local climatic conditions.
- Develop additional helicopter landing zones to provide additional options for landing in bad weather conditions. These landing zones should be used for natural resource management and emergency purposes only, not for commercial use.
- Post signs at unpaved roadway turn-offs to warn visitors about muddy conditions and hazards of getting stuck in the event of heavy rain.

◆ TOPOGRAPHY, PHYSIOGRAPHY, AND SOILS

Conditions / Fragility (Stressors)

In Kōkeʻe and Waimea Canyon State Parks, most of the areas with developed facilities, including the Kōkeʻe Lodge, CCC Camp, recreation residences, and lookouts, fall into the 0 to 35 percent slope range. Slopes in this range create a condition for medium runoff and a slight to moderate erosion hazard. In other areas, slopes greater than 35 percent create conditions for rapid runoff and severe erosion hazard.

Many areas within Kōkeʻe and Waimea Canyon State Parks are already experiencing erosion damage, particularly along Waimea Canyon and the Kalalau Valley Rim where erosion threatens built improvements. For example, at the Puʻu ka Pele picnic area, shoulder erosion is degrading road conditions, and at Puʻu Hinahina, erosion of the canyon rim is scouring the embankment beneath the lookout platform.

Grazing by feral ungulates is a leading cause of erosion. Grazing denudes vegetative cover essential for soil stabilization. Grazing damage is evident throughout the Parks, but is most noticeable from trails and lookouts on the Waimea Canyon rim, and ridge trails on the western slope (Nuʻalolo, Awaʻawapuhi).

Resource Limits

Geologically speaking, there are no limits on the physiological, geological, and soil resources of Kōkeʻe and Waimea Canyon State Parks. These resources will continue to transform under the patient work of natural forces – wind, drainage, deposition, cataclysm, etc. Nevertheless, the condition of these resources may reach limits that adversely affect park features and functions. For example, soil erosion may result in loss of vegetation or degradation of roadway foundations. Also, rock formations may become unstable and pose a threat to park visitors and amenities.

For purposes of interpretation, the physiological and geological resources visible within the two parks display nearly the complete story of the island’s formation.

Public Use / User Limits

Data is not available to determine public use / user limits. Future monitoring of erosion-prone areas, such as trails, streams, and lookouts, is required to determine acceptable levels of use that do not contribute to increased erosion. Additionally, monitoring is necessary to determine a maximum developable slope standard for future development.

Issues, Opportunities, and Constraints

- Kalalau Valley and the western slopes are remnants of the original Waimea dome and first stage erosional period.
- The Waimea Scarp, Alakaʻi Swamp and Kanaloahuluhulu tell the story of the dome’s collapse and subsequent in-fill.
- The eroded walls of Waimea Canyon reveal the layers of geologic history, from the earliest Nāpali basalt flows, to the post-collapse in-fill, to the last volcanic period of the Koloa lavas. Drainage from Mt. Waiʻaleʻale and the Alakaʻi displays the erosional forces that continue to shape the island on a daily basis.
- These geologic stories and opportunities to interpret them are visible from the lookouts at Puʻu o Kila, Kalalau, Puʻu Hinahina, and Waimea Canyon.
- A complex landscape of soil types occurs within the Kōkeʻe and Waimea Canyon area, with each constituent providing evidence of Kauaʻi’s volcanic origin and the natural forces that ultimately shaped the unique terrain. Soil characteristics are one of the keys to understanding fundamental environmental processes in the park region.
- C Soil type and slope grade are determinants of erosion potential and must be considered when defining an area for developing recreation or sanitation facilities.

Recommendations / Best Management Approach

- Create slope maps of areas proposed for development within the parks. Restrict development of new facilities to areas with slopes no greater than 35 percent.
- Develop soil stabilization plans for erosion-prone public use areas including trails, lookouts, dirt roads, and ditch and reservoir system. Include short- and long-term erosion control measures such as grassing and re-vegetation with native or Polynesian-introduced ground cover, mulching with rock or organic materials, use of diversions, check-dams, brush bundles, geo-textiles, etc.
- Develop erosion monitoring program to assess user limits on recreation facilities.
- Re-vegetate with native or Polynesian-introduced plant materials or otherwise stabilize eroded trailhead area at Pu‘u o Kila Lookout, around parking area of Waimea Canyon Lookout, and along shoulders of Waimea Canyon Drive and Kōke‘e Road.
- At Kalalau Lookout, develop interpretive materials about early erosional forces that created the deep North Shore valleys.
- At Waimea Canyon Lookout, develop interpretive materials that tell the story of the original volcanic dome’s development, collapse and subsequent in-fill. Highlight the Waimea Scarp, Alaka‘i Swamp, and the different lava layers (original Nāpali and later Koloa flows) revealed in the canyon walls. Illustrate the erosional forces that continue to sculpt the island.
- At Pu‘u Hinahina Lookout, redevelop the interpretive material about Ni‘ihau Island to interpret the geologic history of three volcanic islands.
- Identify personnel, equipment, and material requirements for erosion control programs.
- Coordinate erosion control efforts among the Division of State Parks, the Division of Forestry and Wildlife, and the Division of Aquatic Resources.
- Develop ungulate control program to

prevent grazing damage and erosion.

◆ **WATER RESOURCES**

Water source and system issues are discussed in Section 5.7, Infrastructure.

◆ **FLORA, FAUNA AND HABITAT**

Conditions / Fragility (Stressors)

Kōke‘e and Waimea Canyon State Parks contain a range of ecological resources, from pristine native natural communities representing a variety of vegetation zones, to heavily modified landscapes populated by introduced plant and animal species, and a mixture of transitional conditions. For planning purposes, different environmental zones can be delineated based on their constituent characteristics, ecological sensitivity, intactness, degree of degradation, accessibility, and level of development. The zones represent different opportunities for planning park programs and amenities to meet the goals and values of each resource category. A further discussion and map of zones defined for Kōke‘e and Waimea Canyon State Parks is presented in Section 5.10. Additional considerations affecting the parks’ flora, fauna, and natural areas include:

- Native forests are threatened by alien plants, animals, vandalism and inadvertent damage from park users and resource collectors.
- Kaua‘i has an exceptionally high number of endangered species and many of them occur in Kōke‘e and Waimea Canyon State Parks. Much of the Parks are designated as critical habitat for endangered plants, birds, and invertebrates.
- Intentional and accidental introductions of invasive species can cause native habitat loss.
- Commercial helicopter noise negatively impacts forest birds.
- Problem animals include: chickens, feral

ungulates, invasive insect species such as ants, ground nesting wasps, termites, slugs, and rats.

- There is no baseline inventory for insects and arthropods, native forest birds, native plants, aquatic life, and soil microorganisms.
- In Kōkeʻe State Park, Kaunuohua Ridge marks the border between more pristine native habitats upland, and more human-modified forests below.
- Pesticide use poses a threat to the environment.
- Pigs, goats and deer eat rare plants, cause slope erosion, and destroy fragile habitat. Deer are a particular threat to mesic forests in Kōkeʻe.
- Excessive resource gathering damages plant growth and reproduction and degrades the park environment.
- Motorized dirt bikes damage sensitive natural areas and frighten forest birds.

Resource Limits

Flora, fauna, and habitat resource limits are a complex subject. Each species of plant and animal is dependent on a unique array of environmental conditions (vegetation composition, elevation, climatic conditions) and ecological relationships that determine its ability to reproduce life. Thus, each species is limited by the availability of suitable habitat conditions, including adequate space, and the presence of threats to those conditions.

Public Use / User Limits

Aside from game animals and stocked fish, user limits are unknown for most of the natural resources and habitats within the Parks. The fundamental issue is one of environmental sustainability which in the context of Kōkeʻe and Waimea Canyon State Parks touches upon an array of efforts to restore native habitat, prevent the spread of invasive species, and protect habitats and individual species from other natural threats and destructive human

activities. Thus, to preserve the Parks' natural resource values, user limits must be determined at a variety of levels and contexts through monitoring programs designed for specific species, specific locations, and specific uses. Other considerations related to public use / user limits include:

- Public use of the flora and faunal resources is limited primarily by access.
- The amount of plant material and number of animals that users may take is limited by the rate of natural reproduction combined with the rate of out-planting and restocking undertaken by DLNR staff. Hunting and fishing limits are controlled by permit conditions that set bag limits. Limits on collecting forest resources are set by DLNR Administrative Rules and controlled by permit.
- USFWS designated critical habitat areas cover lands within the Parks and surrounding natural areas. Development of lands within the critical habitat boundaries is subject to USFWS regulation under certain conditions.

Issues, Opportunities, and Constraints

- There is a lack of recovery and restoration plans and programs for the Parks' resources.
- Feeding of wildlife such as chickens and Nēnē are a problem.
- Wildfire prevention and control is inadequate.
- Controls on resource gathering are limited and poorly enforced.
- Feral pigs, goats, and deer inhabit the no-hunting zones of Kōkeʻe State Park as a safety zone. More efforts to control these animals within the parks are needed.
- Hunting activities damage fragile ecosystems.
- The silence of the forest is a valuable resource and should be protected by restricting loud motorized activities, such as dirt bikes, helicopters, and timber harvesting activities.
- Regulation of commercial helicopter

activities over Kōkeʻe and Waimea Canyon State Parks is lacking.

- The boardwalk installed through the Alakaʻi Swamp allows too much traffic and potential for introducing threats into the sensitive native wet forest ecosystem.
- Weed removal in the native forests is a great opportunity for volunteers to help preserve native ecosystems.
- Native fish, trout, and crayfish populations are very limited in the Parks’ streams. Increasing stocks of these animals could provide a source of food for people, and a recreation attraction to draw for visitors.
- Awareness of environmental issues can be enhanced through media presentations, including documentaries and print campaigns, guided orientations, and ranger talks and walks.
- Existing volunteer programs assist with stretching scarce park resources. Volunteer programs are conducted through Hui o Laka and the Kōkeʻe Resource Conservation Program.
- Dedicated funding sources for natural resources management (native flora and fauna) should be included in the overall parks’ budget.
- Volunteer programs need to offer skills and knowledge to volunteers. Tourists and local people can work and learn about forest management based on natural principles, and can take these lessons home.
- Volunteer workdays for lessees provide an opportunity for them to reciprocate for the privilege they enjoy in the mountains.
- More helicopter landing zones (LZs) are needed for DSP and DOFAW operations. The use of these landing zones should be restricted to natural resource management and emergencies. However, LZs pose a threat in sensitive natural areas. The LZ at Puʻu Hinahina Lookout is used to transport personnel and supplies to the Alakaʻi area. The only new alternative LZ in the area is within the NASA compound.

**Recommendations /
Best Management Approach**

- Regulate access to sensitive native habitats to avoid human impacts from trampling, noise, trash, unauthorized collecting, and transport of seeds in hair and clothing.
- Install fences to exclude pigs, deer, and goats around sensitive native habitat areas and around individual plant specimens or clusters that require protection against these animals.
- Organize special hunting events to control feral animals within the Parks’ boundaries.
- Conduct study of invasive insects that pose a threat to the forest environment.
- Use native tree species such as koa, ‘ōhi‘a, and sandalwood in landscaping and re-forestation programs.
- Develop a replanting program for cultural resource plants, such as maile, mokihana, and other plants used by native Hawaiian cultural practitioners.
- Develop a replanting program for plum trees. As the existing plum trees decline, plant new trees in their place to ensure the continuity of the annual plum harvest.
- Develop interpretive trails and educational material for the major vegetation zone categories: dry shrub land, lowland mesic forest, montane mesic forest, and wet forest.
- Develop interpretive materials about ethnobotanical resources at locations such as Puʻu ka Pele for tree harvest and canoe building uses.
- Work with Hui o Laka, Kōkeʻe Leaseholders Association, and other groups to develop volunteer programs for park maintenance and restoration projects.
- Establish a visible ranger/docent presence in the Parks to serve as informants and authority figures.

◆ TIMBER RESOURCES

Conditions / Fragility (Stressors)

Timber groves within the Parks and adjacent areas consist of various species of conifers, eucalyptus, silk oak, blackwood acacia, and brushbox. Timber stands are scattered in numerous areas throughout the two parks and are accessible in most cases by unimproved roads.

In January 2005, DSP and DOFAW established the Kōkeʻe Timber Management Area comprised of Puʻu ka Pele Forest Reserve, Nāpali-Kona Forest Reserve south of and including Miloliʻi Ridge, Waimea Canyon and Kōkeʻe State Parks for a total of 17,092 acres and executed a Timber Management plan that seeks to add active timber management to present management goals. The plan is designed to promote the island’s forest industry development by the selective harvest of non-native timber plantation areas and the harvest of native trees for fence, roadway, and hazard maintenance and for the salvage of dead and dying trees. After the harvest, the areas will be replanted with native species.

The Board authorized DSP and DOFAW to prepare an environmental assessment in compliance with Chapter 343, HRS requirements and to solicit requests for proposals for the harvest of forest resources and the issuance of permits for small scale forestry operations and the development of timber land licenses for large-scale forestry operations.

Resource Limits

- Within the parks, timber resources are limited to specific, disaggregated areas.
- Any harvesting of timber resources must be done in an ecologically sensitive manner.

Public Use / User Limits

- Commercial timber harvesting will negatively impact the park users experience.
- Timber hauling will impact park visitor

traffic on Kōkeʻe Road.

- Timber hauling will increase the wear and tear on Kōkeʻe Road and unpaved access roads.

Issues, Opportunities, and Constraints

- Forestation programs may be limited by the potential conflict between commercial demands for non-native tree species, and ecological goals of restoring native vegetation and ecosystems.
- A timber management plan is required by law for harvesting.
- C Dispersed timber stands greatly increase the cost of commercial extraction, thereby reducing the potential return on investment and making it more difficult to attract potential private harvest operators.

Recommendations /

Best Management Approach

- Assess road maintenance fee from commercial timber operations.
- Use native hardwood trees in commercial forestry programs.
- Promote commercial uses of native hardwood materials.
- Develop woodworking demonstration program at Kōkeʻe Natural History Museum or CCC Camp.
- Conduct flora and fauna survey of timber stands before harvesting.
- Develop interpretive and educational materials and signage to inform the public about forest management goals and methods. Locate materials at trailheads or locations where park visitors have views of timber growth and harvest.

◆ SIGNIFICANT TREE STANDS

Conditions / Fragility (Stressors)

- Kōkeʻe and Waimea Canyon State Parks are home to numerous stands of trees that may be considered significant because:
 - They form a key element of the

cultural/historical landscape of the Kōkeʻe and Waimea Canyon region.

- They are linked directly to a historical event or activity.
- They are exceptional representatives of their species based on age, size, environmental context, and aesthetics.
- They serve as easily identifiable landmarks for park users.

Significant trees include both native and non-native species located in all vegetation zones within the Parks and surrounding natural areas. Significant trees are susceptible to the same general threats as other flora in the parks, including invasive species, disease, parasites, human damage, and natural catastrophe.

Resource Limits

- Most of the plum trees in Kōkeʻe were planted in the 1930s and are approaching the end of their productive, fruit-bearing years. In the absence of new plantings, Kōkeʻe’s cherished plum picking season will taper off into memory within the master plan time horizon.
- Significant trees face the same resource limits as other plant resources in the park.

Public Use / User Limits

- Public use is limited primarily by access. Park visitors and residents are limited in their “use” of significant trees to those stands or specimens accessible by existing roads and trails.
- In the case of plum trees, public use is limited by seasonal harvest restrictions and per person harvest limits set by DLNR.
- Other public use / user limits are unknown for these resources.

Issues, Opportunities, and Constraints

Each of the criteria cited for establishing the significance of trees represents an opportunity for highlighting the presence of these trees through interpretive programming and/or

physical design of park amenities.

- Two trees within Kōkeʻe and Waimea Canyon State Parks are designated “Exceptional” by the County of Kauaʻi. These trees can be highlighted as points of interest within the Parks and potentially incorporated into the trail system or picnic facilities.
- Most of the tree stands associated with CCC forestry programs and recreation residence plantings are non-native species. Highlighting and enhancing their presence represents a conflict with efforts to preserve and restore native ecology, but also provides an opportunity for interpretation of human impacts on the environment and Kōkeʻe and Waimea Canyon State Parks’ transition over time.

Recommendations /

Best Management Approach

- Identify, map and monitor the location and condition of significant tree stands.
- Map and monitor the spread of invasive plants and organisms that pose a threat to significant trees. Identify priority areas for control efforts.
- Replace aging plum trees with new plantings to ensure continuation of the annual plum harvest. Limit new plantings to areas where plum trees currently exist. Expand plum tree plantings only at Kanaloahuluhulu Meadow.
- Incorporate significant trees and tree stands into park design as landmarks and directional features.
- Re-forest commercial timber areas within the park with native hardwood trees.
- Expand Kalalau Rim Out-planting Facility to support re-vegetation efforts.
- Develop interpretive materials or expand on Kōkeʻe Natural History Museum’s materials related to forestry products and timber management within the parks and surrounding areas.
- Work with Hui o Laka, the Kōkeʻe

Leaseholders Association, and other groups to coordinate volunteer invasive plant control program.

5.3 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

◆ GOALS

To protect, preserve, and manage the physical legacy of human activity in Kaua‘i’s western mountain regions, and ensure the continuity of the cultural values and practices unique to Kōke‘e and Waimea Canyon State Parks.

◆ VALUES

The Kōke‘e and Waimea Canyon area has a long and rich history dating back to pre-western contact periods. The two parks contain a wealth of archaeological and historic evidence of early Hawaiian forest resource use, western agricultural activities, and the role of the uplands as a retreat for Hawai‘i’s turn-of-the-century elite. The Parks continue to play a valuable role in the cultural lives of Kaua‘i’s residents, serving as a location for annual commemorative celebrations and seasonal resource gathering, and as a classroom for passing on traditional practices related to hunting, storytelling, crafts, and other local art forms. Today’s park community includes numerous families and individuals with long ties to the land. These people provide a valuable touchstone to the history of development in Kōke‘e and Waimea Canyon.

◆ ARCHAEOLOGICAL AND HISTORIC RESOURCES

Conditions / Fragility (Stressors)

- Archaeological surveys have been conducted on a site-specific basis only. There is no comprehensive study to link the known sites and no survey of undeveloped areas.
- Historic resources in the Parks date as far back as the late 1800s and include trails,

roads, campgrounds, and structures related to a variety of historical periods and events, including early development of recreation residences, agricultural activities, Civilian Conservation Corps programs, military operations, the U.S. space program, and state park development.

- Historic documentation is more extensive than the physical evidence. Records include the usual sources (diaries, newspapers, published materials, government documents, legal documents, maps, and letters).
- Although several generations separate the present from the early days of post-contact development in the Kōke‘e region, there are individuals yet living with memories spanning the early days of the recreation residences through the entire history of park development.
- Threats to historic and archaeological resources include neglect, natural forces (erosion, fire, weather, vegetation encroachment), and human uses (recreation activities, vandalism, collecting).

Resource Limits

There are only five recorded archaeological sites within the Parks, including heiau and habitation sites. For display purposes, the sites are limited by their poor condition, undeveloped access, and sensitivity to damage and degradation over time. For interpretive purposes, the presence of these sites is sufficient to support an outline of traditional, pre-contact use of the uplands of Kōke‘e and Waimea Canyon.

Although the Kōke‘e and Waimea Canyon region contains a wealth of historic resources, preservation and interpretive work has been very limited. For interpretive purposes, existing historic resources within the Parks provide sufficient evidence of the lives, activities, environment, and values of the major periods and historic influences that contributed to Kōke‘e and Waimea Canyon State Parks’ present form. However, in order to fully realize and maintain their value to the Parks, historic

resources require protection, maintenance, restoration, and in some cases, reconstruction.

Public Use / User Limits

General public use and demand for access to historic resources and interpretive materials is inferred from the status of the Kōkeʻe Natural History Museum as a major park destination and visitor interest in activities at the CCC Camp. Additionally, local residents’ interest in preserving the history of Kōkeʻe and Waimea Canyon is expressed in seasonal events, such as Eo E Emalani I Alakaʻi, also called the Emalani Festival. Although demand is not known, enhancement and interpretation of historic resources is considered to hold significant potential as an attraction for park visitors.

User limits related to the Parks’ historic resources are unknown. Uses of historic resources include visitor access to historic sites and structures for interpretation, short- and long-term habitation of historic recreation residences, and use of historic buildings and features for park programs and operations. Each of these uses requires a different monitoring and preservation regime to prevent the loss of the resource’s historic value.

The restoration of the CCC Camp under the guidance of Hui o Laka, represents one of the few efforts to preserve and interpret the Parks’ historic resources. Several of the recreation residence lessees have also made it their personal responsibility to preserve the historic integrity of their lease properties through careful maintenance and restoration work. Most of the lease properties, however, have been modified, rebuilt, or neglected to the point that they are no longer considered historically significant (See Section 5.6, Recreation Residences). Leases currently contain no provisions for historic preservation. Hence, recreation residence leaseholders are not limited in their use of historically significant properties.

Issues, Opportunities, and Constraints

□ There is no interpretive plan for

archaeological resources in Kōkeʻe and Waimea Canyon State Parks.

- The State Historic Preservation Division (SHPD) currently has little oversight of the interpretive programs and plans being undertaken by Hui o Laka.
- Recreation residence leases contain no requirements for historic preservation.
 - The SHPD recommends the following locations for interpretation:
 - Puʻu ka Pele
 - Puʻu Lua Ditchman’s Cabin
 - Kōkeʻe Ditch System
 - CCC Camp
 - Select recreation residences (based on SHPD historic ranking and other factors as described in Section 6 of this report, and in the *Kōkeʻe and Waimea Canyon State Parks Master Plan Facility Assessment Report*, under separate cover).
 - Other sites identified by the public and Kōkeʻe Interagency Task Force members for possible preservation and interpretation include:
 - Kōkeʻe Natural History Museum and Lodge
 - The 150th Air Battalion Station at Kalalau
 - Kōkeʻe Lee’s House
 - Boiling Pots at the top of Waipoʻo Falls
 - Recreation residences include excellent examples of period architecture and should be included as part of the interpretive program of the Parks.
 - Facilities such as the Kōkeʻe Lodge and Natural History Museum should be preserved and enhanced to acknowledge the past and inform future park visitors.

Recommendations / Best Management Approach

- Develop a park-wide Archaeological and Historic Resources Management Plan to set priorities, establish standards for interpretive

materials, and ensure accuracy and consistency across program elements.

- Continue Hui o Laka’s program to renovate the CCC Camp for use as an interpretive center and multi-purpose space for park programs.
- Conduct a program to record the oral histories of individuals with first-hand knowledge of the early days of the Parks’ development.
- Develop interpretive signage to cover major historic themes to be developed at the park lookouts. (See Section 5.4, Scenic Resources).
- Collaborate with the West Kaua’i Technology and Visitors Center (WKTVC) museum to develop a comprehensive interpretive program that connects the history of the coastal region with that of the uplands of Kōke’e and Waimea Canyon. Incorporate the WKTVC museum facility as the initial welcoming center for Kōke’e and Waimea Canyon State Parks.
- Develop an interpretive program for archaeological resources within the parks. Conduct an assessment of archaeological sites to determine which are suitable for development with public access and interpretive signage.
- Develop an interpretive program for Kōke’e and Waimea Canyon State Parks’ historic recreation residences, including providing an opportunity for public access and/or tours of existing residences.
- See Section 6, for further recommendations related to recreation residences.

◆ CULTURAL ACTIVITIES

Conditions / Fragility (Stressors)

Kōke’e and Waimea Canyon State Parks have long been the site of social gatherings with a variety of functions: recreation, religious practices, art and dance, resource collection, and community festivals. In addition, for countless residents of Kaua’i, the Parks have served as a

“classroom” for handing down traditional practices related to hunting, resource gathering, and crafts. All of these activities instill value in the Parks as a living cultural landscape with direct and ongoing links to pre- and post-contact histories and traditions.

Some of the cultural activities identified with the Parks occur without promotional efforts, such as resource gathering, hunting, and fishing. These activities are dependent primarily on environmental conditions and the availability of resources, including plums, maile, pigs, deer, trout and other resources of interest. Other cultural events, such as the Eo E Emalani I Alaka’i Festival, are dependent on annual organization and promotion, without which the general public would be unaware.

Resource Limits / Public Use / User Limits

Resource limits for natural resource gathering are discussed in Section 2, Natural Resources. Cultural events and practices are limited by the awareness and continued interest of participants, by the knowledge level of practitioners, and by accessibility to the places and availability of resources necessary for their performance.

Issues, Opportunities, and Constraints

- Traditional cultural events and activities that occur at the Parks should be preserved and promoted to ensure the continuity of the parks’ value as a living cultural landscape.
- Opportunities exist to preserve and enhance gathering, hunting and fishing activities through improved natural resource management (See Section 2).
- Other activities are dependent on the organizational and educational efforts of individuals or groups and would not exist without continued support. For example, Hui o Laka has been the principal host for the Emalani Festival and conducts classes in traditional crafts through the Kōke’e Natural History Museum. Events and programs like these enhance the identity of the Parks and

enrich the experience of park visitors.

- Management oversight of cultural events is recommended to ensure consistency of content and contextual relevance to the Kōke‘e and Waimea Canyon region.

Recommendations /

Best Management Approach

- Continue to provide State support for annual cultural events, such as the Emalani Festival and Banana Poka Roundup.
- Establish a ranger presence at cultural events held in Kōke‘e to reinforce the Parks’ identity in association with these events.
- Develop interpretive materials and programming to describe current cultural practices and events that occur in the parks.
 - Annual/Seasonal Events;
 - Hunting as a cultural practice;
 - Natural resource gathering by Hula Halau;
 - Natural resource gathering for other traditional practices, e.g., crafts, medicine, food.
- Use the CCC Camp facilities to facilitate research and volunteers by providing short-term housing and for administrative support for Hui o Laka and the Kōke‘e Natural History Museum.
- Develop out-planting program to re-stock plants sought by resource gatherers, e.g. maile, mokihana, palapalai, and Methley plums.
- Conduct a study of the cultural landscape of Kōke‘e and Waimea Canyon. Identify and develop a management plan to sustain the built and natural resources that contribute to the continued understanding and existence of cultural practices within the parks.

5.4 SCENIC RESOURCES

◆ **GOALS**

To preserve, showcase, and interpret the scenic values of Kōke‘e and Waimea Canyon State Parks in order to enhance visitors’ experience

and understanding of the natural and cultural history of the region.

◆ **VALUES**

From the earliest geologic record revealed in the canyon walls to the clouds above Mt. Wai‘ale‘ale’s forested flanks, from the rock walls and terraces of Hawaiian gatherers to the mountain retreats of Hawai‘i’s turn-of-the-century social elite, Kōke‘e and Waimea Canyon State Parks offer a rich visual landscape embedded with stories of the natural and human processes that shaped the island of Kaua‘i.

◆ **RESOURCE ANALYSIS**

Conditions / Fragility (Stressors)

Scenic resources in the parks are threatened by man-made structures that physically intrude upon view planes or that modify and detract from the natural setting. Similarly, the visual experience is degraded by development designs that are not sensitive to a site’s natural and cultural context.

Resource Limits

Scenic resources are limited only by the extent or scope of the view and the presence of obstructions or conditions (i.e., weather) that block or intermittently hide views. Scenic resources can be “limited” also in their ability to tell a complete story of Kōke‘e and Waimea Canyon’s natural and human history. Together, however, the four existing lookouts provide views of key aspects of the Parks’ natural history and resources. Existing lookouts don’t offer the complete visual story of the relationship between upland water resources and agricultural activities in Waimea Canyon. The major existing lookouts are shown in **Figure 5-1**.

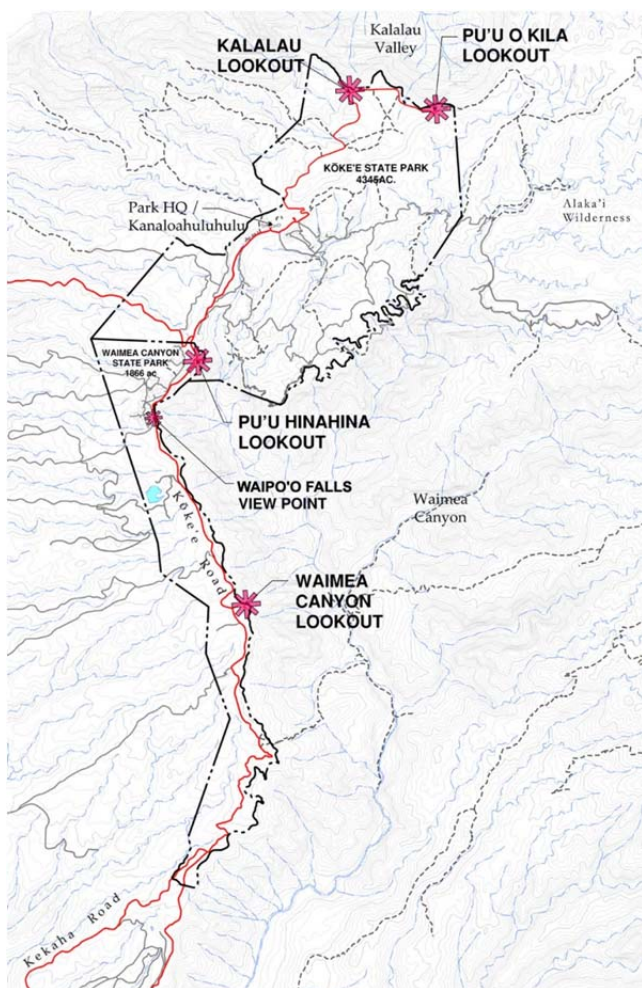


Figure 5-1 - Existing Lookout Locations

Public Use / User Limits

Use of the four developed lookouts is limited by available amenities, including water and wastewater service, parking, lighting, and ADA accessibility. Additional scenic lookouts are located at points along various trails in the park. Access to these scenic resources is limited to individuals willing and/or able to hike on uneven and often steep and lengthy trails. For the majority of the Parks' visitors, scenic resources are limited to those areas of the park accessible by automobile and a very short walk. The three lookouts with restrooms, Waimea Canyon, Puʻu Hinahina, and Kalalau, rely on cesspools for wastewater disposal. Cesspool capacity at these locations is relatively limited and frequently results in restroom closures until

the cesspools can be pumped out. This in turn limits the convenience and amount of time visitors spend at the lookout. Parking is also limited at Kalalau Lookout and at Puʻu o Kila Lookout.

Limited parking at Waimea Canyon Lookout frequently results in bus queues on Kōkeʻe Road and vehicle parking along the shoulders of Kōkeʻe Road and the driveway to the lookout.

Waimea Canyon Lookout is the only one of the four major lookouts that is developed with ADA accessible facilities.

Issues, Opportunities, and Constraints

- The views from the lookouts are an important resource that should be protected from activities and development that would diminish the view or distract from the view context.
- Minimum standards for lookout facilities include: parking, restrooms, potable water, telephone, and interpretive signs.
- Access for persons with disabilities should be provided at the lookouts in compliance with ADA standards.
- The lookouts provide an opportunity to interpret the geology, flora, fauna, and history of the area and, together, to anchor the Parks' identity within a comprehensive visual framework.
- Lookout amenities, particularly restrooms, are often closed for maintenance, and are generally inadequate to meet visitor expectations.

Waimea Canyon Lookout (See Figure 5-2)

- The concession truck at Waimea Canyon Lookout has a transient, low-quality appearance ill-suited to the park's premiere visitor lookout destination.
- Picnic tables will encourage slower visitor turnover which will contribute to parking congestion and circulation problems.
- Due to poor bathroom layout, visitors tend to use the ADA bathroom adjacent to the

parking lot and will queue up there even when the other bathrooms are vacant. Waimea Canyon Lookout is the only concession location in the parks, besides the Kōkeʻe Lodge.

- Waimea Canyon Lookout is the first, and often the only experience visitors have of the Parks. Many visitors are unaware of the resources and amenities further up the mountain. Informational materials at Waimea Canyon Lookout can correct this shortcoming. Development at Waimea Canyon Lookout lacks cohesion due to piecemeal development.
- The lookout platforms and restrooms are disconnected. Functionally, the area between them is the primary pedestrian space, yet it lacks facility and aesthetic improvements. There is no entry definition to the lookout platforms.

Puʻu Hinahina Lookout (See Figure 5-3)

- The lookout has some potential for picnic facility development.
- There is excellent potential to develop interpretive signage and other materials.
- C Lookout is underutilized. Offers a view similar to Waimea Canyon Lookout which might result in lower visitor interest.
- C Canyon Lookout Platform:
 - Step connection to the upper lookout platform is awkward
 - Wall between levels bifurcates and disrupts the platform space.
 - Limited places to sit.
- C Niʻihau Lookout Platform:
 - The pathway is not obvious and the lookout is easily overlooked.
 - It is possible to connect the Niʻihau Platform and the Canyon Platform by a direct trail, rather than passing through the parking area. Site distances from the

driveway exiting onto Kōkeʻe Road are limited.

Kalalau Lookout (See Figure 5-4)

- The lookout has excellent interpretive potential for native and introduced plants, ethnobotany, pre-contact Hawaiian settlement, native birds, and native ecosystems.
- Area around restroom is planted and tended with native and introduced plants. The area has potential to develop into a native garden, CCC plant exhibit, or combination of the two to illustrate a transitional landscape.
- Adjacent Air Force Tracking Station imposes man-made structure on mauka views. However, the facilities represent another facet of the Kōkeʻe landscape and could be included in interpretive materials developed for this site.
- Visitors use the picnic table to get higher to expand their view of the valley. Development of an amphitheater-type berm set back from the edge of the lookout could serve this function.
- Open lawn around viewing platform has potential for development as a picnic area.
- Valley view and interpretive potential is approximately equivalent to Puʻu o Kila, thus Kalalau Lookout should be developed to provide access according to ADA standards. Nice use of stones to define parking lot edges, similar to use in Kanaloahuluhulu campground. Use should be considered as a Kōkeʻe design standard.
- C Path to lookout from bus parking area on Kōkeʻe Road is obscure. There is potential to develop a return through the interpretive garden and past the restroom to the main parking area.

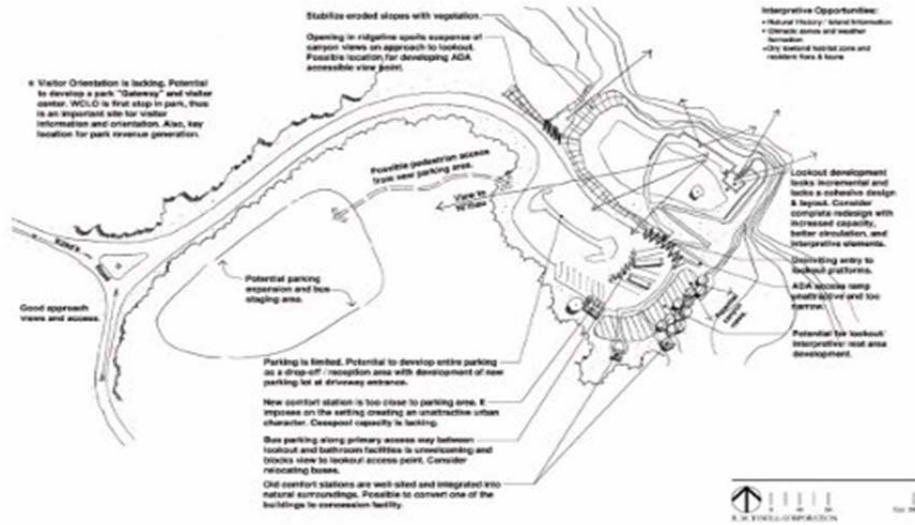
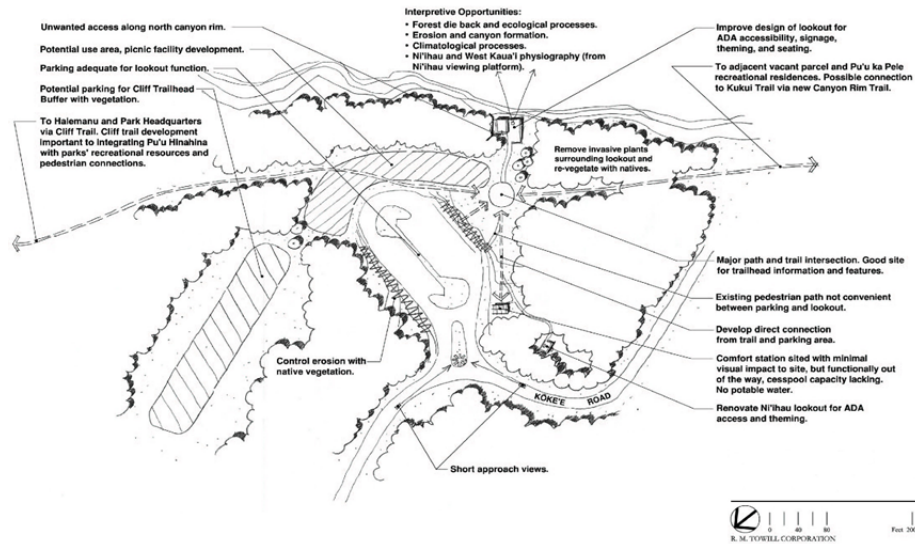


Figure 5-2 - Waimea Canyon Lookout Analysis Map

Figure 5-3 - Pu‘u Hinahina Lookout Analysis Map



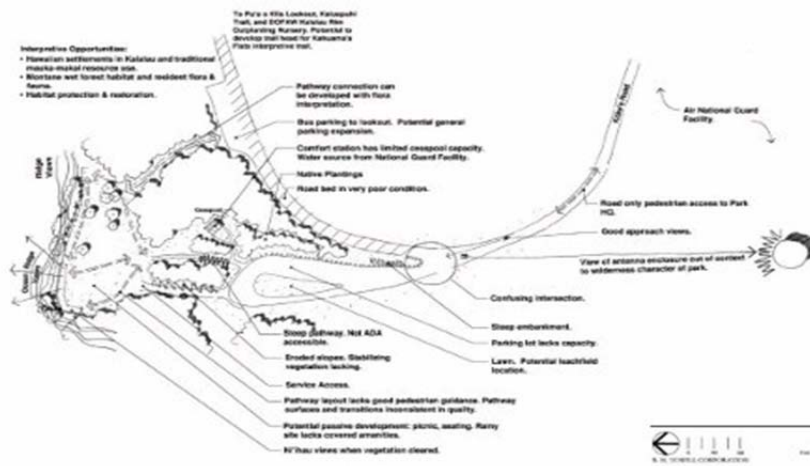
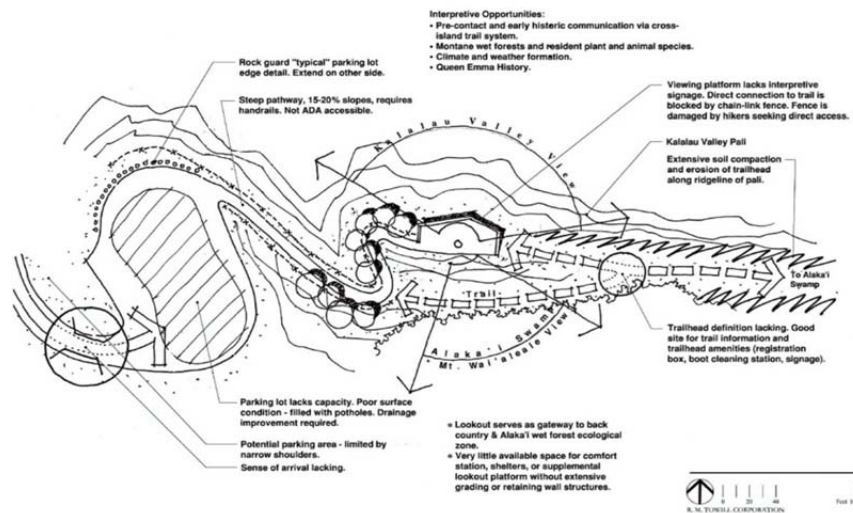


Figure 5-4 - Kalalau Lookout Analysis Map

Figure 5-5 - Pu‘u o Kila Lookout Analysis Map



- C Entrance to lookout is confusing: appears to be the end of Kōke‘e Road: can be corrected with better signage and/or more distinct landscape treatment of the entryway, and narrowing the visual corridor from Kōke‘e Road.
- C Pathway from parking lot is readily apparent, but access is steep and uneven.
- C There are no sheltered picnic facilities at this location.
- C The lookout is frequently rainy, but lacks sheltered picnic tables or a viewing area.
- C Significant erosion conditions exist near viewing platform at the start of the Pihea Trail.

Pu‘u o Kila Lookout (See Figure 5-5)

- Site is used as a staging area for overnight backcountry campers.
- Excellent interpretive potential for native plants, ethnobotany, native birds and ecosystems, pre-contact Hawaiian settlement, watershed functions, and climate and rain-cloud formation.
- Lookout interpretive material should be integrated with Pihea Trailhead content.
- Platform provides 360-degree views of western Kaua‘i, including distant views of the south shore.
- Cloud formation and rainfall are significant elements of the experience provided at this lookout.
- Potential to develop ADA accessible path to viewing platform via route originating at the opposite end of the parking lot from the existing path and skirting around the back of the vegetated mound at the edge of the parking area.

Recommendations /

Best Management Approach

Waimea Canyon Lookout

- Redevelop steps and ADA access ramp to viewing platforms.
- Re-landscape the slope up to the viewing platforms.

- Relocate bus parking stalls away from main pedestrian area between restrooms and platform. Designate parallel bus parking and passenger drop-off along southern edge of parking lot.
- Redevelop area between restrooms and canyon rim with pathway, picnic tables, informational and interpretive signage, and landscaping.
- Relocate ADA accessible bathrooms to a less obtrusive location away from the parking lot.
- Develop a permanent covered space for the concession truck or for a permanent snack and refreshment stand.
- Develop new parking lot at lookout driveway entrance.
- Develop kiosk and signage with maps and other informational materials introducing lookout visitors to Kōke‘e and Waimea Canyon State Parks’ other features, resources, and amenities.
- Develop interpretive materials to provide an overview of key themes of the entire parks system: natural resources and processes, geology, history, and recreational activities.
- Develop interpretive materials specific to the natural context and views from the lookout site, including:
 - descriptions of the dry lowland habitat zones and resident flora and fauna;
 - contrast between the warmer, drier lowland shrub lands and the wet forests at higher elevations;
 - description of the watershed originating in the Alaka‘i Swamp and Mt. Wai‘ale‘ale and the stream system through the canyons; and,
 - the geologic formation of Kaua‘i including the story of the volcanism and erosional forces that shaped the island.
- Provide limited lighting in pedestrian areas.

Pu‘u Hinahina Lookout

- Develop a picnic area with covered tables.
- Develop ADA accessible pathways to Ni‘ihau lookout platform.
- Redevelop stairway from parking lot to Waimea Canyon lookout platform to correct erosion problem.
- Provide landscape.
- Develop trailhead and connection to Canyon Trail.
- Maintain existing helicopter landing zones for park maintenance and emergency landings.
- Develop interpretive signage that builds on the themes from Waimea Canyon Lookout, including:
 - Views of the Alaka‘i Plateau provide an opportunity to describe orographic rainfall process and moisture gradients.
 - On the opposite canyon rim, areas of forest dieback offer a visual example for discussion of dieback as a normal forest ecosystem process.
 - Signs of goats are evident throughout the barren terrain of the canyon. The theme of feral ungulates and their effect on native vegetation can be developed effectively at this location.

Kalalau Lookout

- Develop Kalalau Lookout as a trailhead hub with connections to the trail system, including a new interpretive nature trail, in Kahuama‘a Flats and Pu‘u o Kila Lookout.
- Develop ADA accessible pathway from parking lot to restroom, viewing platform, and picnic tables.
- Construct sheltered picnic tables in the open lawn area around the viewing platform.
- Develop a grassed viewing mound behind paved viewing area to provide a higher vantage for deeper views into the valley.
- Develop landscaping around the restroom with examples of native and introduced species planted during the CCC forestry period.

- Develop interpretive signage and kiosks to describe the Parks upland features, amenities and resources. Include the following elements that are on display in the surrounding area:
 - Montane wet forests and the resident plant and animal species;
 - Topographic diversity and geologic history evident in views spanning from the Kalalau Valley floor to the expanse of the Alaka‘i plateau and Mt. Wai‘ale‘ale;
 - Hawaiian settlements in Kalalau Valley and traditional mauka-makai resource use; and
 - Man-made structures, particularly the Air Force tracking station “golf ball”.

Pu‘u o Kila Lookout

- Repave and improve parking lot with curb stops made from natural materials and improved drainage to reduce development of potholes.
- Provide bike racks at base of path to viewing platform.
- Provide access to viewing platform on the side coming directly from Pihea Trail.
- Stabilize soils along valley rim at trailhead through re-vegetation and step terracing.
- Develop interpretive signage to describe scenic elements on display in the surrounding area, including:
 - Montane wet forests and the resident plant and animal species;
 - Topographic diversity and geologic history evident in views spanning from the Kalalau Valley floor to the expanse of the Alaka‘i plateau and Mt. Wai‘ale‘ale;
 - Hawaiian settlements in Kalalau Valley and traditional mauka-makai resource use; and
 - Man-made structures, particularly the Air Force tracking station “golf ball”, and the distant views of Kaua‘i’s south-shore settlements.

Waipo‘o Falls Viewpoint

- Install warning signs and traffic calming devices on Kōke‘e Road at approach to the viewpoint to prevent accidents caused by pedestrians crossing the road. Traffic calming devices could include rumble strips, speed tables, chicanes, or other measures.
- Install curbs or other shoulder obstructions using natural materials (stones, logs) to prevent motor vehicles from illegally stopping on canyon side of road.
- Re-vegetate or otherwise stabilize erosion damage along the road shoulders.
- Develop a safe cross-walk between the picnic area and the viewpoint. Use striping, signage, and possibly lighting and speed tables.
- Develop interpretive materials at the site to describe Waimea Canyon views, and legends related to nearby geological formations.

5.5 OUTDOOR RECREATION RESOURCES

◆ GOALS

To establish a multifaceted wildlands outdoor recreation program within an environment that promotes preservation of natural areas and cultural features, encourages the pursuit of knowledge, and encourages the enjoyment of the outdoors in a safe and responsible manner.

◆ VALUES

The natural, historic, and cultural resources of Kōke‘e and Waimea Canyon State Parks create an environment valued for a wide array of recreational interests:

- The pursuit of knowledge through the direct observation of natural resources and processes, through access to historic and archaeological features, and through exposure to cultural values and practices.
- Physical challenge through activities such as hunting, fishing, hiking, and

camping.

- Personal retreat and refreshment within the large, isolated spaces of the forest.
- Social gatherings for picnics, camping, or cultural events.

Kōke‘e and Waimea Canyon’s outdoor recreation resources are also valued for their economic potential as a unique attraction for visitors to the island, and as a resource to support local commercial enterprises, e.g., guided tours, hikes, and other “eco-tourism” operations.

It is therefore important that measures be undertaken to ensure that the Parks’ resources are not diminished. The fragility of the region requires coordinated resource management to balance the potentially conflicting interests of recreational activities and natural, historic and cultural resources.

◆ HIKING TRAILS AND ACCESS

Conditions / Fragility (Stressors)

Kōke‘e and Waimea Canyon State Parks contain designated trails that are maintained by the Division of State Parks and Nā Ala Hele. Trails are regularly maintained and passable, with the exception of the Mōhihi Trail. Two new designated trails and several extensions or realignments to existing trails are being considered by the Division of State Parks. Trail maintenance involves clearing overgrowth of vegetation, controlling runoff and stabilizing soils against erosion. Steps and structural elements for stabilizing the trail may be required in steep sections. See **Table 5-1** and **Figure 5-6**.

Resource Limits

Hiking resources are limited to designated trails and roadways.

Public Use / User Limits

Information about demand for hiking resources and use of existing trails is limited. Hiking is

Table 5-1
Designated Trails – Existing and Proposed
Kōke‘e and Waimea Canyon State Parks

Trail	Miles
Nā Pali Overlook Trails	
Honopū Route	2.2
Awa‘awapuhi	3.25
Nu‘alolo	3.75
Pihea	3.7
Miloli‘i	2.2
Waimea Canyon Vista Trails	
Black Pipe**	0.75
Canyon**	2.7
Ditch	1.5
Po‘omau Ditch **	5.0
Po‘omau Canyon Lookout	0.3
Kohua Ridge	2.5
Cliff	0.2
Kukui	2.5
Iliau Nature Loop	0.25
Forest Trails	
Pu‘u ka ‘Ōhelo	0.4
Berry Flat	0.7
Waininiua	0.6
Halemanu- Kōke‘e	1.1
Faye	0.25
Kumuwela	0.8
Kaluapuhi**	1.2
Nature *	0.1
Water Tank**	1.0
Kaunuohua *	na
Camp 6 *	na
Alaka‘i Swamp Trails	
Alaka‘i Swamp	3.5
Mōhihi-Wai‘ale‘ale Route	4.0
Kawaikōi	1.75
Total Mileage	46.2

Notes:

* New trails under consideration.

**Existing trails considered for extension

known to be among the most popular recreational attractions in the parks, and demand for maintained trails for hiking and access to backcountry natural areas for recreation, hunting, research, and resource collection is high. Surveys of recreational hikers indicate that the greatest preference is for trails of less than 3 miles in length, with easy grades, and

views of water features (DLNR 2003).

Limits on use are unknown and no information is available to indicate that particular trails are overused and suffering from popularity. Trails require routine maintenance to amend natural deterioration and human damage. Damage to trail fixtures and amenities are most noticeable, particularly damage to signage. Further, parking at trailheads is a limiting factor often overlooked by determined hikers who mitigate this constraint through creative, and oftentimes destructive, parking techniques.

Issues, Opportunities, and Constraints

Hiking activities and information are disseminated by three agencies, and permits are issued by two. Centralized, uniform, and coordinated information and permitting will facilitate user convenience.

- With a variety of facilities available and with people being out with different objectives there are user conflicts between hikers, hunters and gatherers.
- Regular maintenance of trails is important to enhance the outdoor experience.
- Directional and informational signs at the start (or end) of the trail and along the trail (mileage markers) are needed to keep hikers informed and provide guidance.
- Monitoring trail use is essential for maintaining safe trail conditions and determining facility requirements, e.g., parking, signage, water, toilets, trash disposal.
- Minimum facilities at trailheads should include parking, restroom, trash bins, directional and informational signs. User / use fees are currently assessed for commercial tour groups.
- The Kōke‘e and Waimea Canyon area provides many opportunities to commune with nature, view natural features, observe natural processes, and obtain exercise.
- Black Pipe Ditch maintenance trail has the potential for development into a recreational

trail. As a water feature, the irrigation ditch is an attraction for hikers.

- The trail network provides an array of trail experiences (e.g. easy, moderate, difficult, wet, dry, open, forested).
- Networking of trails can be a means of centralizing facilities such as parking and restrooms.
- Park visitors are typically day-trippers who prefer short hikes of less than 3 miles with scenic water features or panoramic views.
- Pedestrian access in the Parks is limited to the road shoulder and trails. Trail connections are poorly developed and do not provide coordinated access through the parks and to main park facilities and features.
- Invasive plants (i.e. blackberry) on trails degrade the environment and the trail experience.
- Parking at trailheads is limited.

Recommendations /

Best Management Approach

- Consolidate trailheads at key trail junctions. Develop key trailhead “nodes” with visitor amenities, parking, and interpretive facilities at Kalalau Lookout, Awa‘awapuhi-Kaluapuhi trailhead, Water Tank trailhead and Canyon trailhead at Pu‘u Hinahina Lookout.
- Complete Nu‘alolo Trail and Awa‘awapuhi Trail with Kaunuohua Trail and Water Tank trailhead.
- Develop trail connection between Kanaloahuluhulu Meadow and Halemanu, with links to short-term rental cabins.
- Complete Po‘omau Ditch Trail and Canyon Trail connection to Cliff Trail along canyon rim and trailhead near Pu‘u Hinahina Lookout.
- Construct switchback trail to complete the connection between Berry Flat Trail and Kaluapuhi Trail and Camp 6 Trail.
- Construct switchback trail to connect Water Tank Trailhead to Kaunuohua Trail and

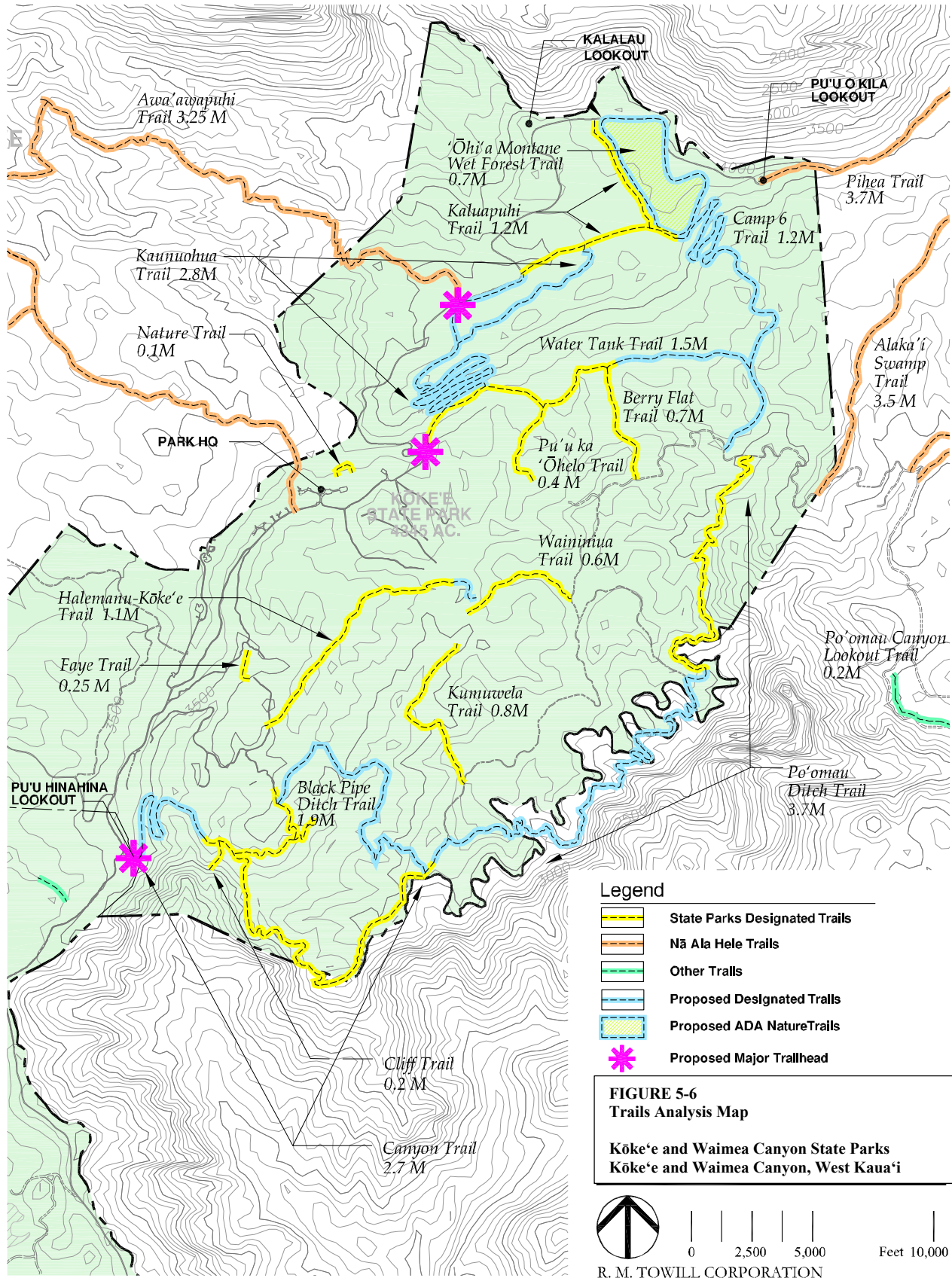
Kaluapuhi Trail.

- Construct trail on Maluapopoki Road to connect Halemanu-Kōke‘e Trail and Waininiua Trail.
- Update signage and interpretive botanical map on Awa‘awapuhi Trail, Iliau Nature Loop Trail, and Nature Trail.
- Develop off-street parking for horse trailers at Kukui Trailhead and Nu‘alolo Trailhead.
- Improve old Mōhihi Ditch Trail for recreational use and access to backcountry campground (outside of park boundaries).
- Improve and integrate Black Pipe Ditch maintenance trail into Kōke‘e and Waimea Canyon State Parks trail system.
- Update trail guide materials and trailhead signs to inform visitors of trail conditions, length, amenities (restroom, picnic and camping facilities) environmental characteristics (forest, canyon, ridge, scenic), features (water features, archaeological and historic sites, significant trees), and uses (horse trail, hunter access, interpretive trail, ADA accessible).
- Develop educational materials at trailheads to inform hikers about possible encounters with hunters, hunting dogs, horses, and other trail users.

◆ CAMPING AND SHORT-TERM CABIN RENTAL

Conditions / Fragility (Stressors)

Kōke‘e and Waimea Canyon State Parks provide opportunities for tent and cabin camping. Camping facilities are not available within Waimea Canyon State Park itself, but the park does contain Kukui Trailhead which provides access to backcountry campsites in Pu‘u ka Pele and Nā Pali Kona forest reserves within Waimea Canyon.



Resource Limits

- The Kanaloahuluhulu Meadow campground is the only car camping facility within the two parks.
- Backcountry camping is limited to facilities located within Waimea Canyon, Sugi Grove, and Kawaikōi Camp.
- The short-term rental cabins at Kanaloahuluhulu are the only public cabin resources within the park.

Public Use / User Limits

- There is demand for additional short-term cabin rentals. Existing cabins at Kanaloahuluhulu Meadow are at 100 percent occupancy. Expansion of cabins is restricted by availability of water and sewer service. Also, an expansion area with sufficient space to maintain a semi-private wilderness experience for cabin renters is necessary.
- Kanaloahuluhulu Campgrounds have high vacancy rates, indicating low demand for car camping at this location.

Issues, Opportunities, and Constraints

- Wilderness quality is important to campground appeal.
 - Nonprofit agencies should be required to provide open, public rental periods for groups and families. DLNR should be notified of available dates that are open to the general public.
 - Serenity is important to many campers.
 - Leases for the Hawai‘i Conference of the United Church of Christ and the Hawai‘i Association of Seventh-Day Adventists are not church camp/group leases, but recreation-residences leases. These lots are ideally suited for group use and may be more beneficially operated through a private concessionaire for public use.
- C Camping activities and information are disseminated by three agencies, and permits are issued by two. Centralized, uniform, and coordinated information and permitting will

facilitate user convenience.

- C There is a lack of public group camping facilities.

Recommendations / Best Management Approach

- Develop additional short-term rental cabins adjacent to existing State cabins.
- Develop new car/tent camping facilities away from Kanaloahuluhulu Meadow to provide more secluded camping opportunities when there is sufficient demand.
- Develop camping facilities at Pu‘u Lua Reservoir (see Fishing Resources), with parking, restroom, and fire rings.
- Develop single camping permit process. Set up a system where Kōke‘e Lodge or the concessionaire will issue camping permits and other permits.
- Improve signage to existing camp sites.

◆ **PICNICKING****Conditions / Fragility (Stressors)**

Kōke‘e and Waimea Canyon State Parks have numerous picnic facilities located within a wide range of environmental contexts. Additionally, adjacent forest reserves contain picnic areas maintained by DOFAW. See **Figure 5-7**.

Resource Limits

- Not all facilities are ADA accessible.
- Sheltered picnic facilities are limited. Currently sheltered picnic tables are available only at the stone pavilion at Kanaloahuluhulu and facilities at Pu‘u ka Pele. Sheltered tables are also provided at the beginning of the Kukui Trail and outside of park boundaries in various forested areas maintained by DOFAW.
- Picnic tables with BBQ facilities are limited to the stone shelter picnic facilities at Kanaloahuluhulu, and the Pu‘u ka Pele Picnic Area. BBQ pits at the stone shelter are in poor condition.

- Large group picnic facilities are limited to Kanaloahuluhulu Meadow and Pu‘u ka Pele Picnic Area.

Public Use / User Limits

Information about public demand for picnic facilities is anecdotal. Based on observations by park personnel and the project team, Kanaloahuluhulu Meadow is identified as the most popular picnic area. Picnic tables around Kōke‘e Lodge are typically full on weekends and holidays. Pu‘u ka Pele picnic facilities are generally less utilized, often vacant, and tend to be used by local residents rather than visitors. The major lookout facilities, though not developed with picnic facilities, would likely be popular for picnic use.

Users are limited only by the availability of open picnic tables, and the availability of other picnic amenities, such as BBQ pits, shelter, water, and restrooms.

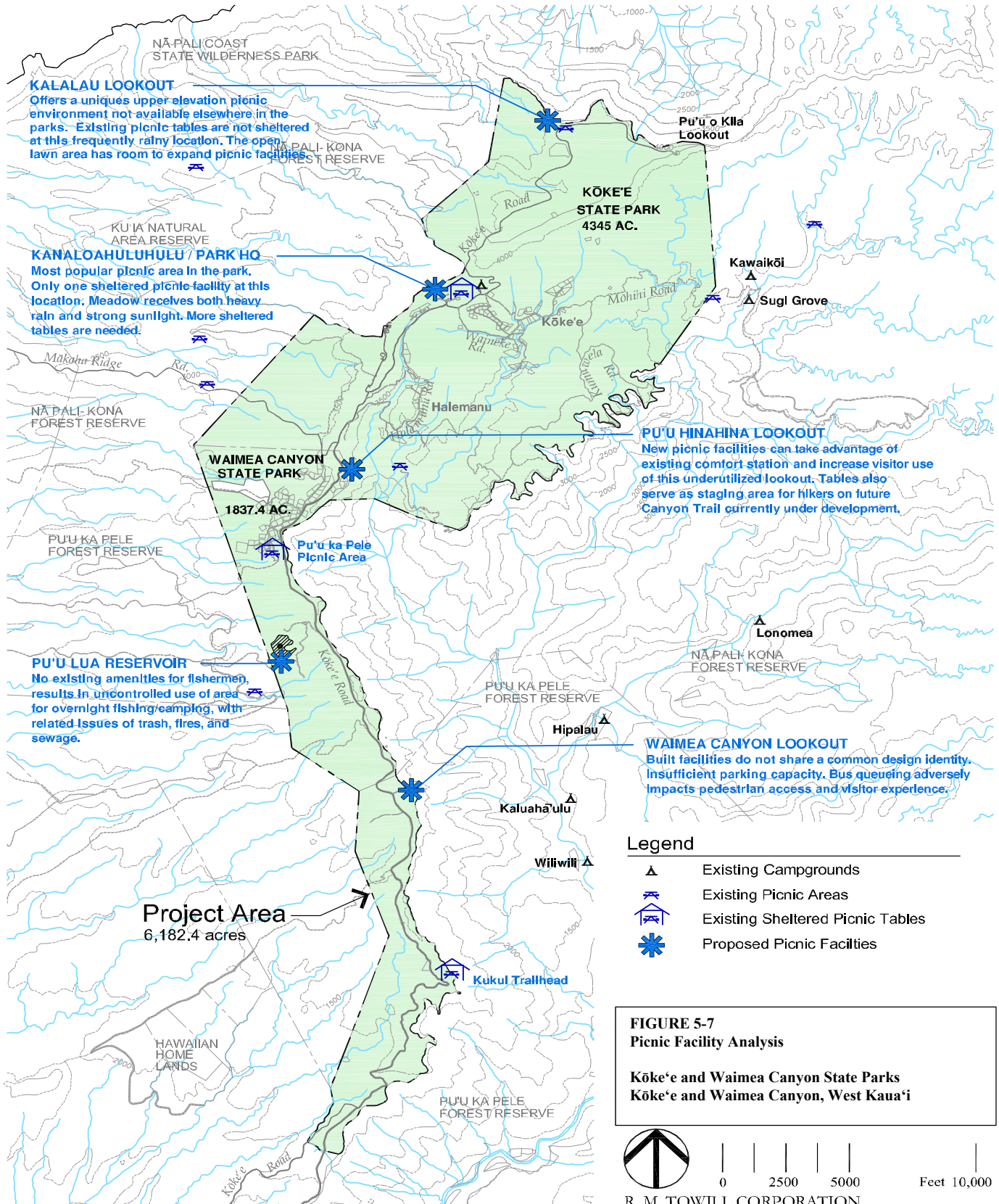
Issues, Opportunities, and Constraints

- Parking areas should be paved and properly drained to prevent the ponding of water during wet periods and prevent soil erosion.
- The most popular picnic site is Kanaloahuluhulu Meadow, where tables near the road are often sought by residents and visitors alike to have a meal followed by a rest or play in the open meadow.
- Kalalau Lookout offers a unique, upper elevation picnic environment not available elsewhere in the Parks. Existing picnic tables are not sheltered at this frequently rainy location. There is room in the large lawn area to expand the number of tables (currently two). No drinking water is available and parking is limited.

- C Kanaloahuluhulu Meadow is not accessible to persons with disabilities because of the lack of paved walkways. Aside from the stone shelter, most picnic tables are located on grass or other unimproved surfaces.
- C There is no signage identifying the picnic facilities on the Kukui Trail.
- C The Kukui Trail picnic area lacks restroom facilities.
- C Pu‘u Lua Reservoir – There are no existing amenities for fishermen, which results in uncontrolled use of the area for overnight fishing and unauthorized camping. Picnic tables, trash cans, BBQ pits, and other such amenities would help define the usable recreational space, reduce impacts from unstructured use of the area, and improve conditions for fishermen.

Recommendations /Best Management Approach

- Develop ADA accessible picnic facilities at Pu‘u Hinahina lookout. This site offers an opportunity to picnic near the canyon rim in a relatively warmer and drier area with shade trees. It could cater to family type picnicking rather than large group picnicking. Picnic facilities at this location can take advantage of existing amenities, including a restroom for men and women, and limited parking.
- Develop a wooded picnic area with views of Waimea Town.
- Provide potable water and upgrade sewage system at Kalalau Lookout.
- Develop picnic facilities at Pu‘u Lua Reservoir with BBQ pits, water, and restroom.



- Provide access to picnic tables at Pu‘u Hinahina Lookout in compliance with ADA standards.
- Provide signage at each picnic area to identify its location to park visitors.
- At Kanaloahuluhulu Meadow: Restore the Kōke‘e Picnic Pavilion to match historic design. Resurface existing parking areas within existing footprint.

◆ FISHING

Conditions / Fragility (Stressors)

The principal fishing sites within the Kōke‘e Public Fishing Area are located west of Kōke‘e Road centered around Pu‘u Lua Reservoir. Designated streams include Koai‘e, Mōhihi, Wai‘alae, Kawaikōi, Waikoali, Kōke‘e, and Kauaikananā Streams and the entire ditch system. Fishing is prohibited in Kōke‘e Stream and its tributaries above Camp Sloggett.

Fishing sites, particularly Pu‘u Lua Reservoir, are subject to heavy use during the fishing season. Impacts include trampling of vegetation, unauthorized camp fires, trash and other human waste.

Fish stocks are susceptible to overfishing, excessive draw down of water from Pu‘u Lua Reservoir, drought, and the natural life-cycle of the non-reproducing trout stock used by the Division of Aquatic Resources.

Resource Limits

Fishing resources include fishing facilities and fish stock. Developed fishing facilities are limited to the following:

- Division of Aquatic Resources supply shed and fish hatchery at Pu‘u Lua Reservoir;
- Fish checking station for recording catches, and;
- Port-a-johns set up seasonally at Pu‘u Lua Reservoir.

In 2002, DAR released 40,000 rainbow trout into Kōke‘e State Park’s streams, ditch system,

and reservoir. DAR typically releases 20,000 fish each year and anticipates an initial natural loss of 20 percent of the total stock. The fish do not reproduce and have a life expectancy of 2 years.

Public Use / User Limits

Public demand for fishing is very high. According to DAR, there is demand for year-round fishing utilizing existing streams or expansion into other reservoirs.

The current fishing season is limited to a total of approximately 30 days per year. The bag limit for trout is seven (7) fish per person per day.

During the 2002 fishing season, 1033 anglers reported into the fish check-in station and recorded a total catch of 1,937 fishes for the season.

Issues, Opportunities, and Constraints

- The use of bag limits is an effective means of sustaining fish populations, however, monitoring is required.
- The Pu‘u Lua location can be utilized by other park visitors during periods when fishing is not allowed. Activities could include viewing, hiking, and picnicking.
- Kōke‘e and Waimea Canyon State Parks are one of the premiere freshwater fishing destinations in the State.
- C Pu‘u Lua access road is unimproved and requires 4-WD. Parking at the reservoir is limited.
- C Fishermen light fires at night. Prohibition on fires is not effective. Lack of designated fire rings and ash cans in fishing areas results in breakdown of fire control.
- C There are insufficient overnight facilities for fishermen. There are no campgrounds, or restrooms near Pu‘u Lua Reservoir.

Recommendations /**Best Management Approach**

- Change HAR Title 13, Subtitle 4 – Fisheries, Chapter 64 – Kōke‘e Public Fishing Area, Kaua‘i, to expand the fishing season year-round.
- Expand the trout stocking program to include Kōke‘e Ditch, and Koai‘e, Mōhihi, Wai‘ale, Kawaikōi, Waikoali, Kōke‘e, and Kauaikananā Streams.
- Develop segments of the Kōke‘e Ditch for fishing. Detain water in limited locations to create “fishing holes” along the water course. Improve trail access to developed segments.
- Develop overnight campground facilities at Pu‘u Lua Reservoir with permanent bathroom facilities, parking, and fire rings.
- Pave access road to Pu‘u Lua Reservoir.
- Develop fish population monitoring program for Pu‘u Lua Reservoir, Kōke‘e Ditch, and major streams in Kōke‘e and Waimea Canyon State Parks.

◆ **HUNTING****Conditions / Fragility (Stressors)**

Public hunting is permitted within certain areas of Kōke‘e and Waimea Canyon State Parks, and throughout the surrounding forest reserves and natural area reserve. Hunting boundaries divide areas by type of game, hunting method, season, and other special conditions.

Resource Limits

Limits on game animals are determined by the number of animal “takes” from the natural game population and released game stock.

Public Use / User Limits

There is high demand for hunting opportunities and resources in the Kōke‘e and Waimea Canyon region.

The parks are used by hunters primarily for access. Hunting within the park boundaries is

extremely limited by location and method. Hunting activities within the surrounding region are limited by location, season, type of game and hunting method. Hunting is limited to the fall and winter months of September and February (bow and arrow hunting only, no dogs); October through November and March and April (bow and arrow or knife hunting only, dogs permitted). Hunting in all forest reserve areas is restricted to weekends and State holidays only.

Issues, Opportunities, and Constraints

- The use of bag limits is an effective means of sustaining the population of game. However, monitoring of animal populations is required.
- Game animals severely degrade the natural habitat and are a major obstacle to native plant recovery and restoration efforts.
- With a variety of facilities available and with people in the parks for different objectives, there are user conflicts between hikers, hunters and gatherers.
- Regular maintenance of trails and roads is important to maintain access to hunting areas.
- The Kōke‘e Hunter Checking Station is the first “official” looking structure within the park and is often mistaken for a ranger station by park visitors.
- Hunters frequently lose their orientation and stray out of hunting area boundaries.
- Lost hunting dogs are a common occurrence and present several problems: 1) uncontrolled dogs can frighten, and in rare cases, attack park visitors; and, 2) dogs found by park residents and visitors are often taken to the Humane Society shelter in Līhu‘e, and the hunters who own the dogs have to contact the shelter and make the long trip from Kōke‘e.
- Feral animal control is a constructive means of engaging hunters in the Parks.
- Within the next 4 - 7 years, DOFAW has plans to replace the old Kōke‘e Hunter

Checking Station with a larger building with office space for DOFAW and DOCARE staff and parking for hunters.

- Increasing license fees or other user fees for hunters would help offset costs of game stocking and management programs.

Recommendations /

Best Management Approach

- Develop educational materials and programming to inform hunters about interactions with hikers and other park users. Incorporate materials into hunting license program.
- Develop educational materials to inform park visitors about hunting as a significant cultural, recreational, and subsistence activity, and integral part of the “Experience”.
- Relocate the Hunter Checking Station out of sight from Kōke’e Road to avoid confusing park visitors.
- Construct (utilize) temporary kennels for lost dogs at the Hunter Checking Station.
- Develop directional and interpretive signs at trailheads and at key points along trails to keep hunters informed and provide guidance (mileage markers and limits of hunting areas).
- Organize special hunting events to control feral animals within park boundaries.
- Allow trapping within developed and high use areas of the Parks.

◆ **RESOURCE GATHERING**

Conditions / Fragility (Stressors)

Based on observations by park staff, commonly collected plants, including plums, maile, mokihana, ferns, and other forest materials are scarce in easily accessible areas. Natural resources are subject to overharvesting beyond their ability to regenerate or reproduce. Adverse impacts from gathering activities, including trampling, breaking plant materials, disruption of plant life cycles, and the potential for

introduction of seeds that are stuck to clothing and shoes, place additional stress on natural resources valued for gathering.

Resource Limits

Resource limits are unknown due to lack of data. Generally, materials collected are limited by growth rate, the presence of threats, and accessibility. Thus, resource limits are species-specific and should be determined for each resource type and location.

Plum Trees – Plum trees are not naturalized, reproducing species, thus they are limited by their natural life-cycle. Most of the plum trees from which the public collect fruit were planted by CCC workers during the 1930s, and thus are in the range of 60 - 75 years old and nearing the end of their fruit-bearing years. Without new plantings of plum trees, the annual plum harvest will largely die out within the Master Plan time horizon.

Public Use / User Limits

Natural resource gathering is a high-demand activity. Individuals and families gather natural resources for a wide variety of uses. People who gather natural resources at the Parks typically go to their favorite areas and secret collecting spots. Easily accessible areas are generally denuded of desired resources.

Rates of harvest are unknown, but vary by species based on season and resource use. Plum trees, for example, are stripped bare in the short summer picking season. Maile is in higher demand during graduation season when it is used in lei-making.

Issues, Opportunities, and Constraints

- Access should be maintained for materials gathered for traditional uses, including food, decorative foliage, craft materials, medicinal plants, and materials used in other cultural practices.
- Sustaining forest resources while allowing forest gathering activities should be a part of

- the ongoing monitoring programs.
- Poaching of native hardwood trees occurs throughout the parks and surrounding forests.
- Fuel loads that increase fire hazards may be reduced by allowing commercial or public collection of fallen trees for use as firewood or salvage for woodworking.
- C Easily accessible gathering zones are quickly depleted of resources.
- C Permits are required from both DSP and DOFAW for resource collecting.

Recommendations /

Best Management Approach

- Revise permit procedure. Consolidate permitting process into one permit to be issued by both DSP and DOFAW that covers both Divisions' jurisdictions.
- Establish gathering zones and restricted zones, on a rotational basis, to allow plants to recover from gathering.
- Develop monitoring program to track condition of plants and materials targeted by gatherers.
- Develop program to cultivate and out-plant species desired by gatherers, including mokihana, maile, and ferns. Determine plant species for program based on permit data and field surveys.

◆ OTHER RECREATION USES (MOUNTAIN BIKING, ROAD BIKES, HORSEBACK RIDING)

Conditions / Fragility (Stressors)

Off-road bicycling (mountain biking) is currently prohibited within Kōkeʻe and Waimea Canyon State Parks. The prohibition is announced on a sign posted at the entrance of Waimea Canyon State Park on Kōkeʻe Road. Mountain biking is allowed in certain areas within the State Forest Reserves. The paved and unpaved roads throughout the Parks are well-suited for bicycle use. Commercial downhill bicycling is a regular activity on the

State highway through the park.

Nearly all of the trails in Waimea Canyon State Park and the lower regions of Kōkeʻe State Park are well-suited for horseback riding. Two trails in particular, Kukui Trail and Nuʻalolo Trail, are regularly used for horseback riding and by hunters with pack horses accessing surrounding hunting areas.

Resource Limits

Bicycling is restricted within the parks to existing roadways. Bicycles and other wheeled vehicles are not permitted off-road or on trails. Downhill bicycling operations are not permitted on park property and are not regulated by DLNR personnel.

Designated trails within Kōkeʻe and Waimea Canyon State Parks are not open to equestrian use. There are no public or commercial stables and no developed parking areas for horse trailers. Several lease cabins are developed with private stables leftover from the old days when horseback was a more common form of travel in the mountains. However, these facilities are not open for public use.

Public Use / User Limits

There is a vocal demand for mountain bike access to trails in Kōkeʻe and Waimea Canyon. The level of demand is unknown. Use of existing park trails is prohibited due to the potential for environmental damage and conflicts with hikers and hunters on the trails. For informational purposes, mountain bike impacts and user limits could be monitored on open trails in the State Forest Reserves.

Despite the lack of amenities, the Parks are regularly used for horseback riding by hunters and pleasure riders. Based on input from park staff, demand for equestrian facilities is primarily focused on developing horse trailer parking facilities at Nuʻalolo and Kukui Trailheads. It is not known if there is a demand for stables or commercial riding operations.

Issues, Opportunities, and Constraints

- Mountain bikers need a place to ride.
- Trails and unimproved roads through the Kōkeʻe area and the contour road through the Puʻu ka Pele area are well-suited for horseback riding and bicycle riding.
- Activity zones should be created where preferences can be given to different uses, such as mountain biking.
- C The impacts to trails and the environment should be considered before allowing certain uses on trails.
- C Bicycles should be prohibited from trails where a potential conflict with hikers exists.
- C Improved roads are narrow with many blind curves, thus are dangerous for slow-moving bicycles and horses.
- C User fees, permits and enforcement should be considered before allowing certain uses on trails.
- C Horseback riding facilities are inadequate, particularly parking for horse trailers.
- C Existing unpaved roads are narrow with many blind curves, and may pose a safety concern for slower moving bikes and horses.
- C It is difficult to differentiate enforcement of mountain biking vs. trail or road riding. Heavy fines and equipment confiscation may deter mountain bikers from riding in restricted areas.

Recommendations /**Best Management Approach**

- Develop off-street parking for horse trailers at Kukui Trailhead and Nuʻalolo Trailhead.
- Develop a designated mountain biking area within non-native timber stands. For example, designate Pine Forest Drive Picnic Area on Mākaha Ridge (managed by DOFAW) for mountain bike use.
- Permit recreational bicycle riding on designated unimproved roads throughout the Parks.
- Prohibit mountain biking on all recreational trails within the Parks.

- Develop brochure identifying areas that are open and closed to bicycle riding and rules, restrictions and fines for riding.

◆ **RECREATIONAL MOTOR VEHICLE USE****Conditions / Fragility (Stressors)**

There are no developed resources for recreational motor vehicles within the Parks. Existing unpaved roads are attractive for recreational vehicle use, particularly for 4-WD vehicles and off-road motorcycles. Unpaved roads in Kōkeʻe are in poor condition and require regular maintenance to remain serviceable.

Resource Limits

- Impacts from motorized vehicles include noise, exhaust, dust, and rut and erosion damage to unpaved roads, trails, and other off-road areas.
- Data on how many vehicles, when, and under what conditions they operate on roads within the Parks is not available. All unpaved roads show signs of heavy vehicle use, particularly those that provide access to the lease lot areas.

Public Use / User Limits

- Operation of recreational all-terrain vehicles, including dirt bikes, are not permitted within the Parks.
- Off-road operation of any vehicle is not permitted within the Parks.
- 4-WD vehicles and street-legal off-road motorcycles are permitted on unpaved roads.

Issues, Opportunities, and Constraints

- The use of recreational motorized vehicles in the parks, especially, dirt bikes, has the potential to conflict with other park values and goals, particularly those related to wilderness and environmental protection.
- Recreational motor vehicle use regulations are poorly enforced.
- 4-WD vehicles provide an opportunity for

people who lack mobility to access and experience remote places.

- Camp 10 Road is a popular road for 4-WD vehicle use, providing access to the remote Waimea Canyon headlands, Kōke‘e Ditch origins, and numerous mountain streams.
- C Recreational motor vehicle use introduces adverse impacts to natural areas that significantly degrade the wilderness experience expected by other park users, e.g. campers, hikers, hunters, and naturalists.
- C Restrictions on dirt bikes are difficult to enforce in remote areas.

Recommendations /

Best Management Approach

- Prohibit all use of unlicensed recreational motor vehicles, including dirt bikes and ATVs within the Parks.
- Permit 4-WD vehicles and licensed motorcycles on unpaved roads within the Parks.
- Construct barriers to block access in areas where illegal off-road vehicle use is evident. Use natural materials (logs, stones), where available and effective.
- Develop signage at trailheads to notify the public of prohibition on recreational off-road vehicle use.
- Develop a monitoring program to determine impacts of public and commercial 4-WD vehicle use on unimproved park roads, notably the Camp 10 Road. Assess the number and type of vehicles using the road, conditions under which the road is used, and corresponding wear and damage to the road.
- Monitor unpaved roads for possible closure during storm events.
- Work with recreational dirt bike riders to identify alternative locations for off-road use. Opportunities may exist in former agricultural lands to designate recreational off-road vehicle areas.

◆ **COMMERCIAL RECREATION USES/ ECOTOURISM**

Conditions / Fragility (Stressors)

Commercial recreation activities include rental cabins, guided trail hikes, horse rides, downhill bicycling, and 4-WD van tours.

Resource Limits

- The availability of commercially-operated services and activities is limited by the market, regulatory constraints, and the physical resources of the Parks.

Public Use / User Limits

- Commercially guided hikes are limited by permit to Nā Ala Hele trails.

Issues, Opportunities, and Constraints

- There is visitor demand for off-road tours, e.g., 4-WD van tours on unimproved roads such as Camp 10 Road. 4-WD van tour operators prefer poorly maintained roads to give their clients additional thrills. Van tours currently are not permitted within the Parks.
- Eco-tour activities have the potential to conflict with other park uses and values.
- Trails and unimproved roads through the Kōke‘e area and the contour road through the Pu‘u ka Pele area are well-suited for horseback riding and bicycle riding.

Recommendations /

Best Management Approach

- Designate trails for guided hiking trips.
- Develop staging areas for commercial horseback rides and bicycle rentals at the Kanaloahuluhulu and Pu‘u ka Pele picnic areas.
- Improve and open Camp 10 Road to commercial 4-WD van tours.
- Develop environmental education and certification program for ecotour operators to ensure that operations are compatible with park values and goals.

5.6 RECREATION RESIDENCES

Kōkeʻe and Waimea Canyon State Parks are unique in that they contain a significant number of income-producing properties. These include 105 leased recreation residential sites located in Puʻu ka Pele, Halemanu Valley and Kōkeʻe, plus one commercial lease to Kōkeʻe Ventures for the Kōkeʻe Lodge and the 12 state rental cabins.

◆ EXISTING BUILDINGS

As part of the Master Planning effort to characterize the building resources within the Parks, a survey of the Parks' existing buildings was conducted. A total of 150 lots are located in the Kōkeʻe -Waimea area. However, only 138 structures were evaluated for this study. The remaining lots are vacant.

The heritage of Kōkeʻe State Park as a valued retreat from the urban environment is exemplified by the vacation cabins. The cabins are loosely clustered into three forested neighborhoods and represent the “residential villages” of the Parks. The neighborhoods are picturesque, consisting of wooden cabins with weathered facades, metal roofs, wide porches and chimneys. They are strung together along meandering dirt roads with narrow dirt driveways, nestled into a landscape of natural and modified forest growth and ornamental gardens.

The tradition of recreation residences in the Parks, their architectural character and the landscape elements they have introduced have created a unique setting not duplicated by any other park in the State Parks System.

◆ GOALS

To preserve and manage the legacy of the recreation residences in Kauaʻi's western mountain regions, and ensure the continuity of the cultural values and practices unique to

Kōkeʻe and Waimea Canyon State Parks.

◆ VALUES

The Kōkeʻe and Waimea Canyon area has a long and rich history dating back to pre-western contact periods. The history of recreation residence development is intertwined with that of the Parks and has evolved as an important feature of the Parks' cultural landscape.

Historic and Cultural Values

The two parks contain a wealth of archaeological and historic evidence of early Hawaiian forest resource use, western agricultural activities, and the role of the uplands as a retreat for Hawaiʻi's turn-of-the-century elite. The parks continue to play a valuable role in the cultural lives of Kauaʻi's residents, serving as a location for annual commemorative celebrations and seasonal resource gathering, and as a classroom for passing on traditional practices related to hunting, storytelling, crafts, and other local art forms. Today's park community includes numerous families and individuals with long ties to the land. These people provide a valuable touchstone to the history of development in Kōkeʻe and Waimea Canyon.

Recreation Values

The recreation residences evolved as the Parks developed and reflect the values brought with the owners. Early lessees of “cabin lots” were associated with the plantation, cattlemen, and business people of Kauaʻi. As time passed and as more lots developed, the newer cabins began to change to reflect the time. The recreation residences are not intended for use as permanent residences, but are valued as wilderness retreats and as a place to get away from the heat and routines of life in the lowlands.

Revenue Source

An average of \$300,044 in lease rents have been generated per year from the two parks. This figure is based on annual revenues at \$311,923

for the period 1985-1996 and \$279,680 from 1997 – 2003 with the rental reopening amounts, for a combined total of \$5,700,836 divided by 19 years. This represents a substantial increase to the pre-1985 era when the total annual lease income was approximately \$40,000 per year.

◆ ANALYSIS

Table 5-2 shows the breakdown of lots within Kōkeʻe and Waimea Canyon State Parks. The total number of lots is an aggregate of tax map key parcels. The lots were divided into three zones – Puʻu ka Pele, Halemanu, and Kōkeʻe. **Table 5-3** shows the year the recreation

residences were constructed. It is significant to note that more than 50 percent of the occupied residences were constructed before World War II. Given that buildings older than 50 years can be considered historic, more than 65 percent of the structures or 68 residences were constructed prior to 1950.

Table 5-2
Summary of Lease Lots in the Kōkeʻe -Waimea Area

Location	No. of TMK Parcels	Current Recreation Residences Leases	Vacant Parcels (No Imprvmts.)	Nonprofit Group Managed Parcels	State Managed Parcels
Puʻu ka Pele	62	44	9(8)	5	8
Halemanu	16	14	2(2)	0	1
Kōkeʻe Lots	68	40	25(24)	1	4
Totals	146	98	36(34)	6	13

Table 5-3
Number of Occupied Cabins by Year Built and Location

Year Built	Number	Kōkeʻe Lots	Halemanu Lots	Puʻu ka Pele Lots
1918-1929	26	13	6	7
1930-1939	27	7	8	12
1940-1949	17	3	0	14
1950-1959	22	14	0	8
1960-Present	21	8	0	13
Unknown	1	0	0	1
Total	114	45	14	55

Occupied Lots = Lots with structures on them.

Total Lots = Number of lots as determined by tax map key number.

Table 5-4
SHPD Ratings of Historic Integrity

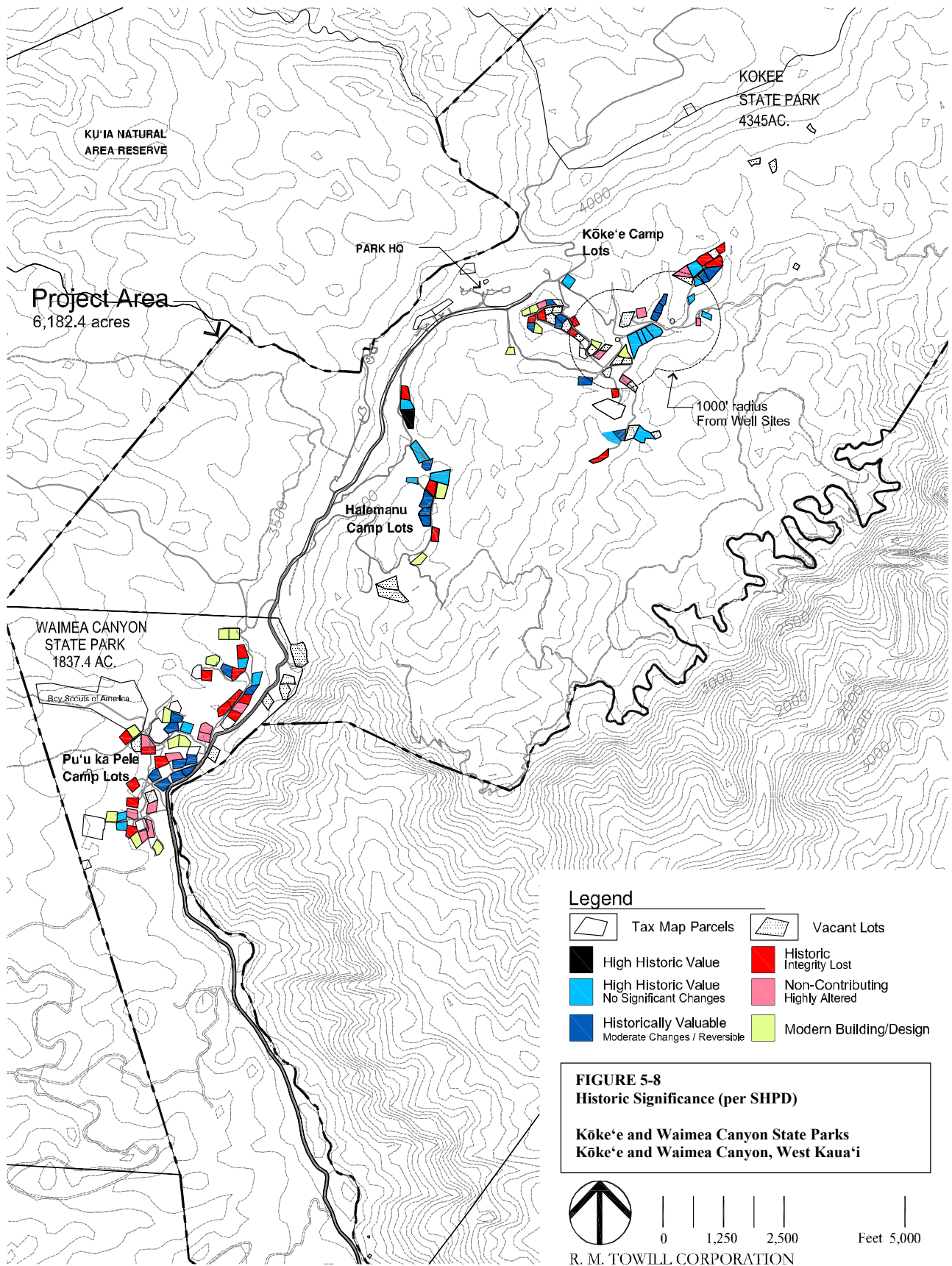
Location	SHPD Rating (see legend)						Total
	1	2	3	4	5	6	
Pu‘u ka Pele Lots	8	4	15	17	4	0	48
Halemanu Lots	0	0	1	6	4	1*	12
Kōke‘e Lots	4	3	12	10	9	0	38
Kōke‘e Lodge and Museum	11	0	0	4	0	0	15
CCC Camp	5	0	0	8	0	0	13
Total:	28	7	28	45	17	1	126
Percent	22.2%	5.6%	22.2%	35.7%	13.5%	0.8%	
Percent Contributing			72.2%				

Note: SHPD rating of units from DLNR master list. Units without rating determined by R.M. Towill.

* Danford - Williamson Residence

Table 5-3 Legend:

- 6 Large Plantation Estate with high historic value and significant architectural design.
- 5 Building and site retain integrity with no significant changes evident. Any changes were in-kind, sympathetic or within period of significance. Includes re-roofing, board replacement, railing replacement (in-kind). Very good example of typical (retains many character defining elements) or good example of architecturally significant building. Building and site have strong original relationship. More than one area of significance (i.e., Rice family compound, for association with important person or event).
- 4 Small changes, or easily reversible changes such as inappropriate paint color or roofing material, and deck additions. Change of windows in inconspicuous locations, small additions done appropriately. Retains overall feeling of historic character and relationship with site, no visual intrusions, however, may lack outstanding architectural features. Can easily be restored to level 5.
- 3 Integrity of building and/or site compromised by inappropriate changes such as large additions, aluminum sliding windows on front or major public facade, use of new "fancy" detailing to look historic but is not consistent with the rustic character. May be able to restore character, contributing, but not character defining to Kōke‘e. Any change could move to Level 4 or 2.
- 2 Not considered contributing through loss of historic associations. Major alterations and/or additions. Examples: Majority of windows and doors changed to modern types. Large additions to front of cabin, utilization of T1-11 and/or vinyl siding. Difficult to restore. Considered non-contributing.
- 1 New buildings built after 1959 whether or not they have rustic character. Buildings totally lost integrity through reconstruction, moving, etc. Not recognizable as historic structure. Not restorable.



Historic Significance

The historic significance of the recreation residences has been evaluated twice by the Historic Preservation Division in the recent past. The results of the evaluation are shown in **Table 5-4** and mapped in **Figure 5-8**. At least 72% of the structures surveyed were considered historically significant and contributed to the cultural landscape.

Of the total number of structures, nearly 50 percent were considered to have high historic integrity (ratings 4, 5 or 6). Broken down by area, the percentage of structures with high historic integrity is as follows:

- Pu‘u ka Pele = 44%
- Halemanu = 92%
- Kōke‘e = 50%

In the spring of 2003, another study to ascertain historic integrity was commissioned by Hui o Laka and the Kōke‘e Leaseholders Association. The results from this study are shown in **Table 5-5** and mapped in **Figure 5-9**.

As with the study conducted by the Historic Preservation Division, more than 50% of the buildings assessed by Duensing were found to have a high level of historic integrity (Rating 3, 4, and 5). Broken down by area the percentages of structures with high historic integrity are as follows:

- Pu‘u ka Pele = 50.9%
- Halemanu = 92.9%
- Kōke‘e = 64.4%

Condition / Fragility (Stressors)

The condition of the recreation residences was visually evaluated to determine the “soundness” of the buildings and estimated level of repair needed. The “soundness” evaluation, while mainly visual, examined the overall look and feel of the main structure, such as rusting metal

roofs, sagging floor lines, rotting piers, condition of paint, signs of rot, etc. As a rule of thumb, 50% of the appraised improvement value of the house was used as a cut-off to determine if the building was worth maintaining. County code requires that residences that are having 50% or more of the structure modified should be brought into 100% compliance with the building code. Because it is cheaper to build a new structure than to reconstruct an old one to meet the code, those structures exceeding 50% in repairs were identified for replacement. Based on this criteria, 67 of the evaluated structures were identified for preservation. **Table 5-6** summarizes the list by historic rating.

Resource Limits

- Limited water resources place the recreation residences at risk of being without fire protection.
- The capacity of the Kōke‘e water system is unknown.
- Thirty-two lots are located within 1,000 feet of existing potable water wells and their cesspools pose a potential health threat.
- Camp Sloggett is not within the wellhead protection zone.
- Camp Sloggett is on the State Register of Historic Places.
- Not all of the recreation residences have electricity.
- Not all of the cabins are connected to the Parks water system.
- Seven percent of buildings have undergone changes that compromise their historic integrity.
- Thirty percent of the buildings have totally lost historic integrity.

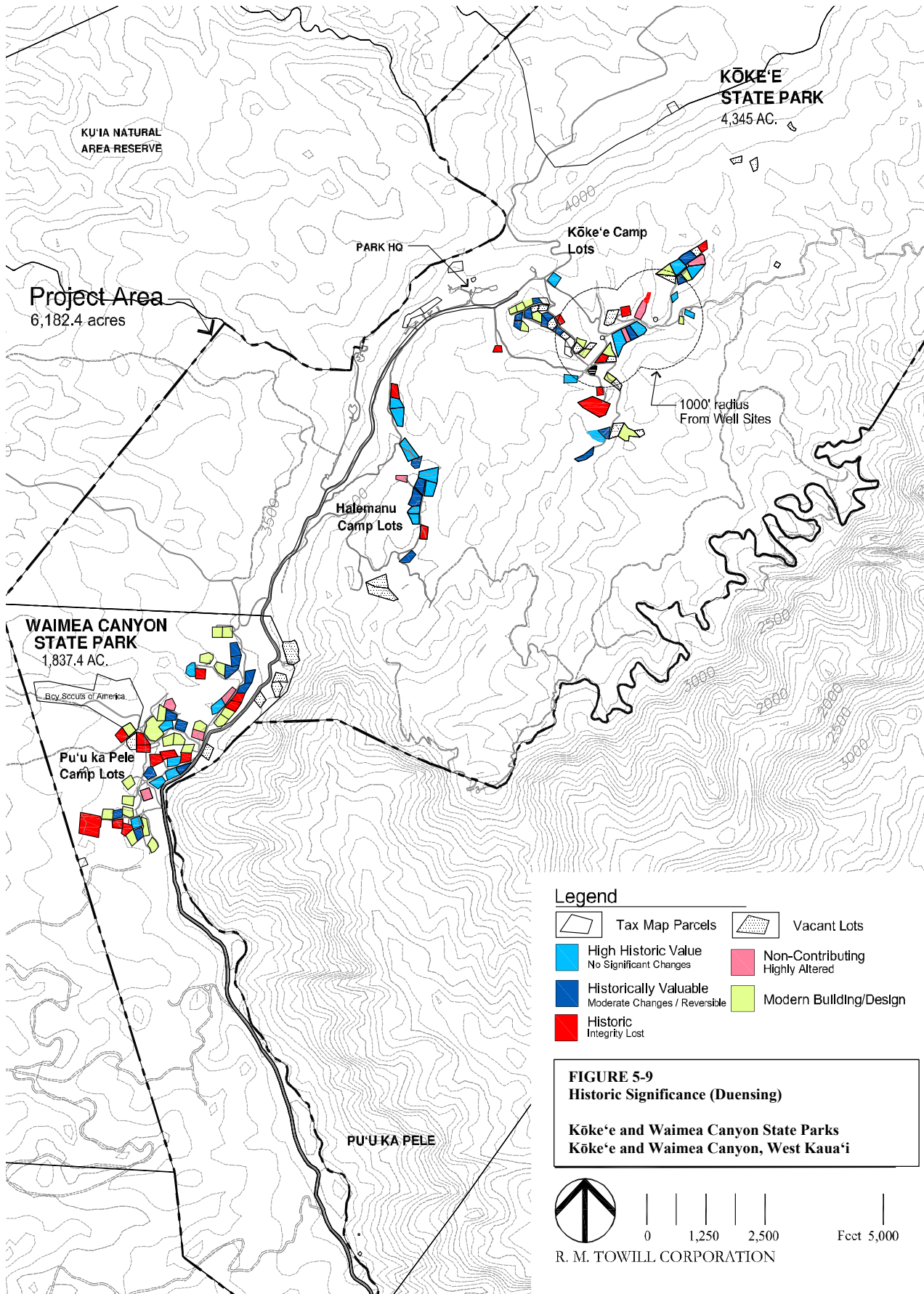
**Table 5-5
Duensing Report Rating of Historic Integrity**

Location	Rating					Total
	1	2	3	4	5	
Pu‘u ka Pele Lots	21	4	13	10	7	55
Halemanu Lots	0	1	3	4	6	14
Kōke‘e Lots	13	4	9	10	9	45
Total:	34	9	25	24	22	114
Percent (Approximate)	29.8%	7.8%	21.9%	21%	19.2%	
Percent Contributing			62.1%			

Source: Dawn Duensing, 2003

Table 5-5 Legend:

- 5 The building and site retain integrity with no significant changes evident. Any changes made to the building were in-kind, sympathetic, or within period of significance (older than 50 years). Examples of changes might include in-kind re-roofing, board replacement, or railing replacement.
- 4 Buildings retain the same overall feeling of historic character and relationship with the site as Level 5. These buildings have no visual intrusions, however, the structures may lack outstanding architectural features.
- 3 Structures have small or easily reversible modifications such as inappropriate paint color or roofing material, or deck additions. These buildings might have new windows in inconspicuous locations or small additions done appropriately. Level 3 buildings would qualify as a contributing structure in a district, but may not be individually eligible for the State or National Registers of Historic Places. These buildings are easily restored to Level 4 or 5.
- 2 The integrity of the building and/or site is compromised by inappropriate changes such as large additions, aluminum sliding windows in front or major public façade, or the use of new “fancy” detailing that attempts to look historic but is not consistent with the rustic character. It may be possible to restore character to these buildings so that they are contributing, but not character-defining structures. Any change could move to Level 3 (qualify for district) or Level 1 (ineligible).
- 1 These buildings have lost historic integrity or are new construction and are considered “non-contributing” structures because of loss of historic association. Level 1 structures have major alterations and/or additions. Examples: Majority of windows and doors changed to modern types (most noted was the use of large sliding doors). These buildings often have large additions to the front of cabin, utilize T1-11 and/or vinyl siding. Level 1 buildings are difficult to restore and are considered non-contributing structures.



**Table 5-6
Buildings Requiring Repair Work**

Historic Value	No. of Buildings	Percent
1 – Non-contributing	8	12%
2 – Low Value	7	10%
3 – Moderate Value	22	33%
4 – High Value	27	40%
5 – Very High Value	3	5%
Total	67	

Public Use / User Limits

- Opportunities for revenue generation are not maximized.
- The cabins are not subject to ADA accessibility requirements, thus very few are equipped to accommodate visitors with disabilities.
- The leaseholders do not pay for infrastructure maintenance. Service fees, i.e. for water, do not equate to true costs.

Leases for the Hawai‘i Methodist Union, Hawai‘i Conference of the United Church of Christ and the Hawai‘i Association of Seventh-Day Adventists are for recreational use and not specifically church camp/group leases. These lots are ideally suited for group use and may be more beneficially operated through a private concessionaire for public use.

◆ ISSUES, OPPORTUNITIES, AND CONSTRAINTS

- How can equity be established in the leasing of the cabins? The land in the Parks are a public trust, the lessee is a trustee for a period of time.
- Should leasehold cabins be allowed in the Parks? The cabins in Kōke‘e and Waimea Canyon State Parks are the only cabins in

the State that are leased to private individuals.

- Invasive plants originating from recreation residence gardens and landscaping threaten the native natural landscape and activity areas.
- Uncontrolled improvements made to properties degrade the historic nature of the buildings.
- Poorly maintained facilities degrade the historic character of the building.
- Dirt/gravel roads require regular maintenance and, for reasons of safety, should not be allowed to degrade.
- Improperly maintained chimneys and firebreaks around houses create a fire hazard.
- How can the cabins’ legacy be preserved? Many of the structures were developed during periods that are milestones in Kaua‘i’s history and present an opportunity for historic education and interpretation.
- The natural and modified forest growth and introduced garden vegetation creates the fundamental fabric of the cultural and historic landscape within the Parks.
- A rural / wilderness character defines the general ambiance of the area.
- The buildings reflect historic periods of development in Hawai‘i.
- As a scenic feature, the recreation residences generally are a positive attraction for the Parks.
- C Demand for short-term rental cabins greatly exceeds the current supply. Options for meeting the demand include conversion of long-term leased cabins to short-term rental, and constructing new cabins.
- C State Parks has limited staff and budget to maintain infrastructure supporting the recreation residences.

Recommendations / Best Management Approach

Recommendations for the disposition of the

recreation residences are categorized as follows: 1) disposition alternatives; 2) program elements, 3) revenue generation, 4) management, and 5) care and maintenance.

Disposition Alternatives

Available methods of property disposition:

- Maintain the current method of property disposition – general public auction to individual long-term leases.
- Property disposition via commercial master lease to a property manager via public auction. The property manager shall be responsible for all properties, pay rent to the State based on revenue generated, maintain infrastructure, and pay for water, plus other conditions imposed by the Land Board.
- Property disposition via master lease to a nonprofit property manager. The property manager shall be responsible for all properties, pay rent to the State based on revenue generated, maintain infrastructure, and pay for water, plus other conditions imposed by the Land Board.
- The State to retain possession of certain parcels for day-rentals to be managed by itself or a vendor.
- The State or private entity to develop recreation residences on vacant parcels. Development criteria would be determined by the State.

Program Elements

- Because the recreation residences possess varying degrees of historic integrity, those structures that have the highest historic rating should be given priority for preservation and management. Management options include: 1) preservation by the State or 2) by a nonprofit or for profit organization.
- State Parks to identify clusters of historic buildings to be used in interpretive programming on Kōke‘e history. The Halemanu area, because of its concentration of historic structures and easily controlled

access, is a good candidate location.

- Buildings that are non-historic and non-contributing to the historic character of the area should be modified where possible to meet “Kōke‘e Vernacular” park design standards, and otherwise screened from view through the use of landscaping. If not possible, consideration should be given to removing those that detract from the historic landscape.

Revenue Generation

- Recreation residences not leased can be used as part of the day-rental inventory, and new residences can be built on vacant lots to augment the day-rental supply.
- Revenues generated by long-term lease of the recreation residences provide an indirect public benefit in the form of budget revenue for park operations, maintenance, and improvements.
- Retaining some or all of the recreation residences for short-term rental would directly benefit the public by creating more cabin rental opportunities to address existing demand, and by providing the public with an opportunity to experience the mountains within a historic context and from more appealing accommodations than that provided by the existing state cabins.
- A premium rental rate could be applied to historic cabins. Income generated through short-term rental would benefit the public by providing budget revenue for park improvements, operations, and maintenance.

Management

- Consideration should be given to leasing the residences to a third party and thereby relieving State Parks of management and maintenance responsibilities.
- State Parks should have a full-time property manager and staff to provide oversight on the historic properties.

Care and Maintenance

- Design guideline elements may include: a) setbacks from the road, b) building materials emphasizing wood and stone as the preferred building material, c) colors should be in earth tones, with no reflective or bright colors, d) pitched roofs of either metal, wood or asphalt shake should be done in muted colors, forest green or barnyard red, and e) unpaved driveways should lead to on-site parking hidden from view.
- Recreation residences within 1,000 feet of the potable water wells are required to connect up to a sewer system with septic or package plant treatment located outside of the ground water protection area (identified by the Waimea scarp fault line).
- Maintenance terms set forth in the lease agreement and building permits requirements should be enforced.
- Leaseholder use and maintenance fees for water, roads, drainage, sewer, electrical power, and communications should reflect actual costs.

5.7 INFRASTRUCTURE

This section examines the infrastructure systems in the Kōkeʻe and Waimea Canyon State Parks and surrounding areas. The following are evaluated:

- Roads,
- Water System,
- Wastewater System,
- Electrical System, and
- Communications.

◆ **GOALS**

To provide safe, economical, and dependable utility and infrastructure systems to facilitate park visitor and user experiences; and to ensure that valuable natural, cultural, historic and scenic resources are not compromised by utility or infrastructure development.

◆ **VALUES**

The provision of utility services and roads are generally considered essential for the maintenance of a “modern” community. The Parks, however, are likened to the running of a modern town. The Parks are seen mostly as natural areas and the developed areas as having a rustic settlement character. How the infrastructure is developed can further add to the character of the area, or it can detract from the desired end-state of planning. The following are general values that were considered in the development, enhancement, and renovation of the infrastructure and utility systems:

Service

- Conservation of available resources should guide utility development at Kōkeʻe and Waimea Canyon State Parks.
- Utility services will be provided within the guidelines established in the master plan.
- The scenic resources available at the Parks should be preserved and should not be interrupted by overhead utilities and towers.
- Utility and infrastructure placements should respect the historic and cultural resources of the area.

Access

- Access to the Parks should be coordinated between the State and the County.
- The principal access roads to the parks create the first impressions that visitors and users have of the park and therefore should be carefully planned in order not to introduce structures or features that would detract from the experience.
- Access into certain parts of the Parks will be limited to service vehicles only in order to protect the resources of the area.
- Recreation and commercial motorized vehicles will be limited to existing paved roads, Camp 10 Road, and dirt collector roads that service the recreation residences. Other specialized access will be allowed by permit only.

Safety

- Users of park utility systems should be assured that the potable water system is free of contaminants, that the sewer system is not polluting water resources, that overhead utilities do not block views and are not situated to cause a hazard.
- Roadways available and open to the public are the means of accessing the park and therefore should be adequate to accommodate the volume of traffic, be without hazards, and should accommodate pedestrians.

◆ **ROADS**

The roadway network in the parks provides the means for park users and visitors to access park resources. The roads also provide a means of controlling access to the natural environment to regulate potential impacts from overuse. DLNR staff, emergency personnel, and employees of various operations within the parklands also rely on the road system to conduct job-related activities, including ensuring the safety of park goers and maintain park operations to meet park user expectations.

This section outlines problems, issues, opportunities, and constraints as they relate to the roadway network. Recommendations to address the problems, issues, opportunities and constraints are also described.

Conditions / Fragility (Stressors)

- The DLNR roadway segments are in poor and hazardous condition; the surfaces need re-paving or possible reconstruction; there is no center line or markers; the overall travel way pavement width is mostly 16 feet; and there are no paved shoulders for most of the roadway. Pedestrians are forced to walk in the travel way because there are no sidewalks.
- Most of the steeper and more heavily used dirt roads are badly rutted and eroded, especially in the Kōkeʻe, Halemanu and

Puʻu ka Pele lease lot areas.

- During rainfall events, water ponding and muddy conditions cause significant problems on the unpaved roads and are hazardous because the depth of the potholes are difficult to detect, especially for non 4-WD vehicles.
- Maintenance of the dirt roads is not performed on a regular basis as drainage swales and ditches alongside the roads are overgrown with vegetation or are silted in.

Resource Limits

- Development of roads within and outside the parks is restricted by topography.

Public Use / User Limits

- Public use of certain roads is currently restricted by physical barriers (gates or chain barriers).
- Public use of certain roads is limited to certain types of vehicles (e.g. 4-WD on unimproved roads).
- Certain paved pullovers along the Canyon's rim lack guardrails or fencing.
- Access to certain areas by large vehicles (e.g. buses) is difficult due to limited turn-around area and weight restrictions.
- Areas without shoulders force pedestrians on to the travel way.
- Areas without shoulders are hazardous when visitors stop to look at the sights, e.g. informal viewing areas.

Issues, Opportunities, and Constraints

- State Parks has taken action to restrict undesirable use of the roads within the Park boundaries, such as commercial downhill bicycling and mountain biking.
- Certain park pullovers along the canyon edge lack guardrails or fencing.
- The principal access roads to the parks are the first impressions that visitors and users have of the park and therefore should be carefully planned in order to not introduce structures or features that would detract

from the experience.

- O The vegetation of the area changes as one enters deeper into the parks. The roadway transects different vegetation zones, from one that is influenced by coastal processes to one of a rain forest.
- C Limited financial resources restrict the amount of repair and maintenance work that can take place.

Recommendations /

Best Management Approach

- Incorporate Waimea Canyon Drive and Kōkeʻe Road within Waimea Canyon State Park.
- Limit access into environmentally sensitive parts of the Parks to park service vehicles.
- Limit non-park motorized vehicles to existing paved roads. All specialized access by permit only.
- Install night reflectors along the center line and pavement edge for the entire length of the road or at least up to the Kōkeʻe headquarters area in order to improve safety during foggy or rainy periods and at night.
- Re-grade and repair dirt roads that provide access to recreation residences and Puʻu Lua Reservoir. If performed periodically, this form of maintenance may be adequate for some of the less traveled roads. A more permanent treatment, such as AC paving should be considered for the roads that are more heavily utilized.
- Develop off-street parking to service the Kukui Trail and Iliiau Nature Loop Trail.
- Coordinate off-road parking with trailhead development and park interpretive programs.
- Develop mechanisms to discourage parking on shoulders.
- Install informational and directional signs to direct park users.
- Develop fuel breaks along park roads.

◆ WATER SYSTEM

This section addresses the potable water system within the Parks and includes the wells, storage system, transmission and distribution system. The focus on the potable water system is also limited to DLNR facilities only.

Conditions / Fragility (Stressors)

- Groundwater quality is affected by soil permeability and other conditions, the underlying geology, and the location of potential pollutant sources (e.g., cesspools, leach fields, and industrial runoff).
- The strong acidity of the volcanic soils is imparted to shallow groundwater sources and subsequently contributes to the deterioration of water lines and degradation of water supplies by dissolving heavy metals from the pipes.
- The quality of the water from the wells is much better than the surface catchment system previously used and currently meets DOH standards based on monthly data. Further, traces of lead have been detected in the system. A treatment system is underway.
- The potable water system serving most of the two parks is developed from within the caldera-fill Olokele formation. Some cabins in the Kōkeʻe and Halemanu area utilize private wells and/or spring water, which also draw from within the caldera. A potential health concern is created by the use of cesspools which drain into the caldera formation.

Resource Limits

- The resource is replenishable, however, source development is limited to the Kōkeʻe area, with estimated sustainable yields of 50 gallons per minute (gpm) from shallow wells.
- The area has additional water resources via surface flows from streams, but this source requires treatment and filtration.
- Local capacity can be enhanced through

increased storage capacity.

Public Use / User Limits

- Water use is fundamentally limited by source development, storage capacity and water quality. Use is also limited to existing system development, including pump, storage, and distribution limitations.
- The potable water system is designed to accommodate 2,000 persons and currently has 93 service connections.
- From January 1999 to January 2001, based on available meter reading data, a total of 12,918,024 gallons was used by metered users. An additional 265,000 gallons per month was estimated to be used, on average, by the non-metered users which include the Kōkeʻe Lodge, its maintenance facilities and laundry. Average water usage (for 24 months) was estimated to be 803,251 gallons per month.

Issues, Opportunities, and Constraints

- Water service is needed for fire control and public facilities.
- The Navy is using potable water only for non-potable purposes.
- An understanding of the geology underlying the parks is important for planning wastewater systems and water source development.
- Development of water features for the parks can be considered through the use of the existing Kōkeʻe Ditch system, expanding the ditch system to include additional reservoirs, or additional water courses.
- Recreational opportunities for the non-potable water systems can be developed, i.e. fishing in streams and the use of Puʻu Lua reservoir as a visitor attraction - interpretive site for the Kōkeʻe Ditch system.
- Many of the mains and lateral lines of the system are old and in poor condition. A detailed analysis should be performed and necessary replacement/repair work should be performed as soon as possible.

- Potable water for the Waimea Canyon Lookout and Kalalau Lookout are needed.
- Water resources for fire control are currently inadequate.
- Create a non-potable water supply for firefighting. Fire engine water carrying capacity is 750 gallons and its pump operates at 1,500 gallons per minute. The rescue truck carries 200 gallons and pumps at 125 gallons per minute. Thirty minutes of firefighting capacity provided by the engine would require a 45,000 gallon tank.
- The capacity of the existing well and storage system is not adequate to meet existing demand nor provide for expansion of existing facilities.

Recommendations /

Best Management Approach

- Establish a Wellhead Protection Zone of 1000 feet from cesspools for potable well sources.
- Replace existing water distribution lines.
- Development of water features for the parks can be considered through the use of the existing Kōkeʻe Ditch system, expanding the ditch system to include additional reservoirs, or additional water courses.
- Recreational opportunities for the non-potable water systems can be developed, i.e. fishing in streams and the use of Puʻu Lua Reservoir as a visitor attraction – interpretive site for the Kōkeʻe Ditch system.
- Develop water awareness/conservation materials for public facilities.
- Water meters should be installed for all major users - i.e. Kōkeʻe Lodge and Kōkeʻe Natural History Museum, etc.
- The water source and treatment systems should be contracted to a private operator.
- Provide access (landing area) to Puʻu Lua Reservoir for helicopters for water supply for fighting wild land fires and the development of dip tanks in open areas for additional water capacity.

- A replacement and backup source of potable water is needed. Well exploration by the Engineering Division should continue as a high priority.
- Many of the mains and lateral lines of the system are old and in poor condition. A detailed analysis should be performed and necessary replacement/repair work should be performed as soon as possible.
- Construct a second water tank at the main water storage area and replace tanks at Mākaha, Pu‘u Hinahina and Waimea Canyon Lookouts.

◆ WASTEWATER

The Kōke‘e and Waimea Canyon State Parks operate two types of wastewater disposal systems: 1) cesspools; and 2) septic system that serves the Kōke‘e Natural History Museum, Kōke‘e Lodge, Rental Cabins, Kōke‘e Pavilion, and the restroom serving the camping area. Focus on wastewater collection and disposal is based on two objectives:

- 1) Protection of the groundwater resources of the area, and
- 2) Ensuring public health and welfare.

Conditions / Fragility (Stressors)

- Majority of the facilities within Kōke‘e and Waimea Canyon are served by cesspools, some are failing, e.g. Waimea Canyon Lookout.
- Only a limited number of facilities within the Kanaloahuluhulu area are served by a treatment system.

Public Use / User Limits / Resource Limits

- A number of recreation residences are located within the 1,000 feet wellhead protection zone. See **Figure 5-10**.
- Large users (more than 20 persons) within Kōke‘e lots should convert to individual wastewater treatment systems - septic tank systems in order to meet EPA requirements for 2005.

- The Environmental Protection Agency (EPA) instituted Underground Injection Control regulations on December 7, 1999, which prohibit the construction of new large-capacity cesspools. The ban on large-capacity cesspools, to be implemented on April 5, 2005, will impact the operations at the Parks. A large-capacity cesspool is defined as “a system that has the capacity to serve 20 or more persons per day, such as cesspools at a rest stop, crew quarters or school” (EPA 909-F-00-004, May 2000). The cesspools are being banned because of their “likelihood of releasing pathogens (disease causing organisms) and nutrients (such as nitrate) into the groundwater.”

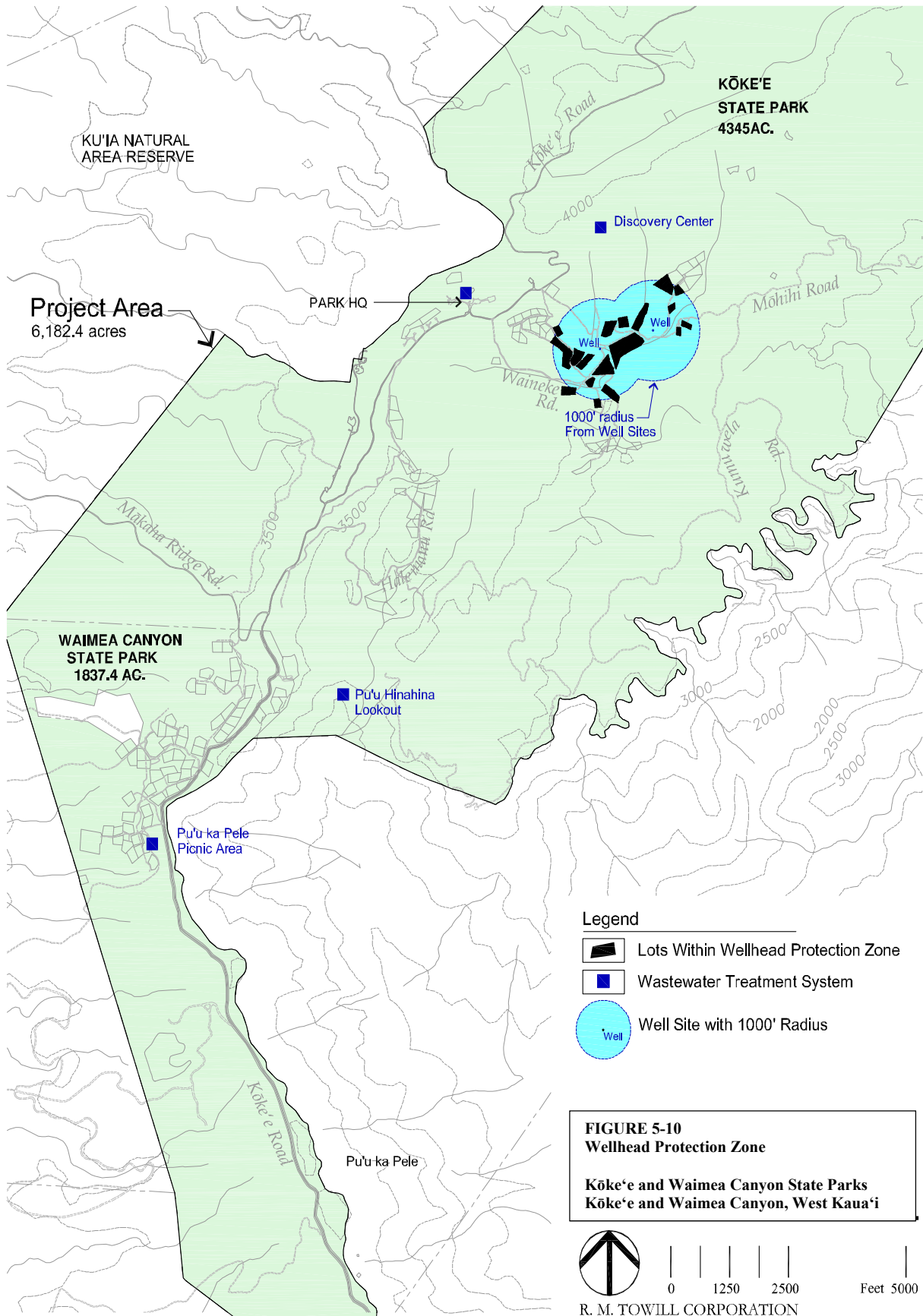
Issues, Opportunities, and Constraints

- C Recreation residences that are located above the current treatment system in the Meadow may be at a sufficient elevation to collect and gravity feed to the treatment system.
- C Leach field expansion is required to handle effluent during periods of high and prolonged rainfall causing ground saturation by water. Because the potable water source for the Kōke‘e area is located down gradient of the buried caldera, and because lease lots have been developed up-slope of the drinking water source, use of cesspools at individual cabin lots in the Kōke‘e area should be discontinued unless alternative treatment systems are implemented, such as individual treatment systems.

Recommendations /

Best Management Approach

- Development of individual treatment plants for the Waimea Canyon and Pu‘u Hinahina Lookouts.
- Relocate the leach field below the treatment plant thereby allowing the effluent to gravity feed into the leach field.
- Expansion of the leach field will be necessary to handle periods of high rainfall.



- The remaining large users (20 or more users) within the Parks should convert to individual wastewater treatment systems - septic tank systems as a condition of the 2005 lease renewals.
- Tie the Kōkeʻe Discovery Center (DOE) into the sewer system at the Meadow. Establish time table for implementation.
- Study and define limits of areas where cesspools should not be developed.
- Establish user fees to pay for operations and maintenance costs.

◆ ELECTRICAL/COMMUNICATIONS FACILITIES

Both parks (Kōkeʻe and Waimea Canyon) are served by electricity and communications (telephone) service. All major park facilities up to the Kanaloahululu area are served by power provided by KIUC and phone service provided by Hawaiian Telcom. Power and electric service to other users within the Parks are at the request of the specific user. Cellular phone service is very limited and unreliable within the parks due to lack of signal coverage. Mobile radio is also available to DLNR personnel.

Conditions / Fragility (Stressors)

- Almost all power and communications lines are overhead and the potential for a tree or limb falling onto the lines is high, and would result in the loss of power and communications.

Public Use / User Limits /Resource Limits

- Not all recreation residences have electric or telephone service.
- Public telephone service is limited to phones located at the Kōkeʻe Lodge and at the Puʻu ka Pele picnic area.

Issues, Opportunities, and Constraints

- Potential for improving the Kukui Tower site as a parking and trailhead for the Kukui Trail and Iliau Nature Loop Trail will require consideration of security, access, and

aesthetics of the Kukui Tower site.

- The Puʻu ka Pele communication facility is a visual and physical intrusion into the cultural landscape.
- Undergrounding of the power and communication lines is expensive. An alternative to undergrounding power and communication lines is to re-route the lines to less visible areas away from the Waimea Canyon rim.
- C Parking is limited at the Puʻu ka Pele (Verizon) site and the site does not have a potable water source or a restroom.
- C The existing Kukui tower is a visual intrusion into the landscape. The tower is visible from the Puʻu Hinahina and Waimea Canyon Lookouts.

Recommendations / Best Management Approach

- Construction of new towers, poles and antennas should consider existing views.
- Locate poles, towers, and antennas away from the Waimea Canyon rim.
- Commission study of all existing transformers for PCBs.
- Consider the use of alternative forms of energy – solar or hydroelectric.
- Require relocation of the Verizon Puʻu ka Pele facility at the end of the lease term.

5.8 ORGANIZATIONAL DEVELOPMENT AND MANAGEMENT

◆ GOALS

Management

To create a management structure that will ensure that operations at Kōkeʻe and Waimea Canyon State Parks are self-sustaining, protect natural resources, and provide a high level of customer service.

Safety

To have in place a comprehensive program of education, prevention, enforcement, and control

in order to respond to, and, where possible, eliminate natural and man-made threats to public safety and the natural environment.

◆ **VALUES**

- Stewardship
- Public Service and Safety
- Fiscal Responsibility
- Effectiveness

◆ **ISSUES, OPPORTUNITIES AND CONSTRAINTS**

Overlapping Jurisdictions

C Maintenance responsibilities in the Parks are clouded between DSP and other agencies needing to traverse the parks to activity areas beyond the parks boundaries.

Conflict in Missions

- C Timber resources within the parks are outside of the jurisdiction of Forestry and Wildlife.
- C Fishing resources within the parks are outside the jurisdiction of State Parks.
- C The goals of the Division of Forestry and Wildlife are conflicting where one arm of the organization promotes preservation and conservation, the other arm promotes resource exploitation. Further, another arm of the organization protects native species, another arm introduces non-natives into the environment.
- C Game animals are a threat to the native biota in the Parks.

Revenue Generation

- Keeping funds collected on the island for use in Kaua‘i’s parks is of concern to residents.
- Visitor usage of facilities versus use by locals is important.
- Monitoring visitor traffic is an important activity to be carried out by park staff in order to measure usage and impacts to resources.

- Revenue generated in the Parks is used throughout the State Parks System because other parks in the system do not generate revenue.
- User fees to offset or pay for improvements should be established. Visitors and residents alike do not generally object to a fee.

Privatization of Functions

- Sewer and water treatment systems require routine inspection by certified personnel.
- Concessions for retail, food and beverage, and cabin rentals should continue to be leased out.
- Hui o Laka currently provides information and interpretive services for State Parks. If additional, on-site State personnel are not forthcoming, then Hui o Laka should continue this service.
- Other areas where privatization would free State personnel to do more program work should be explored.

Customer Service

- C Dual permits are required by users if using Parks and Forest Reserve lands. A single permitting agency or networked permitting system would be beneficial.
- C There is no State personnel presence in the Parks, e.g. a ranger at park headquarters. Personnel presence is limited to maintenance staff.
- C Visitors cannot easily identify a park authority, such as a ranger, for information or assistance.

Education and Research

- Not all areas of the parks have been studied. By establishing or encouraging research activities, additional information can be obtained.
- Data management is important to understand the Parks resources.
- Coordination of research-study activities among the various agencies is important to avoid duplication.

- Natural history functions are provided to visitors by a nonprofit organization.
- Use of Park-Forest “Rangers” for education, interpretation, and enforcement.
- Regular monitoring of the resources is needed and research activities are a means of achieving a win-win situation.
- Providing research-study grants are a means of studying specific items or areas.

Regulation and Enforcement

- All park employees are responsible for educating park visitors and tenants about park regulations and cautioning them about apparent violations and potential hazards.
- “Presence” of park employees is essential. Each employee is an ambassador of the Parks.

Emergency Services

- Public information regarding park and forest area regulations must be posted.
- “Park Watch” programs can improve surveillance and reporting of threats to public safety.
- C Availability of fuel for emergency response vehicles and equipment is limited and restricts the provision of emergency services.
- C Informational signage is subject to vandalism and has a very short life-expectancy.
- C The number and location of helicopter landing zones (LZs) is limited. Rapidly changing weather conditions sometimes require immediate, temporary groundings of helicopters. Additional LZs would provide more options for pilots, expand response strategies, and increase pilot safety.

Fire Prevention and Control

- C Response time for fire engines from Waimea to Kōke‘e is approximately 1 hour. Time can be cut in half if watering facilities are available in the parks to fill pump engines.
- C Currently, helicopter water drops (bambi

buckets) rely on Pu‘u Lua Reservoir as the water source. More dip ponds would improve fire response.

- C Recreation residences are often in non-compliance with lease conditions to cut back vegetation around cabins and keep chimneys clean.

◆ RECOMMENDATIONS / BEST MANAGEMENT APPROACH

- Develop a coordinated information program among the DLNR divisions in the Parks to ensure that visitor information and materials are consistent.
- Create a Kōke‘e regional authority under DLNR that incorporates the functions of all of the divisions which operate in Kōke‘e and Waimea Canyon State Parks and the surrounding forest reserves and natural areas.

5.9 COSTS AND REVENUES

This section outlines revenue and costs associated with the operations and maintenance of programs and facilities at Kōke‘e and Waimea Canyon State Parks.

◆ EXISTING REVENUE

Sources of revenue for the operations of the various DLNR divisions in fiscal year (FY) 2002 on Kaua‘i include: State General Fund, DLNR Special Funds, federal funds, gas tax, and special legislation.

State Parks

The Division of State Parks receives funds from two primary sources: the State General Fund and the State Parks Special Fund. Monies for the Special Fund are generated from the following sources:

- Park Concession, e.g. Kōke‘e Lodge. The concessionaire is required to pay a minimum rent or a percentage of their profits, whichever is greater. Kōke‘e Lodge

provides important services to park visitors, including management of the rental cabins, restaurant service, bookstore, gift and sundries shop, lunch wagon, and visitor information services. The Kōke‘e Lodge operates 12 cabins in 10 structures for rent to the general public. The cabins are provided with basic housekeeping furnishings, such as beds, a kitchen, hot and cold running water, and a wood-burning stove. The wood can be purchased at the Lodge. The cabins are operated in a manner likened to a motel where renters can drive up to their respective units. The Lodge operates a laundry adjacent to the former Ranger’s Cabin. In addition, supplies and wood are stored adjacent to the laundry. The Lodge notes that occupancy is nominally 100%. The highest demand for the cabins is during fishing season and holidays. Generally, these dates are booked a year in advance and there is usually a waiting list. Rental rates for the cabin are approved by the BLNR. In 2008, the BLNR approved rates of \$65 per night for local residents and \$90 per night for visitors. An additional \$5 is charged per person after the first three people. In 2007, rental payments for the Kōke‘e Lodge were based on either a minimum rent of \$5,040 per month or a percentage of sales based on the following: Bar at 10%; Cabins at 16-1/2%; Restaurant at 5%; and Retail at 8%. Currently the Lodge pays between \$6,000 - \$7,000 per month or between \$60,000 to \$84,000 per year. A major portion of the income produced by the Lodge comes from retail sales.

- Waimea Canyon Lookout Lunch Wagon Concession. The concession pays a minimum guaranteed rent of \$615 per month or 8 percent of income.
- Camping Permits are issued for up to 10 persons. A fee of \$5 a night per permit is assessed.
- Water service fees. The parks collect 35 cents per 1,000 gallons of water used by the

leaseholders.

- Money collected from the recreation residences goes into the special fund.

Forestry and Wildlife

The Division of Forestry and Wildlife is funded from five primary sources: the State General Fund, Forestry Special Funds, Wildlife Revenue Fund, federal funds, and the State Fuel Tax. Funds from the Fuel Tax are earmarked for the Nā Ala Hele program. The distribution, by percentage of funds by sources is as follows:

General Funds	27.5%
Special Funds	39.8%
Special Rev. Funds	2.5%
Federal Funds	24.2%
Fuel Tax	<u>6.0%</u>
Total	100.0%

Aquatic Resources

Funds for the operations of the fishing program comes from two sources: 1) State General Fund (for personnel), and 2) Special Fund (for supplies and maintenance).

Land Division

Funds for the operations of the LD activities are from the State General Fund. Income derived from recreation residence rents go into the State Parks Special Fund.

◆ **OPERATIONAL BUDGETS**

This section summarizes the operating budgets of the various DLNR divisions that operate within the parks and surrounding lands. The budgets for each division are summarized by expenditure categories, e.g. labor, equipment, etc.

The scope of the cost estimation was limited to existing facilities and does not include new work to be proposed in the master plan. Further, cost savings that may be obtained from bulk purchases were not considered.

A summary of the cost estimates is shown in

Table 5-7. The following items were identified in the estimate:

Water System:

- Source development – development of two new wells.
- Storage – new 100,000, 10,000 and 5,000 gallon tanks.
- Transmission lines – from the Meadow to Pu‘u Hinahina and Waimea Canyon Lookouts.

Sewer System

- Transmission lines from Kōke‘e Discovery Center to treatment plant.
- Treatment – expand existing leach field.
- Individual Treatment Systems for each of the lookouts.

Roadways

- Paved Roads – 5 miles from Halemanu to Pu‘u o Kila Lookout.
- Unpaved Roads – 49 miles, 10 miles in residential areas, and 39 miles in forest-hunting areas.

Lookouts

- Parking lot repaving for Pu‘u o Kila and Kalalau Lookouts.

Budgetary Cost Estimates

Budgetary cost estimates have been prepared to fix, repair, reconstruct, renovate, demolish, update, or upgrade those items identified as deficient or broken. Ongoing maintenance requirements are discussed at the end of this section.

The cost estimates are based on returning an item to an “acceptable, not necessarily new” condition. Further, the cost estimates are to return the “broken” items to a serviceable level without consideration for future program development.

The methodology used to determine the cost of

the repair, etc., included the following:

- Identification of work required.
- Identification of the cost to return the item to a serviceable level.
- Cost for each item was reduced to a ‘unit cost’ to facilitate calculation.
- Determination of the total number of items in a similar condition.

Maintenance Factors

Ongoing maintenance is a critical element to sustaining the values of the parks and its facilities. Scheduled maintenance, both daily and periodic, should be part of the ongoing operations of the park. As an example, sewer treatment system maintenance costs, serviced by a private contractor, is \$18,000 / year (2001-2002). It is likely that with the conversion of the remaining large cesspools to a septic treatment system, this cost will increase. The alternative is to have Parks personnel (at least 2 persons) be certified to perform the maintenance work.

Water treatment is also recommended to be handled by a private contractor. With the addition of new pumps and storage tanks, the demands of the water testing, pump maintenance and system maintenance will require certified maintenance personnel (at least 2 persons).

Gravel road repair costs have been estimated at \$33,000 per mile. This cost includes equipment operator, equipment (dump trucks, graders, backhoe, bulldozer) and fill material. Road maintenance, on the other hand, is estimated at \$6,000 per mile and includes labor, equipment operator, equipment (dump trucks, graders, backhoe), and fill material.

Recreation Residence - Renovation

Renovation costs were estimated for the recreation residences described in **Table 5-8**. In summary there are a total of 67 structures that require renovation to restore their historic features.

The following methodology was utilized to determine the costs of renovation:

- The value of the improvement was established for each house by the Land Division. Accessory structures were not considered for this evaluation. Fifty percent (50%) of the improvement value was set as the cost baseline. Based on County of Kaua‘i building permit guidelines, if the cost exceeds 50% of the value of the improvement, then all features of the building will be required to be brought to meet modern building codes.
- The cost of renovation was then set at 50% of the value of the improvement.
- Cost of renovation was assumed for only elements that would assure preservation of the structure, such as new roofs, replacement of windows, doors, rotted piers, etc.

Plumbing or electrical renovations will require additional research. Renovation costs were developed as an exercise to determine the magnitude of repairs that are required. As discussed, structures evaluated as Level 1 or Level 2 were examined to determine if modified, could they be included in the inventory to meet requirements of a historic district. Buildings in Level 3 and 4 were all modified and required renovation to restore the buildings to meet a historic architectural period. Level 5 buildings were all deemed contributing, with minor work required to maintain their historic character.

Table 5-7
Repair, Upgrade and Capital Budgets of DLNR Divisions on Kaua‘i
 (Cost excludes survey, design, and equipment costs.)

Division	Expense Category	Unit of Measure	Quantity	Unit Cost	Total	Notes
State Parks						
	New Well at 50 gpm capacity	EA	2	\$15,000	\$30,000	Well drilling to 50', no equipment
	Well equipment - pumps	EA	2	\$15,000	\$30,000	2 pumps, fitting, etc.
	New Storage Tank at 100,000 gals.	EA	1	\$171,000	\$171,000	Steel tank next to existing 200,000 gal. tank
	New Tank Base for 100,000 gal. tank	SF	908	\$22	\$19,976	12" base for tank
	New Storage Tank at 50,000 gals.	GAL	1	\$3	\$150,000	Steel tank
	New Storage Tank at 10,000 gals.	GAL	1	\$3	\$30,000	Steel tank
	Tank Foundation 12" Concrete	SY	556	\$22	\$12,232	For 10,000 and 5,000 gal. tanks
	Transmission Line 4" HDPE	LF	10,000	\$95	\$950,000	Kōke‘e Lodge to Mākaha Road
	Transmission Line 2" HDPE	LF	12,000	\$40	\$480,000	Mākaha Road to Waimea Canyon Lookout
	Individual WW Treatment at lookouts	EA	4	\$24,000	\$96,000	Waimea Canyon, Pu‘u Hinahina, and Kalalau Lookouts
	Leach field development at lookouts	EA	4	\$20,000	\$80,000	
	Water meters - flow meters	EA	4	\$5,000	\$20,000	At exits of water tanks
	Parking Lots					
	- Pu‘u o Kila Lookout	SY	2,456	\$51	\$125,256	Cold planing and pave 22,100 sf
	- Kalalau Lookout	SY	2,178	\$51	\$111,078	Cold milling and pave 19,600 sf
	Roads					
	- Repave Roads (Halemanu to Pu‘u o Kila)	SY	35,200	\$25	\$880,000	4 miles x 20 ft.
	- Drainage improvements along paved road	LF	42,240	\$4	\$168,960	4 miles x 2 ft.
	- Gravel roads to serve houses	CY	105,621	\$17	\$1,795,557	Gravel 3" 10 miles of road x 12 ft. \$6 for demolition; \$6 hauling and disposal
	Building Demolition - Waimeke	SF.	2,000	\$12	\$24,000	
	Waimea Canyon Lookout	LS			\$60,000	Landscaping, new restrooms
	Pu‘u Hinahina Lookout	LS			\$40,000	New approach, picnic area and tables
	Kalalau Lookout	LS			\$50,000	New paths, picnic tables
	Pu‘u o Kila Lookout	LS			\$40,000	New paths, picnic tables
	Forestry and Wildlife					
	- Gravel roads	CY	15,256	\$38	\$579,728	39 miles of gravel road x 12 ft.
	- Drainage improvements	LF	205,920	\$4	\$823,680	39 miles of gravel road - 2 sides
	- Parking lot for 15 cars at Kukui Trail	SY	7,500	\$51	\$382,500	15,000 sf
	- Trailhead improvements at Meadow					
	TOTAL				\$7,149,967	
	Contingency at 15%				\$1,072,495	
	Grand Total				\$8,222,462	

**Table 5-8
Renovation Cost Estimate ***

Historic Value	No. of Bldgs	Renovation Cost
1 – Non-contributing	8	\$135,400
2 – Low Value	7	\$ 59,300
3 – Moderate Value	22	\$185,050
4 – High Value	27	\$199,250
5 – Very High Value	2	\$10,900
Total	66	\$589,900

*Estimate based on 50% of improvement value. Structures were evaluated by visual inspection only, no structural or system evaluations were conducted. Actual cost of renovation should be conducted by a licensed contractor.

◆ REVENUE GENERATION

Revenue generation opportunities for the operations and maintenance of the parks include the following:

- User fees (camping, group hiking, hunting, fishing, etc.);
- Concession fees (commercial vendors, ecotourism);
- Entrance fees for out-of-state visitors (by visitor or per vehicle basis);
- Lease rent (recreation residences) including group camps;
- Water charges;
- Sewer charges; and
- Parking.

Entry Fee – The charging of entry fees for park facilities is not a new idea as it is being utilized at Diamond Head State Monument and at Hanauma Bay Nature Preserve.

Table 5-9 illustrates the potential income that can be generated from the fees outlined above without changing the current mode of operations. Alternative means of utilizing the

resource and means of generating income will be discussed in the consideration of alternatives.

◆ ISSUES, OPPORTUNITIES, AND CONSTRAINTS

- Concessions are currently run for profit and should be used for park operations and enhancement.
- State Parks has taken action to restrict undesirable use of the road within the Parks boundaries, such as commercial downhill bicycling and mountain biking
- Concessions at lookouts provide services to visitors and produce revenues for the parks.
- Operation of Kōkeʻe Lodge is an important source of revenue for the parks.
- There is no mail service at Kōkeʻe Lodge. Mail service with a Kōkeʻe postmark may encourage visitors to purchase cards and increase their time at the restaurant while they write.
- C The concession lunch wagon at Waimea Canyon Lookout looks shoddy and temporary and is not fitting for such a premier visitor destination.
- C Limited financial and personnel resources restricts the amount of repair and maintenance work that can take place.

◆ RECOMMENDATIONS / BEST MANAGEMENT APPROACH

- The various operating divisions on Kauaʻi operate with different missions and objectives that have statewide implications.
- Interpretive programming functions are divided between the divisions.
- Park visitors do not know who to ask for information.
- Implement One-Stop permitting, or coordinated permitting.
- Adjust rate schedule for water service.

**Table 5-9
Revenue Generation Opportunities
(Per Year*)**

Revenue Source	Current	Alternative 1 (5 year plan)	Notes 1	Alternative 2 (10 year plan)	Notes
Lease Rent (per year)	335,000	385,000	2	402,000	10
Maintenance Fee (per year)	0	57,750	3	66,413	11
User Fees	5,000	5,750	4	5,750	12
Concession Fees	60,000	69,000	5	72,000	13
Water Charges	2,260	10,120	6	10,120	14
Sewer Charges	0	18,000	7	18,000	15
Parking	0	TBD	8	TBD	16
Entrance Fee	0	357,500	9	400,000	17
Total	\$402,260	\$903,120		\$974,283	

*Assumes current operation scheme.

Notes:

1	15 % increase over 1985 base value for lease rent.	12	Same as Alt 1
2	110 lease lots at \$3,500 per year	13	20% over current
3	\$525 per year per lot	14	Same as Alt 1
4	15% over current	15	Same as Alt 1
5	15% over current	16	Same as Alt 1
6	Charge same rate at County of Kaua'i	17	Assume 400,000 visitors per year at \$1
7	Sewer charge recovery of cost		
8	Parking revenue TBD		
9	\$1 per person charge at 357,500 visitors per year		
10	20% over current		
11	15% over Alt. 1		

- Install water meters for all users.
- Create new revenue sources.
- Review services that are being performed to ascertain if the service can be privatized.

5.10 ANALYSIS AND PLANNING FRAMEWORK

This section outlines how the findings of the preceding sections have been organized for analysis, and how the analytical framework will be used to develop master plan alternatives.

◆ DEVELOPMENT ZONES

The U.S. Forest Service’s system for classifying and managing recreation lands, called the Recreation Opportunity Spectrum (ROS), was used to organize Kōke‘e and Waimea Canyon State Parks land into development zones or Recreation Opportunity Zones (ROZs). The ROZs were delineated through an analytical process whereby environmental conditions, natural resources, developed amenities, and use characteristics were used to identify and define discrete areas within the overall study area. The ROS methodology and its application to Kōke‘e and Waimea Canyon State Parks are further described in the following sections.

Recreation Opportunity Spectrum (ROS)

ROS is a way of dividing up the landscape into an array of experiences for people to enjoy. ROS is based on the premise that people expect certain levels of development related to the character of the setting and the type of recreation they prefer (USFS, 1993). For example, a facility intended to create a safe, controlled environment for large numbers of people should be highly developed using modern materials and providing ample conveniences. Consistent with visitor expectations, a more primitive “backwoods” area would have far fewer people and, correspondingly, fewer constructed elements. Those would generally be small in scale and be designed to blend into the natural landscape.

The ROS program defines opportunity classes as follows: (Driver and Brown, 1978, Souza 2003)

Primitive – opportunity for isolation (from the sights and sounds of man), to feel a part of the natural environment, to have a high degree of challenge and risk, and to use outdoor skills.

Semi-primitive non-motorized – some opportunity for isolation from the sight and sounds of man, but not as important as for primitive opportunities. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills.

Semi-primitive motorized – Some opportunity for isolation from the sight and sounds of man, but not as important as for primitive opportunities. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills. Explicit opportunity to use motorized equipment while in the area. Characteristics include:

- Predominately unmodified natural environment;
- Low density use;
- Facilities for safety and resource protection; and,
- Controls and restrictions minimized on-site.

Rustic – About equal opportunity for affiliation with user groups and opportunities for isolation from sights and sounds of man. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities are not very important. Practice and testing of outdoor skills may be important. Opportunities for both motorized and non-motorized forms of recreation are possible. Characteristics include:

- Predominately natural environment with moderate evidence of the sights and sounds

of man;

- Moderate density use with low to moderate densities away from developed areas;
- Facilities for conveniences as well as for safety and resource protection; and,
- Controls and regimentation provided offer a sense of security and are on-site.

Concentrated – Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. These factors are generally more important than the setting of the physical environment. Opportunities for wildland challenges, risk taking, and testing of outdoor skills are unimportant, except for those activities like fishing for which challenge and skills are important. Characteristics include:

- Substantially modified natural environment;
- Moderate to high density use with moderate densities away from developed areas;
- Many facilities are for a large number of people and often for special activities; and,
- Controls and regimentation are obvious.

Modern urbanized – Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. These factors are more important than the setting of the physical environment. Opportunities for wildland challenges, risk taking, and testing outdoor skills are unimportant.

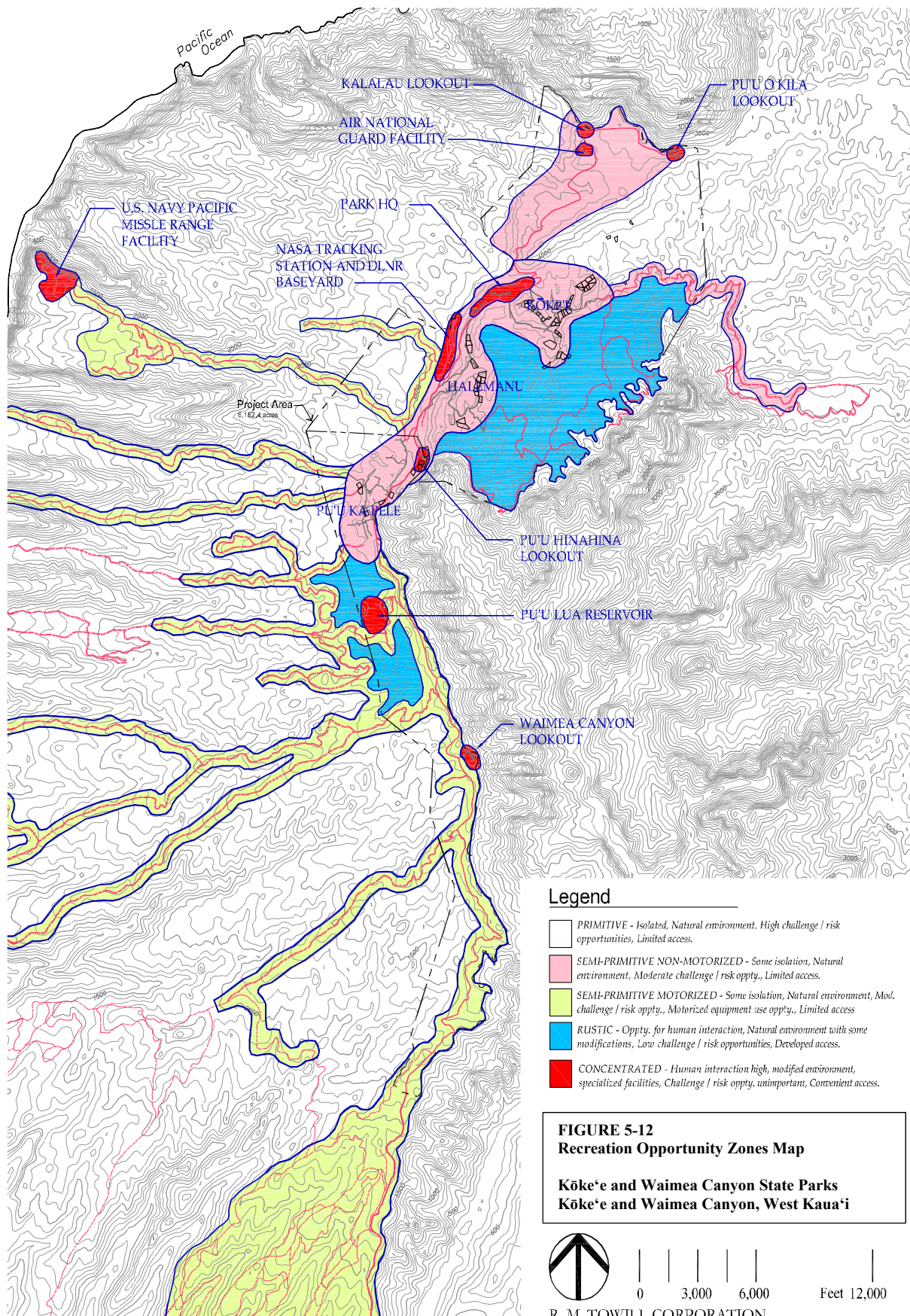
All of the ROS classes except “Modern Urbanized” are represented in Kōke‘e and Waimea Canyon State Parks.

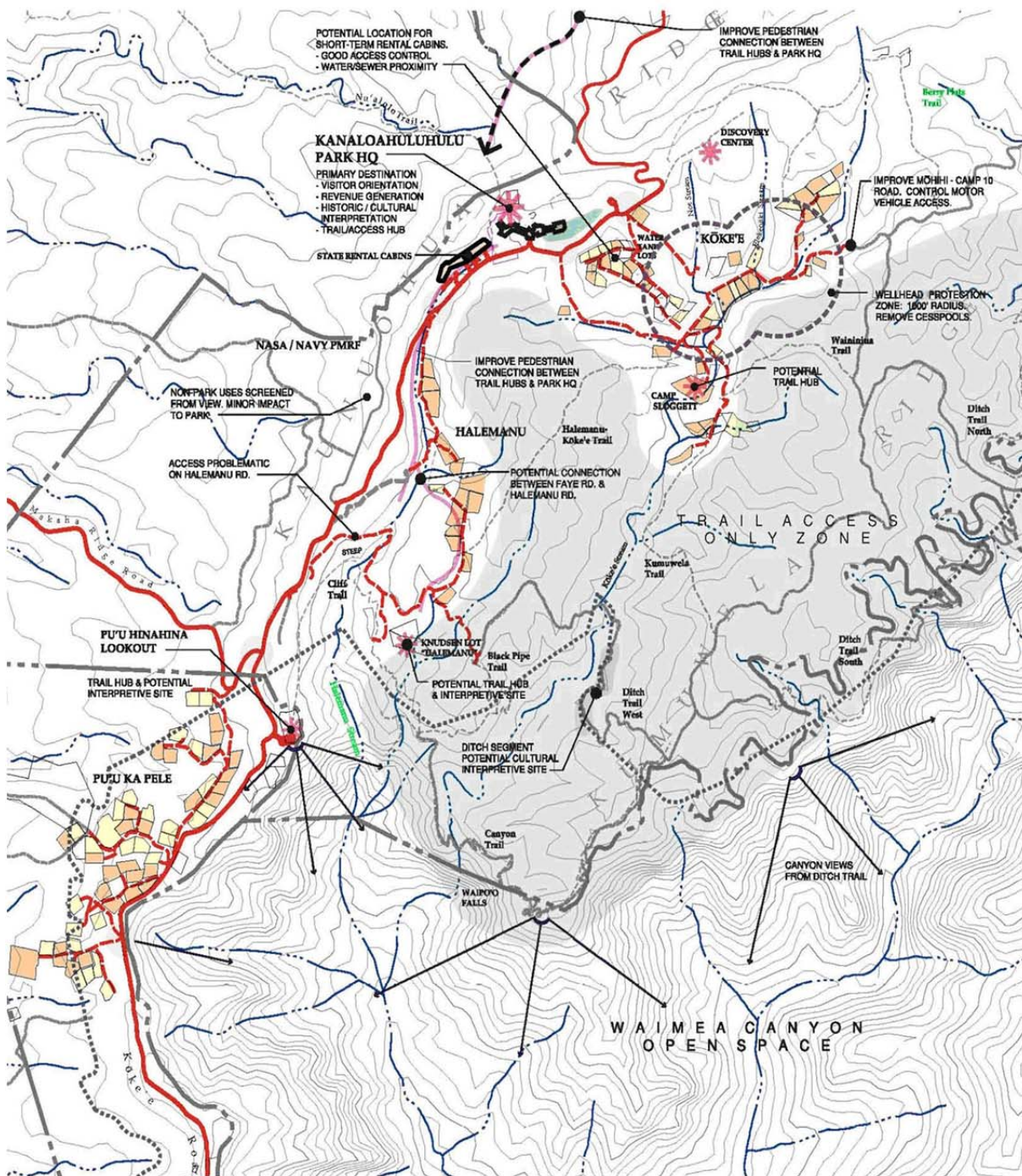
Regional Analysis

Recreation opportunity zones are defined for Kōke‘e and Waimea Canyon State Parks based on these ROS definitions and an analysis of park resources compiled in the Background Research and Inventory Assessment Report and the Facilities Assessment Report.

As a first step, a regional analysis is conducted to identify areas to which the ROS definitions could be applied. The regional analysis uses data from the previous inventory and assessment reports to sketch out the broad physical organization of the parks with respect to physiography and natural resources, access, recreation resources, and developed features. The results of the regional analysis are shown in **Figure 5-11**.

The broad regional boundaries drawn by this analysis are then further refined using the ROS definitions. The result is a Recreational Opportunity Zones (ROZ) map shown in **Figure 5-12**, which is used for additional analysis and alternatives planning. The ROZ map establishes the physical framework in which master plan alternatives can be developed according to an array of themes. Each of the zones falls somewhere along the spectrum of park user expectations, from safe, amenity-rich attractions to isolated, challenging wilderness experiences. Over time, each zone can be discretely managed to meet changing environmental conditions and changing user expectations.

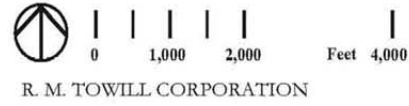




LEGEND

- Historic Rating (Duensing Report):
- Historic rating 3, 4 & 5
 - Historic rating 1 & 2
 - Trail Access Only Zone
- Trails
 Lease Lot Roads (unpaved)
 Kōke'e Irrigation Ditch System
- Activity Node
 Views

FIGURE 5-13
Park Core Analysis Map
 Kōke'e and Waimea Canyon State Parks
 Kōke'e and Waimea Canyon, West Kaua'i



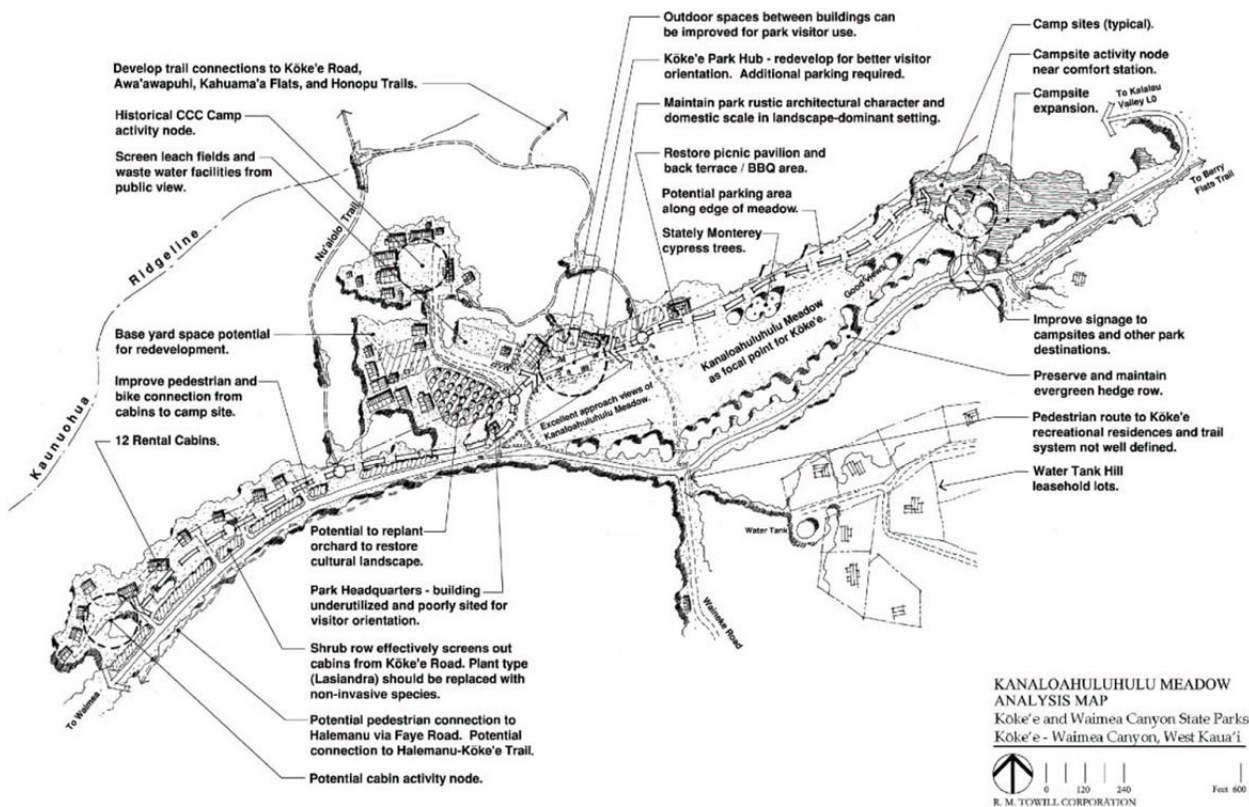


Figure 5-14
Kanaloahuluhulu Meadow Analysis Map

Opportunities and Constraints Mapping

The ROZ framework is useful in delineating areas that require more focused analysis. For this park master planning process, the Rustic and Concentrated ROZs, underwent an additional mapping exercise to identify planning opportunities and constraints. These zones received additional attention due to their more intensive development and use, and the desire to contain planned park development within those zones. For another type of plan, such as a natural resources management plan, the focus might be directed to the primitive or semi-primitive zones where habitat restoration or ungulate control programs are to be staged.

Figure 5-13, Park Core Analysis Map identifies opportunities and constraints within the Rustic ROZ. The map illustrates the integration of the parks' developed corridor (Rustic ROZ) along Kōke'e Road with the adjacent semi-primitive recreation area between Kaunohua and Kumuwela Ridges.

Figure 5-14, Kanaloahuluhulu Meadow Analysis Map identifies opportunities and constraints within the meadow area, including the Park Headquarters, short-term rental cabins, CCC Camp, and related facilities.

Opportunity and constraints maps for the lookouts are presented in **Section 5.4, Scenic Resources** (see **Figures 5-1, 5-2, 5-3, and 5-4**).

◆ RESEARCH AND MONITORING

The analytical process is an ongoing enterprise that does not stop with the approval of a master plan. Good analysis is essential to managing park resources and visitor expectations over time; and good analysis requires good input. Resource monitoring is important to improve the quantity, quality and availability of park resources data for park managers and the public. It involves a basic two-phase program. The first phase involves baseline inventory, or an extensive point-in-time effort to determine the location and condition of selected biological resources. Inventory efforts may involve both the acquisition of new information and the compilation of existing information from disparate sources. The second phase is monitoring, or the collection and analysis of repeated observations over time to evaluate changes in the condition of a resource. (NPS, 2003 http://www.nps.gov/seki/snn/snn_index.htm).

Limits of Acceptable Change

The concept of “Limits of Acceptable Change” (LAC) follows the ROS methodology, originally developed by Clark and Stankey in 1979. The ROS concept provided a convention for defining areas into zones, such as primitive, semi-primitive, rural, and urban, etc., that could be managed for recreation use. The ROS methodology was adopted by the U.S. Forest Service, Bureau of Land Management and National Park Service as their management model for forest and parklands.

Stankey (1985) developed the LAC process in an effort to provide a practical and defensible application of resource carrying capacity concepts. The LAC acknowledges that human-induced change will occur and moves forward to determine how much change will be allowed to occur, where, and the actions needed to control it. The primary emphasis of the LAC process is *“on the conditions desired, rather than on how much use or abuse an area can tolerate. The management challenge is not one of how to prevent any human-induced change in*

the planning area, but rather one of deciding what changes should occur, how much change will be allowed, what management actions are needed to guide and control it and how the managing agencies will know when the established limits are being or have been reached.” (USFS, 1993)

The focus of LAC is to evaluate the boundaries of change and to establish standards on how much change will be tolerated before the quality of the recreational opportunity offered in a ROS class is affected.

The advantages of using the LAC approach to more conventional carrying capacity methodologies include:

- Desired future conditions clearly defined.
- Management actions address specific problems.
- Resource conditions and management effectiveness are evaluated through specific indicators and standards.
- Public becomes partners in management.

The disadvantages of the methodology are:

- It takes a lot of time.
- Forces you to be specific.
- The best indicators take time to develop and measure.
- Setting standards is difficult.
- Requires a lot of systematic monitoring.
- Must be revisited and fine-tuned.
- Public input at all stages slows the process.

The LAC process consists of nine steps that can be broken down into four major components:

Component I - Identify Issues, Concerns and Opportunities

- Step 1: Identify area issues and concerns.
- Step 2: Define and describe opportunity classes.

Component II - Determine Present Condition of Parklands

- Step 3: Select indicators of resource and social conditions.
- Step 4: Inventory existing resource and social conditions.
- Step 5: Specify measurable standards for the resource and social indicators selected for each opportunity class.

Component III - Determine Action Plan

- Step 6: Compile information from Components I and II and identify alternative opportunity class allocations.
- Step 7: Identify what management actions would be needed for each alternative identified in Step 6.
- Step 8: Evaluate and select one preferred alternative as the basis for an action plan.

Component IV - Implement and Monitor Action Plan

- Step 9: Implement actions for preferred alternative and monitor conditions.

◆ DEVELOPMENT AND MANAGEMENT GUIDELINES

Planning and development within the parks should be conducted according to guidelines that reflect the values of park users and the experience of professional park managers. The following paragraphs summarize development principles and methodologies derived from stakeholder input and USFS management practices. These guidelines do not define an end-state of the master plan, but serve to direct planning efforts towards desired outcomes based on principled decisions.

Development Principles

- Plan for long-term environmental and fiscal sustainability of park resources and operations.
- Preserve “wilderness” conditions and character of the upland region.
- Prevent damage or deterioration of historic sites and resources.

- Limit access and prevent damage to sensitive natural areas and native habitats.
- Eliminate or mitigate the impacts of invasive species from areas within parklands.
- Provide for the recreation needs of Hawai‘i’s residents.

Scenery Management Systems (SMS)

In addition to the ROS system, the USFS utilizes SMS to manage the form of the built environment within recreation lands. Scenery Management Systems prescribe that land management activities (including construction of facilities) should not contrast with the existing natural appearing landscape. Within the framework of a regional landscape, character types, form, line, color, and texture are controlled to make activities and structures fit within landscapes (Agricultural Handbook 666). This approach promotes a strong response to the context of the natural landscape. It also reinforces the planning principle that structures should be visually subordinate to the landscape (USFS).

Historic and Cultural Landscape

As described in Sections 5.3 and 5.6 of this report, the history of the Waimea – Kōke‘e area is written in the landscape. The historic buildings, cultural sites and practices, place names, trails, modified forest growth, and archaeological remains all contribute to telling the story of past lives and the continuing relationship Kaua‘i’s residents have with the island’s upland region. Therefore, in the development of the parks’ master plan, the historic and cultural landscape is to be given equal weight with natural and recreational resources in developing plan programs and setting priorities.

Infrastructure and Utility Systems

Infrastructure and utility systems are important for the safety and convenience of park users, as well as having a significant potential effect on the aesthetic value of the landscape. Well-

maintained roads are essential for access, be it for work, recreation, or in times of emergency. Roads are also the dominant man-made structure within the parks landscape. Water and sanitation systems provide for the personal comfort of park users and protect the natural environment from pollution. Electricity and communications systems are likewise important for convenience and safety.

Development principles for infrastructure and utilities should be based on reasonable values of park user safety and convenience, while remaining subject to the imperatives of environmental protection and aesthetic value. Infrastructure and utility systems should therefore, conform minimally to the following:

- Utilities should be sited, screened, and where possible, placed underground to avoid impacting scenic views and minimize their visual presence in the landscape.
- Visible roadway and utility structures should be designed in compliance with park design standards for materials, form, and color in order to be compatible with the character of the regional landscape.
- Infrastructure and utility development should be limited to meeting the requirements of park operations and maintenance, safety, and basic conveniences within developed facilities.
- Utility and infrastructure costs should be borne, as much as possible, by users.
- Utility service and resource demands should be monitored, managed and operated at sustainable levels.

◆ ALTERNATIVE DEVELOPMENT THEMES

The master plan alternatives will be developed around a range of themes that emphasize different resource values and test varying development intensities. At one end of the range, emphasis is placed on a strict environmental ethic that envisions retreat from currently developed areas and restoration of the natural forest environment. At the other end of

the range, recreation values are given priority and development is intensified through increased access and expansion of park user amenities. The range of development alternatives provides a means of testing the “best” combinations of programs, activities, and locations to meet the needs of most park users. Central to the alternative plans are:

- Long-term sustainability;
- Preservation and maintenance of the historic features of the parks; and
- Preserving the unique physical resources of the upland region.

Four (4) master plan alternative development frameworks are defined as follows:

ALT-1 – Facilities, activities, and programs to be administered on a case-by-case basis; no new programming; continuation of current activities as possible with existing revenues and management resources.

ALT-2 – Facilities, activities, and programs administered on a case-by-case basis; repair, but do not expand existing park facilities; continuation of current activities; focus on improving lookouts, then trails; establish design guidelines for cabins; and institute park entry fee.

ALT-3 – Optimize recreational facilities and interpretive programs for cultural and historic resources; focus development at lookouts and the roadway corridor between Pu‘u ka Pele and Kanaloahululu; consolidate trailheads; expand short-term recreation cabin rentals; charge admission at park entrance.

ALT-4 – No new development; restore previously developed areas to a natural state; allow attrition of non-critical development facilities; establish design guidelines for cabins; charge admission at park entrance.

CHAPTER 6 ALTERNATIVES

6.1 ALTERNATIVE 1: “NO ACTION” (EXISTING CONDITIONS PLAN)

◆ VISION

Facilities, activities, and programs are administered on a case-by-case basis at the two parks. No new facilities or park programs are developed. Current activities and programs will be continued with existing revenues and management resources.

◆ OBJECTIVES

- Continue existing programs at current levels.
- Continue existing visitor services at current levels (e.g. museum and Lodge).
- Monitor park use and users to establish park resource limits.
- Establish revenue enhancement program, e.g. entrance fee.
- Protect the park resources (natural and man-made).
- Establish design guidelines for the protection of historic structures.
- Maintain existing roads and utilities.

◆ FEATURES SUMMARY

The features of this Alternative include:

- Continue existing programs and management structure.
- Re-lease existing recreation residences.
- Establish recreation residence maintenance fees for infrastructure.
- Renovate and/or replace utilities and infrastructure as necessary to maintain existing levels of service.

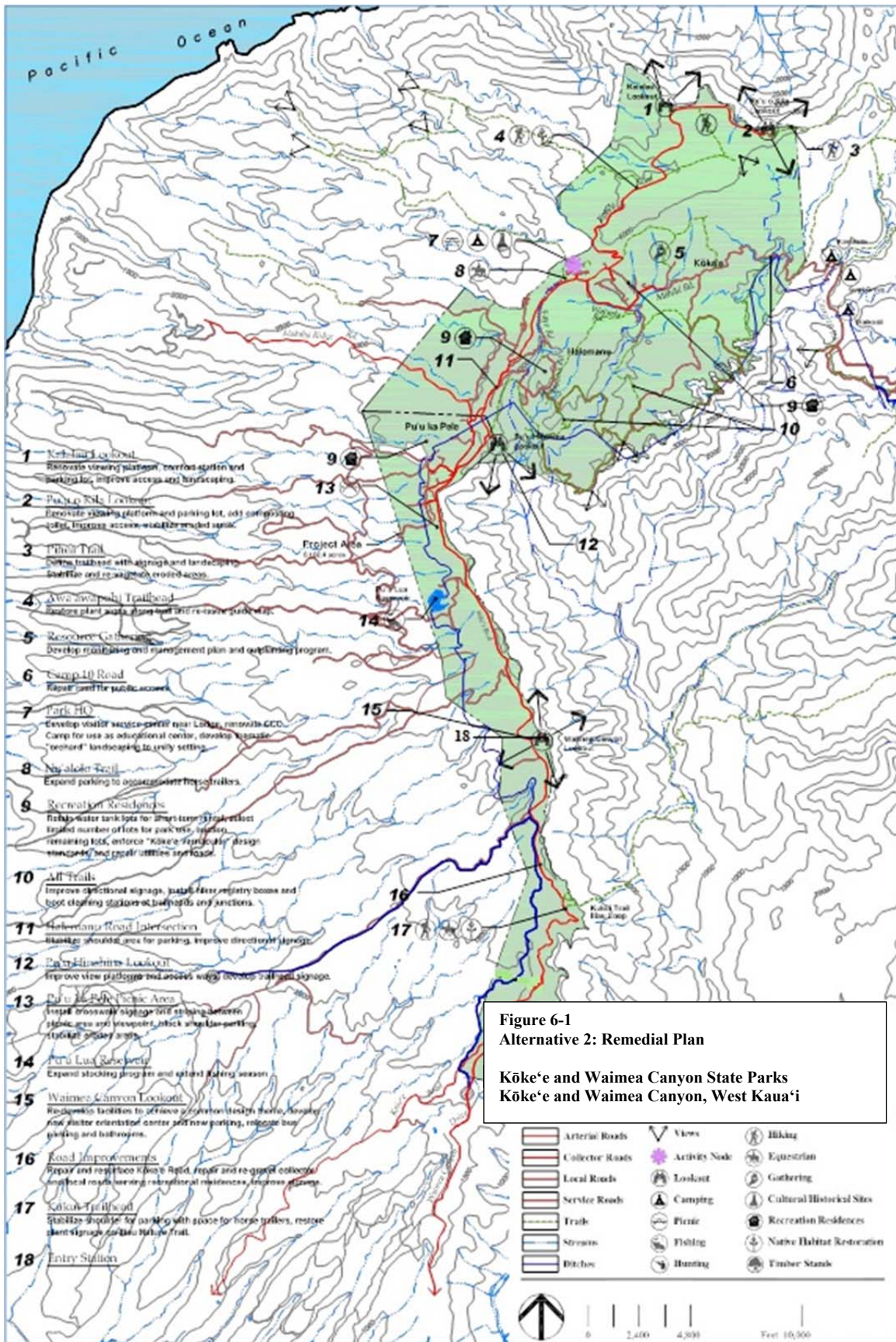
6.2 ALTERNATIVE 2: REMEDIAL PLAN

◆ VISION

Preserve the existing character of the Parks with upgrades to visitor amenities, infrastructure, and utilities in a manner that reinforces the Parks’ historic character and avoids intensifying development. A fundamental goal of the remedial plan is to maintain existing resources, enhance user facilities and to generate sufficient revenue to sustain park operations, maintenance, and routine program upgrades. Improvements to facilities, activities, and programs are to be administered on a case-by-case basis. See **Figure 6-1**.

◆ OBJECTIVES

- Achieve sustainable operations with 35% of park revenues.
- Upgrade existing park facilities such as lookouts, trails, and access roads with improvements to and, if appropriate, minor expansion of lookouts, trails, and roads to enhance the visitor experience.
- Develop design guidelines to protect the historic value and rustic character of the recreation residences and other park structures.
- Improve natural resources management and protection of native ecosystems. To address the rare and threatened species endemic to the Parks, focus programs on invasive species control.
- Continue existing programs at current levels.
- Enhance park identity and visitor orientation through interpretive and directional signs.
- Monitor park use and users to establish resource limits.



- Maintain and support Kōkeʻe Natural History Museum as the primary interpretive site.
- Work with Hui o Laka, Kōkeʻe Leaseholders Association, the Kōkeʻe Resource Conservation Program, and other interested parties to develop volunteer programs for park maintenance and native ecosystem and restoration projects.
- Facilitate the development of a volunteer program with Hui O Laka and provide volunteer housing to encourage volunteers.

◆ FEATURES SUMMARY

The features of *Alternative 2: Remedial Plan* are depicted in **Figure 6-1**. Highlights include:

- Collect entry fee from non-residents and commercial operators using the Parks. Exempt Hawaiʻi residents from entry fees. Expand user fees for operations and maintenance.
- Repair and resurface entire length of Kōkeʻe Road. Repair and re-gravel collector and local roads serving recreation residences. Repair Camp 10 Road for public access.
- Retain water tank lots for short-term rental. Select limited number of Kōkeʻe lots for park use. Re-lease all remaining lots in 2006.
- Enforce “Kōkeʻe Vernacular” design guidelines for all recreation residences with historic rating of 3, 4, and 5. Establish maintenance fees for infrastructure.
- Park HQ: Relocate existing Park HQ building closer to lodge and develop as visitor service center.
- Continue CCC Camp renovation for use as interpretive, educational, and research center.

- Repair existing trails and improve directional and informational signage at trailheads. Complete Ditch Trail and Cliff Trail segments, and Pihea Trail boardwalk.
- Improve pathways and visitor amenities at all lookouts. Add visitor orientation and interpretive signage.

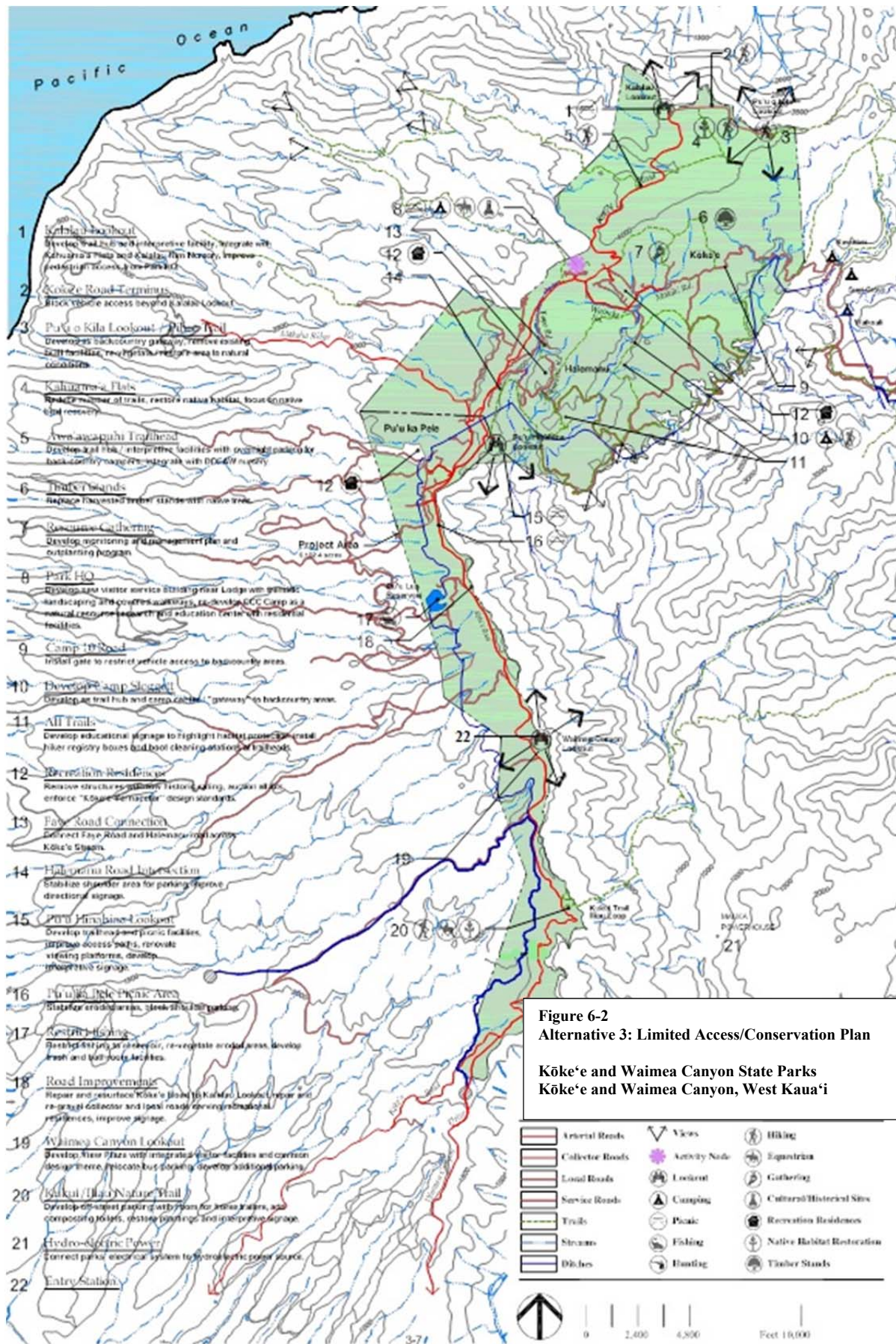
6.3 ALTERNATIVE 3: LIMITED ACCESS/CONSERVATION PLAN

◆ VISION

Restore the Parks to a more natural state by scaling back existing development. The Conservation Plan seeks to create a destination in which visitors can experience the area’s unique native ecosystem and historic-cultural landscape through education and interpretive programs and personal immersion in the environment. See **Figure 6-2**.

◆ OBJECTIVES

- Achieve sustainable operations with 35% of park revenues.
- Consider user fees and entrance fees from non-residents and commercial operators in the Parks.
- Protect and restore the native flora, fauna, and their habitats in the Parks and surrounding natural areas.
- Educate park visitors about the ecological values of the region and the need for protection and restoration efforts.
- Enhance park identity and visitor orientation through interpretive and directional signs.
- Establish design guidelines for the protection of historic structures.
- Limit vehicle access on park roads and centralize pedestrian access in remote areas.



◆ FEATURES SUMMARY

The features of *Alternative 3: Limited Access/Conservation Plan* are depicted in **Figure 6-2**. Highlights include:

- Collect entry fee from non-residents and commercial operators using the Parks. Exempt Hawai'i residents from entry fees. Expand user fees for operations and maintenance.
- Re-lease all lots with historic rating of 3, 4, and 5. Remove all structures with historic rating of 1 or 2. Enforce “Kōke‘e Vernacular” design guidelines. Establish maintenance fees for infrastructure.
- Allow no new recreation residence construction. Restore vacant lots to natural conditions.
- Prohibit vehicles past Kalalau Lookout. Prohibit back country vehicle access on Camp 10 Road.
- Remove built facilities from Pu‘u o Kila Lookout.
- Repair and resurface Kōke‘e Road up to Kalalau Lookout. Repair and re-gravel collector and local roads serving recreation residences.
- Connect Faye Road and Halemanu Road across Kōke‘e Stream.
- Develop new Park HQ/visitor service building near Lodge. Develop thematic “orchard” landscaping and covered walkways to unify setting.
- Re-develop CCC Camp as a natural resource research and education center with residential facilities for staff and researchers.
- Develop backcountry “gateway” trail hubs at Camp Sloggett, Awa‘awapuhi Trailhead, and Kalalau Lookout. Reduce number of trails in Kahuama‘a Flats.
- Renovate and upgrade utilities and infrastructure.

- Develop interpretive facilities at Waimea Canyon Lookout, Park HQ, Camp Sloggett, Awa‘awapuhi Trailhead, and Kalalau Lookout.
- Conduct habitat restoration program in Kahuama‘a Flats.
- Monitor park use and users to establish resource limits.

6.4 ALTERNATIVE 4: PARK FACILITY DEVELOPMENT PLAN

◆ VISION

To optimize recreational opportunities and facilities and to expand interpretive programs that allow park visitors to experience the natural, cultural and historic resources. The plan seeks to create a destination that enhances the wild land experience that visitors of all physical skill levels can enjoy and appreciate while engaging in a variety of outdoor recreational and educational activities. See **Figure 6-3**.

◆ OBJECTIVES

- Achieve sustainable operations with 35% of park revenues.
- Enhance park identity and visitor orientation through interpretive and directional signs.
- Protect and restore the historic and cultural resources in the Parks and surrounding areas.
- Enhance recreational opportunities for park visitors by increasing trail mileage, creating new trail hubs and camping facilities, and providing interpretive hikes/tours, etc.
- Focus development at lookouts and along the roadway corridor between Pu‘u ka Pele and Kanaloahuluhulu Meadow.

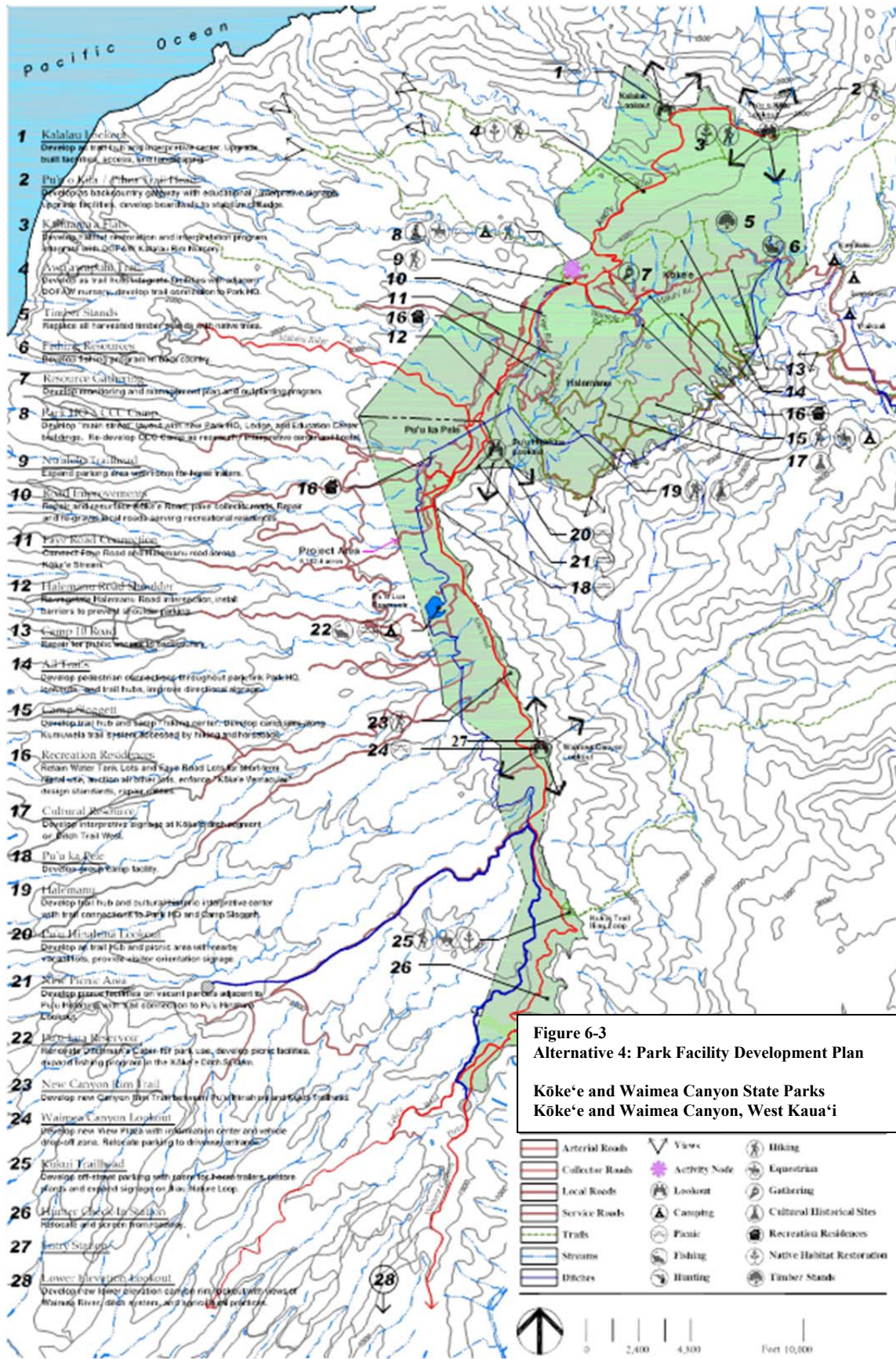


Figure 6-3
Alternative 4: Park Facility Development Plan
Kōke'e and Waimea Canyon State Parks
Kōke'e and Waimea Canyon, West Kaua'i



- Integrate the Parks and adjacent forest reserves by means of an enhanced trail system of nodes and hubs and trailhead kiosks.
- Protect and restore the native flora, fauna, and their habitats in the Parks and surrounding natural areas.
- Educate park visitors about the ecological values in the region and protection and restoration efforts.
- Establish design guidelines for the protection of historic structures and in the construction of new structures.
- Remove structures that do not contribute to the historic character of the area and revegetate the cleared area with native vegetation.
- Expand opportunities to learn about the Parks' history and cultural landscape through interpretive facilities and tours, (both guided and self-guided, vehicles and walking tours) and kiosks.
- Design and construct a visitor center that orients visitors to the Parks and shows the resources and history of the Parks through audio-visual programs, exhibits, and displays.
- Develop "satellite" interpretive facilities at lookouts and trail hubs.
- Develop tours around themes, e.g. native forests, bird-watching, historic cabins (for architectural history).
- Expand concession and management leases to provide interpretive and visitor services.
- Develop interpretive (nature) trails at locations that are ADA accessible.

◆ FEATURES SUMMARY

The features of Alternative 4: Park Facility Development Plan are depicted in **Figure 6-3**. Highlights include:

- Re-lease all existing recreation residences that contribute to the historic character of the area. Houses in the "water tank lots" and Faye Road to be reserved for short-term rentals. Enforce "Kōke'e Vernacular" design guidelines. Establish maintenance fees for infrastructure.
- Develop new homes on vacant lots. Follow "Kōke'e Vernacular" design guidelines.
- Repair and resurface Kōke'e Road. Pave collector roads. Repair and re-gravel local roads serving recreation residences. Repair Camp 10 Road for backcountry access. Connect Faye Road and Halemanu Road across Kōke'e Stream.
- Enhance park identity and visitor orientation. Develop Lodge area as a "main street" layout with new Park HQ, Lodge, and Education Center buildings separated by landscaped spaces, and served by storefront parking and covered boardwalk connection.
- Re-develop CCC Camp for use as research/interpretive center and hostel.
- Develop trail hubs at Halemanu, Camp Sloggett, Awa'awapuhi Trailhead, Pu'u Hinahina and Park HQ with interconnecting trail system.
- Establish revenue enhancement program, including entry fee for non-residents and improved concession facilities at Waimea Canyon Lookout.
- Renovate and upgrade utilities and infrastructure.
- Monitor park use and users to establish resource limits.

6.5 ALTERNATIVES EVALUATION

The selection of a preferred alternative plan is based upon an evaluation process that considered the range of opportunities presented by the project site. Within the two parks, the range of opportunities is limited by the resources’ ability to sustain itself. Limitations when imposed, however, are more discrete and are related to the resources available – some natural and some man-made. The limitations of the natural resources have been documented in the opportunities and constraints section of the Analysis Report. In this way, resource limits were kept at the forefront of the alternative development process.

The evaluation of the alternative was conducted on a qualitative basis. Decisions were required to be made on the basis of “best fit” with the overall theme or approach to the development of the Parks. Specific measures used are described below.

◆ MEASURES OF EVALUATION

The following measures were used as the basis of the evaluation:

- Thematic Approach
- Plan Components
- Conflict Evaluation
- Costs and Revenue
- Management and Administration

◆ THEMATIC APPROACH

The evaluation process begins with a decision about fundamental park values. The four alternatives described above provide a starting point for identifying the park themes, or values that will ultimately be advanced in the master plan. They represent a range of development intensities, from

“return to nature” to maximum enhancement of built amenities. In their individual composition of program elements, each places different emphasis on essential park functions of resource protection, recreation, education, and revenue generation.

Comments forwarded by four groups were evaluated and are summarized in **Table 6-1**. Based on responses received, Alternative 2, the remedial approach, garnered the most support compared to Alternatives 3 and 4, and was the thematic approach used for the development of the Master Plan.

**Table 6-1
Thematic Approach Evaluation**

	Alt-1	Alt-2	Alt-3	Alt-4
Consultant	□	■	▣	▣
Kōke’e IATF	□	■	▣	▣
Public Comments	■	■	▣	□
State Parks Staff	□	■	▣	▣

- = Favorable approach
- = Undesirable approach
- ▣= Somewhat favorable approach

◆ PLAN COMPONENTS

Selection of compatible plan components was the next stage of the evaluation process. Plan components are organized under the heading of land use, circulation, and open space. The preferred plan can be constructed from components of a single alternative or can be a composite of discrete components selected from each of the four Alternatives.

If discrete components are selected from several alternatives, then a new plan is created and evaluated. The components selected are to be evaluated against their ability to “meet” the requirements or development goals of that particular plan. If plan components are judged to be out of character with the overall goal, then

**Table 6-2
Plan Component Evaluation**

Development Theme	Alt-1	Alt-2	Alt-3	Alt-4
Natural Resources	○	●	◐	○
Historic & Cultural Resources	○	◐	●	◐
Scenic Resources	○	●	◐	●
Outdoor Recreation	○	●	◐	●
Recreation residences	○	◐	○	◐
Interpretation	○	●	●	●
Infrastructure	○	●	◐	●
Organizational Development & Mgmt.	○	●	◐	◐

○ = Not favored component

◐ = Somewhat favored component

● = Favored component

the components may be revised or replaced as necessary to correspond with the desired values and outcomes.

The plan components were also shared with the four groups identified above. Their choices are recorded in **Table 6-2**.

Recreation residences

Five alternatives for the disposition of the recreation residences were presented independently from as well as incorporated within the four main alternatives described earlier. The range of options for the recreation residences included:

- Alt-1: Maintain the status quo
- Alt-2: Re-lease recreation residences except for 19 lots which are to be used for short-term (day, overnight) rentals.

- Alt-3: Re-lease recreation residences except for some lots in the Kōke‘e and Halemanu area.
- Alt-4: Re-lease recreation residences except for some lots in the Kōke‘e area and the removal of non-historic structures.
- Alt-5: Lease all of the lots to a third party concession for disposition as day-rentals, medium-term rentals, and long-term rentals.

At an October 2003 public information meeting where the alternatives were presented, members of the public expressed their desire to choose “none of the above” from a range of options for the disposition of the recreation residences. A summary of responses is shown in **Table 6-3**.

**Table 6-3
Recreation Residence Evaluation**

	Alt-1	Alt-2	Alt-3	Alt-4	Alt-5	None of the Above
Consultant	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Kōke‘e Interagency Task Force	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Public Comments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
State Parks Staff	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

= Favorable approach
= Undesirable approach
= Somewhat favorable approach

◆ **CONFLICT EVALUATION**

During the public comment period, the use of the trails within the Waimea Canyon and Kōke‘e State Parks by mountain bicycle enthusiasts was raised as an issue. An evaluation of this use was made by the members of the Kōke‘e Interagency Task Force who concluded that the bicyclists were not to be excluded from the Parks. However, they were to be limited to the unpaved roads in the Parks. Reasons for this decision included the potential for conflicts between hikers and hunters on the trail, and the damage to trails and sensitive natural areas caused by mountain bikes. The use of off-road vehicles was also considered by the Task Force, and they concluded that liability and maintenance concerns outweigh the public benefits of allowing this type of activity within the Kōke‘e area, at this time. Further, if proposals are received for the use of the roads by commercial ventures, they will be evaluated on a case-by-case basis, based on the road condition.

◆ **COST AND REVENUE**

The costs associated with each plan was calculated and are summarized in **Table 6-4**. Detailed calculations were previously

submitted in Appendix 1, Table 2 of the Final Alternatives Report. Costs were estimated for each plan component recommended. The costs were evaluated separately to ensure that they do not influence initial selection of the preferred plan theme and components. Cost considerations will eventually shape the plan content, however they should not dictate overall plan direction.

Revenue generation was examined for each plan to ascertain if the total revenue to be generated can sustain the activities and programs planned for the Parks.

Operations and maintenance costs were also estimated to project income and revenue requirements.

**Table 6-4
Improvement Cost Evaluation**

Alternative	Cost*	Ranking
Alt. 1**	\$5.23 Mil	1
Alt. 2	\$6.64 Mil	3
Alt. 3	\$5.84 Mil	2
Alt. 4	\$10.24 Mil	4

*Cost is based on 2003 dollars.
 ** Costs include repairs to selected items.

Potential revenues that could be generated from the alternative plan components were identified for each plan (**Table 6-5**). Existing revenues were used as the baseline for revenue generation. Charging an entry fee was new for the plans. For purposes of this evaluation, a fee of \$2 per person entering the Parks was assumed.

Table 6-5
Preliminary Revenue* Evaluation

Alternative	Income	Ranking
Alt. 1	\$0.40 Mil	4
Alt. 2	\$1.30 Mil	2
Alt. 3	\$1.20 Mil	3
Alt. 4	\$1.46 Mil	1

*Estimated revenue based on 2003 dollars.

Revenues were assumed for leases of the recreation residences, concessions, additional daily rentals, and collection of a maintenance fee.

◆ MANAGEMENT AND ADMINISTRATION

Management and administration issues address how the recommendations of the Master Plan will be implemented and by whom.

Kōke‘e Administrative Agency

Consideration should be given to establishing a ‘super’ agency that would consolidate resources and manage the various DLNR divisions having jurisdiction in the Waimea-Kōke‘e region. The functions of this agency would include:

- Maintenance of facilities, trails, roads, utilities, etc.;
- Manage real estate resources;
- Manage natural resources;
- Provide program and visitor services;
- Manage commercial interests; and
- Provide services to the public.

Program Support

Program support services have been provided by Hui o Laka in the form of interpretive material distributed at the Kōke‘e Museum, and natural history and cultural programs provided to the public. Recent efforts to restore the CCC facilities are an important contribution made by Hui o Laka.

It is recommended that the DLNR continue leasing such activities to a nonprofit or for profit organization to provide information, programs, and facilities to service the public.

In order to enhance the Parks’ identity and improve customer services, the renovation of existing buildings and or construction of new facilities in Kanaloahuluhulu Meadow and CCC Camp should be undertaken. Facility improvements include the development of a staffed visitor center and service desk.

Commercial Uses

Commercial activities in the Parks have provided a valuable service to park visitors by providing food and retail merchandise not normally provided by the State. At Kōke‘e, the vendor provides food service, retail merchandise, and rental of twelve cabins for overnight visitors. Revenue derived from the services and sales further provide income to the State to operate the Parks. The Lodge at Kōke‘e, LLC was issued a revocable permit, terminable upon 30 days notice. When the Final Master Plan is approved by the BLNR, State Parks intends to publish a solicitation for a long-term concession agreement via sealed bids.

The following are recommended:

- A commercial lease be offered to a qualified vendor for a period not to exceed 10 years, with a re-opening after the fifth year;
- Provide a permanent facility (area) for a

concession operation at the Waimea Canyon Lookout to sell refreshments.

- Continue the overnight rental of cabins.

6.6 PREFERRED ALTERNATIVE

A preferred alternative was selected based on the evaluation of the alternatives, and is called the Remedial Plan. As cited previously, the alternatives that were developed provide a range of development options. Further, components from each of the alternatives served as a menu of options that was combined into the preferred alternative.

Comments received from the public, interested parties, the Kōke‘e State Park Advisory Council, and DLNR staff members, all provided a basis for the development of the preferred alternative. As components were included or deleted, how they related to each other and how they “fit” together was examined.

Major components of the preferred alternative are described below.

Thematic Approach

Preserve the existing character of the Parks with upgrades to visitor amenities, infrastructure, and utilities in a manner that reinforces the Parks’ historic character and avoids intensifying development. A fundamental goal of the preferred plan is to maintain existing resources, enhance user facilities, generate sufficient revenue to sustain park operations, and maintenance and routine program upgrades. Improvements to facilities, activities, and programs are to be administered on a case-by-case basis.

On November 5, 2003, the Board of Land and Natural Resources approved the following recommendation:

“Approve the Objectives of Alternative #2 Remedial Plan and direct the Division of State Parks to continue the planning and environmental impact statement process for Kōke‘e and Waimea Canyon State Parks.”

◆ FEATURES OF THE PLAN

(*NOTE: Notwithstanding any provision of this or prior chapters of the Kōke‘e and Waimea Canyon State Parks Master Plan to the contrary, the terms and provisions of Chapter 7 constitute the final master plan and shall control in the event of ambiguity or conflict. It is specifically noted that the discussion of Alternative 2 in section 6.2 (Remedial Plan) above, does not represent the terms of the preferred alternative or final master plan.)

Components selected to be in the preferred alternative include: See **Figure 6-4**.

Kalalau Lookout

Renovate viewing platform, comfort station and parking lot, provide interpretive signage, improve access and landscaping with native plantings.

Pu‘u o Kila Lookout

Renovate viewing platform and parking lot, add composting toilet, improve access, and stabilize eroded areas.

Pihea Trailhead

Define trailhead with signage and landscaping. Stabilize and re-vegetate eroded areas.

Install boardwalk/steps to control erosion and prevent hikers from wandering off the trail.

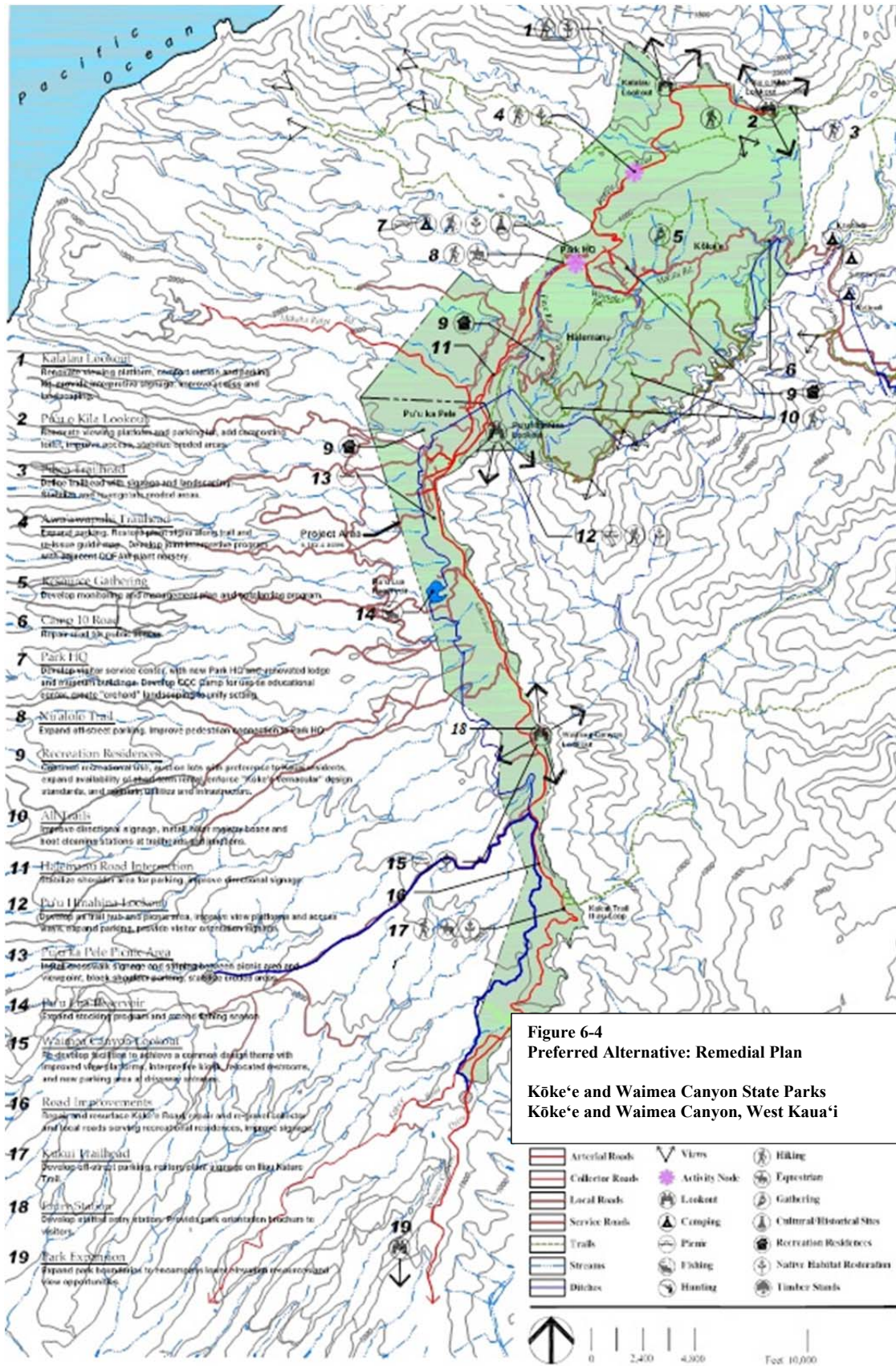


Figure 6-4
Preferred Alternative: Remedial Plan
Kōke'e and Waimea Canyon State Parks
Kōke'e and Waimea Canyon, West Kaua'i

Awa‘awapuhi Trailhead

Resurface existing parking area. Restore plant signs along trail and re-issue guide map. Develop joint interpretive program with adjacent DOFAW plant nursery.

Resource Gathering

Develop monitoring and management plan and outplanting program.

Camp 10 Road

Repair road for public access.

Park HQ

Develop visitor service center, with new Park HQ and renovated lodge and museum buildings. Develop CCC Camp for use as an educational center, and create "orchard" landscaping to unify setting.

Nu‘alolo Trail

Improve existing parking area and surface with grass pavers.. Improve pedestrian connection to Park HQ.

All Trails

Improve directional signage, install hiker registry boxes and boot cleaning stations at trailheads and junctions.

Upgrade trail guide materials and signs to inform visitors of trail conditions, length, environmental characteristics, features, and uses.

When work on existing or new parking areas is proposed, surfaces will be constructed utilizing permeable pavement materials to promote runoff filtration.

Halemanu Road Intersection

Stabilize shoulder area for parking, improve directional signage.

Pu‘u Hinahina Lookout

Develop as a trail hub. Improve view platforms and access ways, improve

parking, and provide visitor orientation signage.

Pu‘u ka Pele Picnic Area

Install crosswalk signage and striping between picnic area and viewpoint, block shoulder parking, and stabilize eroded areas.

Pu‘u Lua Reservoir

Expand stocking program and extend fishing season.

Waimea Canyon Lookout

Develop a pedestrian view plaza between the view platform and the unmanned visitor information center, snack and refreshment concession, and restroom facility. The view plaza will provide the setting for the visitor amenities and will not increase the existing footprint of the lookout by more than 30%. The visitor information center will include map displays and orientation materials to inform visitors about the parks’ resources, its history, geology, and unique environment. The snack and refreshment concession will be supplied with zero waste snacks and feature locally produced fruits and products.

Road Improvements

Repair and resurface Kōke‘e Road, repair and regravels collector and local roads serving recreation residences, improve signage.

Maintain existing roadways to provide a natural scenic corridor and slow traffic by limiting road width, where feasible.

Kukui/Iliou Nature Loop Trail Trailhead

Develop off-street parking and connection to a new trail segment along the canyon side of Kōke‘e Road. Restore plant signage on the Iliou Nature Loop Trail.

Park Entry Station

Develop staffed entry station. Collect entry fees from non-residents and commercial operators. Hawai'i residents will not be assessed an entry fee.

Establish a security check point that may deter unauthorized and/or criminal activities. Security cameras will film vehicles entering and exiting the parks.

Monitor buses going to Waimea Canyon Lookout.

Provide park orientation brochure to visitors.

Other locations for an entry station may also be considered, such as at the entrance to Kōke'e State Park.

Prior to renovation or reconstruction of existing facilities, provide proposed design and site plans to the Kōke'e State Park Advisory Council for review and public input.

Recreation Residences

Lease the recreation residences through a public auction and preserve the historic character and integrity of the structures through the enforcement of "Kōke'e Vernacular" design standards and maintenance of utilities and infrastructure.

Table 6-6 summarizes details relating to the recreation residences.

**Table 6-6
Recreation Residences Statistics**

Location	No. of Lots	Current Recreational Residences Leases	Vacant Parcels (No Imprvmts.)	Nonprofit Group Managed Parcels
Pu'u ka Pele	62	38	9	6
Halemanu	16	13	2	0
Kōke'e Lots	69	38	24	2
Totals	147	89	35	8

- Nonprofit Groups include: Ka 'Imi Na'auao o Hawai'i Nei, Hui o Laka, Kaua'i Christian Fellowship, 7th Day Adventists, United Methodist Union at Pu'u ka Pele; YWCA and United Church of Christ at Kōke'e Lots.

In summary, there are currently 114 recreation residence lots with structures on them. There are another 36 lots that are vacant.

The majority of the leases expired in 2005, and the remainder in 2006. Upon expiration, the leases have been extended pursuant to month-to-month revocable permits issued by the BLNR.

During the development of the alternatives the public was asked to comment on the following recreation residence disposition alternatives:

- Alt-1: Maintain the status quo.
- Alt-2: Re-lease recreation residences except for 19 lots which are to be used for short-term (day, overnight) rentals.
- Alt-3: Re-lease recreation residences except for some lots in the Kōke'e and Halemanu area.

- Alt-4: Re-lease recreation residences except for some lots in the Kōke‘e area, and remove all non-historic structures.
- Alt-5: Lease all of the lots to a third party concession for disposition as day-rentals, medium-term rentals, and long-term rentals.

In addition to the alternatives cited, consideration was also given to designating recreation residence areas, or the entire Park, as a historic district in recognition of the important role the Parks played in the history of Kaua‘i. Consideration for the designation of a historic district was for the purposes of allowing for direct negotiations with current leaseholders in accordance with Chapter 171, Section 36.2, Hawai‘i Revised Statutes.

On July 8, 2008, Act 223 was passed, authorizing the Board of Land and Natural Resources to directly negotiate new leases with existing lessees or permittees of recreation residences. Prior to this Act, it was not legally possible to conduct direct negotiations with the current lessees. As prescribed by HRS, Chapter 171, Section 44, leases of public lands for recreation purposes were required to be awarded through a public auction process.

Act 223 also established the Kōke‘e State Park Advisory Council whose responsibilities are to:

Review and assist the DSP in updating and revising the parks’ Master Plan;

Advise and assist in the management of the recreation residence leases;

Enhance community education and cultural awareness;

Participate in the protection and preservation of the Parks’ natural and cultural resources;

Advise and assist in the overall implementation of the Parks’ Master Plan.

Guiding Principles

The mission and goals of the Division of

State Parks are stated as:

Mission: The mission of the Division of State Parks is to properly manage and protect Hawai‘i’s natural and cultural heritage values found within the State Park system, provide a broad range of outdoor recreation opportunities, promote a safe, high quality park experience for Hawai‘i’s residents and visitors, and preserve Native Hawaiian gathering and cultural access rights.

Goals and Objectives: To preserve and protect fragile and delicate resources, while providing for their use by the general public.

The following guiding principles were adopted by the planning team with concurrence from the DLNR:

- Public Benefit – The resources of Kōke‘e and Waimea Canyon State Parks are available as a public benefit, open and accessible to all.
- Open Process – The disposition of the recreation residences will be conducted in the open.
- Protection of the Resource – The natural and historic resources of the Parks should be protected and preserved.

Recommendation

Recreation residence lots located within Kōke‘e and Waimea Canyon State Parks are to remain in recreational use. The DSP is currently pursuing the following actions as directed by the BLNR:

- Enter into direct negotiations at a nominal rent for the lease of recreation residences to nonprofit organizations holding current leases or permits, in accordance with HRS, Section 171-43 or Section 171-43.1.
- Enter into direct negotiations for “one-time only” lease of recreation residences

and lots at market-based rents to existing lessees or permittees of recreation use leases within the parks, pursuant to Act 223, and HRS, Section 171-44.

- Issue the remaining recreation residence leases by public auction with priority given first to residents of the island of Kaua‘i, second to residents of the state of Hawai‘i, and lastly to other interested parties regardless of residency.
- Retain two (2) cabins for State use.
- Other terms and conditions as may be prescribed by the Chairperson.
- All disposition processes are subject to review and approval of the Department of the Attorney General.

◆ **PRELIMINARY BUDGETARY**

IMPROVEMENT COSTS

The following is summary of development costs associated with the preferred alternative:

**Table 6-7
Preferred Alternative
Development Cost Estimate**

Cost Item	Amount (mil.)
1. Roads	\$4.40
2. Parking	\$0.32
3. Trails	\$0.06
4. Park HQ	\$0.45
5. Utilities	\$0.40
6. Lookouts	\$0.50
Total	\$6.13

CHAPTER 7 MASTER PLAN

7.1 INTRODUCTION

The master plan vision is to preserve and perpetuate the existing character of Kōkeʻe and Waimea Canyon State Parks by protecting the area’s unique native ecosystems, scenic views, historic and cultural landscape, and recreational resources, and by guiding public uses and developing park facilities in a manner that does not compromise the integrity of the mountain’s natural resources, wilderness values, and intrinsic qualities. Towards this end, the master plan will guide the protection, preservation and management of Kōkeʻe and Waimea Canyon State Parks for a twenty-year period extending from 2005 to 2025. The proposed Master Plan is presented in **Figure 7-1**.

The following objectives shall guide and govern interpretation of the Master Plan elements and shall control in the event of conflict:

- Restore, maintain and/or repair park utilities and infrastructure.
- Protect, preserve, and manage archaeological resources, historic sites and traditional cultural places within Kōkeʻe and Waimea Canyon State Parks, and ensure the continuity of the traditional cultural values and practices that are unique to these parks.
- Protect and restore the native flora, fauna, and their habitats in the parks and surrounding natural areas.
- Remove invasive flora and fauna species.
- Preserve scenic mauka and makai natural landscapes and vistas along the roadway leading to and through the parks, including geological features and forests.
- Provide adequate staffing, equipment and supplies for quality restoration and ongoing maintenance of the parks’ trails, facilities, infrastructure and natural resources.
- Maintain and support Kōkeʻe Natural History Museum as the primary interpretive site for the parks.
- Assure that no commercial signage will be allowed within the parks and ensure that all directional signage within the parks is unobtrusive and limited in number.
- Maintain existing roadways to provide a natural scenic corridor and slow traffic by limiting road width.
- Conduct lease dispositions to maximize stewardship, access to accommodations, historic preservation, and cultural use by Kauaʻi residents. Current leases to nonprofits shall not be converted to commercial ventures.
- Find alternative revenue sources to provide ongoing support for the operations of Kōkeʻe and Waimea Canyon State Parks.
- Work with Hui o Laka, Kōkeʻe Leaseholders Association, and other groups to develop volunteer programs for park maintenance and restoration projects.
- Provide volunteer housing and other incentives to encourage volunteering in the parks.
- Management decisions shall be based on conservation values rather than developed recreation, commercialization and/or privatization of park resources.
- All decisions related to the design, size and location of built improvements within the parks shall be reviewed by the Kōkeʻe State Park Advisory Council.

7.2 DESIGN GUIDELINES

Visitors' images of parks are primarily visual. Man-made elements within a natural setting have the potential to complement or conflict with visitor expectations of "wilderness" and accordingly impact their subconscious appraisal of their experience in the parks.

The following design guidelines are developed to enhance both park identity and visitors' experiences in the Parks. Design references are taken directly from the natural landscape as well as the vernacular architecture that has developed in Kōke'e and Waimea Canyon over the years.

Implementation of the design guidelines in all park improvements will reinforce a consistent park character and identity through the range of landscapes found within Kōke'e and Waimea Canyon. Though specific locations within the parks will respond to local climate and terrain, common design elements will create a recognizable identity that readily expresses the heritage of Kōke'e and Waimea Canyon State Parks facilities.

◆ DESIGN PRINCIPLES

- **Dominance of the Natural Landscape** - Man-made elements are subordinate to the natural landscape. Structures are to be located away from primary view zones, set back from roadways and screened from view, where appropriate.
- **Native Reference** - Design elements drawn from the natural landscape and from the park region's traditional methods and materials of construction are to be used throughout the parks to establish and reinforce park identity.
- **Consistent Design** - A consistent design vocabulary will be used throughout the parks' built facilities to reinforce a common park character readily

identifiable with Kōke'e and Waimea Canyon. Design elements will provide flexibility to respond to local climate and environmental conditions.

- **Use of Natural Materials** - Natural materials will be used to preserve the Parks' rustic character and blend into the wilderness landscape.

Minimal Development Footprint - Planned improvements will be concentrated within existing developed areas along the Kōke'e Road corridor in order to minimize the development "footprint" on the natural landscape. Exceptions include construction of a new park entry station at the entrance to Waimea Canyon State Park.

◆ KŌKE'E VERNACULAR ARCHITECTURE

- **Design** - The typical architectural style is simple vernacular, with rustic features that complement the natural landscape of Kaua'i's upland forests at Kōke'e.
- **Construction methods** – Architectural styles are dominated by board-and-batten or vertical-board, post-on-pier construction. For example, recreation residences primarily feature six-light wood-framed sliding windows or wood-framed double-hung windows. Foundations are typically post-on-pier and may feature rough-finished log posts and rocks.
- **Rustic Features and Craftsmanship** - Rustic features include the use of 'ōhi'a (or other tree) logs and branches in porch railings. Native materials are also used in rock fireplaces and chimneys and foundations. Exteriors may be left unpainted to reinforce a rustic character.
- **Roofing** - Roofs are traditionally gable. Hipped roofs, introduced to Kōke'e in the 1920's, may be used. Primary roofing materials are corrugated metal or shake.

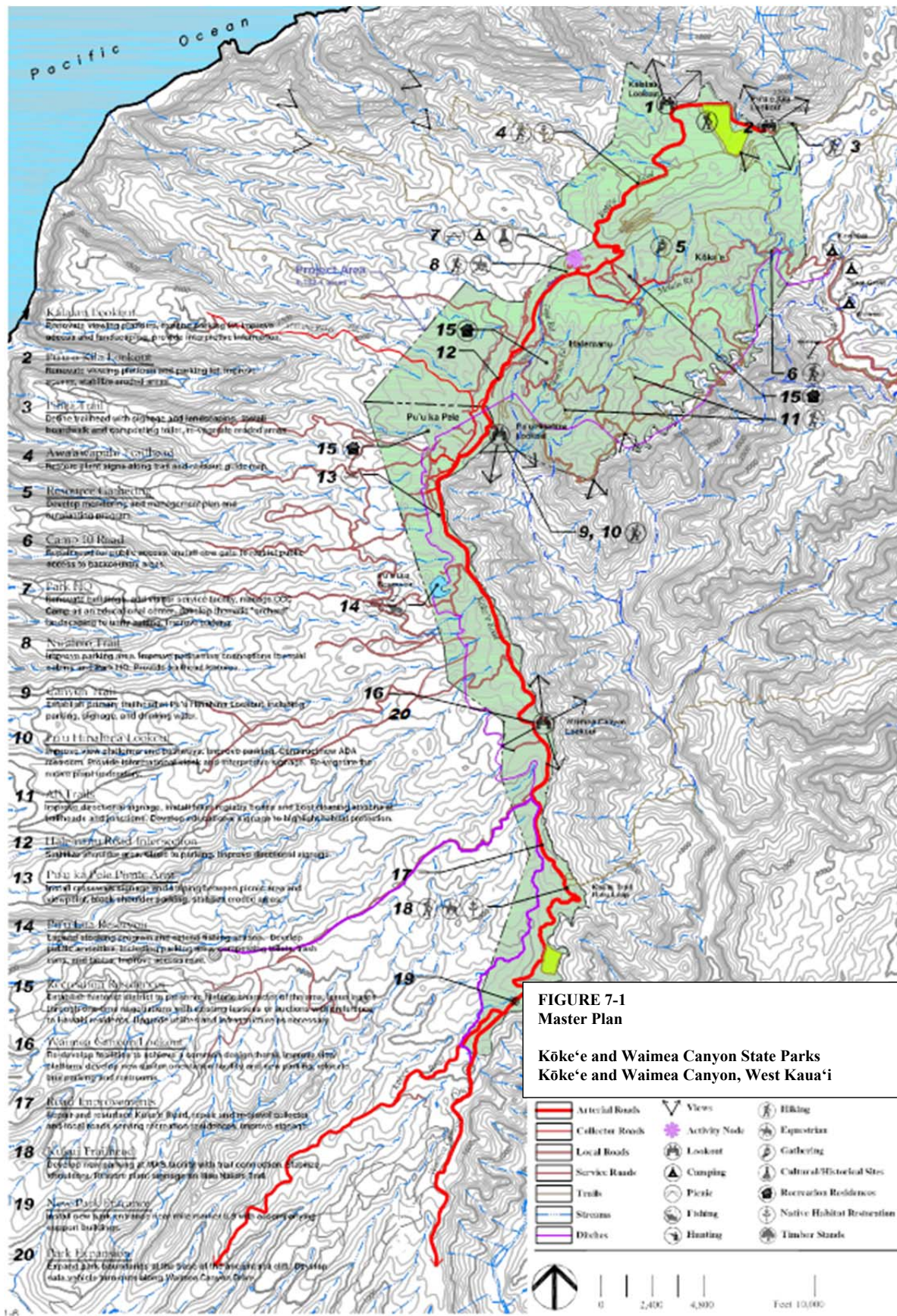




Photo 7-1
Kōke‘e Vernacular: Board and Batten, Post-on-Pier Foundation, Corrugated Gable Roof, Wood-framed Glass Pane Windows
TMK: 1-4-04: 09

- Access - Unpaved driveways lead to on-site parking hidden from view.



Photo 7-2
Typical Roof Architecture – Gable (right) and Hip (left), Composite Material
TMK: 1-4-02: 48

◆ BUILDING MATERIALS

Materials used in the construction of park facilities should be natural in appearance to reinforce the parks’ rustic character and to blend into the wilderness context. Materials may be finished or unfinished depending on location and function of the structure. Acceptable structural materials include:

- Timber
- Stone



Photo 7-3
‘Ōhi‘a Wood Railing Detail
TMK: 1-4-02: 10

- Anchor-block
- Stained concrete
- Compacted/binded soil
- Grass and gravel pavers



Photo 7-4
Typical Driveway
TMK: 1-4-04: 28

◆ PARK BUILDINGS

Major Buildings

Large scale public buildings such as the planned park visitor center, Kōke‘e Lodge, and Kōke‘e Natural History Museum should incorporate vernacular design elements at a scale appropriate to their public use function.

- Broad stairways
- Wide lanai with deep, overhanging eaves
- High-ceiling interior
- Rustic architectural details, including use of stone and unfinished timber supports and railings.

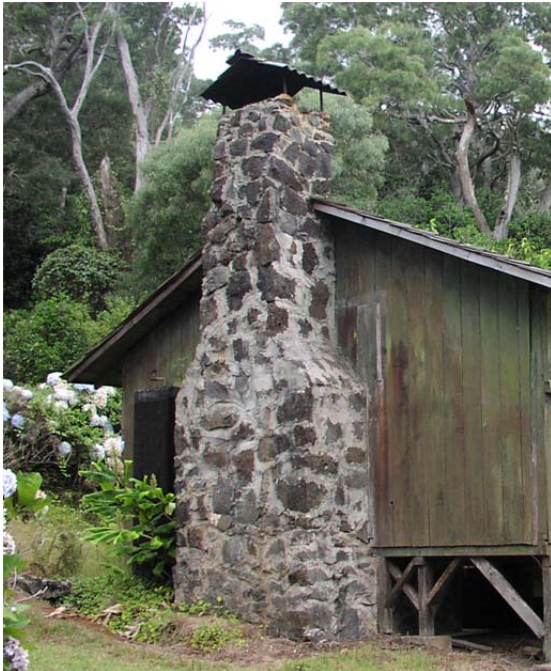


Photo 7-5
Stone Chimney Detail
 TMK: 1-4-04: 35

Large scale buildings located outside of the public zones, such as the base yard warehouse and garage structures, do not require the same design consideration. In the interest of balancing function, cost, and performance in meeting park goals, such facilities can employ standard, utilitarian architecture and rely on siting and landscape screening to avoid visually intruding on the park visitors' experience.



Photo 7-6
Stone Wall Detail
 CCC Camp Base Yard



Photo 7-7
Public-Scale Building
 CCC Camp, Kōke'e

Minor Buildings

Smaller scale buildings include public facilities, such as lookout restrooms, concession buildings, campground restrooms, pavilions, and hunter and fishing checking stations. They also include smaller scale buildings used in support of park operations, such as the park entry station and the storage building at Pu'u Lua Reservoir.

Minor buildings should incorporate vernacular design elements and native materials in their construction.



Photo 7-8
Public-Scale Plantation-Style Building
Waimea Plantation Cottages, Waimea,
Kaua‘i

Restrooms

- Timber structural elements
- Gable roof of shingle or corrugated metal.
- Surfaces should use wood, slat, stone, or stone-textured concrete finishes.
- Restrooms should be sited and scaled to avoid intruding on the landscape.



Photo 7-9
Kalalau Lookout Restroom

Park Entry Station

The existing Park Headquarters Building at Kanaloahuluhulu Meadow could serve as a design model for the planned entry station support building. The new entry station



Photo 7-10
Park Headquarters Building at
Kanaloahuluhulu Meadow

building may be designed to match the headquarters building in materials and style.

Entry station design should include:

- Hipped, shake roof.
- Shake siding
- Timber structural elements.
- Double-hung, pane-glass windows.

◆ **STRUCTURAL ELEMENTS AND FURNISHINGS**

Design of structural elements and furnishings, including simple shelters, benches, picnic tables, railings, and steps, should complement the regional environment and reflect the parks’ rustic character. Structural elements should be composed of natural materials that weather well, are robust in scale, and evoke a sense of permanence and craftsmanship. Finishes and colors should be appropriate to the local landscape. Note: Examples in the following photos illustrate the rustic design concept, but do not represent that actual size or scale of materials to be used. Final design will be subject to review and comment by the Kōke‘e State Park Advisory Council.

Park Furniture

Benches and tables should be of simple design composed in heavy timber or stone.

Shelters

Shelters for picnic tables, kiosks, and public phones should use heavy timber structural elements with gable roof of corrugated metal or shake. Designs should reinforce the Kōke‘e vernacular style and relate the park structure to the parks’ historic landscape.



Photo 7-11
Bench Detail
Example from Lake Towada, Japan



Photo 7-12
Picnic Table Concept
Example from Lake Towada, Japan



Photo 7-13
Picnic Table Detail
Kōke‘e Picnic Pavilion



Photo 7-14
Picnic Shelter Detail
Waipo‘o Falls Viewpoint / Picnic Area

◆ **RAILINGS AND GUARDRAILS**

Where required for purposes of safety or conservation, railings along lookouts, pathways and stairways, and guardrails along the scenic roadways should use the same design standards as park furniture. Materials should be robust in scale and composed of timber and/or stone to reinforce a park-wide rustic design identity. Metal elements may be included, but should be integrated with the natural materials and remain subordinate to them. Railings and guardrails must not have a utilitarian appearance to avoid visual conflict with the natural landscape.

Note: Examples in the following photos illustrate the rustic design concept, but do not represent the actual size or scale of materials to be used. Final design of railings and guardrails will be subject to review and comment by the Kōke‘e State Park Advisory Council.



Photo 7-15
Railing Concept
Example from Lake Towada, Japan



Photo 7-16
Railing Concept
Example from Lake Towada, Japan



Photo 7-17
Pathway Design Concept
Example from Lake Towada, Japan

◆ **PARKING**

Parking areas should be designed as an integral part of the park landscape. Curvilinear forms are preferable where space and terrain allow. Existing vegetation should be left as close as possible to the edges of visitor parking areas.

Natural or introduced landscaping should be used to screen parking areas from adjacent roadways and public use areas.

Surfaces should be graded and finished according to use and climate conditions. Paving should be minimized wherever possible. For proposed new parking areas, or improvements to existing ones, surfaces will be constructed using permeable materials, such as grass pavers and turf blocks to promote runoff filtration and to create a more natural appearance.

Bollards and curb stops should follow the same design standards as park furniture. Boulders or logs should be used for barriers to blend into the natural landscape. Materials should be robust in appearance and scaled appropriately for traffic control functions. See **Photos 7-18 and 7-19**.



Photo 7-18
Boulder Bollards Detail
Kōke'e Campground, Kanaloahuluhulu

In more developed locations, such as at Waimea Canyon Lookout, natural materials with a higher level of finish can be used to reinforce a rustic design character that is compatible with the more refined improvements at the site. The use of consistently sized and smoothed removable log bollards within a highly developed parking lot, shown in **Photo 7-19**, subtly, yet unmistakably signals to the visitor the character of the experience they are entering.



Photo 7-19
Log Bollards Detail
Example from Lake Towada, Japan

For security purposes, where possible, parking lots should be planned as part of a

larger pedestrian and vehicular circulation system. The unpredictable presence of vehicles and/or pedestrians creates a deterrent for those persons contemplating criminal or other unwanted activities.

Capacity

Limits on parking capacity will be used to control visitor access in sensitive natural areas. Parking areas will be located off of the roadways and screened from view.

Shoulder Parking

Parking along road shoulders visually detracts from the natural landscape and diminishes the road's function as a scenic parkway. In locations with blind curves, narrow road segments, road crossings, and/or slopes and steep drop-offs, shoulder parking creates a safety hazard for vehicle traffic and pedestrians. Where road shoulder surfaces are not stabilized, vehicle use creates wheel ruts and exacerbates erosion, particularly in wet areas.

Shoulder parking will be controlled through the use of barriers, signs, and enforcement. Barriers will be constructed of natural materials, such as stone and timber. Barrier design should reinforce park identity and be compatible with the surrounding environmental setting.

◆ **SIGNAGE**

Park signage is used for identification, direction, information, and interpretation. Park signage should be designed and sited to complement the immediate natural setting and be constructed of approved materials that reinforce the parks' rustic character.

Signs in general should be a visible, but not disruptive element within the landscape. The use of signs should be minimized first by clear organization of facilities. The layout of site features and use of

landscaping can, in many cases, eliminate the need for signage.

To strengthen park identity and help visitors orient to important information, a consistent palette of materials, colors, font type, and graphic design should be developed for Kōkeʻe and Waimea Canyon State Parks signage.

Design considerations include:

- Keep signs as low as possible above the parks' natural ground cover.
- Keep sign size as small as possible within appropriate design constraints such as traffic design speed visibility.
- Symbols should be used in place of text for common facility and activity identification. Symbols are easier to read from a distance, and thus can be displayed relatively smaller than text. Use text and symbols consistently throughout park signage.
- Minimize the number of signs at a single location. Where possible, consolidate different types of information on fewer numbers of signs.
- Signs should be designed for easy repair and revisions, and inexpensive replacement.
- Interpretive signage shall be limited to not distract from the experience of being in a wilderness area.
- Interpretive efforts could be expanded on at the Kōkeʻe Natural History Museum.

◆ LANDSCAPING AND VEGETATION

Over time, the activities of the mountain residents have produced a mosaic of several distinct landscape typologies. Though each typology expresses a different relationship with the land, there is an apparent shared landscape characteristic of open lawn space defined and accented with natural and

introduced tree plantings. This landscape feature is emblematic of Kōkeʻe and evident throughout the public spaces and lease lots within the two parks. It is most prominently displayed in the open space and monumental trees at Kanaloahuluhulu Meadow. Landscape typologies evident in Kōkeʻe are described below.

Forest Clearing Landscape

This landscape type is representative of the recreation residence origins in the early forest camps and hunters' cabins. It is characterized by the cabin set within a small, grassed clearing from which the forest has been beaten back, but remains dominant. Surrounding vegetation is generally comprised of dense, untended, natural forest constituents. Landscape improvements are minimal. Planted trees are typically used to define entrances to the recreation residence lots and property boundaries. Tended vegetation (typically ornamental ti, ginger, hydrangea, and similar plants) is limited to the immediate perimeter of the cabin.

Woodland Park Landscape

This landscape type suggests a forested park in which scattered trees are set within a meadow-like environment to create a naturalistic woodland appearance. This landscape represents the integration of the forest through both selective clearing and introduced tree plantings. Trees are typically left untended. Planted trees are used also to define entry ways and property boundaries.

Orchard Landscape

This landscape type developed from agricultural experimentation conducted by the Civilian Conservation Corps at Kanaloahuluhulu Meadow. Fruit trees, including varieties of plum, pear, cherry and apple, were provided to early recreation residents to assist in meeting annual planting quotas under the terms of the early camp lot

leases. In this landscape, the forest is cleared to create open space for orderly plantings of fruit trees in rectangular or triangular rows. The landscape is controlled and the lot displays a functional organization of space with built elements – residences and peripheral utility structures – sited for the convenience of orchard maintenance. Ornamental vegetation is typically limited to the periphery of built elements. In some examples, orchard plantings are incorporated on a small scale within other landscape typologies.

Cottage Garden Landscape

This landscape type is suggestive of a formal, English garden style and may reflect early park residents’ identification with cultural roots from both sides of the northern Atlantic. In this landscape, the forest is beaten back to create controlled, ornamental space. Characteristics include carefully tended flower and vegetable beds set within well-manicured lawns surrounding the residence. The natural forest may be represented within the landscape by carefully groomed specimens of trees or shrubs.

Landscape design based on these typologies is appropriate for the “settlement” areas within the park, such as at Kanaloahululu Meadow and within the recreation residential areas where people have asserted a human presence. Outside of the settled areas, the natural landscape should prevail.

Landscaping at facilities, such as the lookouts and trailheads, which are developed to showcase the natural beauty of the parks, should be designed to blend into a “wilderness” setting. Native plant materials and massings, local earth forms, and color and texture palettes drawn from the immediate vicinity should be used in the design.

7.3 ACCESS AND CIRCULATION

◆ ENTRY STATION

An entry station is an essential component of the master plan. It serves to:

- Provide park orientation and informational brochures to park visitors.
- Establish the parks’ identity and a presence.
- Collect fees from non-resident visitors and commercial operators.

Location

The new entry station may be located within the Waimea Canyon State Park boundary immediately north of the junction of Waimea Canyon Drive and Kōke‘e Road (SR 550), in the vicinity of mile marker 6.9.

An entry booth will be positioned between incoming and exiting travel lanes. Two incoming lanes will be provided; one lane adjacent to the entry booth for paying visitors and a second bypass lane for residents, park staff, and service employees. Exiting traffic will use a single, free-flow lane with a backup prevention device. Security cameras will film vehicles entering and exiting the Parks.

As an option, another location near the entrance of Kōke‘e State Park may be considered.

Entry Station

A small entry station will be provided to house the fee collection operations and a small bathroom (**Figure 7-2**).

The entry station will be used to collect entry fees, distribute informational brochures, monitor buses going into Waimea Canyon Lookout, and address visitor inquiries. The entry station will not function as a visitor center, rest stop or restroom.



Figure 7-2, Park Entry Station

Note: The approximate size and specific design elements of the entry station are to be determined when the project is implemented.

The design and location will be subject to review by the Kōke‘e State Park Advisory Council. Authority to approve the final design and location resides with the Land Board.

◆ **ROADS**

The road system in Kōke‘e and Waimea Canyon State Parks provides access as well as sight-seeing and recreational opportunities for park users. For the purposes of the master plan, roads are treated in three categories: arterial roads, collector roads, and local roads. Proposals for each category are described below.

General recommendations for the entire road system include:

- Permit recreational non-commercial bicycle riding on improved and unimproved roads throughout the parks.
- Permit 4-WD vehicles and street-legal off-road motorcycles on unpaved roads.

Prohibit operation of recreational all-terrain vehicles, including dirt bikes, within the parks.

- Construct barriers to block access in areas where illegal off-road vehicle use is evident. Use natural materials (logs, stones), where available and effective.
- Provide and maintain grass shoulders for pedestrian safety along Kōke‘e Road in Kōke‘e State Park.
- Calm traffic by limiting the road width to 18’.
- Preserve scenic mauka and makai natural landscapes and vistas along the roadway leading to and through the parks, including geological features and forests, by acquiring lands to preserve and protect view planes and avoiding development in or on the roadways.
- Provide minimal safety improvements to permit roadside pull-offs along Waimea Canyon Drive and Kōke‘e Road without developing and expanding these into lookouts.

Arterial Roads

Arterial roads within the parks include Kōke‘e Road, Waimea Canyon Drive, and Pu‘u o Kila Road. The arterial roads are the most significant man-made intrusion in the natural landscape. They function as scenic

parkways and provide visitors with important first impressions of the parks. As such, structural elements visible from the roadway should be constructed with natural materials that complement and blend into the wilderness setting. Development adjacent to the roadways, such as parking areas and buildings, should be screened from view with landscaping using native plantings and geo-forms. Consistent design treatments should be used throughout the road system to unify and strengthen park identity.

Planned improvements to arterial roads include:

- Repair and resurface the entire length of Kōkeʻe Road.
- Develop the roadways as fuel breaks with selective clearing setback 40 to 50 feet from road edge (50 feet maximum in slope conditions). Clearing should target non-native trees, particularly silk oak and eucalyptus. Efforts should be made to avoid removing native vegetation. Some koa and ʻōhiʻa may be removed where they would block the road if toppled.
- Install road-surface reflectors along the center line and shoulders.
- Improve identity and directional signage at key intersections, including: Kanaloa-huluhulu/Park HQ, the four major lookouts, Puʻu ka Pele, Halemanu Road, Faye Road, and Waimeke Road, Mākaha Ridge Road, and the turn-off for Puʻu Lua Reservoir.
- Stabilize shoulder area at the Halemanu Road and Kōkeʻe Road intersection.
- Incorporate Kōkeʻe Road and Waimea Canyon Drive into Kōkeʻe and Waimea Canyon State Parks. The Division of State Parks would like to assume management authority over the roads within the parks for the following reasons:
 - 1) It will give DSP the capability to manage the parks' paved and unpaved roads in accordance with park program objectives.
 - 2) It will improve management of roads during emergency events.
 - 3) It will provide greater management control to prevent the introduction and spread of invasive weeds and disease.
 - 4) It will provide greater management control to develop and maintain the road system as a scenic resource. Currently, the road system is not managed to take advantage of the scenic features and visual opportunities along the roadway corridors.
 - 5) It will provide greater management control for maintenance of firebreaks and removal of hazardous trees. DSP has special understanding of ecological and aesthetic considerations of vegetation clearing in a park environment that State and County transportation departments lack.
 - 6) DSP jurisdiction over the road system is a prerequisite for developing a park entry station and entry fee program at the preferred location. State DOT will not allow DSP to collect a fee on a road that they own.

Collector Roads

Collector roads include Waimeke Road, Water Tank Lot Road, Mākaha Ridge Road, and Kāʻaweiki Ridge Road into Puʻu ka Pele. Planned improvements to collector roads include:

- Regrade, gravel, and correct drainage on unpaved collector roads.
- Provide directional signage and improve road name signs within Kōkeʻe and Puʻu ka Pele recreation residential neighborhoods.

Local Roads

Local roads include Faye Road, Halemanu Road, Mōhihi Road, Camp 10 Road, Maluapopoki Road and other recreation residence access roads in Kōke‘e and Pu‘u ka Pele. Planned improvements to local roads include:

- Regrade, gravel, and correct drainage on local roads serving recreation residences.
- Repair Camp 10 Road for public access, including regrading and graveling, and improving stream crossings.
- Develop Camp 10 Road as a fuel break.
- Improve directional and warning signage, include prohibition on 2-WD vehicles on Halemanu Road, Camp 10 Road beyond the Pohaku hula turnoff (just past Berry Flat trailhead), and the road to Pu‘u Lua Reservoir. Include warning signs for 2-WD vehicles on all other local roads.

◆ **HIKING TRAILS**

General recommendations and improvements planned for the trail system include:

- Improve informational, directional, and trail identification signage at all trailheads and junctions to fulfill basic obligations of care and safety for park users.
- Update trail guide materials and trailhead signs to inform visitors of trail conditions, length, amenities (restrooms, picnic and camping facilities) environmental characteristics (forest, canyon, ridge, scenic), features (water features, archaeological and historic sites, significant trees), and uses (horse trail, hunter access, interpretive trail, ADA accessible).
- Install hiker registry boxes at all trailheads.

- Install boot cleaning stations at certain trailheads and at trail junctions leading to primitive recreation zones.
- Update informational and interpretive materials for Awa‘awapuhi Trail, Iliau Nature Loop Trail, and Nature Trail.
- Restrict equestrian access within all primitive recreation zones.
- Where work on existing or new parking areas are proposed, surfaces will be constructed using permeable pavement, grass pavers, turf blocks, or similar type materials to promote runoff infiltration.
- Prohibit mountain biking on all hiking and interpretive trails within the parks. Allow mountain biking on trails designated by DSP for that activity.

See **Figure 4-21** and **Figure 5-7** for trail locations.

Kukui /Iliau Nature Loop Trail

- Develop a new, off-street parking area at the Hawai‘i Air National Guard microwave antennae station turnout (mile marker 9). See **Figure 7-3**. The site is currently under lease to the U.S. Air Force.
- Install shoulder barriers to prohibit shoulder parking at the trailhead.
- Connect new parking area to Kukui Trail and Iliau Nature Loop Trail via a new trail segment along the canyon side of Kōke‘e Road.
- Provide identification sign on Kōke‘e Road.
- Provide an informational/interpretive kiosk at the trailhead.
- Provide composting toilets at the trailhead. Locate toilets to minimize intrusion on the landscape.
- Restore and expand signage on Iliau Nature Loop Trail.

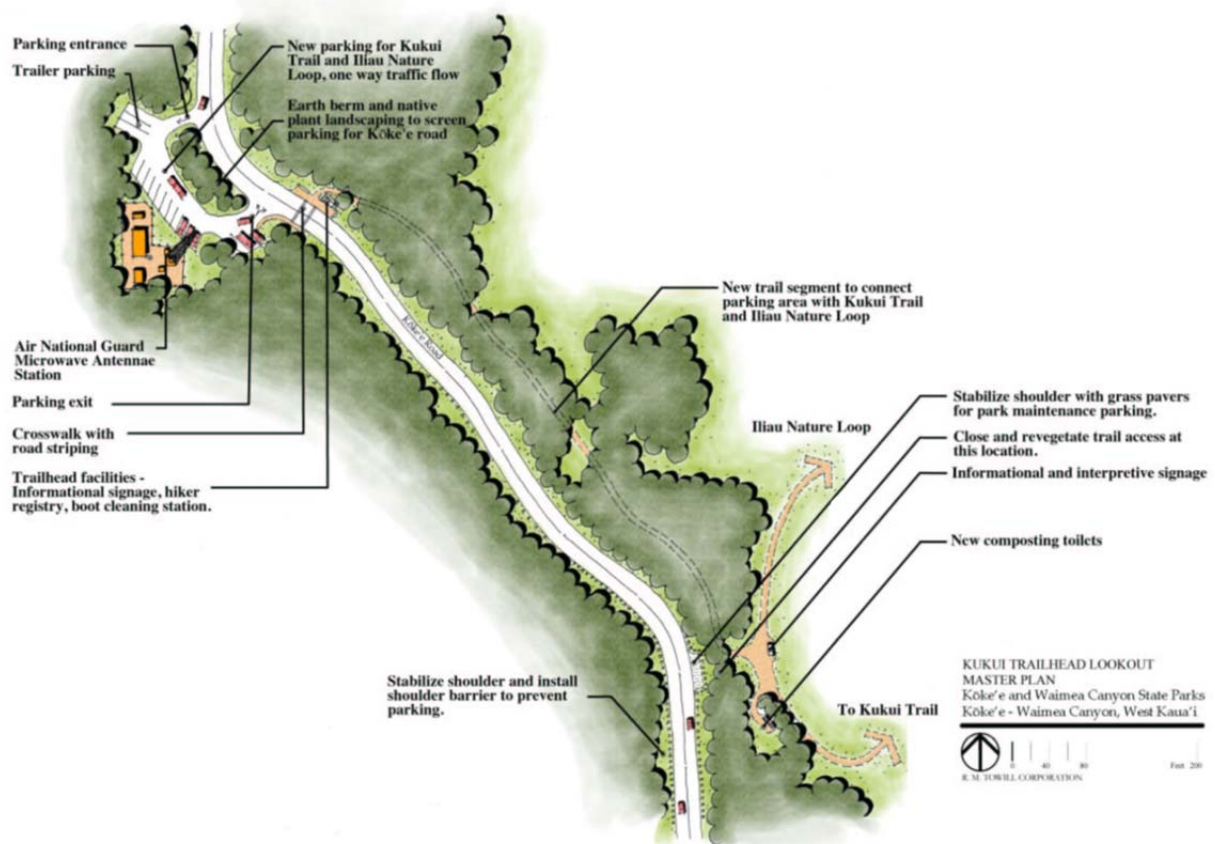


Figure 7-3, Proposed Improvements to Kukui Trailhead

Canyon-Ditch Trail System (Pu‘u Hinahina)

- Establish a primary trailhead at Pu‘u Hinahina Lookout. New trailhead facilities should include parking for 25 to 30 vehicles, signage, and a drinking fountain.
- Prohibit trail access from Halemanu intersection. Block parking and revegetate shoulders. Provide signage to direct visitors to Pu‘u Hinahina and Kanaloahuluhulu Meadow.
- Complete upgrade of Black Pipe Trail and Canyon Trail segments with connection to Pu‘u Hinahina Lookout.
- Improve trail surfaces and install steps and switchbacks as necessary to facilitate access on steep grades.

- Upgrade and reroute segments of Po‘omau Ditch Trail as necessary to improve access and avoid landslide area.
- Improve trail junctions per general trail comments.

Halemanu-Kōke‘e Trail

- Extend Halemanu- Kōke‘e Trail across Kōke‘e Stream to Maluapopoki Road.

Nu‘alolo Trail

Nu‘alolo Trail is maintained by DOFAW. The proposed improvements to trailhead facilities described below are to be developed by DOFAW.

- Improve and maintain existing parking area. Surface parking area with grass pavers.

- Regrade, gravel, and improve drainage on the parking lot driveway.
- Improve trailhead facilities per general trail comments. No composting toilet will be developed at this location.

Kaunuohua Ridge Trail System (Water Tank Trail, Kaluapuhi Trail)

Kaunuohua Ridge Trail System will establish primary trailheads along Kōke‘e Road for easy access to Kaunuohua Trail, Kaluapuhi Trail, Water Tank Trail, and the Camp 6 Trail. When complete, the connecting trails will offer pedestrian access linking Kanaloahuluhulu Meadow with Kalalau Lookout.

Proposed improvements include:

- Establish primary trailhead for Water Tank Trail on Kōke‘e Road at entrance to the DOE Discovery Center (mile 15.6). Trailhead facilities will include parking for 25 to 30 vehicles, directional signage, and landscaping to screen parking from Kōke‘e Road.
- Establish primary trailhead for Kaluapuhi Trail on Kōke‘e Road across from Awa‘awapuhi Trailhead (mile 17). Trailhead facilities will include parking for 25 to 30 vehicles, composting toilet, directional signage, and landscaping to screen parking from Kōke‘e Road and to screen the DOFAW facility from hikers.
- Reopen Camp 6 Trail and Kaunuohua Trail.
- Connect Water Tank Trail to Camp 6 Trail.
- Provide informational and interpretive signage throughout the trail system to orient and educate hikers.
- Relocate the north end trailhead for Kaluapuhi Trail towards the west about 400 feet to the area across the bus parking lot at Kalalau Lookout.

Awa‘awapuhi Trail

Awa‘awapuhi Trail is maintained by DOFAW. The proposed improvements to trailhead facilities described below are to be developed by DOFAW.

- Restore and expand plant signs and guide map for the trail.
- Resurface existing parking area. Do not expand existing area.
- Install shoulder barriers and curb stops around parking area to direct parking.
- Improve trailhead facilities per general trail comments.
- Install composting toilet at trailhead.
- Develop joint interpretive program with adjacent DOFAW plant nursery.

Pihea Trail

The Pihea Trail trailhead is located at Pu‘u o Kila Lookout within Kōke‘e State Park. The trail and trailhead are maintained by DOFAW. The lookout is maintained by DSP. The proposed improvements to trailhead facilities described below are to be developed by DOFAW in coordination with DSP improvements to the lookout.

- Improve trailhead facilities per general trail comments
- Install boardwalk/steps along the valley rim between Pu‘u o Kila Lookout and Pihea Overlook to control erosion and prevent hikers from wandering off the trail.
- Stabilize and revegetate eroded areas with native plant species.
- Provide composting toilet at the edge of the lookout parking lot.
- Develop separate parking lot for hikers and signage denoting time limits on select parking stalls.
- Coordinate trailhead improvements with proposed improvements to Pu‘u o Kila Lookout.

Proposed Interpretive Trails

Develop new interpretive trails to be ADA accessible and to highlight the four main forest types found in Kōkeʻe and Waimea Canyon State Parks:

- ‘A‘ali‘i Lowland Dry Shrubland
- Koa Lowland Mesic Forest
- Koa / ‘Ōhi‘a Montane Mesic Forest
- ‘Ōhi‘a Montane Wet Forest

Trail facilities at all four locations will include parking and interpretive signage. Hikers will be directed by signage to the nearest restroom facilities at primary lookouts or trailheads.

7.4 OPEN SPACE

◆ SIGNIFICANT TREES / FORESTRY

In June 2007, the DSP and DOFAW signed the Forest Management Plan for the Kōkeʻe Timber Management Area. The plan provides the management framework for the area to promote Kauaʻi’s forest industry development through sustainable management of public lands.

- Identify, map and monitor locations of significant tree stands within the parks.
- Incorporate significant trees and tree stands into park design as landmarks and directional features.
- Utilize the methods in the forest management plan which are:
 - Sustainable commercial management of non-native timber plantation areas, where harvesting would be followed by replanting of native species.
 - Selective harvest of non-native or invasive species in native forest areas, where harvesting would be followed by replanting of native species.
 - Harvest of native trees for the purposes of fence or roadway maintenance, hazard reduction, or the salvage of dead and dying trees.
- Restore native plant communities where partial/remnant native plants exist within areas degraded or dominated by non-native species.

- Replace all harvested timber stands within the park with native tree plantings (Koa, ‘Ōhi‘a, Sandalwood, Kauila, Mokihana).
- Map and monitor the spread of invasive plants and organisms that pose a threat to significant trees. Identify priority areas for control efforts.
- Develop best management practices to control discharges and noise, dust, exhaust, and other impacts from timber harvesting and processing operations.
- Restrict heavy equipment operations on improved park roads to non-peak visitor hours.
- Revise DLNR Administrative Rules to allow for a road maintenance fee assessment from commercial timber operations.

◆ HUNTING

- Retain current boundaries and regulations.
- Plant a landscape buffer to screen the hunter check-in station from vehicles on Kōkeʻe Road.
- Develop educational material and programming to inform hunters and other park users about game management program and native Hawaiian ecosystems. Incorporate materials into the hunting license program.
- Develop educational materials to inform park visitors about hunting as a significant cultural, recreational, and subsistence activity, and an integral part of the Kōkeʻe experience.

◆ FISHING

- Expand fish stocking program at Pu‘u Lua Reservoir.
- Change HAR Title 13, Subtitle 4 – Fisheries, Chapter 64 – Kōkeʻe Public Fishing Area, Kauaʻi, to expand portions of the public fishing area.

- Develop amenities for fishermen at Pu‘u Lua Reservoir, including composting toilets, parking, and trash containers.
- Improve Pu‘u Lua Reservoir access road.

◆ **GATHERING**

- Develop monitoring and management plan for resources targeted by gatherers, such as Mokihana, Maile, ferns, etc.
- Replace Methley Plum trees, Maile, Mokihana and other plants used in cultural traditions as existing plantings cease productivity.
- Limit new plantings to areas where plum trees currently exist, and Kanaloahuluhulu Meadow.
- Consolidate DSP and DOFAW gathering permits into a single permit.

◆ **INVASIVE PLANT CONTROL**

- Work with Hui o Laka, the Kōke‘e Resource Conservation Program, the Kōke‘e Leaseholders Association, and other groups to coordinate volunteer invasive plant control programs.
- Develop a staffed program within DSP to implement an invasive species control strategy in the parks.

◆ **NATURAL AREAS**

- Regulate access to sensitive native habitats to avoid human impacts from trampling, noise, trash, unauthorized collecting, and transport of seeds in hair and clothing.
- Provide DSP staffing to protect and restore native fauna, flora, and their habitats in the parks and surrounding natural areas.

7.5 LAND USE

◆ **RECREATION RESIDENCES**

The recreation residence lots will remain in recreational use. The DSP shall conduct the

lease dispositions to maximize stewardship, access to accommodations, historic preservation and cultural use by Kaua‘i’s residents.

The Department may consider leasing formerly occupied lots that are currently vacant.

The disposition process will be guided by the principles of transparency and public equity. Transparency refers to the availability of information to the general public and clarity about government rules, regulations, and decisions. Transparency in government decision making and public policy implementation reduces uncertainty, reinforces public confidence, and inhibits corruption among public officials. Public equity refers to the principle that all individuals must be treated equally by collective institutions in order to ensure the continued functioning of those institutions. Public equity, or the principle of equal access and opportunity, is a moral principle underpinning government legitimacy.

Impacts

Increases in recreation residence occupancy as a result of new lease arrangements would place additional burdens on infrastructure and utilities. Under current conditions, recreation residence lessees are permitted to occupy their lots no more than 6 months per year. Assuming the typical lessee uses their residence only half that amount of time, current cabin occupancy is assumed to be 25 percent year-round.

An increase in short-term rental cabins would increase average year-round occupancy and require increased infrastructure maintenance and expansion of utility services, notably water and sewer. The potential environmental impacts from increased recreation residence use will be assessed in the Environmental Impact Statement being prepared for this master plan. A long-term monitoring program for recreation residence use should be implemented regardless of the management arrangement in order to

track impacts and develop necessary mitigation measures.

General Recommendations

- Develop an interpretive program for historic recreation residences, including providing an opportunity for public access and/or tours of existing residences.
- Replace all existing water mains and distribution lines serving the recreation residences.
- Recreation residences within 1,000 feet of the potable water wells are required to connect up to a sewer system with septic or package plant treatment located outside of the groundwater protection area identified by the Waimea scarp fault line.
- Maintenance terms set forth in the lease agreement and building permit requirements should be enforced. In particular, maintenance of fire breaks around recreation residences and chimney maintenance are both required to prevent forest fires.
- Leaseholder use and maintenance fees for water, roads, drainage, sewer, electrical power, and communications should reflect actual costs.
- Replace service lines and fixtures that are old or contain lead.
- Work with nonprofit organizations that rent cabins and provide a substantial amount of public service and consider them separately from individual cabin leases.
- Take at heart the testimony received on this issue and evaluate it and come up with a workable solution for everyone.

◆ **KANALOAHLUHULU MEADOW**

Kanaloahuluhulu Meadow is the heart of Kōkeʻe and a primary park visitor destination. The meadow area serves several valuable park functions:

- Park Identity / Landmark
- Ranger Presence/Visitor Service
- Park Community / Social Center
- Research / Education Center

Proposed improvements are illustrated in **Figure 7-4** and described below.

Kōkeʻe Lodge and Natural History Museum

The Kōkeʻe Lodge and Natural History Museum are housed in World War II era buildings that were constructed in 1942 to serve as temporary structures for wartime purposes. Maintenance and restoration efforts have extended use of these buildings well beyond their expected life span. The structures are now deteriorating and in need of replacement. New facilities are proposed to replace these structures that are designed for their intended purpose and reflect the history and character of Kōkeʻe and Waimea Canyon State Parks.

In order to serve current park visitor needs, the master plan proposes to reconstruct the Lodge and Museum buildings and integrate a new Visitor Service Center into the design, subject to the following design constraints:

- A maximum of two (2) structures will be used to house the lodge, museum, and visitor service center. The new buildings will be located in the same location as the existing buildings. Building footprints will not move towards the Meadow.
- The building(s) will be designed to be one-story with a maximum building height of twenty-five (25) feet and have a combined square footage restricted to a maximum of eight thousand (8,000) square feet (sf). This represents an approximate 33% increase over the combined building footprint of the existing lodge and museum, as shown in **Table 7-1**:

The reconstruction may require the preparation of a supplement to the Master Plan Environmental Impact Statement or a separate Environmental Assessment.

Design and reconstruction of the Kōkeʻe Lodge and Museum buildings will be subject to further design review by the Kōkeʻe State Park

Advisory Council. Authority to approve the final design resides with the State Land Board.

**Table 7-1
Kōke‘e Lodge and Museum Building Expansion**

Facility	Existing Footprint (sf)	33% Increase (sf)
Kōke‘e Lodge	4,200	5,586
Kōke‘e Museum	1,750	2,328
Total	5,950	7,913
Maximum Allowable Footprint		8,000

Kōke‘e Lodge

- Reconstruct the Kōke‘e Lodge building to meet Kōke‘e vernacular architectural design standards. Improve the interior to better accommodate Lodge functions (dining service, book and sundries store, visitor services), and to improve ADA access.
- Integrate the building with the common area landscaping surrounding the lodge and Kōke‘e Natural History Museum.
- Develop low-maintenance fuel break behind the restaurant by excavating as necessary, grading, and grassing so it can be easily mowed.

Kōke‘e Natural History Museum

- Continue to lease museum operations to a nonprofit organization, such as Hui o Laka.
- Renovate or reconstruct the museum building to meet Kōke‘e vernacular architectural design standards and to improve the building’s function.
- Provide temporary facilities for museum operations during reconstruction.
- Provide interpretive and educational displays to educate park visitors about Kōke‘e and Waimea Canyon State Parks’ rich natural and cultural resource history and ongoing resource conservation and preservation programs.
- Integrate the museum building with the common area landscaping surrounding the museum and Kōke‘e Lodge.

Park Visitor Service Center

- Integrate a new Park Visitor Service Center, within the renovated/reconstructed Kōke‘e Lodge and Natural History Museum building(s).
- The visitor center will be staffed by park personnel and will provide the following services:
 - One-stop location for all park permits (camping, fishing, hunting, gathering, commercial trail use, and school bus permits).
 - Visitor orientation and information that includes maps identifying park facilities, recreation opportunities, and natural and cultural resource context, rules and regulations concerning visitor safety, conservation efforts and general park information. Note: interpretive exhibits and materials will be provided by the museum.
 - Complaints, reports, and emergency communications.
 - Park HQ function.
- The visitor center will include space for the following (approximate square footage):
 - Service Counter (120 sf).
 - Office / Communications Space (150 sf).
 - Personnel Comfort Space - lockers, food storage (150 sf).
- The visitor center will be designed to comply with Kōke‘e vernacular architectural design standards.

Kōke‘e Picnic Pavilion

- Restore the stone pavilion building and rear BBQ area.
- Remove jalousie windows.
- Develop a low-maintenance fuel break behind the pavilion by grading and grassing so that the area can be easily mowed.
- Improve wheelchair ramp access from the parking lot.
- Reconstruct restrooms to meet ADA requirements.

Kōkeʻe Campground

- Improve directional signage to campsites and surrounding trail connections.
- Relandscape the ginger patch with native vegetation and develop additional campsites.
- Repair existing campsite amenities: water spigots, BBQ pits, and tables, as necessary.
- Reconstruct the restroom in the tent campground to increase the number of toilets and meet park design standards.
- Develop an informational kiosk and a program to interpret Kōkeʻe’s history, cultural history, conservation history and cultural landscape, including the Kōkeʻe Ditch System.

Park Headquarters Building

- Infill original orchard landscape adjacent to the building with new tree plantings.
- Continue to use the building as an office, communications station, restroom, and storage space for State Parks employees.

Kanaloahuluhulu Ranger Station

- Restore, renovate and adapt the historic Ranger Station, which is currently used as the Kōkeʻe Lodge Manager’s house, for park volunteer housing and use by State Parks staff for meeting space and storage

CCC Camp

- Continue use as an educational center and field station for natural and historic research and management, and volunteer housing.
- Restore and adapt the garage and storeroom, the carpenter shop, and the wood shed for multi-use park operations and interpretive purposes.

Kōkeʻe Base Yard

- Renovate the existing base yard buildings in the historic CCC Camp complex.
- Expand existing leach field into the historic base yard area. Use grass pavers to cover leach field area to allow continued light vehicle and pedestrian traffic.

- Continue use of certain base yard buildings for storage and maintenance operations. Use other buildings in the base yard for interpretive programs.

New DSP Base Yard

- Relocate main base yard functions, including office space, vehicle parking, material stockpiles, and non-hazardous material storage. Dedicate space for use by other State agencies. Include space for fire equipment and the possible inclusion of a water tank for fire-response use.
- Develop new base yard site on Kōkeʻe Road east of the Water Tank Road intersection, between the head of Noʻe Stream and Kōkeʻe Road. The new facility will contain an administrative office, maintenance shop, repair shop, garage, storage buildings, and restrooms with showers.
- The NASA maintenance annex will continue to serve as a maintenance shop, helicopter landing zone, and the site for the installation of an above-ground fuel storage tank. DSP’s use of the NASA site is minimal due to DSP’s lack of authority over the site.

State Rental Cabins

- Maintain existing state cabins for short-term rental use.
- Outsource rental cabin operations and maintenance through a concession lease to a private nonprofit organization.
- Develop pedestrian pathway to connect cabins to the lodge and museum area.
- Replace lasiandra hedge with native shrub species.
- Create low-maintenance fuel breaks behind cabins by excavating as necessary and grassing so that it can be easily mowed.

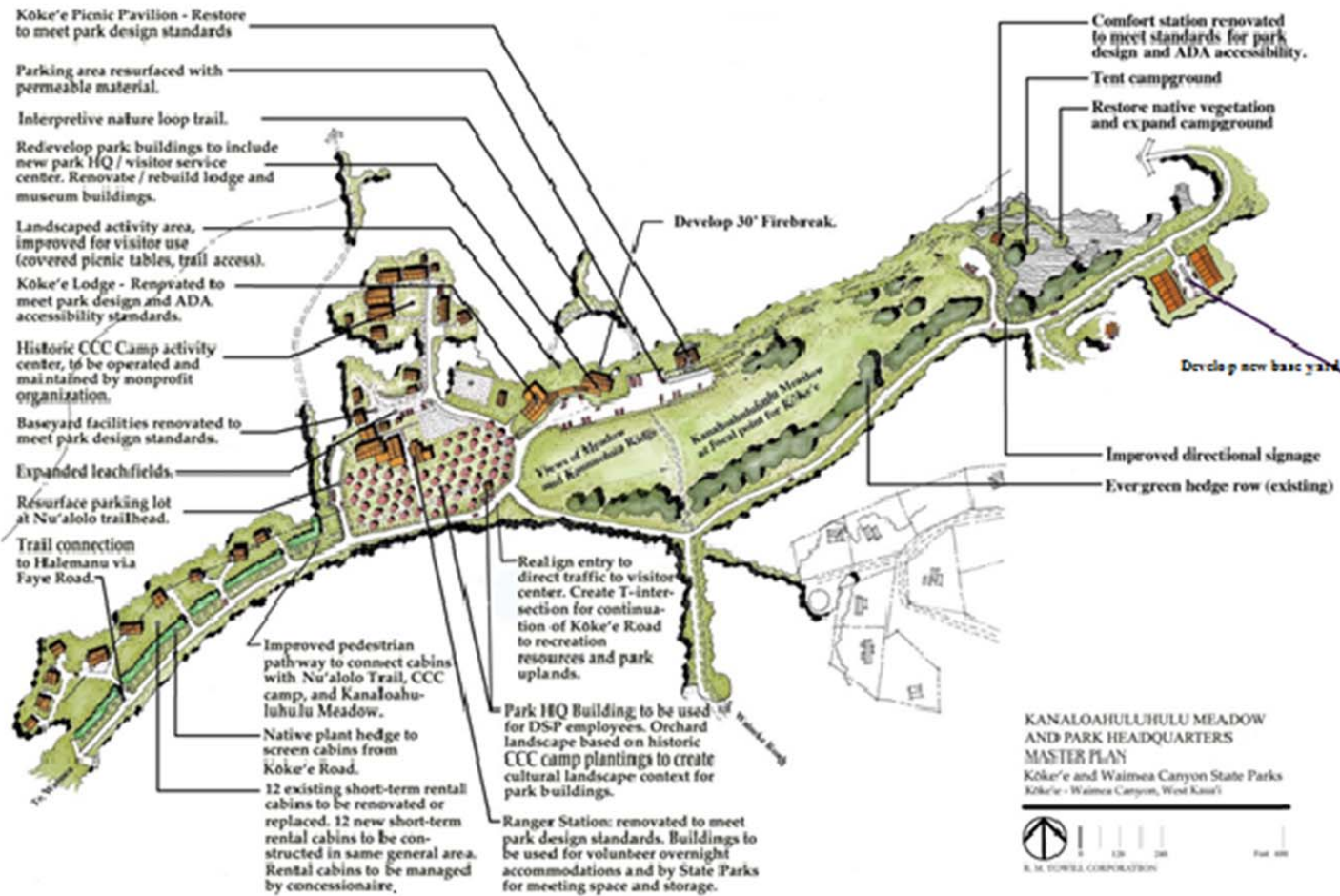


Figure 7-4, Kanaloahuluhulu Meadow and Park Headquarters Master Plan

New Overnight Accommodations

- Develop up to 12 new state cabins in the same general location as the existing state rental cabins to provide additional short-term rental capacity to meet existing demand. The new cabins will not encroach on Kanaloahuluhulu Meadow.
- Develop new facilities to be subordinate to the natural landscape and landmark meadow views. Locate new structures and provide vegetative screening using native and historic plant types to minimize visual impact. Incorporate Kōkeʻe vernacular architectural features to reinforce park identity.
- The additional cabins are to be managed under the existing Kōkeʻe Lodge concession contract.

Landscape Improvements

- Preserve meadow open space and views of Kaunuohua Ridge.
- Maintain tree-lined approach to meadow on Kōkeʻe Road.
- Replace Lasiandra hedge between Kōkeʻe Road and the State rental cabins with native shrub species.
- Restore orchard landscape theme based on historic CCC Camp plantings.
- Incorporate fruit trees and native plants into the landscape plan. Integrate native plants with museum and lodge improvements.
- Provide cover for the public telephone.

Parking Improvements

- Do not expand the parking area beyond its current, existing footprint. Parking at the meadow has space for approximately 70 cars in the parking area at Kōkeʻe Lodge and Museum, and space for approximately 22 cars at the campground parking area at the east end of the meadow.

- Designate an area for school buses to park between the current Kōkeʻe Natural History Museum location and the picnic pavilion. (Note: Commercial buses will be prohibited past Waimea Canyon Lookout).
- Resurface and restripe the existing access roads and parking areas to delineate parking stalls.
- Construct parking and driveway surfaces using permeable pavement, grasscrete, turf block, or similar material that allows infiltration of rain and runoff water.
- Construct surfaces to comply with ADA accessibility standards.
- Temporary, spill-over parking will be allowed on the meadow grass during festival and special event days.
- Continue the use of boulders for curb stops and vehicle barriers along the entire length of the driveway during normal park operations.
- Provide a barrier to prevent through-traffic between the visitor facilities at the Meadow and the Kōkeʻe campground.
- Landscape the parking area with native plants.

Utilities and Infrastructure

- Realign the road and intersection at the entrance to Kanaloahuluhulu Meadow to direct traffic to the lodge and museum area. Create a T-intersection with a stop sign for vehicle traffic coming down Kōkeʻe Road, and a yield sign for left-turn movement from the lodge going up Kōkeʻe Road. Traffic moving up Kōkeʻe Road to the lodge or bypassing the meadow, and traffic exiting the lodge and museum heading down Kōkeʻe Road, will not be stop-controlled.
- Expand the septic system leach field into the open space area adjacent to the Ranger’s House (historic location of the chicken coop and garden) **see Figure 4-14**, and into the base yard roadway.

- Place electrical and telephone lines underground.
- Upgrade electrical system.

◆ LOOKOUTS

General

- Replace all cesspools with septic systems or composting toilets as appropriate to the level of use.
- Improve informational and directional signage.
- Improve interpretive signage at Waimea Canyon Lookout without intruding into view plane.
- Improve landscaping using native plants.
- Upgrade railings to meet safety standards.
- Follow “Kōke‘e Vernacular” design standards for all built elements.
- Develop potable water system (except at Pu‘u o Kila).
- Prohibit bus access past Waimea Canyon Lookout.
- Keep lookouts, with the exception of Waimea Canyon Lookout, free of concessions and retail services.

Waimea Canyon Lookout

Waimea Canyon Lookout is the premier visitor destination within the two parks. The lookout is the turnaround point for many visitors and tour groups who are unaware of or unable to enjoy the parks’ other resources and attractions. Waimea Canyon Lookout is the furthest location into the parks where commercial tour buses will be permitted. The character and quality of the lookout is thus critical to the impression of Kaua‘i and the State Park system that visitors will take with them when they leave. The lookout’s popularity creates a strategic opportunity to inform and orient park visitors to the rich experiences waiting further up the mountains.

Planned improvements to the lookout are illustrated in **Figure 7-5**. Improvements include:

- Develop a pedestrian view plaza between the view platform and the unmanned visitor information center, snack and refreshment concession, and restroom facility. The view plaza will provide the setting for the visitor amenities and will not increase the existing footprint of the lookout by more than 30%. The visitor information center will include map displays and orientation materials to inform visitors about the parks’ resources, its history, geology, and unique environment. The snack and refreshment concession will be supplied with zero waste snacks and feature locally produced fruits and products.
- Improve walkways and platform access to comply with ADA requirements.
- Provide ramp access to the top viewing platform.
- Develop a new parking lot and bus staging area below the existing parking lot. Relocate bus parking to the new parking area. The illustrated layout of the new parking area is conceptual. Additional topographic study is required before final layout can be determined. The new parking area should be screened with landscaping and oriented to preserve the spatial integrity and aesthetics of the view plaza area.
- Stabilize/revegetate eroded areas around the parking lot and canyon rim with the exception of the open erosion area on the canyon rim northwest of the view platform. This site is to be maintained in its present state as a photo location for print and film media companies.
- Install boulders to serve as bollards along Kōke‘e Road and the lookout driveway to prevent shoulder parking.

- visitor amenities, including a covered kiosk with information, interpretive displays, and orientation materials.
- Redevelop the walkways to both the Waimea Canyon and Ni‘ihau viewing platforms to comply with ADA accessibility requirements.
 - Redevelop the existing lookout platform to meet park design standards and improve ADA accessibility.

- Construct a new ADA accessible restroom in the lookout plaza between the parking lot and canyon viewing platform. Locate the new restroom to minimize its visual impact at the lookout. Retain the existing restroom adjacent to the parking lot.

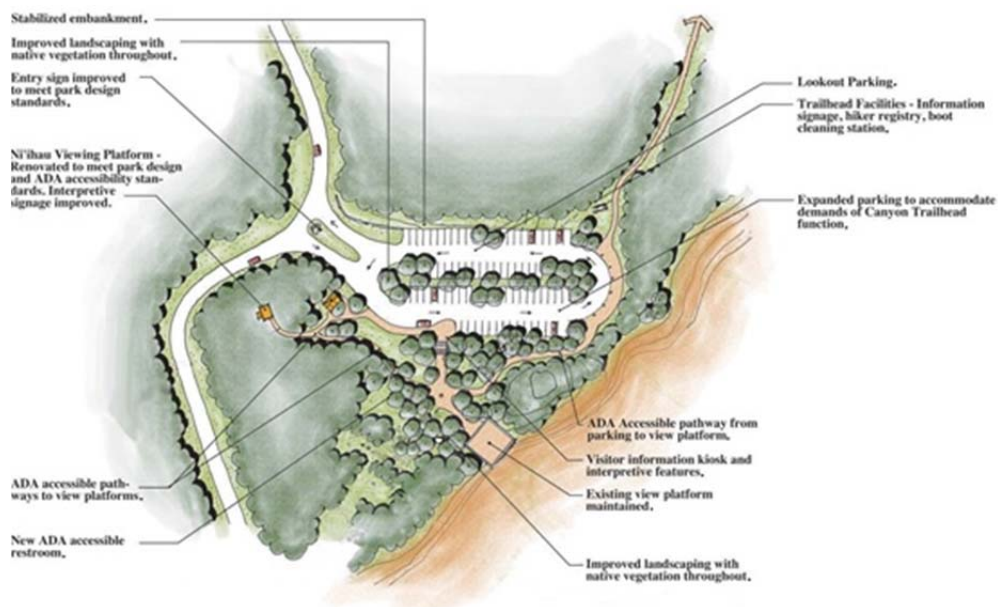


Figure 7-6, Proposed Improvements to Pu‘u Hinahina Lookout

- Develop trailhead facilities and signage for the Canyon Trail (see **Hiking Trails** section).
- Expand the existing parking lot eastward towards the canyon rim to create additional parking for the Canyon Trail, and northward to create an additional row of parking. Restripe the existing van drop-off zone to create additional angled parking stalls.
- Provide signage to designate short-term (1 hour) and long-term parking for, respectively, lookout visitors and hikers using Canyon Trail.

- Develop ADA accessible parking stalls at eastern end of parking lot where grades are suitable for pathway access to the view platform.
- Eradicate non-native vegetation around lookout facilities, stabilize soils and revegetate eroded areas with native plant species.
- Revegetate area with koa and associated native understory plants.

Interpretive Program Content

- At the Ni‘ihau viewpoint, use Ni‘ihau to

interpret the geological history of the islands' volcanic formation.

- On the opposite canyon rim, areas of forest dieback offer visual example for discussion of dieback as a normal forest ecosystem process.
- Signs of goats are evident throughout the barren terrain of the canyon. The theme of feral ungulates and their effect on native vegetation can be developed effectively at this location.

Kalalau Lookout

Kalalau Lookout is located in a forest transition zone where the increasingly dominant native vegetation offers hints of the pre-contact upland landscape. Unreachable views to the Kalalau Valley floor and the Nā Pali Coast, where distant remnants of stone terraces punctuate green and red slopes, also take the imagination back in time and provide an ideal atmosphere and context to interpret the natural and cultural landscape of Kōkeʻe. The lush greenery of the valley and often wet conditions at the site are in striking contrast to the dry landscape of Waimea Canyon and well illustrate the parks' wide range of habitat and weather conditions.

Planned improvements to Kalalau Lookout are illustrated in **Figure 7-7**. They include:

- Develop a feature with signage to identify arrival at Kalalau Lookout and distinguish the parking lot from the Kōkeʻe Road continuation. Design the entryway feature to meet Kōkeʻe vernacular design standards.
- Improve the pathway system to comply with ADA accessibility requirements.
- Provide additional picnic tables along the south and west edge of the open lawn area.

- Expand and resurface the parking lot towards the west.
- Upgrade the walkway between the parking area and lookout to comply with ADA accessibility standards.
- Redesign the scenic lookout to take full advantage of the sweeping views along the cliff face.
- Redesign the lookout guardrails to comply with Kōkeʻe vernacular design standards. Include in guardrail design a feature to intercept trash blowing from the lookout into the valley.
- Develop a potable water system and restore the existing drinking fountain. A new well source is required for potable water at this location.
- Resurface the Kalalau Lookout spill-over parking area located along the side of Puʻu o Kila Road.
- Upgrade the walkway and directional signage between the parking area and lookout to comply with ADA accessibility standards.
- Improve landscaping (i.e., grading, planting) to revegetate the large scarred/eroded area between the main (paved) parking lot and the picnic grounds.
- Develop interpretive displays. Information, available at the park headquarters, should forewarn park visitors of the misty conditions that are often encountered at the lookout.

Interpretive Program Content

- Develop interpretive materials about the role of Pacific Ocean weather patterns and their effect on Hawaiʻi's environment. Highlight the climatic changes between the Kōkeʻe uplands and the valley floor.



Figure 7-7, Proposed Improvements to Kalalau Lookout

- Develop interpretive materials about early island development, including the original volcanic dome formation, the early erosional forces that created the amphitheater-headed North Shore valleys, and the undersea landslides that formed the steep cliffs of the Nā Pali Coast.
- Develop interpretive material about (1) Montane wet forests and the resident plant and animal species; (2) topographic diversity and geologic history evident in views spanning from the Kalalau Valley floor to the expanse of the Alaka‘i Plateau and Mt. Wai‘ale‘ale; (3) Hawaiian settlements in Kalalau Valley and traditional mauka-makai resource use; and (4) man-made structures, particularly the Air Force Tracking Station’s “golf ball”.

Pu‘u o Kila Lookout

Pu‘u o Kila Lookout is the entryway into the wilderness region of the Alaka‘i Swamp and Mt. Wai‘ale‘ale. It marks the end of the

road and convenience. Proposed improvements to Pu‘u o Kila Lookout are illustrated in **Figure 7-8**. They include:

- Redesign and renovate viewing platform to take full advantage of the 360-degree view to increase capacity, and to meet park design standards.
- Remove fence barrier at end of platform and construct lateral connection to Pihea Trail.
- Provide interpretive signage at the lookout platform.
- Install informational signage to orient park users and inform them of park regulations and available facilities.
- Improve walkway from parking lot to viewing platform and Pihea Trailhead. Renovate viewing platform to provide direct access to Pihea Trail along valley rim alignment.
- Revegetate erosion scars along canyon rim.

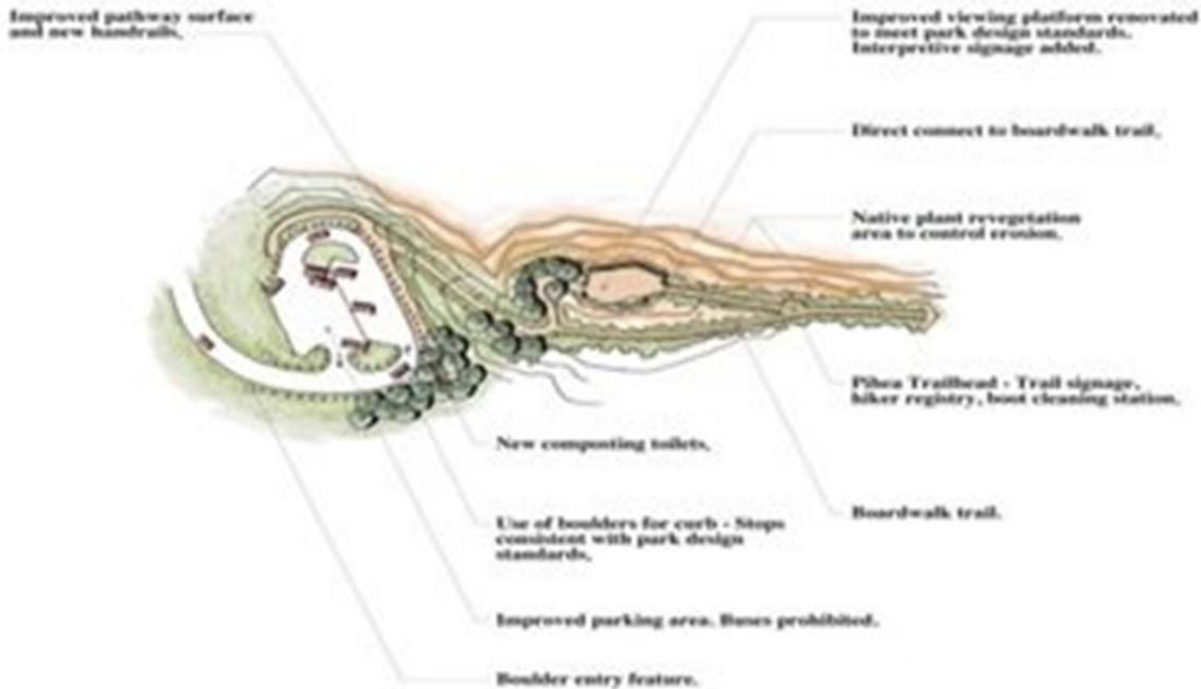


Figure 7-8, Proposed Improvements to Pu'u o Kila Lookout

- Correct parking lot drainage problem.
- Improve landscaping around parking lot and lookout using appropriate native vegetation.
- Designate reserve stalls for short-term (30 minute) parking for use by visitors to the lookout. Pihea Trail hikers should be directed by signs to use unreserved stalls. If parking use by hikers impacts parking availability for lookout visitors, DOFAW will be required to develop and maintain additional parking to support trail use.

As part of the proposed Pihea Trailhead improvements, DOFAW will develop and maintain composting toilets for the convenience of hikers. The composting toilets will be located at the edge of the parking lot away from the canyon rim and situated to minimize intrusion on the landscape.

Interpretive Program Content

Develop interpretive materials to describe:

- The role of Pacific Ocean weather patterns and their effect on Hawai'i's environment. Highlight the climatic changes between the Kōke'e uplands and the valley floor;
- Montane wet forests and the resident plant and animal species;
- Topographic diversity and geologic history evident in views spanning from the Kalalau Valley floor to the expanse of the Alaka'i plateau and Mt. Wai'ale'ale; and,

- Man-made structures, particularly the Air Force tracking station “golf ball”, and the distant views of Kaua‘i’s south-shore settlements.

Lower Elevation Turnouts

Waimea Canyon Drive offers spectacular views spanning from the coastal regions, into the canyon, and on to the distant green uplands of the Alaka‘i wilderness and Mt. Wai‘ale‘ale. Capturing these views at lower elevation turnouts will enable the complete visual story of Kōke‘e and Waimea Canyon to be told. Lower elevation turnouts will also help orient visitors and build anticipation for the rich resources waiting in the Parks above.

The Waimea Canyon State Park’s lower boundary would be extended to include new lower elevation viewpoints. Typical amenities would include: safe turnout from the roadway, ADA accessible pathways, and interpretive signage. Restrooms would also be considered where appropriate.

◆ **PICNIC FACILITIES**

Kanaloahuluhulu Meadow

Kanaloahuluhulu Meadow is the most popular picnic destination within the two parks. Proposed improvements to the existing picnic facilities are described in the **Kanaloahuluhulu / Park HQ** section.

Pu‘u ka Pele Picnic Area / Waipo‘o Falls Viewpoint

Proposed improvements to the Pu‘u ka Pele Picnic Area/Waipo‘o Falls Viewpoint include:

- Improve walkway and viewpoint to comply with ADA requirements.
- Replace existing railing with fencing that meets current safety standards and conforms to park design guidelines.

- Design railings to intercept trash blown towards the canyon.
- Pave driveway and parking area.
- Provide landscape plantings to screen parking lot and picnic facilities from Kōke‘e Road.
- Expand open lawn area adjacent to large picnic pavilion for use as a play area.
- Provide identification and pedestrian crossing signage on Kōke‘e Road.
- Develop interpretive signage about the legends of Pu‘u ka Pele and Kā‘ana in order to enhance site identity.

Long-term improvements should consider realignment of Kōke‘e Road to create room for a small picnic area adjacent to the viewpoint. Additional topographic study is required to assess the feasibility of road realignment.

◆ **UTILITIES AND INFRASTRUCTURE**

Electrical System

- Renovate electrical system distribution lines.
- Relocate poles, towers, and communication antennae away from areas where they will intrude on scenic views.
- Place electrical and telephone lines underground in Kanaloahuluhulu Meadow. Priority for undergrounding is: (1) meadow, (2) state cabins, and (3) remainder of park.

Wastewater System

- Expand the Kanaloahuluhulu leach field to handle periods of high rainfall.
- Replace all large capacity cesspools (20 or more users) with a wastewater collection and treatment system.
- Connect all recreation residences within the wellhead protection zone to a

wastewater collection and treatment system.

- Establish “no build zone” for cesspools based on geology and groundwater resources.
- Establish user hook-up fees.
- Establish user fees to pay for operations and maintenance costs.
- Investigate privatizing the development, operation and maintenance of wastewater systems.

Water System

- Replace existing water transmission and distribution system.
- Continue exploration for additional potable water source development.
- Develop a replacement and backup source of potable water, particularly at Kalalau Lookout.
- Install water meters for all users.
- Charge user fees to pay for operation and maintenance of the public water system.
- Require backflow prevention devices for all large camps and facilities with commercial kitchens.
- Extend water transmission lines to Waimea Canyon Lookout.
- Establish “no build zone” for cesspools based on geology of the area and impacts to water resources.
- Enforce a Wellhead Protection Zone of 1,000 feet from cesspools for potable well sources.
- Develop Kōke‘e irrigation ditch system as non-potable water source for fire-fighting.
- Develop dip tanks in open areas to provide water supply for fighting wild land fires.
- Construct a second water tank at the main storage area.

Communication System

- Install solar powered emergency call boxes in locations where historical

records of accidents and rescue calls indicate there is a need.

◆ **PARK EXPANSION**

The following summarizes proposed park expansion plans. Details regarding these plans are provided in the previous sections, as noted.

- Expansion of Waimea Canyon State Park to include lands along Waimea Canyon Drive for a parkway with turnouts.
- Addition of Pu‘u ka Pele Microwave Station, tower sites, and access road (0.25 acre) to Waimea Canyon State Park.
- Addition of Kekaha Sugar Company’s electric power line area (9 acres) to Waimea Canyon State Park.
- Addition of Kōke‘e Road within Waimea Canyon State Park (45.25 acres) to Waimea Canyon State Park.
- Addition of the lands along Waimea Canyon Drive, approximately 2,500-3,000 ft. wide and all of Kaleinamanu Ridge to Waimea Canyon State Park.
- An easement over Kōke‘e’s irrigation ditch in Kōke‘e and Waimea Canyon State Parks for park purposes.
- An easement approximately 70 feet below the rim of Waimea Canyon/Valley for vegetation management to maintain the views of the canyon/valley and surrounding country.
- Incorporate all existing access and utility easements into Kōke‘e and Waimea Canyon State Parks. This is necessary to give DSP greater management control over the resources within the easement corridors.
- Transfer jurisdiction over all roads within the parks to DSP. See: ***Arterial Roads***.

7.6 MANAGEMENT

◆ PARK MANAGEMENT/OPERATIONS

- Create a Kōkeʻe Regional Authority under DLNR that incorporates the functions of all of the divisions which operate in Kōkeʻe and Waimea Canyon State Parks and the surrounding forests and natural areas.
- Coordinate DSP and DOFAW road maintenance operations under a single entity.
- Create a single DLNR interface through which the public can obtain permits for camping, hunting, fishing, gathering, and commercial uses.
- Review park services, including utility, maintenance, and visitor services, to determine which services can be privatized.
- Work with Hui o Laka, Kōkeʻe Leaseholders Association, Kōkeʻe Resource Conservation Program, and other groups to develop volunteer programs for park maintenance and restoration projects.
- Establish a visible ranger/docent presence in the parks to provide an identifiable information source and authority figure.
- Develop an environmental education and certification program for ecotour operators to ensure that operations are compatible with park values and goals. Certification can be used as a marketing tool.

Coordinate park planning, management, and operations with the Kōkeʻe State Parks Advisory Council, in accordance with Chapter 171-8.5, HRS.

The Advisory Council consists of nine appointed voting members and four ex-officio members. The Advisory Council is responsible for reviewing and assisting in

revising the master plan, advising and assisting in the management of recreational cabin leases, enhancing community education and cultural awareness, participating in the protection and preservation of park resources, and advising and assisting in the overall implementation of the Kōkeʻe and Waimea Canyon State Parks Master Plan.

◆ PERSONNEL REQUIREMENTS

Personnel

The DSP will need the following positions to be approved and filled in order to carry out the Master Plan recommendations:

- General Construction and Maintenance Supervisor
- Construction and Maintenance Worker
- Mechanic
- Heavy Equipment Operator
- Equipment Operator
- Arborist
- Laborers (5)
- Park Caretaker II (4)
- Resource Management Technicians (3)
- Botanist
- Park Interpretive Coordinator
- Park Interpretive Technicians (2)
- Volunteer Coordinator
- Clerk Typist (2)
- Cashiers (3)
- Nurseryman
- Parks District Superintendent I

◆ NATURAL RESOURCES PROTECTION

Management Programs

- Conduct a geological and physiographic survey to identify the significant resources with management and interpretive recommendations.
- Develop and implement recovery plans for threatened and endangered species.

- Develop and implement restoration plans for natural plant communities.
- Site and construct plant nurseries at mid-elevation and in the lowlands within the parks to support recovery and restoration efforts.
- Site, design, and construct plant preserves to contain all the habitats found within the two parks.
- Continue and expand invasive species control, including control of jungle fowl.
- Expand and maintain fuel breaks around buildings and along selected roads.
- Continue encouraging and facilitating scientific research within the parks and adjoining lands managed by DLNR.
- Provide volunteer housing and other incentives to encourage volunteering in the parks.
- Develop and implement an educational program to promote knowledge of the parks' natural and historic resources, and the important role the park lands continue to play in the life of the island and state.
- Update and improve administrative rules and lease conditions to protect natural resources and improve enforcement rules.
- Consider leasing a suitable lot to a nonprofit invasive weed control organization such as the Kokee Resource Conservation Program, to construct a facility to be used as an office, storage, and volunteer overnight housing. Seek funding in the amount of \$300,000 to assist in the construction of a building for natural resources preservation programs.
- Support private research within the parks and surrounding natural areas as a means of building up the resource monitoring program.
- Develop a monitoring program to determine impacts of public and commercial 4-WD vehicle use on unimproved park roads, notably the Camp 10 Road. Assess the number and type of vehicles using the road, conditions under which the road is used, and corresponding wear and damage to the road.
- Develop monitoring and management plan for resources targeted by gatherers.

◆ EDUCATIONAL / INTERPRETIVE PROGRAMS

- Develop a coordinated information program among the DLNR divisions to ensure that visitor information and materials are consistent.
- Develop a park-wide Archaeological and Historical Resources Management Plan to set priorities, establish standards for interpretive materials, and ensure consistency of information.
- Conduct a study of the cultural landscape of Kōke'e and Waimea Canyon. Develop a management plan to sustain the built and natural resources that contribute to the continued understanding and existence of cultural practices within the parks.
- Conduct a program to record the oral histories of individuals with first-hand knowledge of the early days of the parks' development.
- Develop interpretive / educational materials and programs to inform the public about forest management goals and methods. Locate materials at trailheads or locations where park visitors have views of timber growth and harvest.

Monitoring/Limits of Acceptable Change

- Develop a monitoring program to record changes to park conditions over time.
- Develop a database of indicators to be used to measure park conditions of natural resources, facilities, infrastructure, and rates of use.

- Develop a Children’s Nature Center. The Center is to be maintained and operated by the Division of State Parks or a nonprofit organization.
 - Develop four new ADA accessible nature trails to interpret the major native forest types and plant associations found within the parks: ‘A‘ali‘i Lowland Dry Shrubland; Koa Lowland Mesic Forest; Koa / ‘Ōhi‘a Montane Mesic Forest; and ‘Ōhi‘a Montane Wet Forest. Trail facilities will include parking and interpretive signage. See: HIKING TRAILS section for additional description.
 - Develop an interpretive program for the Pu‘u ka Pele canoe builder’s site. The site is reported to contain remnants of a heiau, an ahu (shrine), and two house sites. A portion of the site is currently occupied by the Verizon communication tower, which operates under a lease with the State. If the site is to be developed as a visitor interpretive site, the lease on the Verizon facilities will be terminated, the built facilities removed, and the area re-vegetated with native plantings. Interpretive program content may include signage and guided tours to explain traditional Hawaiian silviculture, canoe building practices and the role of upland resources in the Hawaiian community.
 - Develop an interpretive program related to the Kōke‘e Irrigation Ditch System, including the Pu‘u Lua Reservoir, Pu‘u Lua Ditchman’s cabin, Black Pipe Ditch Trail, and Po‘omau Ditch Trail. The interpretive program should include the history of the ditch system and development of the Kōke‘e cultural landscape, the role of the ditch in West Kaua‘i’s agricultural economy, and individuals associated with the ditch history. Program elements may include signage, restoration of ditch facilities, and self-guided and docent-guided interpretive hiking trails along segments of the ditch.
 - Develop an interpretive program for the CCC Camp to be run by DSP or a nonprofit organization. Coordinate program content with Hui o Laka’s CCC Camp restoration program. Program elements may include signage, guided tours and DSP staff presentations.
 - Develop an interpretive program for the historic Kōke‘e Ranger Station located near Camp Sloggett. The historic cabin is currently used by DOCARE as a base of operations for officers patrolling Kōke‘e. Interpretive program content may include signage at the cabin and inclusion of the cabin’s history in park-wide literature and signage proposed as part of a new visitor’s center.
 - Develop an interpretive program for the proposed new visitor center at Kanaloahuluhulu Meadow. The interpretive program will include the history of Kōke‘e and Waimea Canyon State Parks, including the cultural and natural history, as well as information on the Kōke‘e cultural landscape with a guide to significant landmark sites and features.
- ◆ **PUBLIC SERVICE**
- Continue to provide State support for annual cultural events, such as the Emalani Festival and Banana Poka Roundup.
 - Establish a uniformed ranger / docent presence in Kōke‘e and Waimea Canyon State Parks to reinforce the parks’ identity.
 - Establish mail service at Kōke‘e Lodge with a Kōke‘e State Park postmark.

7.7 COSTS AND REVENUE

◆ COSTS

Capital Improvement Costs

Estimated capital costs for master plan improvements total \$28.3 million over the 20-year plan period. This amount does not include costs to upgrade the recreation residence buildings, but does include a fair-share cost of road, water, sewer, and drainage improvements to support the recreation residences.

Capital improvement costs are discussed in Subsection 7.8 **Phasing Plan** and presented in detail in **Appendix A, Table A-1 – Master Plan Cost Estimate**.

Recreation Residences

It is assumed that capital improvement costs for recreation residence buildings will be borne by individual lease holders and will not be a State expense. Estimated improvement costs are summarized in **Table 7-2**.

Table 7-2
Estimated Renovation Costs
Recreation Residence

Condition	Count	Cost per Unit (000)	Total
Good	44	\$15	\$660,000
Moderate	22	\$42.5	\$935,000
Bad	39	\$70	\$2,730,000
Total	105	--	\$4,325,000

Notes:

(1) Condition based on historic rating (Duensing 2003). See section on **Recreation Residence Lease Rents** below for further details.

(2) Cost per unit based on current renovation costs for

comparable structures on Kaua‘i. Cost per ‘Bad’ unit based on replacement cost utilizing a ‘kit cabin’ with additional premium for Kōke‘e vernacular detailing (Plasch, 2004).

Infrastructure costs to support recreation residence use, including road, water, sewer, and drainage improvements, are estimated to be \$4 million. This cost is included in the total master plan capital improvement cost of \$28.3 million.

Personnel Costs

The Division of State Parks will require 30 new positions to be approved and filled in order to carry out the proposed Master Plan recommendations over the 20-year time horizon. New personnel will be phased in according to the operational needs of master plan facility improvements and management programs. The new positions, costs, and phasing are listed in **Table 7-3**.

Operational and Material Costs

Personnel costs are used as the basis for estimating future operational and material costs. Based on the current DSP budget, non-labor operational and material costs comprise approximately 50 percent of the total park budget. Operational and material expenses for the first four years of the master plan are shown in **Table 7-4**.

**Table 7-3
Master Plan Personnel Requirements**

Phase	Position	No. Staff	Salary	Total
I 2007 -2010	Heavy Equipment Operator	1	\$45,000	\$45,000
	Arborist	1	\$50,000	\$50,000
	Laborer	1	\$33,000	\$33,000
	General Construction & Maintenance Supervisor	1	\$54,900	\$54,900
	Construction & Maintenance Worker	1	\$42,200	\$42,200
	Mechanic	1	\$45,000	\$45,000
	Botanist	1	\$50,000	\$50,000
	Cashiers	3	\$28,000	\$84,000
				<u>\$404,100</u>
II 2011-2015	Resource Management Technicians	2	\$34,000	\$68,000
	Park Caretaker II	2	\$33,800	\$67,600
	Volunteer Coordinator	1	\$45,800	\$45,800
	Nurseryman	1	\$33,000	\$33,000
	Laborer	4	\$33,000	\$132,000
			<u>\$346,400</u>	
III 2016-2020	Parks District Superintendent I	1	\$46,400	\$46,400
	Resource Management Technicians	1	\$34,000	\$34,000
	Park Caretaker II	2	\$33,800	\$67,600
	Equipment Operator	1	\$34,800	\$34,800
			<u>\$182,800</u>	
IV 2021-2025	Park Interpretive Coordinator	1	\$45,800	\$45,800
	Park Interpretive Technicians	2	\$36,700	\$73,400
	Clerk Typist	2	\$28,000	\$56,000
			<u>\$175,200</u>	
TOTAL		30		\$1,108,500

Note: Personnel costs taken from DLNR FY 2004-2005 Operating Costs Table BJ-1 and Fringe Benefits from Negotiation Agreement Approving Central Services Costs and Fringe Benefit Rates for FY 2003, rounded to next highest hundred.

**Table 7-4
Estimated Operating Budget – Master Plan Phase I (2007-2010)**

Expense	2007	2008	2009	2010
Previous year's budget	\$300,000	\$390,000	\$490,000	\$750,200
Labor Increase	\$45,000	\$50,000	\$130,100	\$129,000
Non-Labor O&M Increase	\$45,000	\$50,000	\$130,100	\$129,000
Total O&M Budget	\$390,000	\$490,000	\$750,200	\$1,008,200
% Increase over previous year	30%	26%	53%	34%

Source: FY 2002

◆ REVENUE

A summary of projected annual revenue to the State from proposed master plan programs and projects is summarized in **Table 7-5**.

Table 7-5
Projected Annual Park Revenue

Revenue Source	Amount
Entry Fee	\$725,000
Recreation Residence Lease	\$478,000
Concession	\$226,101
Maintenance and Service Fees	\$85,870
Miscellaneous Permits	\$5,000
Total	\$1,519,971

Note: Projected revenue is net present value.

Revenue sources are discussed in the following sections:

Entry Fee

An estimated 430,700 people visited Waimea Canyon State Park in 2003 according to the Hawai‘i State Parks Survey (HTA 2004). See **Table 7-6**. Establishing an entry fee for this population offers the single, most straightforward source of revenue for the parks.

An entry fee may be assessed on a per person or per vehicle basis. A per vehicle fee may encourage visitors to car pool, thus reducing the number of vehicles within the parks and correspondingly reduce road and parking congestion, and maintenance requirements. **Anyone holding proof of residency (Hawai‘i drivers license, Hawai‘i I.D., or other document) would be exempt from paying an entry fee.**

The estimated revenue is based on the revenue DSP receives at other parks that have an entry fee and an estimated number of visitors annually to the parks.

Recreation Residence Lease Rents

For fiscal year 2004, annual revenues to the State from lease rents are approximately \$205,000.

A comparative analysis was conducted to demonstrate the feasibility and relative merits of five management options for the recreation residences, including private management under a master lease. Results of the analysis include the following:

Under State management, the projected net present value (NPV) of revenues to the State over a 20-year period is \$6.4 million. Annualized NPV revenue to the State is estimated to be \$515,000.

Under a master lease, projected NPV revenues over the same 20-year period are approximately \$6.0 million to the State and \$470,00 to the master lessor. In addition, the master lease option provides for a broad range of Hawai‘i residents using the cabins.

Conclusion

The Board of Land and Natural Resources concluded in February 2006 to reject the master lease approach in favor of continuing the public auction of the recreation residences. Lease rents to be determined by appraisal.

Concession Fees

Concessions are leased by the State to a single private operator under negotiated terms guaranteeing the State a minimum annual income. The current lease with the Kōke‘e Lodge, LLC, provides to the State a minimum guaranteed annual rent of \$226,101. Actual income to the State may be higher based on a monthly percentage of gross concession receipts.

**Table 7-6
Park Visitor Counts and Transportation Data**

Park	Out-of-State	Residents	Total
Waimea Canyon	405,659	29,872	435,531
Waimea Canyon %	93%	7%	100%
Kōkeʻe	227,327	30,843	258,170
Kōkeʻe %	88%	12%	100%
Average Party Size	2.5	2.9	--
Estimated Vehicle Trips to Waimea Canyon State Park*	162,263	10,300	172,563

Source: HTA, 2004

Note: * Vehicle trip estimate derived from HTA 2004 Survey numbers for Waimea Canyon State Park visitors divided by average party size. Kōkeʻe State Park visitor numbers not added in estimate.

Maintenance and Service Fees

Maintenance and service fees should be charged to park tenants, concessionaires, and lessees to recapture the true costs to operate and maintain water, sewer, electrical and road systems. Currently, income from sewer and water service fees amounts to less than \$5,000 annually and no costs for road maintenance are recovered. Based on current DSP expenses, potential revenue from park leaseholders for maintenance and service fees is shown in **Table 7-7**.

**Table 7-7
Projected Annual**

Maintenance and Service Revenue	
Service Category	Fees
Maintenance	\$57,750
Water Charges	\$10,120
Sewer Charges	\$18,000
Total	\$85,870

Miscellaneous Permits

Management of park use permits, including camping, fishing, hunting, hiking, and

commercial uses should be consolidated within a single organizational entity. Permit rates should be adjusted to capture reasonable costs of maintaining the impacted resource. No permit fees will be assessed for activities related to cultural practices.

In practice, permit fees do not comprise a significant source of revenue for the parks. They do serve a more important function in regulating and monitoring use of park resources. Currently, estimated annual revenue from permit fees is approximately \$5,000.

7.8 IMPLEMENTATION STRATEGIES

◆ RECREATION RESIDENCES

Recreation residence lots located within Kōkeʻe and Waimea Canyon State Parks are to remain in recreational use. The DSP is currently pursuing the following actions as directed by the BLNR:

- Enter into direct negotiations at a nominal rent for the lease of recreation residences to nonprofit organizations holding current leases or permits, in accordance with HRS, Section 171-43 or Section 171-43.1.
- Enter into direct negotiations for “one-time only” lease of recreation residences and lots at market-based rents to existing lessees or permittees of recreation use leases within the parks, pursuant to Act 223, and HRS, Section 171-44.
- Issue the remaining recreation residence leases by public auction with priority given first to residents of the island of Kaua‘i, second to residents of the State of Hawai‘i, and lastly to other interested parties regardless of residency.
- Retain two (2) cabins for State use.
- Other terms and conditions as may be prescribed by the Chairperson.
- All disposition processes are subject to review and approval of the Department of the Attorney General.
- Vacant lots, previously occupied, may be considered for a lease.

◆ PHASING PLAN

The phasing plan is used to establish priorities for proposed master plan capital improvement projects and park management programs. The following criteria are used to prioritize projects:

- State Parks Mission – projects and programs that are essential to fulfilling the State Parks mission to manage Hawai‘i’s outdoor resources for preservation, recreation, and education,

e.g., maintenance of the area’s unique native ecosystems, vistas, trails, and historic-cultural landscape to ensure that public use does not compromise the integrity of the parks’ natural resources and intrinsic qualities.

- Natural Resource Protection and Management – projects and programs that focus on protection of native flora, fauna, and their habitats in the parks and surrounding natural areas, removal of invasive flora and fauna species, protection of significant historic and cultural sites and activities within the parks.
- Safety and Protection – projects and programs required to provide for the continued safety of park visitors, recreation residents, and staff, and that are necessary to protect park resources from imminent harm, e.g. fire breaks, emergency communication.
- Revenue Generation – projects and programs which will immediately generate revenue to support park operations and improvements, e.g. park entry station.
- Primary Visitor Attractions – park facilities and programs which attract and receive the greatest number of visitors, e.g., Waimea Canyon Lookout, seasonal fishing and plum picking.

Table 7-8 presents a summary of development cost estimates for master plan improvements. Development cost calculations are broken down in Appendix A.

**Table 7-8
Master Plan Capital Improvement Projects Cost Estimate and Phasing**

PROGRAM	PHASING				REC RES	TOTAL
	2007-2010	2011-2015	2016-2020	2021-2025		
CIRCULATION						
Entry Station	\$357,500	\$0	\$0	\$0		\$357,500
Arterial Roads	\$3,630,688	\$625,000	\$1,250,000	\$625,000	\$0	\$6,130,688
Collector Roads	\$299,300	\$333,333	\$333,333	\$333,333	\$0	\$1,299,299
Local Roads	\$183,840	\$155,000	\$150,000	\$150,000	\$630,000	\$1,268,840
Service Roads	\$25,000	\$106,500	\$25,000	\$25,000	\$0	\$181,500
Parking	\$416,000	\$2,173,610	\$507,000	\$1,372,700	\$0	\$4,469,310
Trails	\$444,700	\$301,808	\$613,853	\$560,973	\$0	\$1,921,334
Subtotal Circulation	\$5,357,028	\$3,695,251	\$2,879,186	\$3,067,006	\$630,000	\$15,628,471
OPEN SPACE						
Natural Resources	\$675,000	\$375,000	\$375,000	\$375,000		\$1,800,000
LAND USE						
Recreation Residences	\$0	\$0	\$0	\$0	\$165,000	\$165,000
Kanaloahuluhulu Meadow/Park	\$71,800	\$2,370,500	\$1,725,300	\$325,000	\$0	\$4,492,600
Headquarters Lookouts	\$44,000	\$2,191,000	\$1,644,000	\$1,183,500	\$0	\$5,062,500
Picnic Facilities	\$0	\$0	\$367,000	\$663,500	\$0	\$1,030,500
Utilities	\$589,900	\$400,000	\$450,000	\$350,000	\$110,000	\$1,899,900
Subtotal Land Use	\$705,700	\$4,961,500	\$4,186,300	\$2,522,000	\$275,000	\$12,650,500
TOTAL	\$6,737,728	\$9,031,751	\$7,440,486	\$5,964,006	\$905,000	\$30,078,971

Note: Expanded cost estimate table is presented in Appendix A.

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