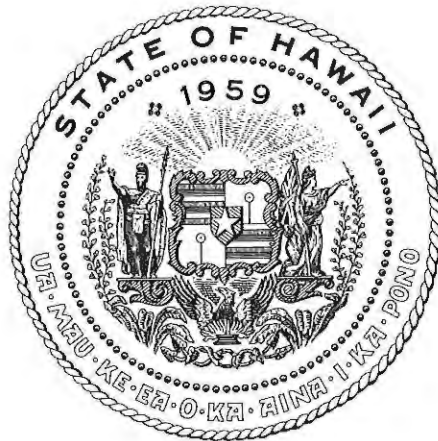


# STATE LAND USE DISTRICT BOUNDARY REVIEW

## Executive Summary

# HAWAII



*Office of the Governor*  
**OFFICE OF STATE PLANNING**

1992





EXECUTIVE CHAMBERS  
HONOLULU

JOHN WAIHEE  
GOVERNOR

FOREWORD

The State Land Use District Boundary Review takes a bold step toward defining what kind of Hawaii we want to leave as our legacy for future generations. The growth and protection of our precious islands must be planned, and planned carefully.

This review sets forth the direction for urban growth that is needed for housing and economic development in our fair State. Rather than reacting to proposals by landowners and developers, this review has allowed the State to plan for development well into the next century. It provides for an adequate supply of urban lands in locations which can be efficiently serviced by infrastructure and other public facilities and which will not have adverse impacts on our environmental, cultural and agricultural resources.

While economic development is essential, it simply must not threaten our fragile environment. This review identifies the unique and special areas that are part of our heritage. Our native forest, wetland and stream ecosystems and rare flora and fauna habitats must be protected. Significant historic sites, coastal areas and scenic and open space resources are other treasures which must be safeguarded for future generation.

The protection of our watersheds is also critical to assure that we have the groundwater resources to support the growth of our population.

While the final decisions for the reclassification of lands identified in this report are left to the Land Use Commission, the information provided in this review will be the standard by which land use decisions will be judged in the future.

JOHN WAIHEE





# OFFICE OF STATE PLANNING

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## PREFACE

The most recent Five-Year Boundary Review began in 1990 and concluded in 1992. It was an opportune time to conduct an assessment of our State Land Use District boundaries. Hawaii was emerging from a period of intense development pressures and many areas that residents thought were "safe" from development, in fact, were not.

Many were saying that it was time to step back and reassess our lands and their designations before the next wave of investment hit. Many questioned whether we wanted every square inch of these islands developed and asked whether anything would be left for future generations.

Agriculture was changing; a way of life disappearing. The old, large-scale sugar and pineapple plantations were downsizing or closing. The projected outlook for diversified agriculture was mixed. The visitor industry was the State's dominant industry and was largely dependent on Hawaii's natural scenic beauty.

In conducting the boundary review, we turned to the Constitution:

"For the benefit of present and future generations,  
the State ... shall conserve and protect Hawaii's  
natural beauty and all natural resources ..."

Article XI, Sec. 1  
Hawaii State Constitution

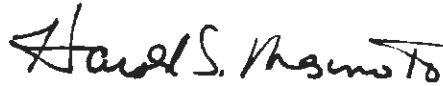
Therefore, a major focus of the review was to protect Hawaii's special areas before they were placed in jeopardy or irretrievably lost.

When we examined the actual lands in the districts, we found that many sensitive environmental resources were in the Agricultural District which left them vulnerable to development. Many of the lands in the Agricultural District were agricultural in name only. The boundary review has recommended that sensitive environmental areas be reclassified to the Conservation District or be protected by other means.

The review has also sought to direct growth and provide lands to meet long-range needs for housing and economic development. Some of this has already been addressed in the extensive statewide urbanization of land over the last five years. More land was urbanized during the last five years than during the prior ten-year period, primarily for affordable housing. However, the review has identified areas which are desirable and suitable for urbanization in order to direct growth to these areas.

Finally, we have worked to retain sufficient agricultural lands to meet the industry's changing needs and to provide open space.

The Office of State Planning is deeply appreciative of the many individuals, organizations and agencies that helped in this process and thanks them for their time, advice and concern for Hawaii's limited land resources.

A handwritten signature in black ink that reads "Harold S. Masumoto". The signature is written in a cursive style with a large initial 'H' and 'M'.

Harold S. Masumoto  
Director

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## I. INTRODUCTION

### Purpose of the Five-Year Boundary Review

The purpose of the Five-Year Boundary Review is to conduct a statewide, comprehensive, policy-oriented examination of State land use district classifications. It provides the Land Use Commission the opportunity to review urbanization proposals from a broad, comprehensive and long-range viewpoint rather than incrementally on a case-by-case basis. It also provides an opportunity to identify conservation or agricultural resources which are not in the appropriate land use district and should be reclassified.

Section 205-18, HRS, of the State Land Use Law, requires the Office of State Planning (OSP) to undertake a review of the classification and districting of all land in the State every five years. Upon completion of the Five-Year Boundary Review, a report of findings and recommendations will be submitted to the State Land Use Commission. OSP may then initiate petitions for boundary amendments to implement the report.

The Legislature reinstated the Five-Year Boundary Review in 1985 in order to emphasize long-range planning in the land use decision-making process. The boundary review report provides the basis for recommending changes to existing land use district boundaries during the Five-Year Boundary Review and provides guidance for future land use decisions.

This report summarizes the boundary review for the Island of Hawaii. Separate reports have been prepared for Kauai, Oahu, Maui, Molokai and Lanai.

### 1991-92 Review - Direction and Scope

The 1969 Five-Year Boundary Review was conducted with the philosophy that "the elements of land, air and sea are resources to be managed for the welfare of present and future generations." The 1991-92 boundary review has been conducted with the same philosophy in mind. Specifically, the Five-Year Boundary Review has been guided by Article XI, Section 1, of the Hawaii State Constitution which states: "For the benefit of present and future generations, the State ... shall conserve and protect Hawaii's natural beauty and all natural resources ..."

Factors that shaped the direction and scope of the 1991-92 Five-Year Boundary Review were:

- (1) Statutory provisions which require the review to focus on the Hawaii State Plan and County Plans;
- (2) Continuing discussion of constitutional provisions relating to important agricultural lands and the finding that there are significant acreages in the Agricultural District which contain conservation resources;

- (3) The need to revise boundaries based on new information and growing public awareness and support for protection of Hawaii's natural resources; national attention which has been focused on Hawaii's native species extinction crisis; and Act 82, SLH 1987, which calls for reclassifying high quality native forests and the habitat of rare native species of flora and fauna into the Conservation District;
- (4) Recommendations in the Hawaii Water Resources Protection Plan that call for increased protection of watersheds; and
- (5) The need to provide urban land to meet population and economic growth needs and promote infrastructure planning.

#### A. Statutory Provisions

The Land Use Law provides that OSP shall focus its review on the Hawaii State Plan and County General Plans and County Development and/or Community Plans. The Hawaii State Planning framework includes the State Plan itself as well as State Functional Plans. Seven State Functional Plans relating to physical resource needs and development were approved in 1991. The major theme for these physical resources Functional Plans was "balanced growth" and focused on the promotion of a balanced growth approach in the use of our limited resources. This theme provided direction for the boundary review and weighed heavily in the decision to conduct a physical resources-oriented assessment rather than an administrative or organizational review and to focus on the protection of natural resources.

The County General, Development/Community Plans and specific regional plans were closely examined for policy direction, particularly for the location of urban growth areas. In addition, a technical study was conducted to identify differences between existing State land use districts and County Plan designations. An assessment of these areas of inconsistency was conducted in order to recommend the appropriate State land use designation.

#### B. Continuing Discussions Over LESA

There have been a number of proposals put forward to implement Article XI, Section 3, of the Hawaii State Constitution which calls for the identification and protection of important agricultural land. One of these proposals recommended by the Land Evaluation and Site Assessment (LESA) Commission would have taken all non-important agricultural land out of the Agricultural District and placed these lands and Urban District lands into a new district under County jurisdiction. Of the approximately 1.9 million agriculture acres in the existing Agricultural District, 700,000 acres would be retained as important agricultural land while 1.2 million acres would go into this new district. The State would still have land use responsibilities in regulating conservation land and important agricultural land. For these conservation and important agricultural lands, the existing dual land management system would apply since both State and County approvals would be required for development.

However, there were a number of reservations regarding the LESA Commission proposal. A major reservation included the concern that there were conservation resources in the Agricultural District which should not go into an urban-type district but instead should be reclassified to the Conservation District. A pilot study undertaken by OSP in 1987 found that there were significant acreages in the Agricultural District with potential conservation value. Thus, it was felt that the Five-Year Boundary Review should specifically examine areas in the Agricultural District which merit reclassification to the Conservation District.

C. Need to Revise Boundaries Based on New Information and Growing Support for Protection of the Environment

The general trend is that lands have been slowly taken out of the Conservation District. There were 2,009,087 acres in Conservation in 1969 and 1,960,976 in 1990. At the same time, there has been a growing awareness of and support for the need to protect Hawaii's natural resources. Further, there has been new information which has been developed since the last boundary review, for example, on the location of rare and endangered species. Rare and endangered species were not specifically addressed during previous reviews. There has also been data and information collected as a result of statewide recreation and water resources planning, stream studies and other studies which serve to identify conservation resources. The Five-Year Boundary Review provides an opportunity to assess this new information and propose areas for reclassification to the Conservation District.

In addition, Hawaii's native species extinction crisis has received national attention. Approximately 75 percent of species extinctions recorded in the U.S. have occurred in Hawaii. Currently, 25 percent of all rare and endangered plants and animals in the U.S. are found in Hawaii. Proper classification of conservation resources is one of many steps which must be taken to affirmatively address this crisis.

Act 82, SLH 1987, states that the Legislature finds that Hawaii has several rare species of plants, animals, and fish that are found nowhere else in the world. The Legislature also finds that Hawaii has sizable areas of high quality native forests which are not in the Conservation District. The Act further states that to the maximum extent practicable, it is the intention of the Legislature to preserve Hawaii's unique native flora and fauna by reclassifying such areas as Conservation Districts.

D. Water Resources Protection Plan

The 1978 Hawaii State Constitutional Convention proposed and the electorate approved a new section on water resources which became Article XI, Section 7. This section in part states that the State has an obligation to protect, control and regulate the use of Hawaii's water resources for the benefit of its people. The State Water Code, Act 45-87, was adopted pursuant to Article XI, Section 7, of the Hawaii State Constitution. The Hawaii Water Plan and its component Water Resources Protection Plan were prepared as required by the Water Code.

The plan calls for increased protection of watersheds. Therefore, a Watershed Protection Study was conducted for the Five-Year Boundary Review to identify areas which should be protected as important watersheds. High priority areas were identified for study as budgetary limitations precluded a study of the entire State.

#### E. Urban Land Needs and Infrastructure Planning

Infrastructure is a major limiting factor affecting growth and development in all Counties of the State. In addition, new wastewater rules do not allow individual wastewater systems for developments exceeding 50 dwelling units. As such, infrastructure planning among landowners/developers and between the public and private sector will become even more critical in the years ahead. The Land Use Commission (LUC) can play a major role in promoting infrastructure planning and development by delineating future areas of growth consistent with County and regional plans so that landowners and developers can make long-range commitments for the provision of infrastructure.

In addition, the Land Use Law and Land Use Commission Administrative Rules provide that the Urban District contain sufficient land to meet a ten-year projection. As a result, the boundary review looked at urban land requirements with respect to meeting population and economic needs for the next ten years. A 25 percent surplus factor was added on to account for lands which may be held out of the market for various reasons. The projections are also on the high side because existing densities and a 5 percent vacancy factor were used; household size was projected to decrease significantly and the redevelopment of existing urban areas at higher densities was not taken into account.

The boundary review has recommended the reclassification of lands to the Urban District to meet population and economic growth needs for the next ten years and to assure predictability in infrastructure planning.

### Background of the Boundary Review

#### The 1969 Review

There are no readily available statistics on acreages reclassified during the 1969 boundary review. However, the review found that there was sufficient vacant urban land to meet projected growth for the next ten years on Oahu and Maui County. Additions to the Urban District were primarily made to refine district boundaries to include areas of existing urban use or accommodate public facilities. For Hawaii County, the study found that available vacant urban lands could accommodate three times the anticipated growth of resident population. Changes were made primarily to refine district boundaries. Many resort area proposals were submitted for Hawaii County. Available growth projections did not substantiate the need for redistricting most of the areas at the time of the review. However, some changes were made in response to detailed requests. For Kauai County, although the present Urban Districts were sufficient to accommodate foreseeable growth, the

location and distribution of these areas did not necessarily provide for specific locational needs determined in the County General Plan. Adjustments were made for residential areas, and the proposed resort areas at Princeville and Keoniloa Bay at Poipu were urbanized.

One of the major contributions of the 1969 review was to add certain lands along the shoreline to the Conservation District. The original land use boundaries were based heavily on forest reserve boundaries and steep slopes, although some shoreline/coastline areas were included. The 1969 review specifically examined the shoreline, river valleys and areas of steep topography. Many areas with scenic resources were also added to the Conservation District.

With respect to the Agricultural District, there were relatively minor additions to the Agricultural District on all islands.

#### The 1974 Review

During the 1974 boundary review, 4,731 acres were reclassified from the Agricultural to Urban District (significantly less than the 13,104 acres that landowners and developers proposed for urbanization).

Areas urbanized included Waipio, Ewa Town and Oneula on Oahu; Waikoloa, Kaupulehu and Kealakehe on Hawaii; Wailuku and Wailuku Heights on Maui; and Kapaa and Nukolii on Kauai.

Approximately 33,278 acres were reclassified from Conservation to Agriculture (primarily from the mauka Kona area in the Keauhou ahupuaa). There were 23,871 acres reclassified from Agriculture to Conservation (15,000 acres of which were in Kapapala, Hawaii). Over 3,000 acres went from Urban to Agriculture (1,680 acres were at Kaluakoi and planned for hotel use) and 679 acres were reclassified from Urban to Conservation. The Urban to Conservation reclassifications included lands at Kahaluu, Heeia Fishpond, and Hawaii Kai on Oahu for open space and at Hapuna and Keei, South Kona in Hawaii for open space.

On Molokai, three areas planned for hotel use, Puaahala, Paialoa, and Kaluakoi were reclassified from the Urban District to the Agricultural and Conservation Districts.

## II. STUDY METHODOLOGY

The 1992 Five-Year Boundary Review process included reviews of the Hawaii State Plan, State Functional Plans, County General Plan and County Development and/or Community Plans, baseline studies, resource mapping through the State's Geographic Information System, a Public Information and Participation Component, and extensive coordination with State, County and Federal agencies and other public and private organizations and individuals.

### Baseline Studies

The following are baseline studies conducted for the State Land Use District Boundary Review:

- County Plans and State Land Use District Review and Mapping Study, PBR, Hawaii, addresses the requirement to review County General Plans and County Development and/or Community Plans. The study examines the relationship between existing State land use district boundaries and County plan designations.

Development or Community Plan maps were overlaid onto State land use district boundary maps and guidelines were developed to show which classifications were consistent with each of the State's Urban, Rural, Agricultural or Conservation Districts. Areas of inconsistency between State and County land use designations were identified and highlighted so that these areas could be further examined to determine the appropriate State land use classification.

- The Urban Land Requirements Study, Wilson Okamoto & Associates, Inc., examined urban land in the State to determine how much urban zoned land is required to accommodate population and economic growth for the next five, ten and twenty years. Key components of this analysis include determining the existing supply of vacant urban lands in each County, assessing the general suitability of these lands for development, relating the supply to anticipated future demands for urban lands including residential, industrial, commercial, resort and public uses and identifying urban land requirements.
- Infrastructure Constraints and Opportunities Study, Eugene P. Dashiell, ATCP, Planning Services, assesses infrastructure constraints and opportunities by County and planning area. Major infrastructure systems including airports, harbors, highways, water systems, sewerage and solid waste are examined.
- Agricultural Resources Study, Deloitte & Touche, analyzes issues and trends in the State's major agricultural industries and assesses their outlook.
- Watershed and Water Recharge Areas, University of Hawaii Water Resources Research Center, identifies high priority watershed and water recharge areas that should be reclassified to the Conservation District. The Hawaii Water Code and Hawaii Water Plan call for increased protection of

our watershed and water recharge areas. The Water Resources Protection Plan recommends that minimum areas of conservation lands for watershed as protected infiltration areas should be set aside. This study serves to address these concerns.

- Proceedings of the Native Ecosystems and Rare Species Workshops records the information gathered from a series of workshops conducted by OSP with the assistance of The Nature Conservancy of Hawaii. The purpose of these workshops was to identify areas that are known or suspected to contain significant biological resources including native forests and shrub lands, rare and endangered species, and unique or important habitats. The report does not contain recommendations and serves primarily as a resource study which identifies the location of these resources like other planning or resource studies which have identified important agricultural lands, historic sites, steep slopes, flood hazard zones, etc. The areas identified were assessed by OSP with the assistance of State and Federal agencies.
- David L. Callies provided overall land use and planning assistance.

#### Public Information and Participation

A Land Use Stakeholder Survey was conducted by Sunderland Smith Research Associates, Inc., to obtain input on land use issues from individuals and organizations involved in land use throughout the State. In-depth interviews were conducted with 150 community and government leaders and other "stakeholders" to delineate priority goals for land use planning, identify stakeholders' opinions on land use and growth policies and areas that should be protected in the Agricultural and Conservation Districts.

Highlights of the Land Use Stakeholder Survey include the following:

- The major land use concerns and priorities of participants in the survey varied according to the interests and organizational affiliations of the individuals involved. For example, developers and landowners were most concerned with reducing the burden of land use regulations and streamlining the review process, while environmentalists were most interested in protecting natural resources.

There was a consensus that truly prime agricultural land should continue to be protected.

Opinions were more divided on the extent to which other land currently classified as agriculture should be made available for housing and other development, maintained as open space or retained for diversified agriculture or other uses.

A number of individuals expressed a desire to make unused non-prime agricultural land available for urban purposes, especially for housing development.

Other survey participants, however, were more interested in ensuring that undeveloped lands receive protection from urban encroachment. They feared that with the phasing out of sugar, pressures to develop agricultural land would become very great. Environmentalists in particular felt that keeping land in its natural state and ensuring open space should be a basic policy objective.

- Respondents were asked to prioritize the most important goals for land use in the State of Hawaii today. The priority "Guide and direct development to make sure it serves Hawaii's needs" ranked first place overall. By affiliation, the development interests ranked in first place "guide and direct development ..." and in a tie for second "Assure adequate infrastructure" and "Provide land for jobs and economic growth." The two goals of guide and direct development and assure infrastructure were the two picks of the government sector.

Environmental organization representatives think that keeping Hawaii's air and water clean and pollution-free, and preserving shorelines, coastal areas and open space are the two priority goals.

Civic organizations put preservation of Hawaii's scenic beauty at the top, followed by guide and direct development to serve Hawaii's needs.

The preservation of agricultural land was pretty low on the lists of all segments except environmental groups. The only issue that was ranked lower to some groups was preservation of historic and cultural sites.

While most participants agreed that government policy should provide direction, there was not a consensus on what that direction should be. As discussed earlier, the group's priority goals was to "Guide and direct development to make sure it serves Hawaii's needs." Developers, however, interpreted that objective to mean that growth should continue at a fairly rapid pace to meet expanding needs, whereas environmentalists saw it more as a mandate to slow down and stabilize the rate of growth and development.

- A majority or near majority of every segment except environmental organizations, would like to see some growth and development in Hawaii over the next decade. "Some growth" was the usual choice from the roster of four possibilities that was offered to respondents: "a lot of growth"; "some growth"; "a little growth"; and "no growth at all."

Public informational meetings were conducted in March and April 1991 to solicit general comments and proposals for changes to land use district boundaries from the general public, special interest groups, community organizations, landowners and developers. As a result of this request for input, a number of recommendations for boundary changes were received-- approximately 11 on Kauai, 42 on Maui (including Molokai and Lanai), 32 on Hawaii and 41 on Oahu. These were evaluated by OSP within the context of the overall review and baseline studies. Those that have been recommended are included in this report.



Public informational meetings were also conducted statewide from March-June 1992 to solicit comments on the draft report. The Office of State Planning also met with a number of organizations and community groups to present the draft proposals and obtain public input.

#### Resource Mapping/State Geographic Information System

One of the objectives of the review is to build up long-term capabilities in land use planning. The emphasis on a physical resources-oriented review led to use of the State Geographic Information System for this project.

Data layers added to the system to assist in the boundary review included State land use districts, vegetation maps which identify areas of native vegetative growth, State forest reserves, State natural area reserves, marine life conservation districts, national wildlife refuges and parks, rare and endangered species from the Heritage Program of The Nature Conservancy, native bird habitats, lands in sugarcane and pineapple cultivation and lava flow hazard zones. Overlays of resource information were prepared and examined to identify areas for potential reclassification.

The State Geographic Information System was an invaluable land use planning tool which assisted greatly in the analysis and presentation of complex information.

### III. APPROACH

This boundary review places high priority on the protection of Hawaii's conservation resources. Watersheds, habitats of rare and endangered species, wetlands, special streams, historic sites, and coastal, open space and scenic resources are all heritage resources which require protection for the benefit of future generations.

However, there will be opposition to placing lands into the Conservation District. Landowners who have had plans for more intensive use of their properties will object because only certain types of uses are allowed in the Conservation District. Some land use options which would greatly increase the value of these lands may be foreclosed.

Other landowners who may only want to continue existing uses object to the additional regulations and paperwork which may be involved to obtain permits to expand or change uses in the Conservation District.

Objections may also be raised because lands which could have been used to provide some community benefit as a trade-off for urban zoning would already be protected through Conservation districting.

In addition, the Counties raise homerule concerns. Conservation lands fall under the jurisdiction of the Board of Land and Natural Resources rather than the County. The Counties would prefer to retain regulatory control over these lands.

Nonetheless, despite potential opposition, the statute requires that the review be conducted. Further, it is in the long-term interest of the State that these valuable assets be reclassified into the Conservation District.

The reclassification of lands requires review and approval by the Land Use Commission under quasi-judicial proceedings.

Because it can be expected that some petitions to reclassify lands to the Conservation District will be contested, the justification for initiating a petition to reclassify land into the Conservation District must be strong. Therefore, there are two types of Conservation District recommendations in the report. Priority #1 Areas have been identified as top priority recommendations for Conservation reclassification which OSP will initiate petitions for. These are recommendations which have strong justification and can withstand the scrutiny of contested case proceedings.

Priority #2 Conservation recommendations include areas which OSP recommends but will not be initiating petitions because of budgetary constraints. Priority #2 also includes areas which have been identified as containing conservation resources, but documentation of these resources is not strong enough to defend a petition under contested case proceedings. It further includes areas where other methods have been agreed to, to prevent changes in use or in certain instances, to even enhance identified conservation values.

The purpose of identifying Priority #2 Conservation recommendations is to alert State and County agencies, the Land Use Commission (LUC), and the public that the land contains certain conservation values which should be considered in any petition for reclassification. It should also alert the landowner as to the State's position in the event that these areas are proposed for development.

During the review, the question of whether to submit proposed legislation to amend the Land Use Law to allow the Land Use Commission to conduct the boundary review under quasi-legislative rather than quasi-judicial proceedings arose. Under the quasi-legislative process, the LUC would hold hearings on the report and proposed amended land use maps. After the hearing, the LUC would adopt or reject the proposed map amendments.

Under quasi-judicial proceedings, the State would submit a petition to the LUC; the LUC holds a hearing; the landowner may request to intervene; and the LUC may approve, approve with modifications or deny the petition.

The advantage of the quasi-legislative proceedings would be that changes would be more directly based on public input and more policy-oriented in nature. Quasi-judicial proceedings are heavily fact-based. Further, because of the amount of information needed to support a reclassification and the procedures involved, the number of reclassifications that can be considered are limited. Reclassifications under these procedures are also site-specific rather than broad-brush proposals.

The decision was to retain the contested case process as it provides for careful scrutiny of all petitions--urban, agricultural and conservation--and allows the landowner or other affected parties to intervene under contested case procedures. Therefore, no amendments to the statute to change the proceedings have been proposed.

However, because the Five-Year Boundary Review is a comprehensive, overall review, petitions under the Five-Year Boundary Review should be reviewed in the same broad fashion, and OSP may request that the Land Use Commission review petitions by region or subject area, e.g., watersheds.

#### Land Use Commission Petition Stage

The Office of State Planning will file petitions to reclassify Priority #1 areas with the Land Use Commission. In this case, OSP and the respective County planning departments are mandatory parties to the petition. Landowners, as well as any other parties with standing, may intervene in the proceedings by filing an application with the LUC.

The procedures of the Land Use Commission are guided by Chapter 205, HRS, and the LUC Administrative Rules. The petitioner is required to serve copies of the petition to affected landowners. Public notice of the hearing on the proposed boundary amendment is also required.

The Land Use Commission will conduct a hearing on the proposed boundary amendment. Six affirmative votes are necessary to approve any boundary amendment.

#### IV. CONSERVATION, AGRICULTURAL, RURAL AND URBAN DISTRICT ISSUES

##### Conservation District Issues

Management of Conservation Resources. Landowners and environmental groups have both raised the point that proper management is needed to protect Hawaii's rare and endangered species. They contend that zoning is not enough. It is true that zoning is only one element of an array of actions needed to protect conservation resources. Zoning is the allocation of land resources to meet certain desirable community goals, but other things also need to take place to achieve those goals. Just as zoning lands Urban does not guarantee that these lands will be developed and provide houses and jobs, zoning lands Conservation does not guarantee that rare and endangered species will be preserved. For example, reclassification into the Conservation District may not solve the problems of pigs, banana poka and fire.

However, although Conservation designation does not address these natural forces which are so destructive to Hawaii's wildlife, it can protect these lands from man-made intrusions, e.g., construction and development which have also historically eliminated many natural areas. Placing limitations on intensive use of these lands can help to assure that there is a resource left to protect.

If lands remain in the Agricultural District, the potential for more intensive use of the land exists. Within the Agricultural District, agricultural subdivisions and golf courses (C, D and E lands) are permissible uses.

There are more restrictions on uses within the Conservation District and an environmental assessment is required before lands can be reclassified out of the Conservation District. Therefore, where high quality conservation resources were present, it was determined that the best course of action was to recommend that they be classified in the Conservation District.

Uses Within the Conservation District. From a landowner's perspective, there are too many restrictions on uses in the Conservation District. The permits that are required for uses in the Conservation District are disincentives and cause landowners to object to lands going into the Conservation District. It is acknowledged that restrictions on uses are needed in the Conservation District to protect fragile resources. However, it can be argued that not all uses should have to go through the same scrutiny. For example, why should conservation-oriented organizations such as the U.S. Fish and Wildlife Service have to obtain Conservation District Use Applications (CDUA) for fencing, laying pipes or similar uses in the Conservation District. If taro farming is a compatible use in wetlands because it keeps areas open for waterbirds, or aquaculture a compatible use in fishponds, should a CDUA be required for these uses?

From an environmentalist's perspective, Conservation District rules may not be restrictive enough. For example, residences and golf courses may be permitted in certain subzones within the Conservation District.

To address the concern that lands will be reclassified to the Conservation District but not protected, e.g., that residences or golf courses will be permitted, OSP is generally recommending as Priority #1 areas which meet the criteria for the protective, resource or limited subzones. The Office of State Planning will support designation of these areas into the protective, resource or limited subzones.

Existing statutes grandfather non-conforming uses in the Conservation District. Thus, if lands are reclassified to the Conservation District, existing uses are allowed to continue. A CDUA will only be required for an expansion of an existing use or a new use. Grandfathering of existing uses when lands are reclassified to the Conservation District is a way to not adversely impact current landowners while preventing additional harm to the resource and limiting more intensive use of the property. For the County of Hawaii, there may be areas which are used for grazing where the "grandfather" provision would apply.

Both landowners and environmental groups have pointed to a need for examination of Conservation District rules. It may be worthwhile to begin such an examination before the Five-Year Boundary Review is completed.

Scenic, Open Space and Wilderness Resources. The Land Use Law recognizes scenic, open space and wilderness areas as conservation resources. The original delineation of boundaries and the 1969 review included these areas in the Conservation District.

Open space and scenic resources were identified as important topics during the existing boundary review largely because of the debate over LESA and important agricultural lands. Agricultural lands are an open space resource. One of the initial objectives of the review was to identify open space and scenic resources in the Agricultural District which should be reclassified to the Conservation District. This proved to be very difficult to do and has been accomplished only to a very limited extent. The report does contain recommendations to reclassify some of the more outstanding scenic and open space areas in the State to the Conservation District, e.g., Olomana. However, there are many other scenic and open space resources which potentially should be in the Conservation District but have not been recommended for reclassification. This is because such resources are measured and valued qualitatively rather than quantitatively and further studies are needed to determine the significance of specific resources and to justify reclassification by the LUC. It is recommended that such studies be pursued because scenic resources are so important to Hawaii's visitor industry.

Wilderness areas should also be considered. The term wilderness here is not meant to denote Federally designated wilderness areas. The term refers to areas which may not contain rare or endangered plants or animals, may not have watershed value or contain steep slopes, etc., but have value primarily as natural areas. These may, for

example, include areas which are heavily vegetated with non-native species. These natural areas contribute to the overall landscape and are part of what makes Hawaii an attractive and special place. Care needs to be taken that these areas are not incrementally lost and reclassified to urban or agriculture simply because they do not contain rare and endangered species or are not of watershed value.

However, as with open space resources, OSP did not identify and recommend areas for reclassification during the review solely on wilderness values because the evaluation would have been qualitative in nature and difficult to support before the Land Use Commission.

Retention of Conservation District Boundaries. The review found that with the exception of Oahu and Kauai, large acreages of additional urban lands were not needed. Moreover, urban growth for the next ten years on all islands can be accommodated by the redistricting of agricultural land not needed to sustain sugar, pineapple or diversified agricultural operations. Sufficient important agricultural land will remain to meet agricultural production goals. Redesignation of Conservation District land is not needed to meet urban land requirements for the next ten years or to meet agricultural production goals.

Therefore, except for one area in Hawaii County, the review did not recommend that Conservation land be reclassified out of the Conservation District.

In general, it is recommended that lands be retained in the Conservation District unless the Land Use Law is changed to establish an Open Space District, and that any future proposals to reclassify Conservation District land continue to be carefully assessed. If an Open Space District is established, lands which have low value as conservation or agricultural resources but which have open space value and are not needed for urban uses could be included in this district.

Coastal Conservation Issues. At several of the public informational meetings, participants proposed that a continuous greenbelt strip along the coastline be placed into the Conservation District. The Office of State Planning has not included this as a boundary review recommendation because this type of blanket statewide change should be addressed through legislation or by the Counties. OSP proposed legislation in 1991 to increase the shoreline setback to 40 feet in the Urban District and 150 feet in non-Urban Districts with exceptions for small lots. This bill did not pass. However, the Counties already have the authority under Chapter 205A to establish setbacks greater than the minimum established in that Chapter and thus a more immediate solution to this issue may rest with the County governments.

The boundary review does identify specific areas along the coastline which should be reclassified to conservation because of their resources or to conform to County plans.

## Agricultural District Issues

The existing Agricultural District contains lands with soils which are only marginally good for agriculture as well as lands with good soils. The reasons for this go back to the initial delineation of land use district boundaries. After the Land Use Law was adopted in 1961, the LUC adopted temporary boundaries. Generally, the LUC renamed the forest and water reserve zones as Conservation Districts and divided the remainder of the land into "urban" and "non-urban," temporarily classifying the non-urban as "agriculture."<sup>1</sup>

Upon further and more detailed analysis, permanent boundaries were recommended by the Commission's consultants, Harland Bartholomew and Associates.<sup>2</sup> The Urban District was expanded to include a liberal allocation of land for anticipated population growth. The boundaries of the interim Conservation District were also modified considerably. State land leased for Agriculture was included in the Agricultural District as were lands in the original forest reserve suitable for agriculture. In other locations, the Conservation boundaries were extended to include areas subject to erosion, wilderness areas, unique examples of lava flows, areas of outstanding scenic quality, recreational and historic sites. Agricultural District boundaries were based on the soil classification, existing agricultural land uses, topography, rainfall and consultation with experts.

The Commission conducted meetings and public hearings and modified and subsequently adopted land use district boundaries.

The consultants encountered certain special problems during the course of their study, problems which are still applicable today. One of these problems was the appropriate disposition of so-called "waste lands" which are neither suitable for high-grade agricultural nor urban development, also called "residual" lands. They noted that 1) under the provisions of Act 187, the Land Use Law, there are no unidentifiable land uses or residual lands, 2) "residual" areas are sometimes viewed as land to be considered waste but such areas are also identified as wilderness and may contain plant or animal life, making them appropriate for Conservation designation, 3) the resources at the peripheral boundaries of the Agricultural and Conservation Districts may approach a line of diminishing positive identification, and 4) there is a need for the exercise of value judgements in the delineation of Conservation and Agricultural District boundaries in many parts of the State.<sup>3</sup>

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<sup>1</sup> Harland Bartholomew and Associates, Land Use Districts for the State of Hawaii, Recommendations for the Implementation of the State Land Use Law, Act 187, SLH 1961, January 11, 1963, pp. 9-10.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid., pp. 17-19.

The question of what to do with lands in the Agricultural District that are not suitable for high-grade agricultural use still exists. Moreover, while it is the State's intention to protect important agricultural land pursuant to the Hawaii State Constitution, the future will bring further questions and concerns relating to the entire Agricultural District because of the changing face of agriculture in Hawaii.

Overall, acreages in sugarcane and pineapple are declining and are projected to decline further although there are individual plantations that remain very healthy. Diversified agriculture is growing and over the years, significant acreages have been planted in macadamia nuts. However, diversified agriculture is not expected to be able to utilize all of the lands taken out of sugar and pineapple.

Agricultural use has been one means of keeping areas in open space and providing related open space benefits. Fields of sugarcane, for example, have enhanced the scenic beauty of the islands. However, there is uncertainty as to the nature and strength of the sugar industry in Hawaii. Proponents of open space will no longer be able to rely on sugar or pineapple to provide open space as companies continue to shrink the size of their plantations. Some landowners of former sugar and pineapple lands have gone into alternative crops such as oats and coffee and this should be encouraged.

However, there is a growing recognition that open space is a valuable resource in its own right and should be protected and managed. Open space enhances the value of surrounding communities, provides buffer areas, scenic vistas, and facilitates efforts to manage and direct urban growth.

As stated earlier, this review initially looked at the issue of agriculture and open space but in many ways found it difficult to address under the existing land use categories. The establishment of a new district, an Open Space District, and a tightened-up Agricultural District containing only important agricultural lands has been under discussion by the Legislature and provides a solution to the agriculture/open space dilemma.

#### Rural and Urban District Issues

The boundary review recommends that certain lands be urbanized to meet urban land requirements for the next ten years and include a 25 percent surplus. Questions have been raised as to whether this land will actually be developed and specifically whether it will be developed to address the need for affordable housing. It has been suggested that taxation be used as an incentive. It has also been proposed that the provisions on agricultural dedication which allows lands in the Urban District to be dedicated to agriculture be reviewed to determine whether this provision has been facilitating the "holding" of lands rather than the development of urbanized lands.

The recently enacted "use it or lose it" provision can also be utilized to promote development of urbanized lands. Affordable housing requirements can be addressed during the petition process.



Expediting the permit process has also been raised as a concern. To facilitate implementation of the review and expedite development in areas which the review has determined are appropriate, the Office of State Planning will be requesting the Land Use Commission to change some of its detailed requirements on the form and content of petitions during the boundary review.

## V. TYPES OF RECOMMENDATIONS

The following explains the types of recommendations included in this report.

### Reclassifications to the Conservation or Agricultural District

Priority 1. These are areas that OSP will likely petition for in FY 92-93 and beyond. These include areas which require protection, i.e., conservation resources for which there is sufficient documentation and justification to support a petition under contested case proceedings.

Priority 2. These are areas that are recommended as lower priority. They include, for example, conservation resources: a) which are already protected because of government or non-profit ownership with conservation objectives such as national parks; b) that are significant but not of as high quality or abundance as other areas or not as critical to meeting a specific conservation objective such as protecting endangered birds; c) which are believed or known to contain conservation resources but further survey work is necessary to either verify resources or determine appropriate boundary lines; d) which are of high quality but resource constraints limit the number of petitions which can be prepared; e) but other methods are available to protect the identified conservation values.

### Reclassifications to the Urban and Rural Districts

Recommendations for areas appropriate for reclassification to the Urban and Rural Districts are identified. OSP may initiate petitions for certain State, County and private lands which are recommended in the State Land Use District Boundary Review reports for reclassification to the Urban and Rural Districts. The decision as to which petitions OSP will initiate will be based on policy considerations, additional information, conditions on development and the availability of manpower and financial resources.

### Areas of Critical Concern

Two Areas of Critical Concern have been identified for Hawaii County. Natural Resources Roundtable discussions are to address these areas. Petitions to reclassify these lands to the Conservation District will not be initiated if landowners submit a letter of agreement promising not to develop their lands for five years (tied to the next Boundary Review) or until a mutually agreeable solution to the resource problem is reached, whichever is shorter. However, these areas require attention and alternative methods of regulation or management to protect the resources which are present. Some of these areas are in agricultural use and that agricultural use is generally compatible with protection of the conservation resources. However, these areas are subject to development pressures and more intensive uses which are allowed in the Agricultural District.

Department of Hawaiian Home Lands (DHHL)

DHHL lands containing conservation resources and lands proposed for urbanization have been identified in the report. However, these lands are not subject to the State Land Use Law according to the Hawaiian Homes Commission Act of 1920, and action will not be taken on these lands.

## VI. SUMMARY OF HAWAII COUNTY RECOMMENDATIONS

### A. Conservation District

Conservation district designation serves to protect Hawaii's unique and fragile environmental and natural resources. Assuring that these precious resources are included within the Conservation District also helps to reduce future land use conflicts by confirming that it is the State's intent that these resources be protected. For example, conflicts over Heeia Marsh on Oahu may have been avoided if this important wetland and waterbird habitat had been in the Conservation District rather than the Urban District.

The examination of State land use districts in Hawaii County found the need to address three important areas:

1. Kona and Kohala Mountain Watersheds;
2. Native ecosystems and habitats of rare and endangered species; and
3. Streams with outstanding aquatic or riparian resources.

#### Kona and Kohala Mountain Watersheds

Conditions in West Hawaii have changed considerably from the 1960's when district boundary lines were first drawn and from the late 1960's and early 1970's when boundaries were last reviewed. Since then, water has become a critical issue. Billions of dollars have been invested in the makai areas and thousands of additional visitor and residential units are planned which will require water to sustain their growth. The Kona and Kohala Mountain watersheds are vital recharge areas and need careful protection.

Kona Watershed. Water is a pressing concern because of growth in the North Kona district. The high rainfall and fog drip zone on the slopes of Hualalai and Mauna Loa are the ultimate generators of water supply in Kona.

If altered so that its positive hydrological features are debased, the developable water supply will contract. There are no alternate water supplies feasibly available to urbanized Kona.

The chloride content at the Kahaluu well, the existing Kona basal water table source, has risen to dangerously high levels according to the State Water Resources Protection Plan.

The Kona Watershed is in the Agricultural District rather than the Conservation District and is primarily in ranch use. The draft Watershed Protection Study, Conservation Zone Adjustment, conducted by the Water Resources Research Center, University of Hawaii, for the Five-Year Boundary Review, recommends expanding the Conservation District to protect the high rainfall and fog drip zone on the slopes of Hualalai and Mauna Loa.

Some feel that these lands should remain in the Agricultural District maintaining that existing ranching activities are not detrimental to the watershed. However, it can no longer be assumed that historical agricultural uses which may or may not be incompatible with watershed protection will continue.

Cattle ranching, especially smaller operations, has encountered difficult financial times. The wave of investment that has recently swept the islands has even reached mauka Kona.

Two former ranches, Hokukano Ranch and Kealakekua Ranch, have development proposals. A golf course has been proposed at Hokukano Ranch and three golf courses, a lodge and 550 units have been proposed at Kealakekua Ranch. A 1,800-acre subdivision, Kaloko Mauka, cuts through native forest and bird habitat on the slopes of Hualalai. Acres of native forest have been cleared.

Kohala Mountain Watershed. The existing Conservation Zone in the Kohala Mountain Range extending from Pololu to Waipio Valley yields approximately 40 mgd of groundwater to an array of ditches and tunnels. In addition, water is diverted from streams on the leeward slope above Waimea for municipal and irrigation uses. Substantial groundwater resources have also been identified by exploratory drilling northwest of Pololu on the windward side, and to some extent in the dry leeward sector. These groundwater resources are expected to become principal sources of domestic supply for developments in the South Kohala district as well as in the regions where they occur. The existing Conservation Zone tributary to these water resources is quite small. The draft Watershed Protection Study conducted by the University of Hawaii Water Resources Research Center for the Five-Year Boundary Review recommends expanding the Conservation District in the North Kohala Mountains to generally enclose areas having greater than about 60 inches average rainfall, but also to expand into somewhat lower rainfall zones where volcanic vents and cinder cones can reasonably be incorporated.

Conservation District Issues. Reclassification of these lands into the Conservation District can serve to protect important resources since uses in the Conservation District are closely regulated.

However, there is a need to recognize existing ranching operations and potential impacts to these uses. Existing uses such as ranching and forestry will be grandfathered in under existing statutes and allowed to continue as non-conforming uses. However, any change in the type of use or expansion of an existing use would require a permit and this may be burdensome to existing ranching operations.

At the minimum, the status quo should be maintained in the area, that is, no golf courses or additional residential development. In addition, forest protection and enhancement should be promoted and rare and endangered species protected.

Alternatives are the establishment of a special subzone which would allow only uses compatible with watershed purposes, but would allow the landowner greater flexibility than the usual Conservation District subzone designation. Negotiation of easements, participation in the Natural Area Partnership Program or Forest Stewardship Program or other agreed-upon methods for protection are other ways to achieve protection of the resource as an alternative to Conservation designation.

Another option could be County or landowner-initiated and would involve a change in County zoning for the area to exclude golf courses and additional residential development.

The taxation issue is another problem which needs to be addressed. In some cases, paradoxically, taxes may increase if lands are placed into the Conservation District. This is because lands dedicated to grazing use have the lowest tax rate. Unfortunately, this also provides an incentive for landowners to convert forest land into pasture since this will lower their tax rate.

When reclassification of lands to the Conservation District is proposed, the Counties often raise the issue of home rule. Their concern is that reclassification to Conservation takes these lands out of County control/regulation. However, in order for more intensive use to occur, a State land use district boundary change and, subsequently, appropriate County approvals would be needed.

In the case of the Kona and North Kohala Watershed areas, home rule may become a major issue because of the acreages involved. However, the uses that the Counties would ordinarily regulate in this area would be the development of golf courses, residential subdivisions, resort-type uses, or commercial, industrial uses. If a special subzone were established excluding new uses of this type and requiring a district boundary amendment for such uses, no County authority would be lost. Once the land was reclassified out of Conservation, the applicant would have to get County zoning and other approvals for these uses.

The Kona and North Kohala Watersheds should be protected. Reclassification to the Conservation District is one option. The other alternatives outlined are other methods.

A Watershed Roundtable has been convened by the Department of Land and Natural Resources and the Hawaii County Council. The purpose of the roundtable was to bring parties on different sides of this issue together to see if some common ground could be found to work out a solution to this dilemma. Two roundtable meetings have been held. Landowners, ranchers, environmental organizations, community members, State, County and Federal agencies participated in the roundtable discussions.

At the second meeting, it became clear that no progress was being made on the issue. There was no consensus among the parties involved. OSP indicated that while the Office was willing to continue to participate in Roundtable discussions, the boundary review was operating under a deadline. Although the Office would like to pursue options, it needs to have assurances that existing uses would be locked in place until some solution is reached or until the next boundary review is completed in order to avoid further urbanization or development. OSP proposed to negotiate easements with the ranchers. These easements would be an agreement between the State and the ranchers that existing uses could continue but that the ranchers would not engage in new or more intensive uses of the land, for example, for subdivisions or golf courses. It was proposed that the easement run until the next Five-Year Boundary Review or until a mutually agreeable solution to the resource problem was reached, whichever was shorter. The ranchers were asked at the roundtable if they could in principle endorse the concept of easements as proposed. The ranchers responded that their interests were too diverse and that they could not speak with one voice on this issue.

The Office of State Planning then indicated that it would begin discussions on easements with each rancher or landowner individually and that if agreements on easements or other methods of protection could not be reached, petitions for reclassification to the Conservation District would be initiated.

In the meantime, House Concurrent Resolution 292-92 requests the Department of Land and Natural Resources and County of Hawaii to continue the facilitated discussions already started. The Legislature expanded the scope of the discussions to include issues of natural resources management and asked that the Kohala Watershed area also be discussed.

The Department of Land and Natural Resources has asked the Alternative Dispute Resolution Center of the Judiciary to conduct these facilitated workshops.

The Kona and Kohala Mountain Watersheds have been designated Areas of Critical Concern in this report.

While the Five-Year Boundary Review in the past may have been primarily the preparation of a report, changing times and more public involvement in the planning process bring a new dimension to the boundary review, incorporating problem-solving by the parties involved. Roundtable discussions have been successful in other dispute situations and may show the way to meet multiple objectives in the West Hawaii watershed.

#### Native Ecosystems and Rare and Endangered Species

The Five-Year Boundary Review found habitats of endangered forest birds and native forests and rare plant ecosystems in Hawaii County classified in the Agricultural District rather than the Conservation District.

Kona Forests. The Kona forests which overlap the Kona watershed area contain koa, ohia, lama and sandalwood. Hualalai and portions of Central Kona-Kealia and South Kona have been identified as habitat essential for recovery for Hawaii's endangered forest birds--the Hawaiian creeper, akepa and akiapolaau. The last Hawaiian crow or alala, left in the wild, is found in South Kona. These forest areas merit protection. These areas are in the State Agricultural District. A Natural Resources Roundtable is planned to discuss protection of this area.

Mauna Kea Ring (Upper Paauhau and Kaohe). Most of Mauna Kea is in the Conservation District and protects the endangered forest bird, the palila and the mamane forest. There is, however, a segment of a band of remnant mamane forest which provides palila habitat in the northern sector of Mauna Kea which is in the Agricultural rather than Conservation District. Its protection would help to preserve a continuous stretch of habitat around the mountain and permit birds to move between habitat patches.

Kanakaleonui-Keanakolu Tract. This forested tract now in the Agricultural District forms an important biological bridge between Mauna Kea and Hakalau National Wildlife Refuge for migrating endangered forest birds. It is essential feeding and nesting habitat for the akiapolaau, palila and Hawaiian hawk. Conservation designation would link this area with already Conservation-zoned areas on Mauna Kea and Hakalau. However, because this tract includes Hawaiian Home lands, OSP will not petition to reclassify this area.

Hakalau Forest National Wildlife Refuge (NWR) and Adjacent Forest Bird Habitats. Portions of the Hakalau Forest National Wildlife Refuge are in the Agricultural District rather than the Conservation District as are adjacent areas which contain a high concentration of endangered forest birds. The area supports at least 10 species of native forest birds. A portion of this site is DHHL land and a petition will not be initiated for these lands.

Keauhou (in the Volcano area). Keauhou provides habitat for six endangered bird species and five rare plant species including one endangered plant species and three species being considered for listing.

Puuwaawaa/Kaupulehu. This area contains dryland forest and rare plant species. It is also designated critical habitat for the endangered hibiscus, Kokia drynarioides. Although some areas have been burned by recent forest fires, some forest areas are left, and certain native plant species which regenerate after a fire are returning.

Kehena. This is an intact, high quality ohia wet forest in the Kohala Mountains which is currently zoned Agricultural. It is part of the Kohala Mountain watershed area.



### Special Streams

Streams that have been identified in the Hawaii Stream Assessment as containing outstanding aquatic resources or riparian values that include waterbird recovery habitat, or based on new information provided by the Department of Land and Natural Resources or the U.S. Fish and Wildlife Service and are in the Agricultural District, have been recommended for inclusion in the Conservation District. These streams provide irreplaceable habitat for aquatic and riparian flora and fauna which are much less abundant now than they have been in the past. Hawaii's streams are simple in structure and are completely dependent upon runoff from relatively natural areas. A disturbance at any point in a stream's course may reverberate through the system causing the ecosystem to collapse. The optimal recommendation is the protection of entire watersheds from activities that lead to increased sediment load, pollution and other harmful changes to the stream. A ridge-to-ridge approach would stabilize these ecosystems and offer native species the greatest chance of survival and has been recommended for streams where possible. However, in cases where ridge-to-ridge protection is not feasible given existing land use activities, e.g., residences, a 100-foot Conservation District corridor on both sides of the stream as measured from the scoured bank should be established. Conservation designation would provide for the regulation of uses, e.g., construction of structures adjacent to the stream, and assure stream protection.

In Hamakua, the Lalakea Stream is recommended.

In North Hilo, these streams are: Kilau, Manowaiopae, Kuwaikahi, Kihilani, Kaiwilahilahi, Kapehu, Paeohe, Maulua, Pohakupuka, Manoloa, Ninole, Opea, Peleau, Umauma and Hakalau.

In South Hilo, these streams include: Paheehee, Honomu, Kapehu, Makea, Kawainui, Hanawi, Kaieie, Kaapoko, Kapue, Pahoehoe and Wailuku.

Waikoloa Stream is also recommended and runs through North and South Kohala.

### Other Conservation Resources

Other areas which are proposed for reclassification to the Conservation District include a buffer around the Waipio Valley Rim; State forest reserve additions; extension of Lapakahi State Historical Park; the Keakealaniwahine archaeological site complex; plus in North and South Kohala for their scenic resource and water recharge value and an area fronting Wailea Bay for recreational purposes.

#### B. Agricultural District

There are more than enough agricultural lands in the County to meet agricultural production goals. Important agricultural lands should be maintained in the Agricultural District to assure the viability of the sugar, macadamia and diversified agricultural industries.

Agricultural District lands shall also be maintained to provide open space and scenic vistas. No additions to the Agricultural District are recommended for Hawaii County. However, Agricultural District lands with high conservation resources have been recommended for reclassification to the Conservation District.

C. Urban and Rural Districts

Urban Land Requirements

The Urban Land Requirements Study, Wilson Okamoto & Associates, Inc., 1991, examined the need for urban land based upon a comparison of available developable urban land and projected urban land requirements.

Urbanization Trends

During the 15-year period from between 1976 and 1990, there were 12,540 acres reclassified to the Urban District in Hawaii County. Nearly three-fourths of these lands were in North Kona (3,288 acres) and South Kohala (5,764 acres). The most recent five-year period has also been the most active, with 7,305 acres reclassified.

URBAN DISTRICT RECLASSIFICATIONS  
COUNTY OF HAWAII  
1976-1990, BY DISTRICT  
(in acres)

	<u>1976-80</u>	<u>1981-85</u>	<u>1986-90</u>	<u>TOTAL</u>
Puna	5	1,729	0	1,734
South Hilo	221	23	0	244
North Hilo	0	77	0	77
Hamakua	43	0	0	43
North Kohala	9	79	1,288	1,376
South Kohala	1,279	1,439	3,046	5,764
North Kona	0	317	2,971	3,288
South Kona	13	1	0	14
Kau	0	0	0	0
TOTAL	1,570	3,665	7,305	12,540

Source: Wilson Okamoto & Associates, Inc., Urban Land Requirements Study, 1991, from Land Use Commission records.

Developable Urban Land

The study assessed lands in the Urban District to identify developable urban land. These lands were defined as lands which do not contain any permanent development, are relatively level with a slope of less than 20 percent and otherwise free of readily identifiable environmental constraints. Also excluded from the definition of

developable lands were existing golf courses, parks and roadways and lands zoned Open by the County. The study found that in Hawaii County, there are 19,071 acres of developable urban lands.

VACANT DEVELOPABLE URBAN LAND<sup>1</sup>  
COUNTY OF HAWAII

Puna	4,023
South Hilo	3,368
North Hilo	61
Hamakua	231
North Kohala	279
South Kohala	4,852
North Kona	5,359
South Kona	293
Kau	605
Total	<u>19,071</u>

<sup>1</sup>Excludes lands in the State Urban District which are County zoned Open.

Source: Wilson Okamoto & Associates, Inc., Urban Land Requirements Study, 1991.

Demand for Urban Land

Future demands for urban land were determined through population and employment projections and through estimated urban land area requirements by Wilson Okamoto & Associates, Inc. The M-K Series of Population and Economic Projections were utilized. The Office of State Planning is currently evaluating these projections, particularly the visitor industry projections. There are concerns that the visitor industry projections are too high, reflect an over-reliance on that industry and may become a self-fulfilling prophecy. However, these projections are still recommended for planning purposes.

According to M-K projections, the County of Hawaii is projected to grow from its presently estimated population of 124,600 in 1990 to 160,400 by the year 2000.

Residential area requirements assumed existing densities, declining household size, and no redevelopment of existing urban areas. Census data on household size was not available when the study was conducted and the census data shows a higher household size than that reflected in the study. Revision of the projections will be needed for the next five-year boundary review. A 25 percent flexibility factor was added to the total urban land requirement figure to account for lands which may be held out of use. Such a flexibility factor allows for unanticipated choices of individuals and firms who may acquire land in excess of the estimated need, and it allows for land which may be held out of use because of personal preferences of property owners, unfavorable market conditions or legal complications which make the land unavailable for immediate development.

## Urban Land Requirements

Urban requirements to the year 2000 were projected because of the Land Use Law and LUC rules which provide that the Urban District shall include sufficient reserve areas for urban growth in appropriate locations based on a ten-year projection.

Based on the above-mentioned assumptions and comparisons of available developable urban lands with projections of urban land needs, Hawaii County has sufficient urban lands available to meet urban land requirements to 2000 with a surplus of 12,497 acres available to meet demands beyond 2000.

### URBAN LAND REQUIREMENTS FOR THE YEAR 2000 COUNTY OF HAWAII

	<u>Surplus (Deficit) of Urban Lands</u>
Puna	3,262
South Hilo	1,841
North Hilo	61
Hamakua	(51)
North Kohala	(1)
South Kohala	3,765
North Kona	4,486
South Kona	24
Kau	<u>410</u>
Subtotal	13,797
25% Flexibility Factor	(1,317)
TOTAL	12,479

Source: Wilson Okamoto & Associates, Inc., Urban Land Requirements Study, 1991.

## Urban District Recommendations

Although additional urban lands are not needed in Hawaii County based on available vacant developable urban lands and growth projections, certain areas have been recommended for Urban reclassification based on State and County regional plans. In addition, the County has recommended that areas around Keaau Town be reclassified to the Urban District. The reclassification of core areas for urban growth will facilitate infrastructure planning by landowners.

The Panaewa (Waiakea) Residence Lots were recommended by the Department of Hawaiian Home Lands for reclassification to the Urban District and the area is designated low density urban in the County General Plan. However, although the area is immediately adjacent to urban facilities and services and some of the lots are already

developed, these lots are under the management of the Department of Hawaiian Home Lands. Since according to the Hawaiian Homes Commission Act of 1920 these lands are not subject to the State Land Use Law, a petition will not be initiated for this area.

Reclassification of 660 acres from the Agricultural to Urban District around Keaau Town is recommended. Urbanization of this area would create an urban core in the Puna planning area and make it easier for the State and County to meet the social and physical infrastructure needs of a rapidly growing population.

The urbanization of the Kailua to Keahole area consistent with the Keahole to Kailua Development Plan and West Hawaii Regional Plan is supported during the boundary review. Of top priority for State-initiated reclassification are State-owned lands consistent with State plans for the area which will be used to develop facilities and allow uses to support the development of the area as the Big Island's Second City. The site of the University of Hawaii's Kona campus is included in these State lands. Reclassification of lands in the K to K area may serve as a catalyst to bring several landowners together to develop infrastructure.

VII. PRIORITY LISTING

<i>Site</i>	<i>Change</i>	<i>Acres</i>	<i>Map Code</i>
<i>Areas of Critical Concern</i>			
1. Kona Watershed	NA	113,112	46
2. North Kohala Watershed	NA	22,500	47
<i>Priority 1 Recommendations</i> <i>OSP intends to initiate reclassification petitions</i>			
<i>Hamakua</i>			
1-1. Lalakea Stream	A to C	160	1
1-2. Waipio Valley Rim Buffer	A to C	456	2
1-3. Upper Paauhau (Mauna Kea)	A to C	4,161	3
1-4. Kaohe (Mauna Kea)	A to C	5,307	4
<i>North Hilo</i>			
1-5. Streams from Lapahoehoe to Maulua Bay - Kilau, Manowaiopae, Kuwaikahi, Kihalani, Kaiwilahilahi, Kapehu, Paeohe, Maulua	A to C	441	7
1-6. Streams from Maulua Bay to Haiku Point - Pohakupuka, Manoloa, Ninole	A to C	582	8
1-7. Streams from Nahaku Point to Hakalau Bay - Opea, Peleau, Umauma	A to C	444	9
<i>South Hilo</i>			
1-8. Hakalau Forest National Wildlife Refuge (Humuula) & Adjacent Forest Bird Habitats (portion)	A to C	13,522	10
1-9. Streams from Lehuawehi Point to Alia Point - Paheehee, Honomu, Kapehu, Makea	A to C	653	12
1-10. Streams from Onomea Bay to Maunau Point - Kawainui, Hanawi, Kaieie, Kapue, Pahoehoe	A to C	1,209	13
1-11. Wailnku River	A to C	84	14
<i>Puna</i>			
1-12. Forest Reserve - Moaula	A to C	809	20
1-13. Forest Reserve - Kaalaiki-Ninole	A to C	3,661	21

<i>South Kona</i>			
1-14. Forest Reserve - Honomalino	A to C	2,701	22
1-15. Forest Reserve - Oleomoana	A to C	104	23
1-16. Forest Reserve - Kaohe	A to C	408	24
1-17. Forest Reserve - Kukuioapae	A to C	604	24
<i>North Kona</i>			
1-18. Forest Reserve - Honuaula Tract 3 Extension	A to C	78	25
1-19. Forest Reserve - Honuaula Tract 3	A to C	2,976	26
1-20. Forest Reserve - Honuaula Tract 2	A to C	1,609	27
1-21. Forest Reserve - Makaula-Ooma Mauka Tract	A to C	1,252	28
1-22. Keakealaniwahine Complex	A to C	32	29
1-23. Puuwaawaa	A to C	12,634	30
<i>North Kohala</i>			
1-24. Kehena	A to C	3,898	40
<i>Priority 2 Recommendations</i>			
<i>North Hilo</i>			
2-1. Waipunalei	A to C	1,476	6 <sup>1</sup>
2-2. Hakalau Stream	A to C	4	9
<i>South Hilo</i>			
2-3. Area above Hilo Forest Reserve (Waikoloa Ponds) (Portion)	A to C	7,048	11
2-4. Kaapoko Stream	A to C	7	13
<i>Puna</i>			
2-5. Olaa West	A to C	445	17
2-6. Kilauea-Keauhou	A to C	18,628	18
2-7. Hawaii Volcano National Park	A to C	6,324	19
<i>North Kona</i>			
2-8. Kaupulehu	A to C	3,201	31
2-9. Area east of Kaloko and Honokohau Fishponds	U to C	565	32
2-10. Area fronting Wailea Bay	U to C	6	35

<sup>1</sup>Exhibit #5 not shown.

2-11. Hapuna Beach State Recreation Area	A to C U to C	10 6	36
2-12. Hills of Waimea - Hokuula - Puu Owaowaka - Puu Ki - Puu Kakanihia - Puu Maile - Puu Manu	A to C	NA	37
2-13. Puus of South Kohala	A to C	NA	38
2-14. Waikoloa Stream and tributaries	A to C	839	39
<i>North Kohala</i>			
2-15. Lapakahi State Historical Park	A to C	11	41
2-16. Lapakahi State Historical Park Extension	A to C	1,332	42
2-17. Extension of Couservation District at Akoakoa Point	A to C	322	43
2-18. Kohala Cliffs and Valley	A to C	720	44
2-19. Puus of North Kohala	A to C	NA	45
<i>Urban Recommendations</i>			
U-1. Keauu	A to U	660	16 <sup>2</sup>
U-2. K-K State lands to support Second City	C to U A to U	1,200 1,440	33
U-3. Keahole to Kailua	A to U C to U	6,738 2,825	34

TOTAL ACREAGES  
BY PRIORITY AND ACTION

Priority 1	A to C	57,785
Priority 2	A to C	40,367
Priority 2	U to C	577
Urban	A to U	7,398
Urban	C to U	2,825
Areas of Critical Concern	NA	135,612

<sup>2</sup>Exhibit #15 not shown.



VIII. LISTING OF RECOMMENDATIONS

<u>EXHIBIT NO./AREA</u>	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
<u>HAMAKUA</u>			
1. Lalakea Stream (Priority 1)	A to C	159.7	Aquatic and riparian resources, scenic and recreation area.
2. Waipio Valley Rim Buffer (Priority 1)	A to C	456.38	Scenic sites with physiographic features, high potential recreation area.
3. Upper Paauhau (Mauna Kea) (Priority 1)	A to C	4,161.61	To preserve a continuous stretch of forest bird habitat around Mauna Kea. Upper Paauhau has remnant woodlands of mamane and naio and is forest bird habitat. Upper Waikii contains remnant mamane forest with patches of koa. In addition, Waikii has been identified as essential habitat for palila.
4. Kaohe (Mauna Kea) (Priority 1)	A to C	5,306.71	The entire area lies between breeding areas for endangered palila and comprises a segment of the mamane forest band that encircles Mauna Kea. Protection of this area would help preserve a continuous stretch of habitat around the mountain.

<u>EXHIBIT NO./AREA</u>	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
<u>NORTH HILO</u>			
6*. Waipunalei (Priority 2)	A to C	1,476.28	The site contains a degraded example of two rare native forest types: mixed montane mesic koa-ohia forest and koa-mamane montane dry forest with a native understory in places. The rare pilokea plant and endangered Hawaiian hoary bats are found in this area. It is surrounded on two sides by Conservation District lands.
7, 8, 9 North Hilo Streams (Priority 1)	A to C	various	Outstanding aquatic resources, scenic and recreational values.
<u>SOUTH HILO</u>			
10. Hakalau Forest National Wildlife Refuge (Humuula) & Adjacent Forest Bird Habitats (Portion) <sup>1</sup> (Priority 1)	A to C	13,521.6	The area supports at least 10 species of native forest birds and is one of the last areas containing reasonably high densities of akepa, Hawaiian creeper, akiapolaau and io. Portions of the site support koa-ohia and koa-mamane forests.
11. Area above Hilo Forest Reserve (Waikoloa Ponds) <sup>2</sup> (Portion) (Priority 2)	A to C	7,048	Waterbird habitat.

<sup>1</sup> The National Wildlife Refuge portion is a Priority #2 area because it is under government ownership with conservation objectives. A portion of this area is also DHHL land for which petitions will not be initiated.

<sup>2</sup> A portion of this area is DHHL land which is not subject to the State Land Use Law.

\*Exhibit #5 not shown.

<u>EXHIBIT NO./AREA</u>	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
<u>SOUTH HILO (cont.)</u>			
12, 13, 14* South Hilo Streams (Priority 1)	A to C	various	Outstanding aquatic resources, scenic and recreational values.
<u>PUNA</u>			
16. Keaau	A to U	660	To establish an urban core in Puna.
17. Olaa West (Priority 2)	A to C	445	Native forest managed by the National Park Service.
18. Kilauea-Keauhou (Priority 2)	A to C	18,627.99	Native forest, endangered bird and rare plant habitat.
19. Hawaii Volcanoes National Park (Priority 2)	A to C	6,324	Parkland.
State Forest Reserves			
20. - Moaula (Priority 1)	A to C	809	Watershed protection, maintain relatively intact native forest, native bird habitat, public hunting for pigs.
21. - Kaalaiki-Ninole (Priority 1)	A to C	3,661.21	Watershed protection, intact native forest, native bird habitat and public hunting for pigs.
<u>SOUTH KONA</u>			
South Kona Forest Reserves			
22. - Honomalino (Priority 1)	A to C	2,701.08	Maintain intact native forest with less common and rare native species, native forest bird habitat, public hunting for pigs.

\*Exhibit #15 not shown.

<u>EXHIBIT NO./AREA</u>	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
<u>SOUTH HILO (cont.)</u>			
23. - Oleomoana (Priority 1)	A to C	104	Forestry management, native forest bird habitat, public hunting area for pigs and goats.
24. - Kaohe (Priority 1)	A to C	408.41	Forestry management, native forest bird habitat, public hunting area for pigs and goats.
24. - Kukuiopae (Priority 1)	A to C	604	Forestry management, native forest bird habitat, public hunting area for pigs and goats.
North Kona Forest Reserves			
25. - Honuaula Tract 3 Extension (Priority 1)	A to C	78.4	Watershed protection, public hunting and recreation, reestablish koa forest on mauka
26. - Honuaula Tract 3 (Priority 1)	A to C	2,976.1	portion, reforest with non-native species on makai portion, native forest bird habitat on mauka portion.
27. - Honuaula Tract 2 (Priority 1)	A to C	1,608.5	
28. - Makaula-Ooma Mauka Tract (Priority 1)	A to C	1,252	
<u>NORTH KONA</u>			
29. Keakealaniwahine Complex (Priority 1)	A to C	32	To protect several archaeological sites for incorporation into and expansion of the existing State historical park makai of Alii Drive.
30. Puuwaawaa (Priority 1)	A to C	12,634.33	Protection of rare and endangered plants and native forest.

<u>EXHIBIT NO./AREA</u>	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
<u>NORTH KONA (cont.)</u>			
31. Kaupulehu (Priority 2)	A to C	3,201.12	Protection of rare and endangered plants and native forest.*
32. Area East of Kaloko & Honokohau Fishponds (Priority 2)	U to C	564.74	Consistent with use as National Historic Park.
33. K-K State lands to support Second City	C to U A to U	1,200 1,440 (approx.)	To urbanize State-owned land to facilitate development of the K-K area as the County's Second City. Includes lands for University purposes. The West Hawaii Regional Plan (WHRP) directs future urbanization to the Kailua-Kona to Keahole Subregional planning area. The County's K-K Development Plan designates this area for residential, commercial and industrial use. Proposed changes of selected area will direct growth consistent with the County's Plan and WHRP.
34. Keahole to Kailua	A to U C to U	6,738.45 2,825	Urbanization of the Kailua to Keahole area consistent with the K-K Development Plan and West Hawaii Regional Plan is supported.
35. Area fronting Wailea Bay (Priority 2)	U to C	6.3	State lands which are planned for coastal recreational use.

\*Landowner has committed to management plan.

<u>EXHIBIT NO./AREA</u>	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
<u>NORTH KONA (cont.)</u>			
36. Hapuna Beach State Recreation Area (Priority 2)	A to C U to C	9.61 5.69	Reclassification of these portions to Conservation District would make the areas consistent with remainder of park which is in the Conservation District.
37. Hills of Waimea (6 hills on Quad #H-25; Hokuula, Puu Owaowaka, Puu Ki, Puu Kakanihia, Puu Maile, Puu Manu) (Priority 2)	A to C	various	Conserve, preserve and enhance scenic sites and protect water recharge areas.
38. Puus--South Kohala (Priority 2)	A to C	various	Conserve, preserve and enhance scenic sites and to protect water recharge areas.
39. Waikoloa Stream (Priority 2)	A to C	839.28	Aquatic and riparian resources. Scenic and recreation area.
<u>NORTH KOHALA</u>			
40. Kehena (Priority 1)	A to C	3,897.78	The site has good ohia wet forest. Watershed protection.*
41. Lapakahi State Historical Park (Priority 2)	A to C	11	Portion which was omitted when area first set aside in the Conservation District.
42. Lapakahi State Historical Park (Priority 2)	A to C	1,332.4	Would extend park to mauka portion of what has been identified as part of Lapakahi complex.

\*A major landowner has submitted a subdivision application to the County for his property (20-acre parcels; Subdivision No. 92-115). However, OSP and the landowner are discussing options including withdrawal of the subdivision and alternative methods of protection for the property. OSP will not initiate a petition while progress is being made in these discussions.











<u>EXHIBIT NO./AREA</u>	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
<u>NORTH KOHALA (cont.)</u>			
43. Extension of Conservation District at Akoakoa Point (Priority 2)	A to C	322	To protect scenic and recreational resources.
44. Kohala Cliffs and Valley (Priority 2)	A to C	720	The area contains lands necessary for the conservation, preservation, and enhancement of scenic sites.
45. Puus-North Kohala (Priority 2)	A to C	various	To protect scenic and visual resources.
46. Kona Watershed (Area of Critical Concern)	--	113,112	Watershed. Native forest (koa, sandalwood, lama, ohia) and forest bird habitat.
47. Kohala Mountain Watershed (Area of Critical Concern)	--	22,500	Watershed and native forest.

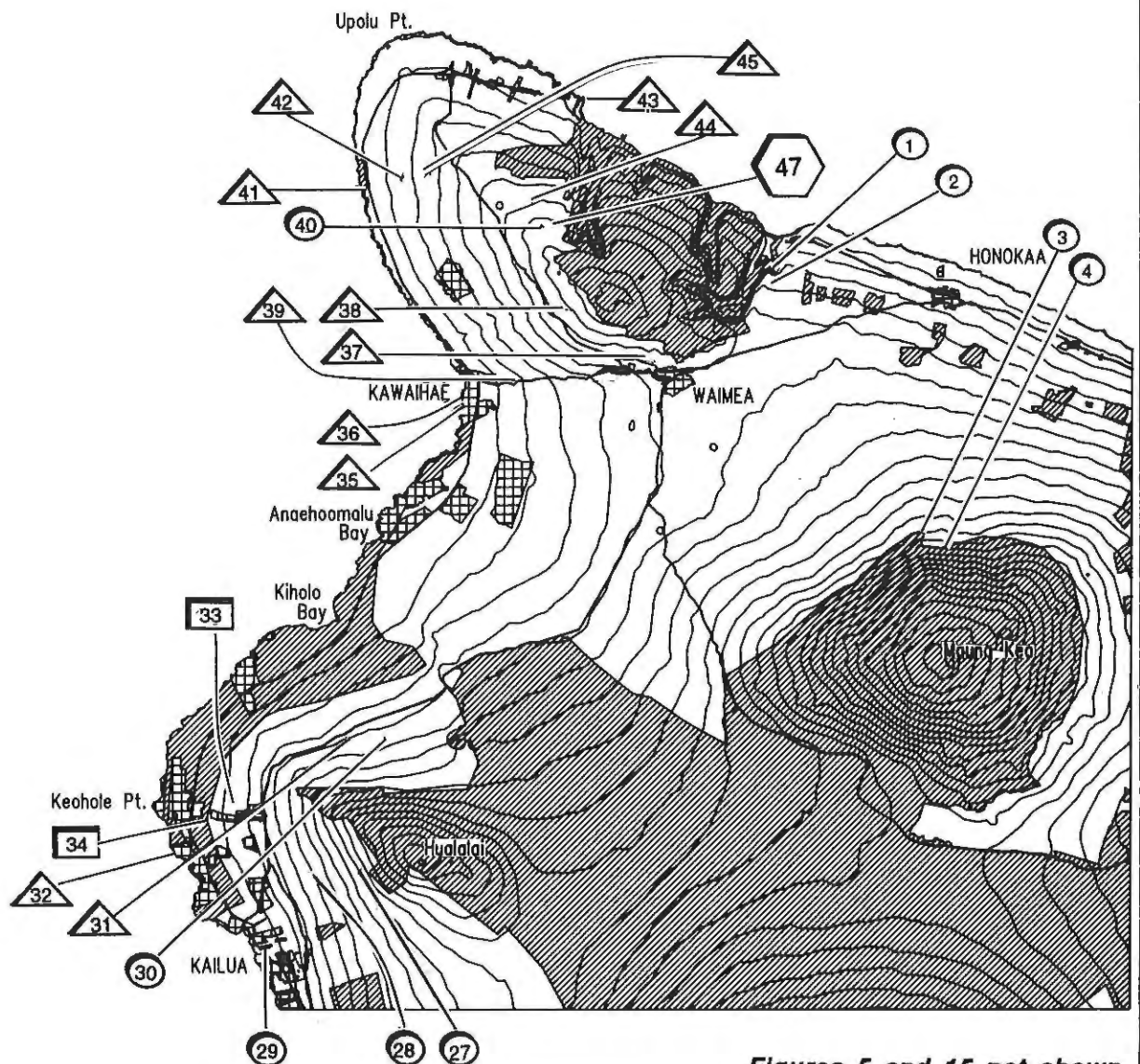




# FIVE-YEAR BOUNDARY REVIEW RECOMMENDATIONS

## ISLAND OF HAWAII

-  Agricultural District
-  Conservation District
-  Rural District
-  Urban District
-  Roads
-  500 Ft. Contours
-  Priority 1
-  Priority 2
-  Urban Recommendation
-  Area of Critical Concern












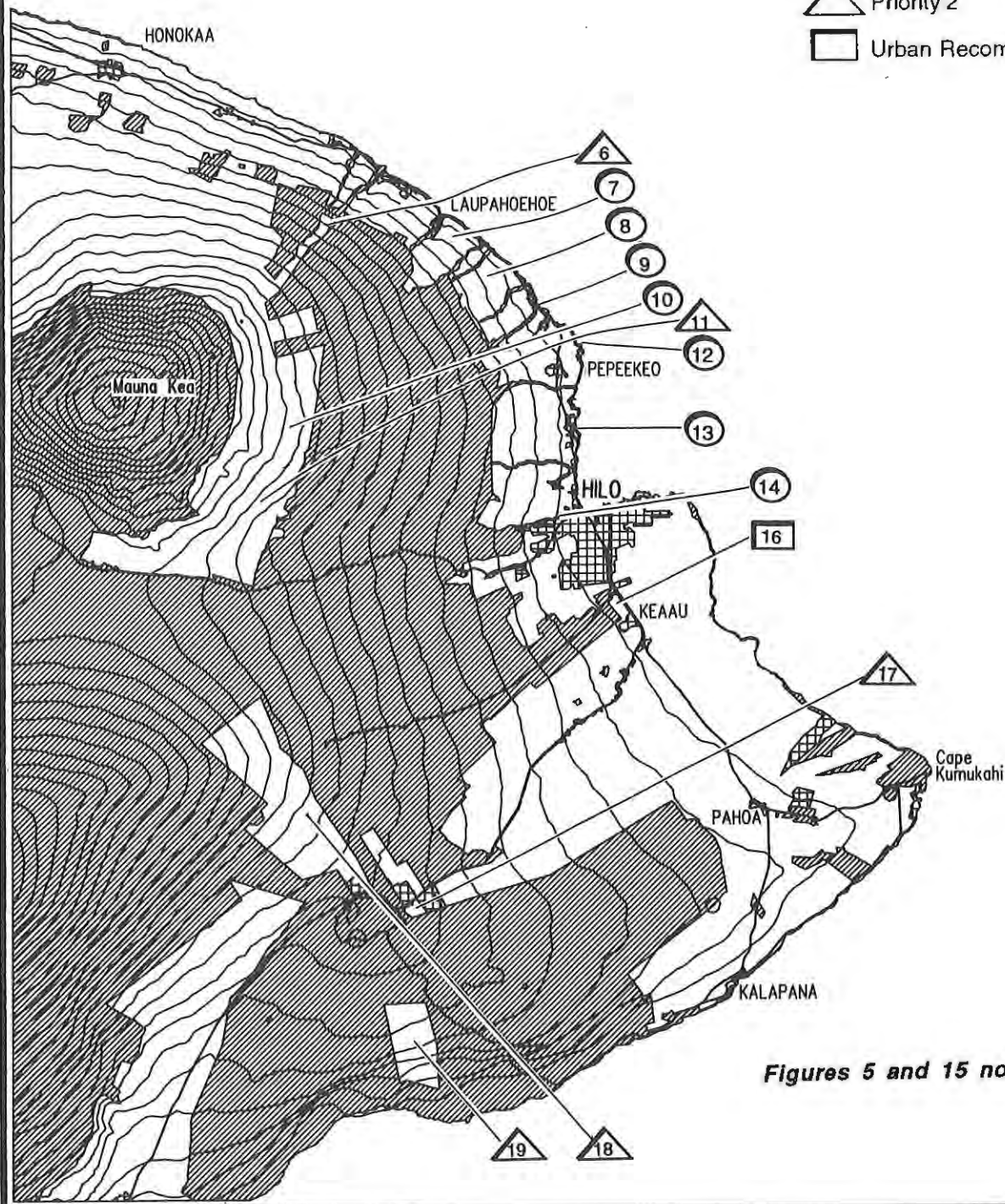
Figures 5 and 15 not shown



# FIVE-YEAR BOUNDARY REVIEW RECOMMENDATIONS

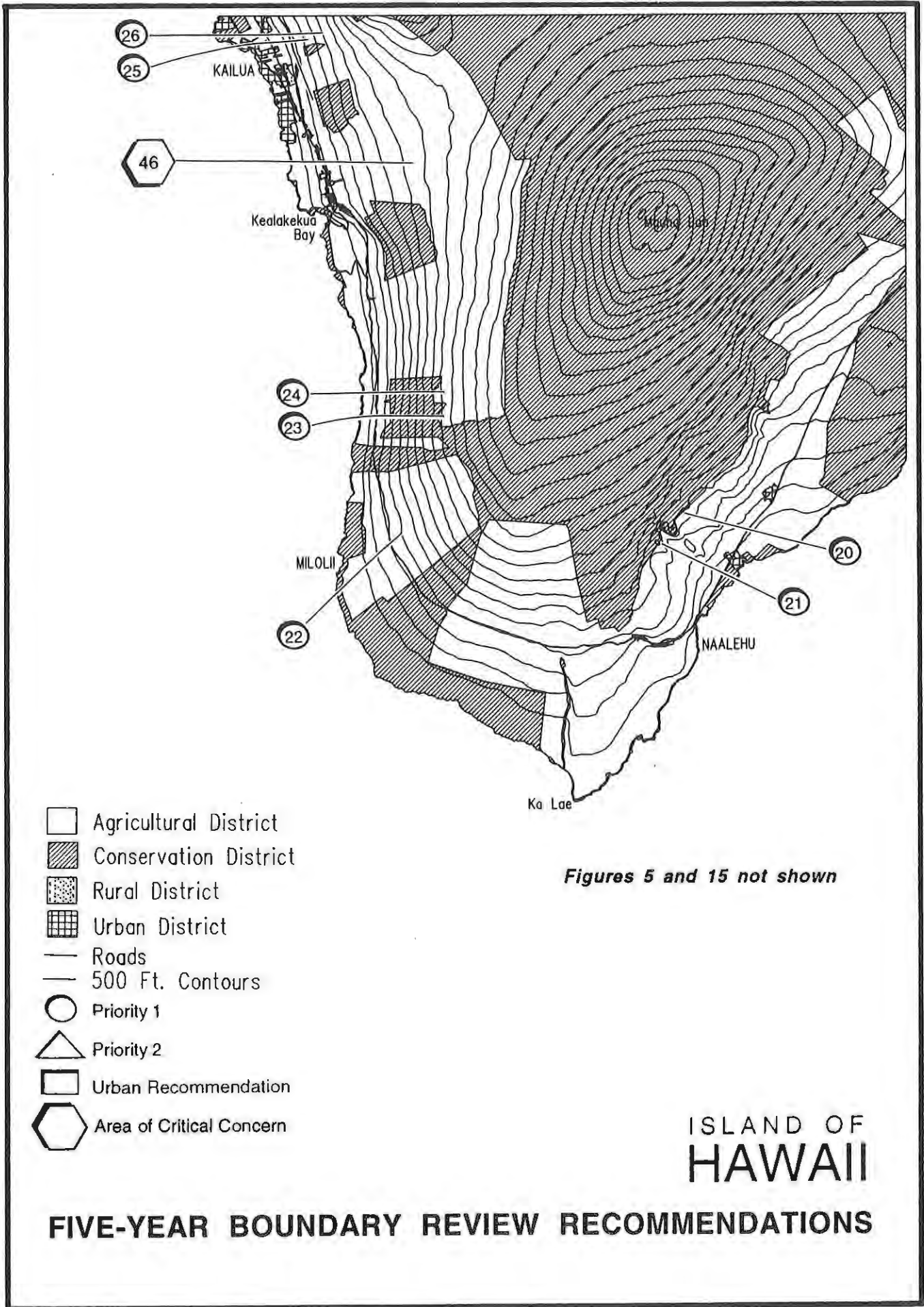
## ISLAND OF HAWAII

-  Agricultural District
-  Conservation District
-  Rural District
-  Urban District
-  Roads
-  500 Ft. Contours
-  Priority 1
-  Priority 2
-  Urban Recommendation



Figures 5 and 15 not shown







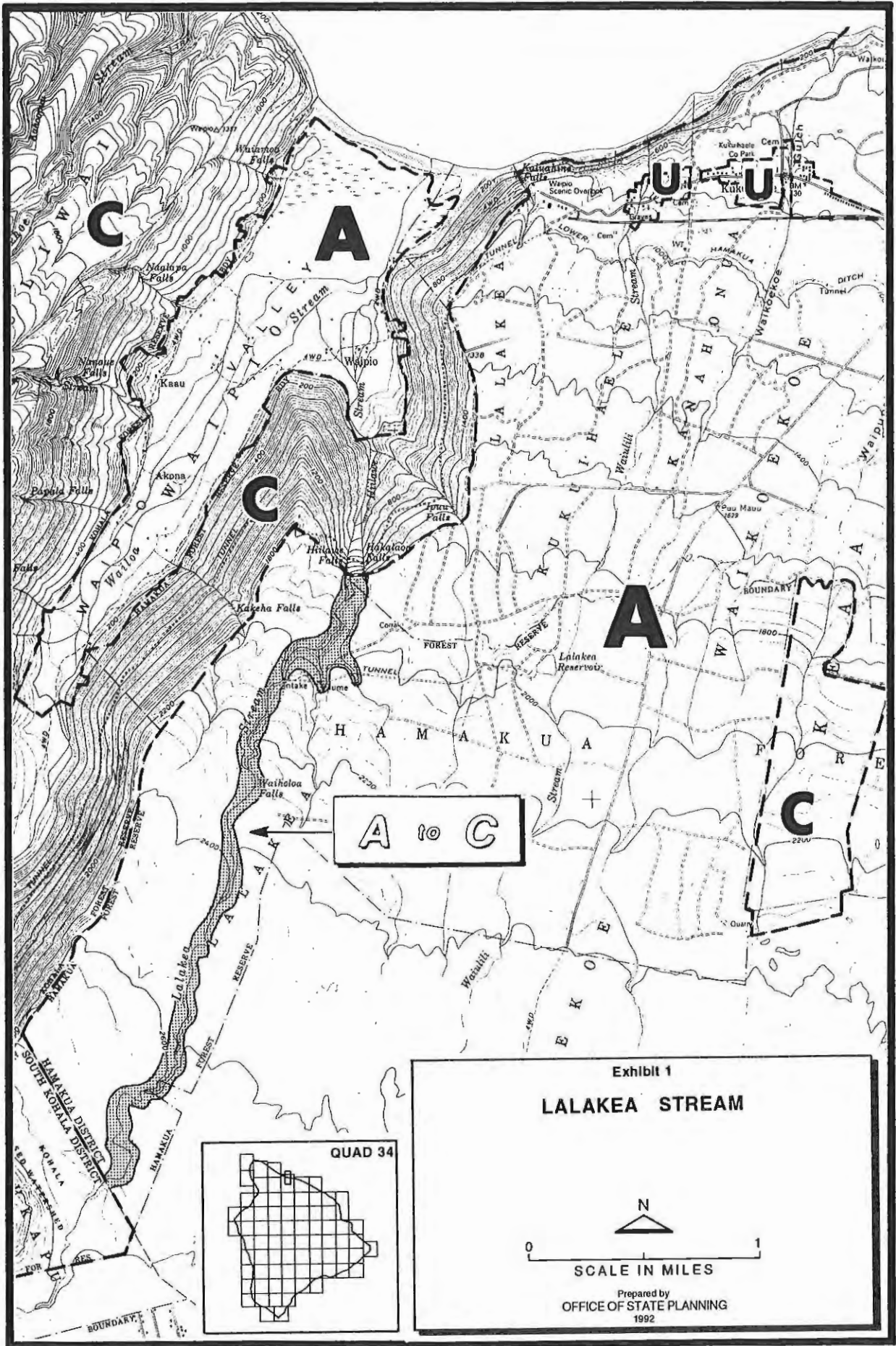


Exhibit 1  
**LALAKEA STREAM**

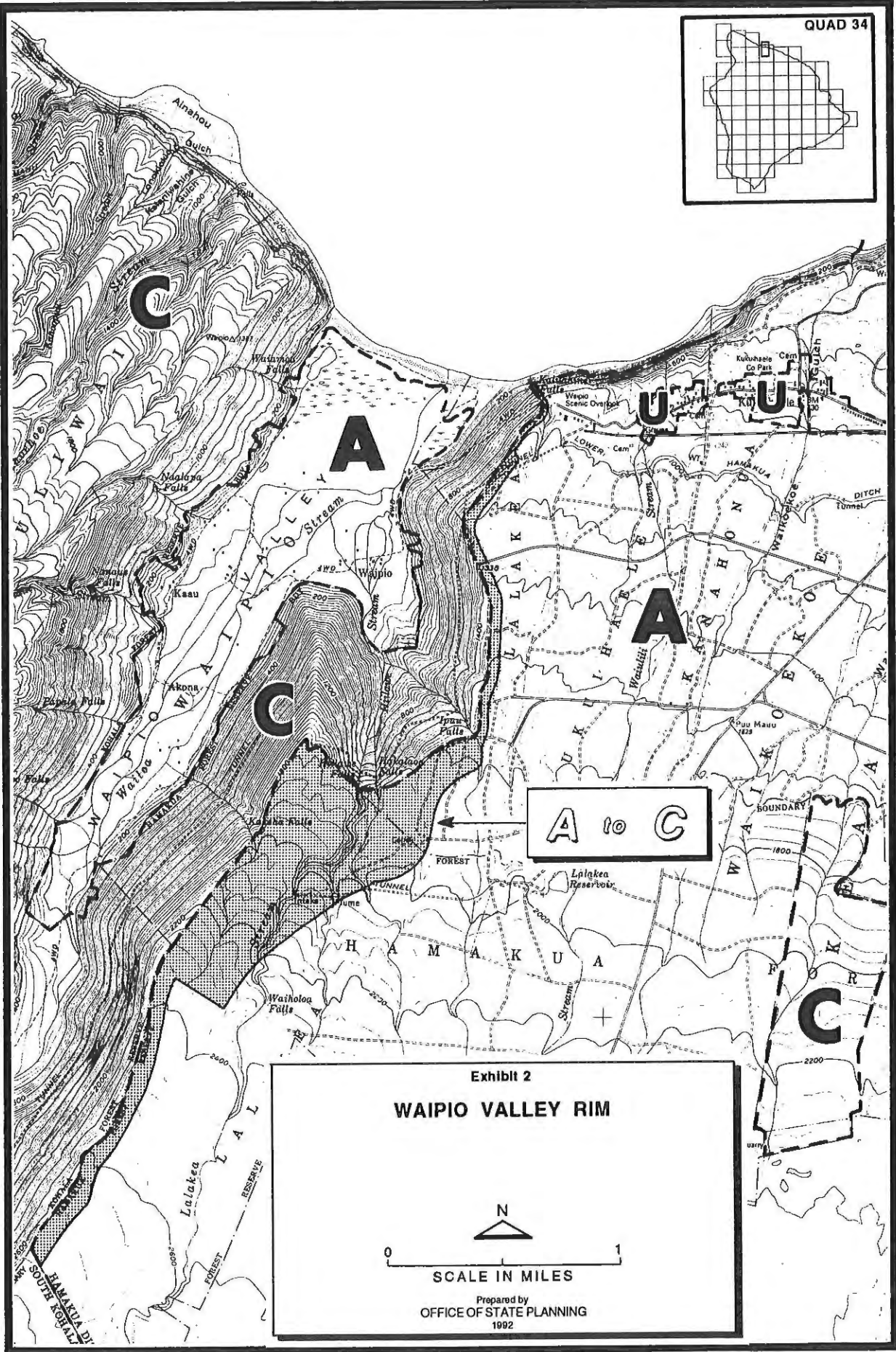
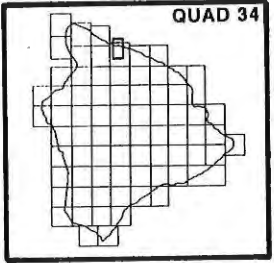
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A to C

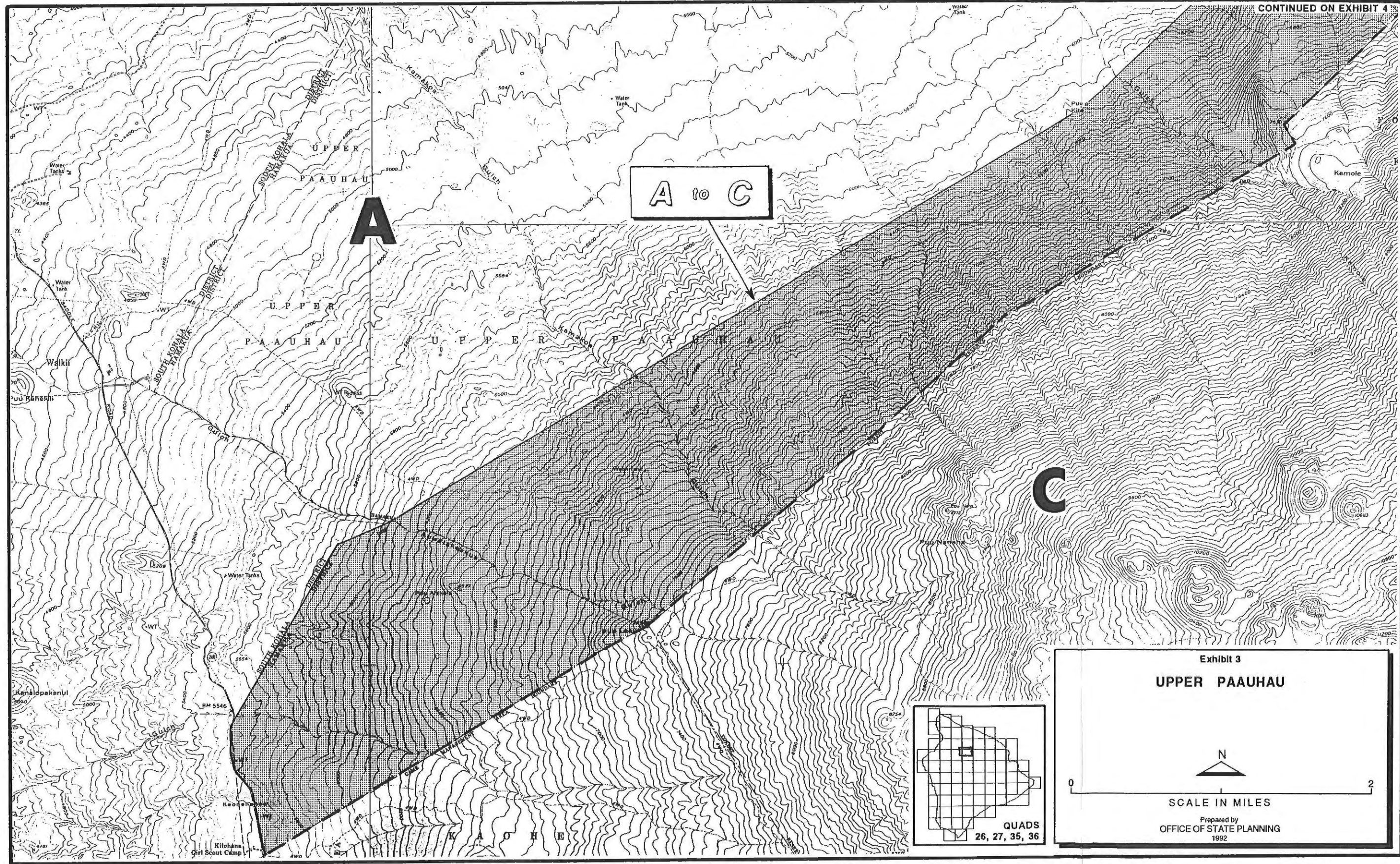
Exhibit 2  
WAIPIO VALLEY RIM



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1992





A to C

A

C

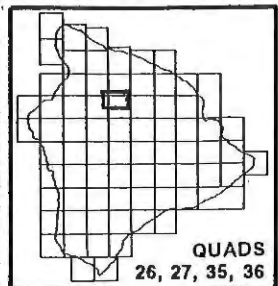
Exhibit 3  
**UPPER PAAUHAU**

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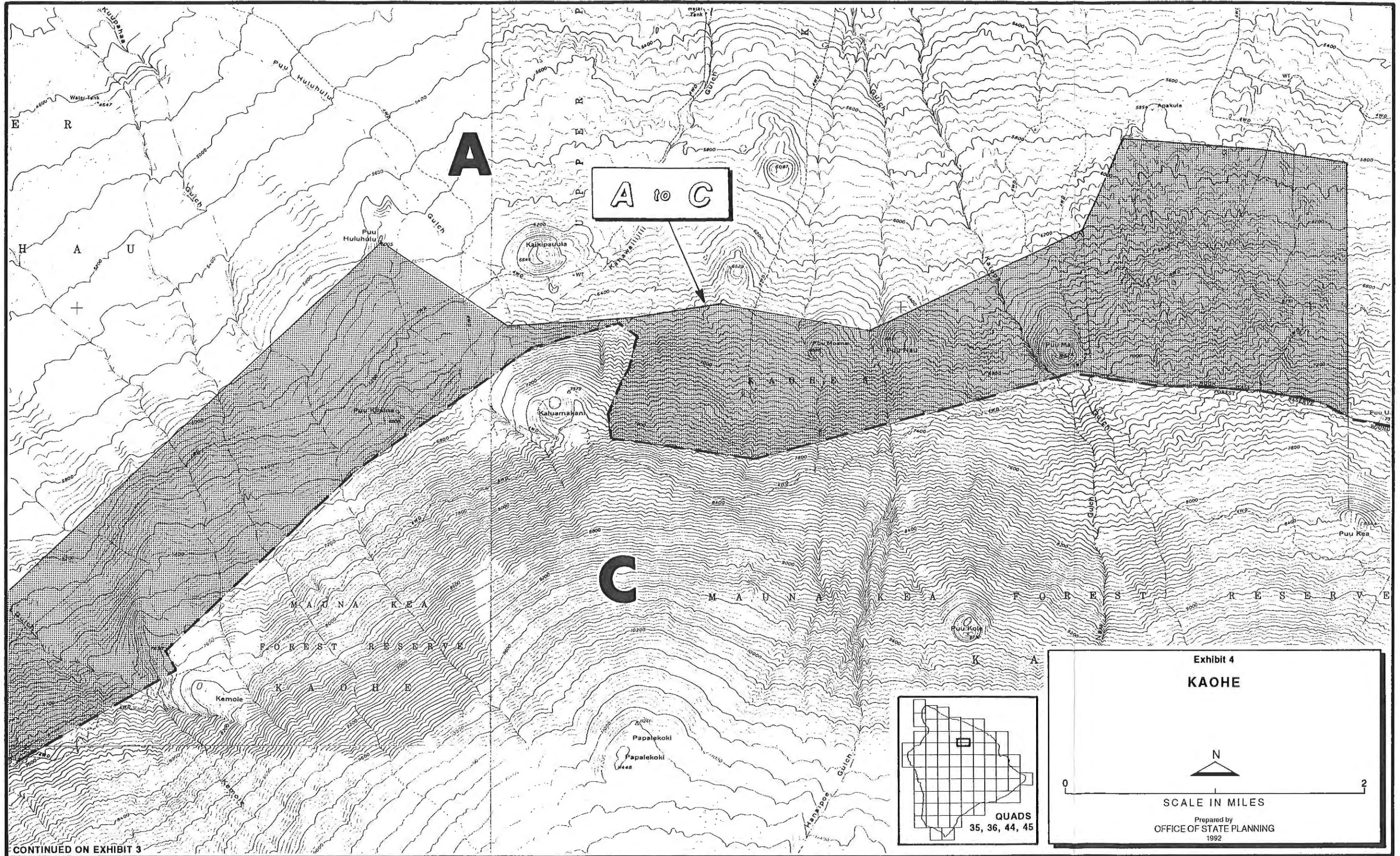
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QUADS 26, 27, 35, 36





CONTINUED ON EXHIBIT 3

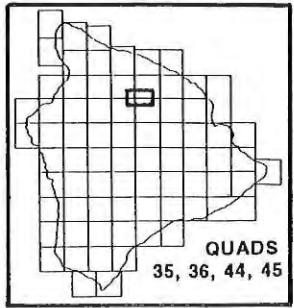
Exhibit 4  
**KAOHE**

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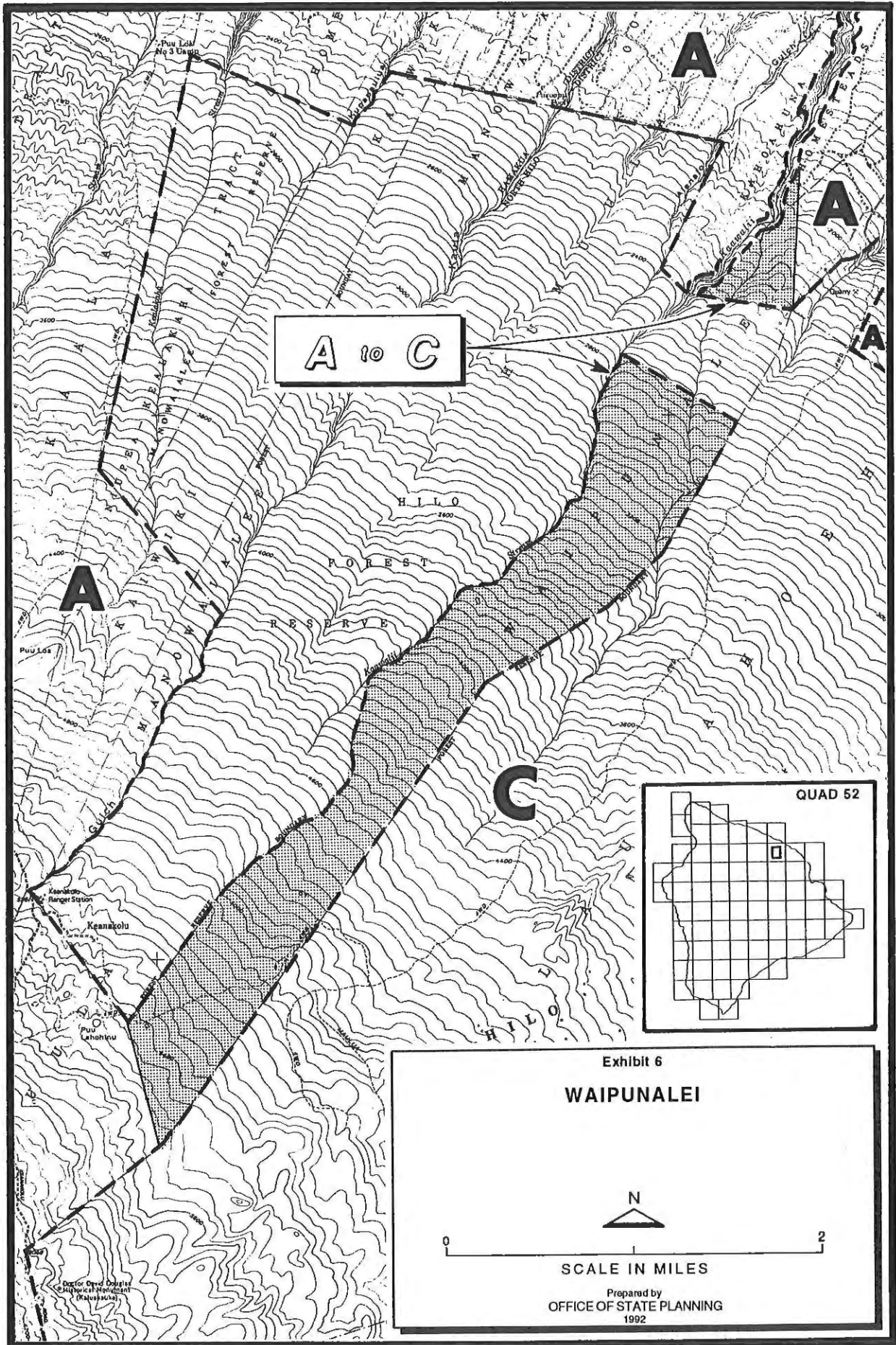
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A to C

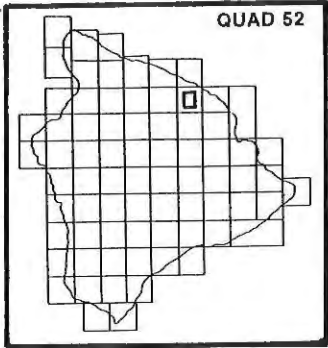


Exhibit 6  
**WAIPUNALEI**

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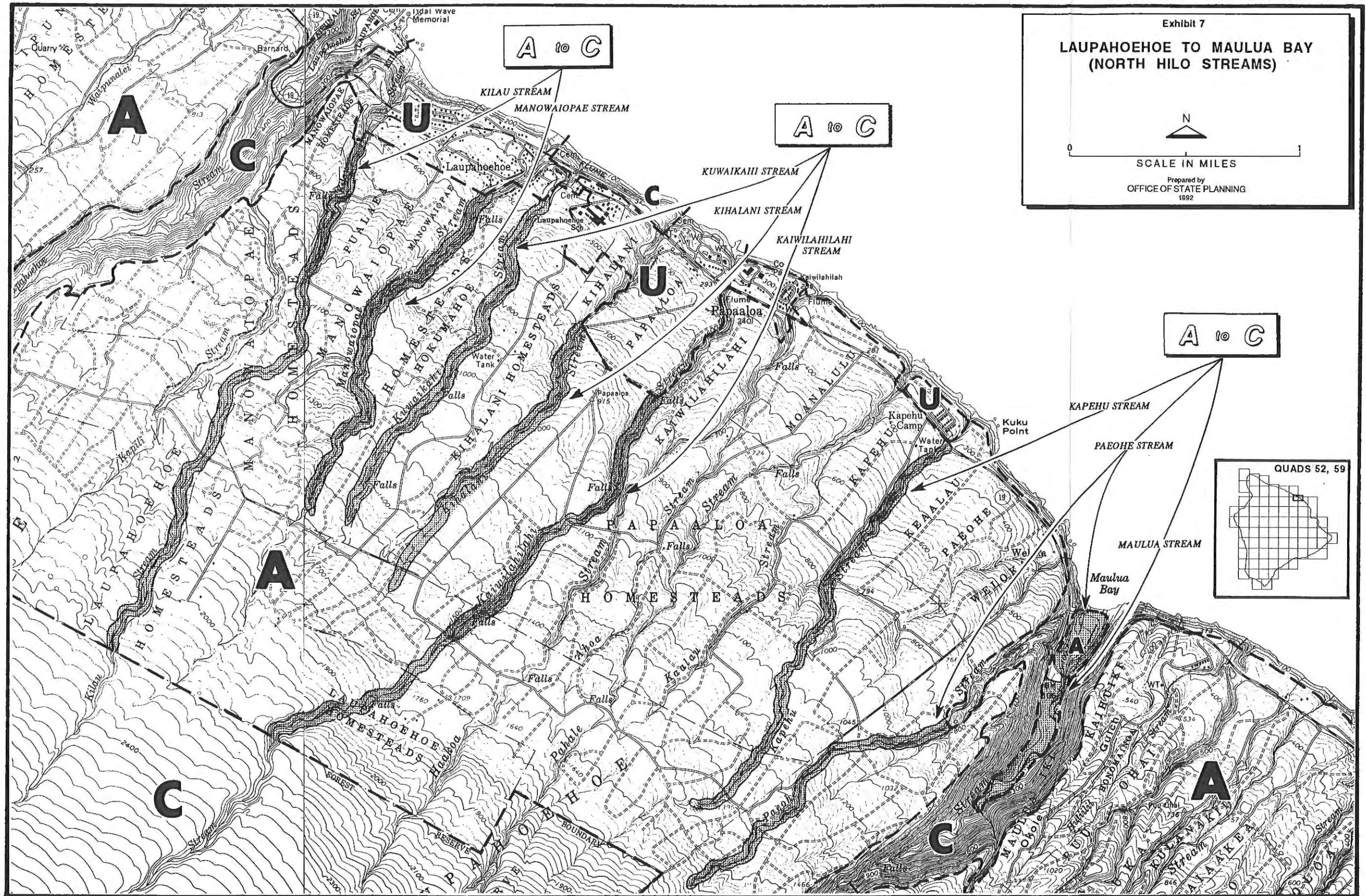


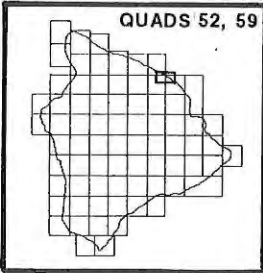
Exhibit 7  
**LAUPAHOEHOE TO MAULUA BAY  
 (NORTH HILO STREAMS)**

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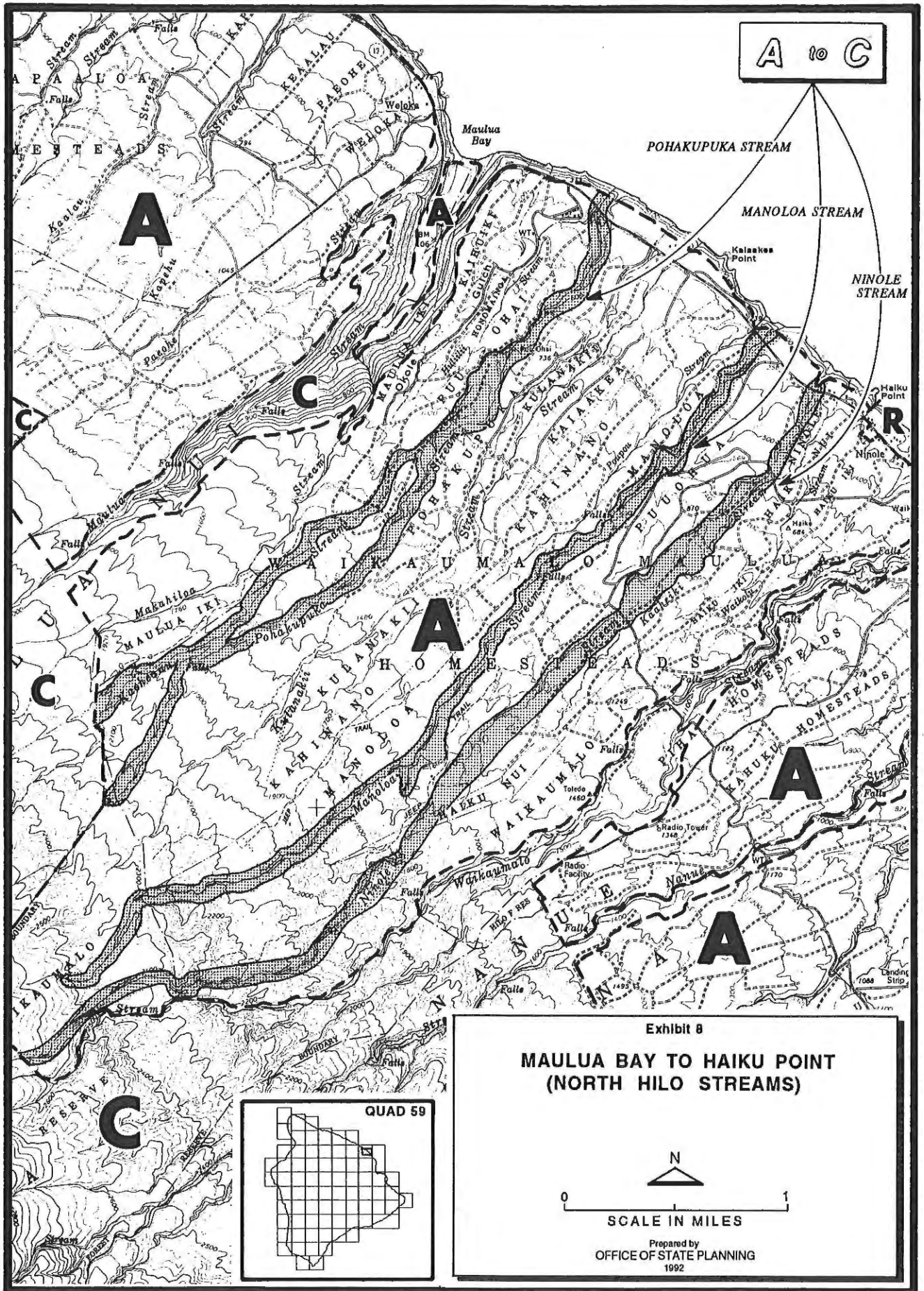
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A 10 C







A to C

POHAKUPUKA STREAM

MANOLOA STREAM

NINOLE STREAM

A

A

C

C

C

A

A

A

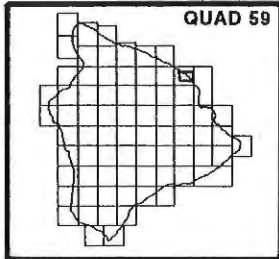
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Exhibit 8  
**MAULUA BAY TO HAIKU POINT  
 (NORTH HILO STREAMS)**

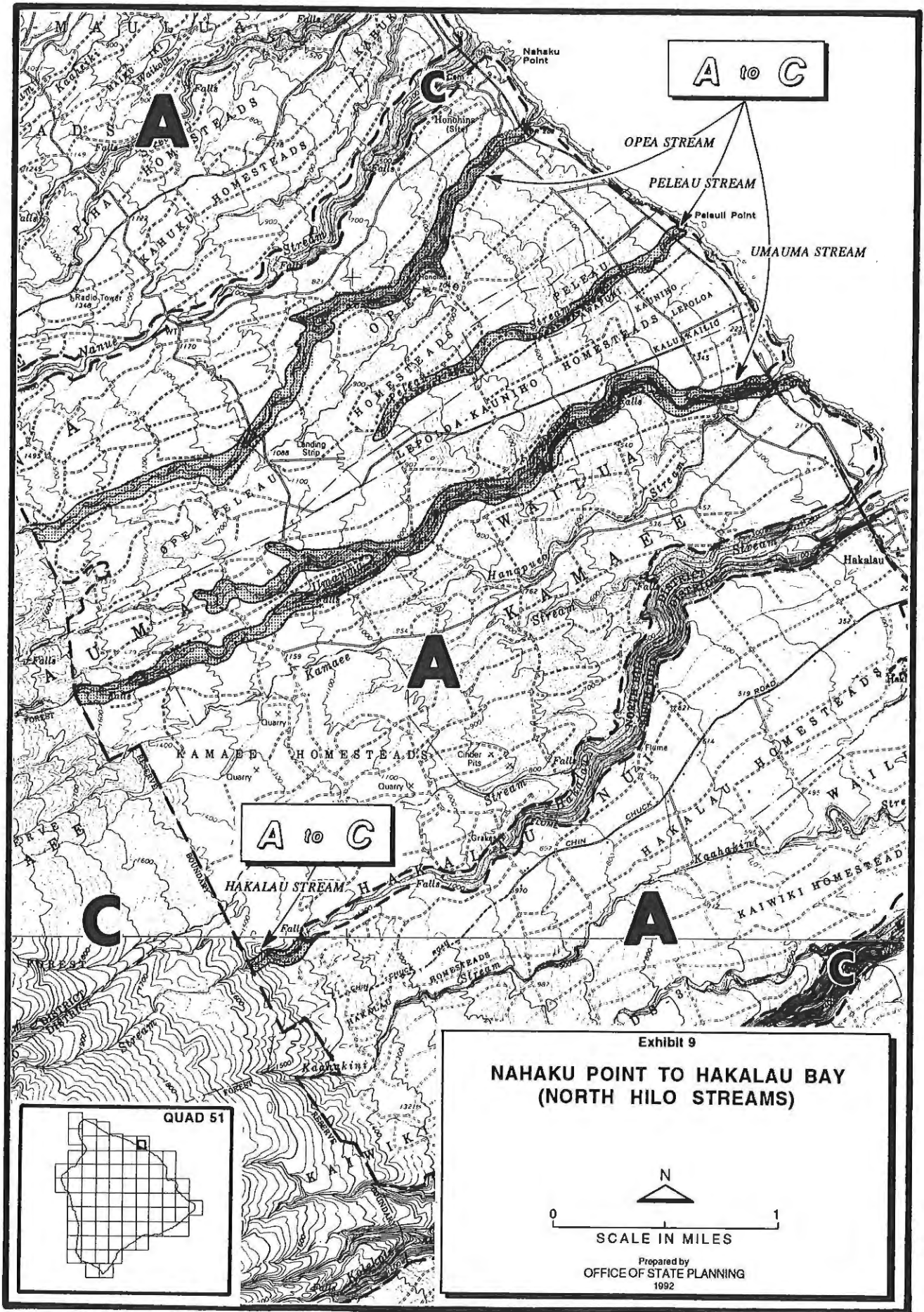
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A to C

OPEA STREAM  
 PELEAU STREAM  
 UMAUMA STREAM

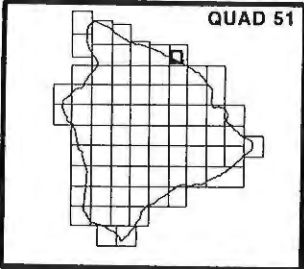
A to C

Exhibit 9  
**NAHAKU POINT TO HAKALAU BAY  
 (NORTH HILO STREAMS)**

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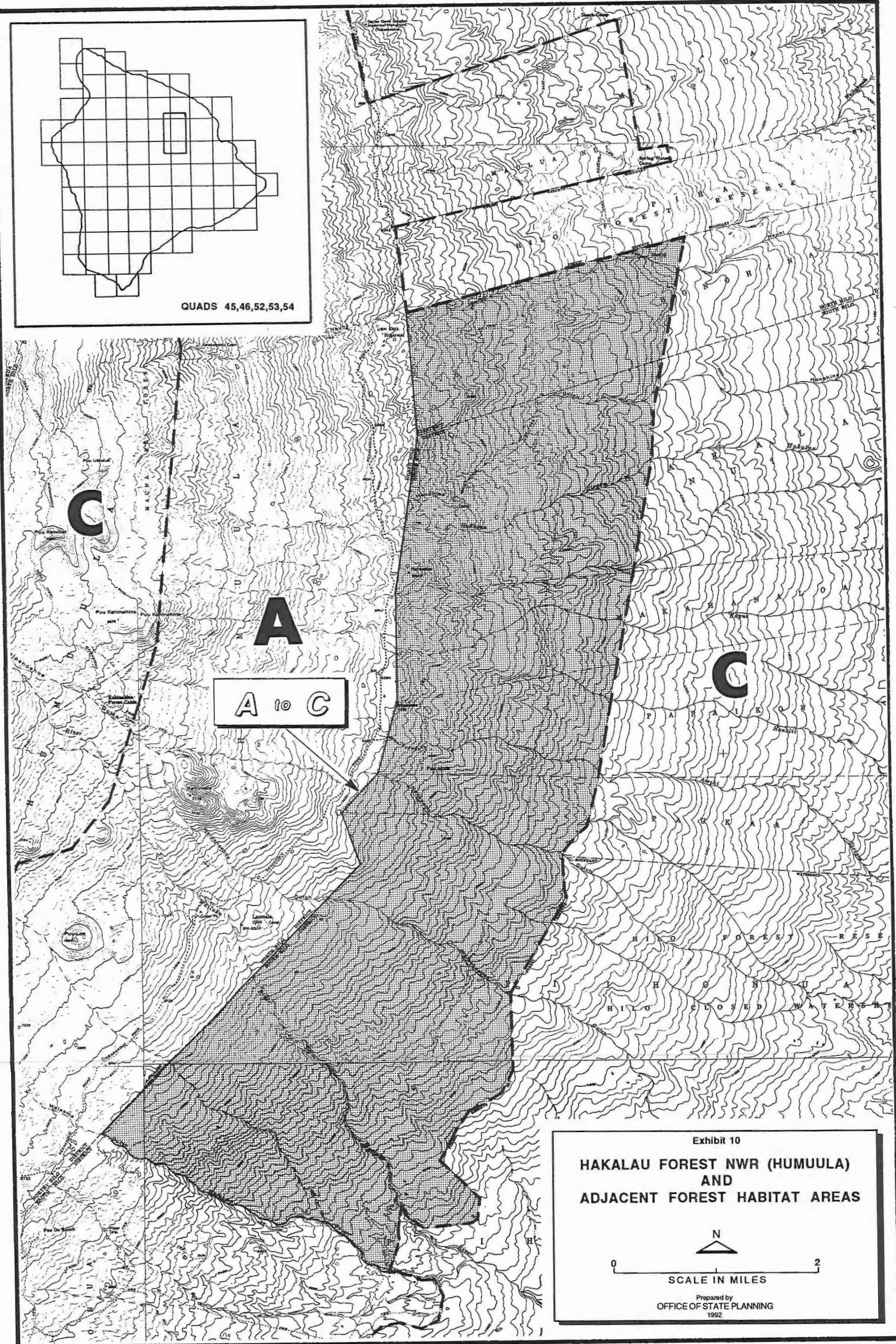
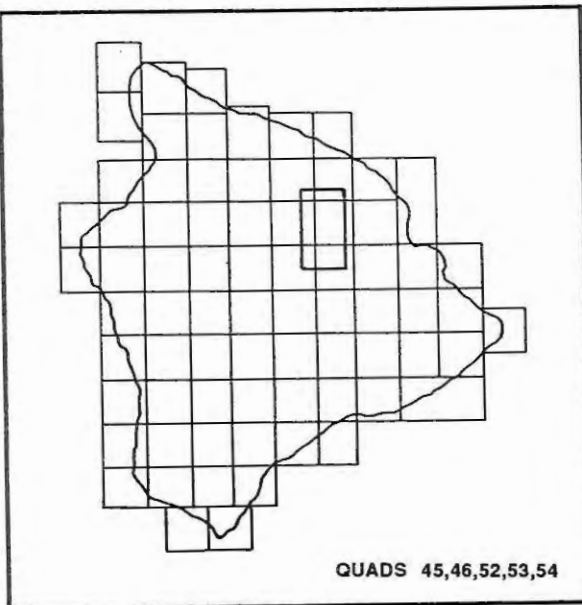


Exhibit 10  
**HAKALAU FOREST NWR (HUMUULA)  
 AND  
 ADJACENT FOREST HABITAT AREAS**

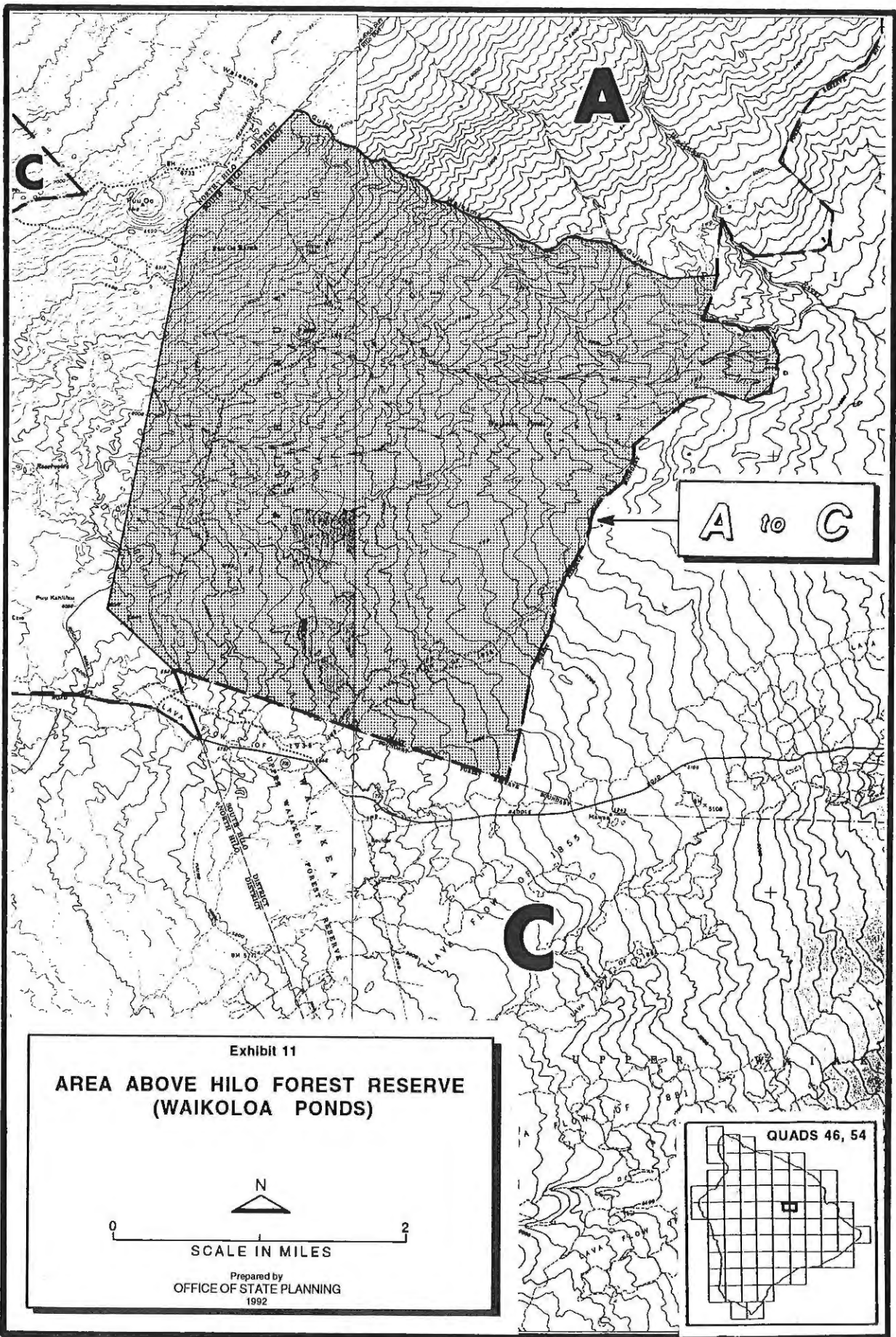
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**Exhibit 11**  
**AREA ABOVE HILO FOREST RESERVE**  
**(WAIKOLOA PONDS)**

  
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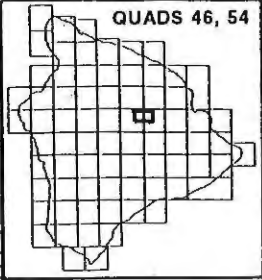
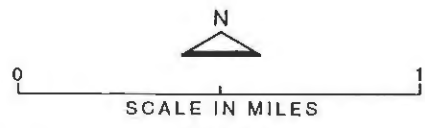
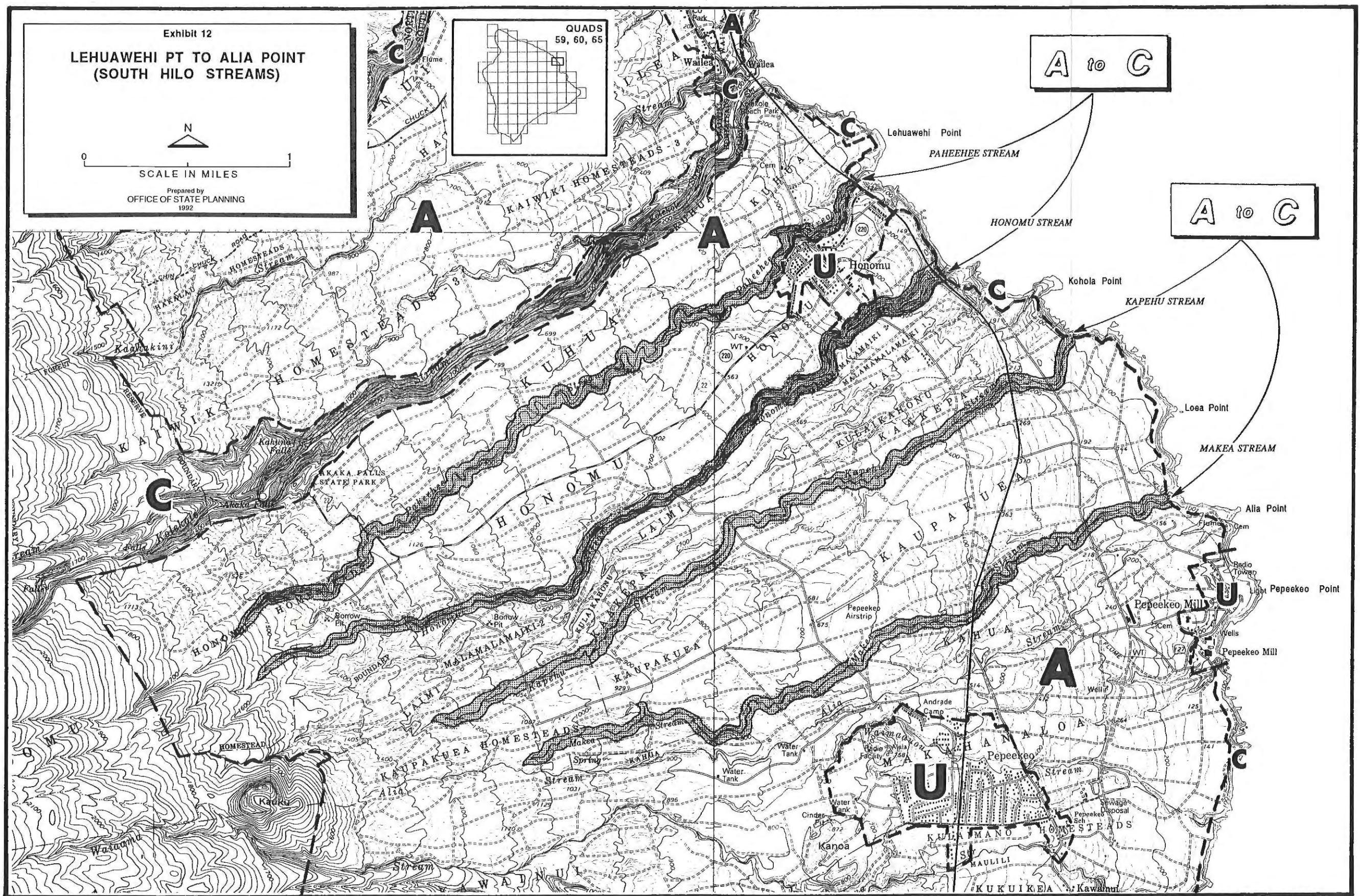
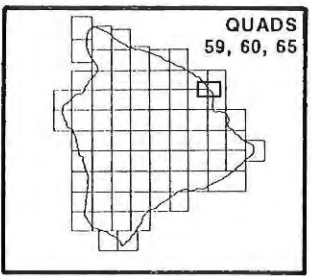




Exhibit 12  
LEHUAWEHI PT TO ALIA POINT  
(SOUTH HILO STREAMS)



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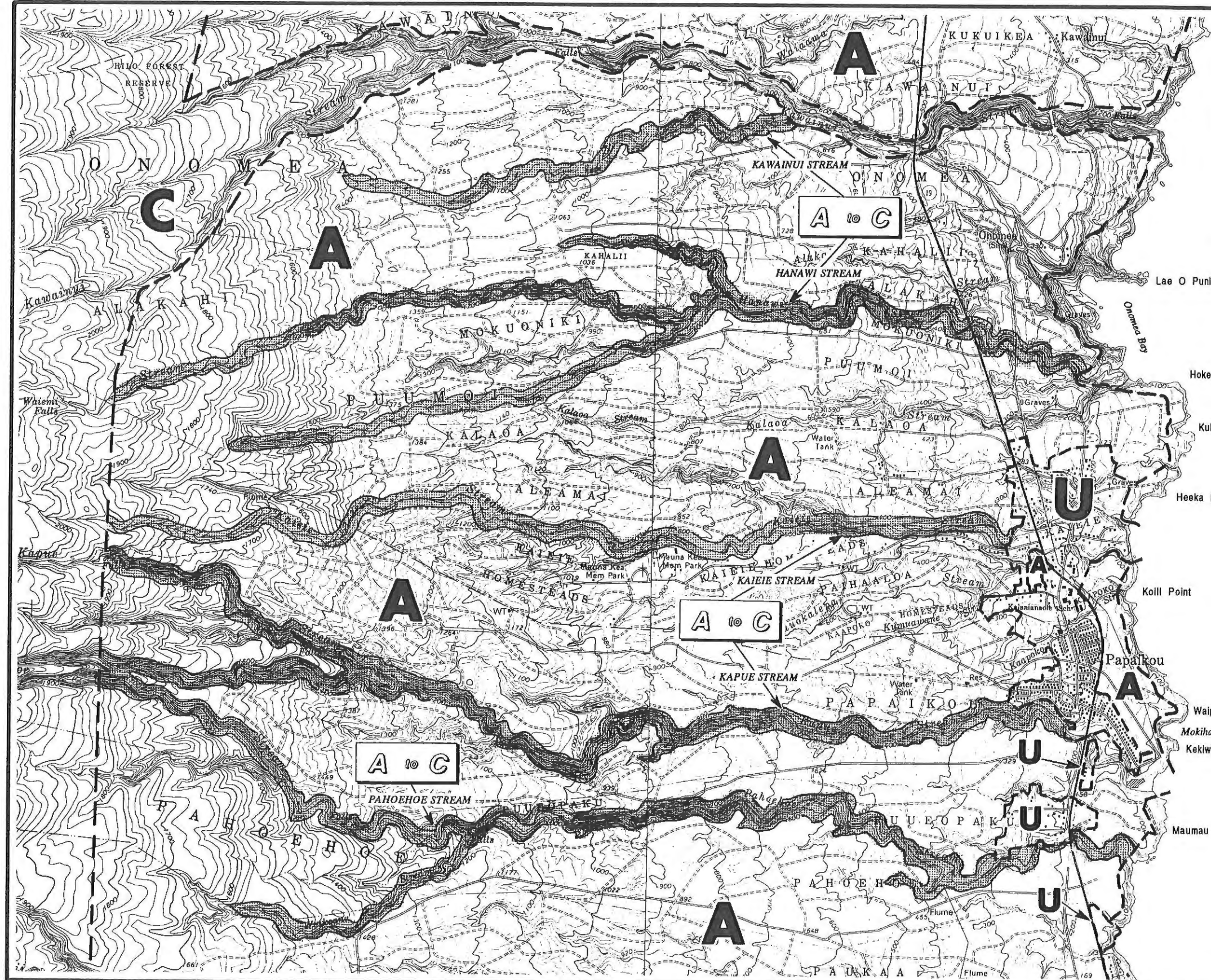
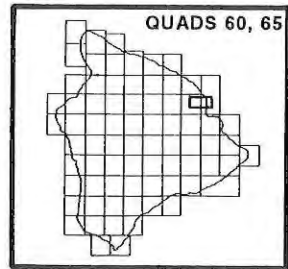


Exhibit 13  
**ONOMEA BAY TO MAUMAU POINT  
 (SOUTH HILO STREAMS)**

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- Onomea Bay
- Hokeo Point
- Kukui Point
- Heeka Point
- Koili Point
- Papaikou
- Waipahi Point
- Mokihana Bay
- Kekiwi Point
- Maumau Point



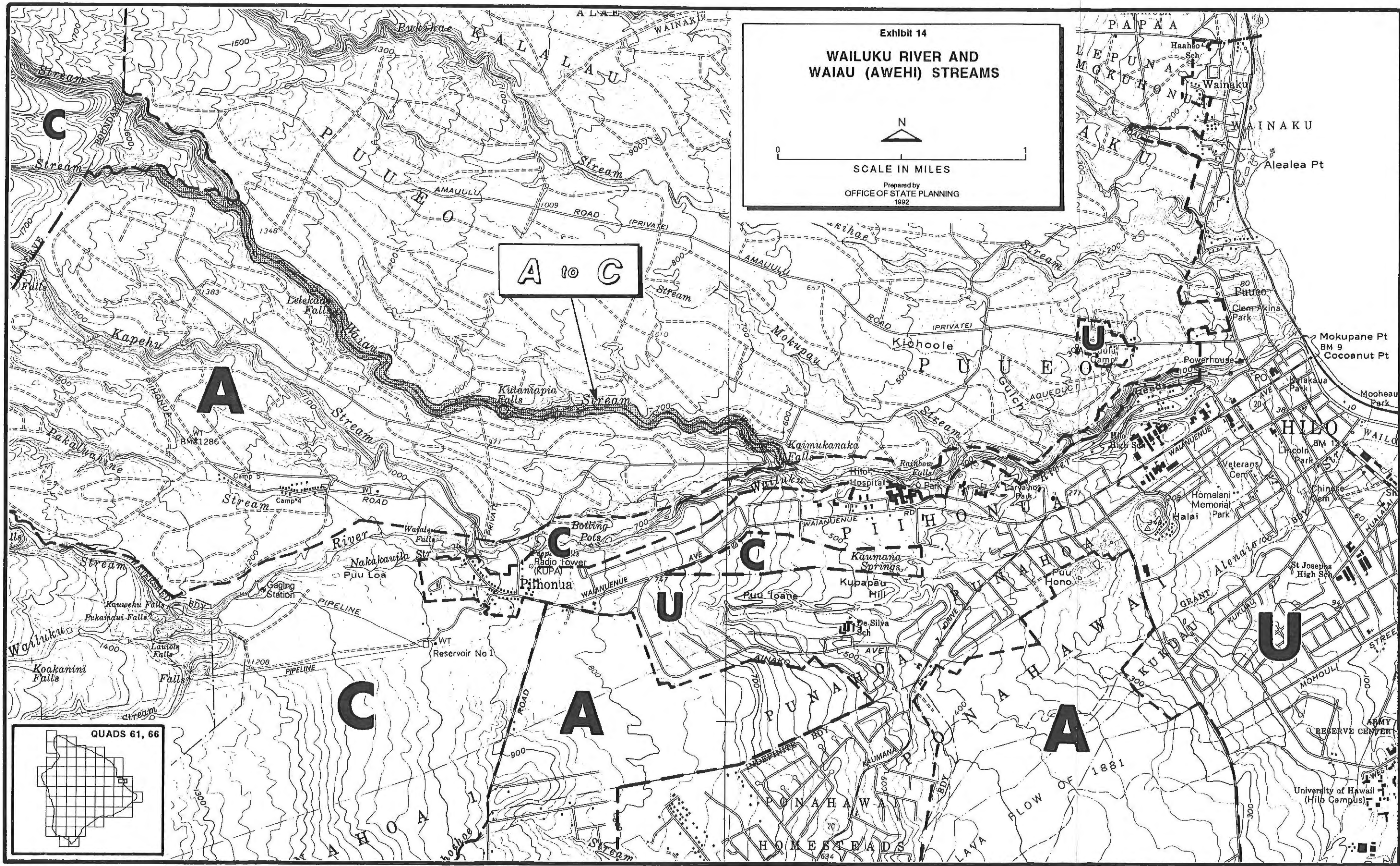
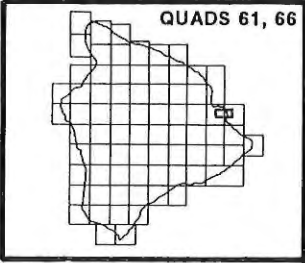


Exhibit 14  
**WAILUKU RIVER AND  
WAI'AU (AWEHI) STREAMS**

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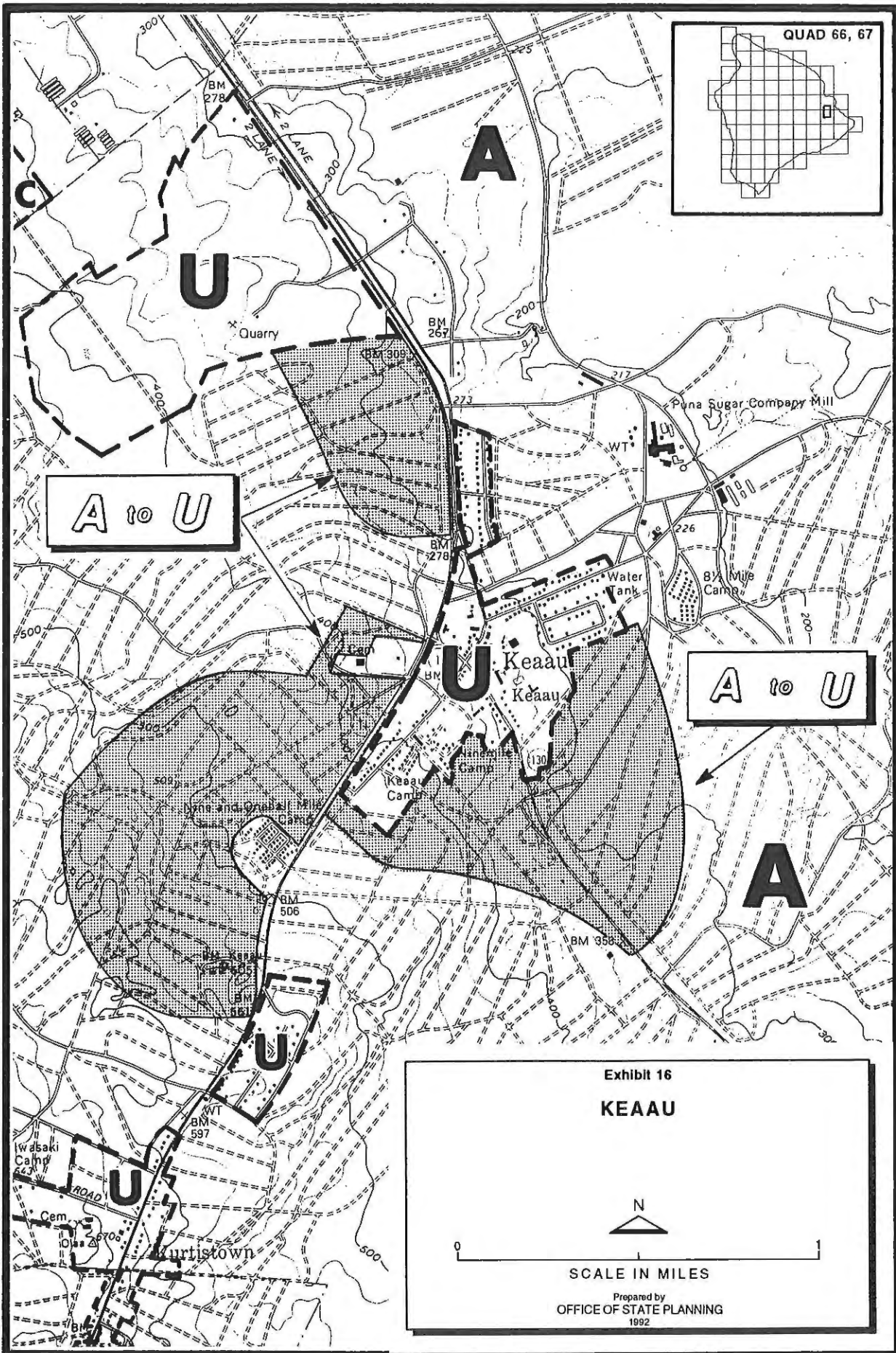
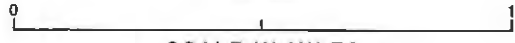




Exhibit 17

# OLAA WEST



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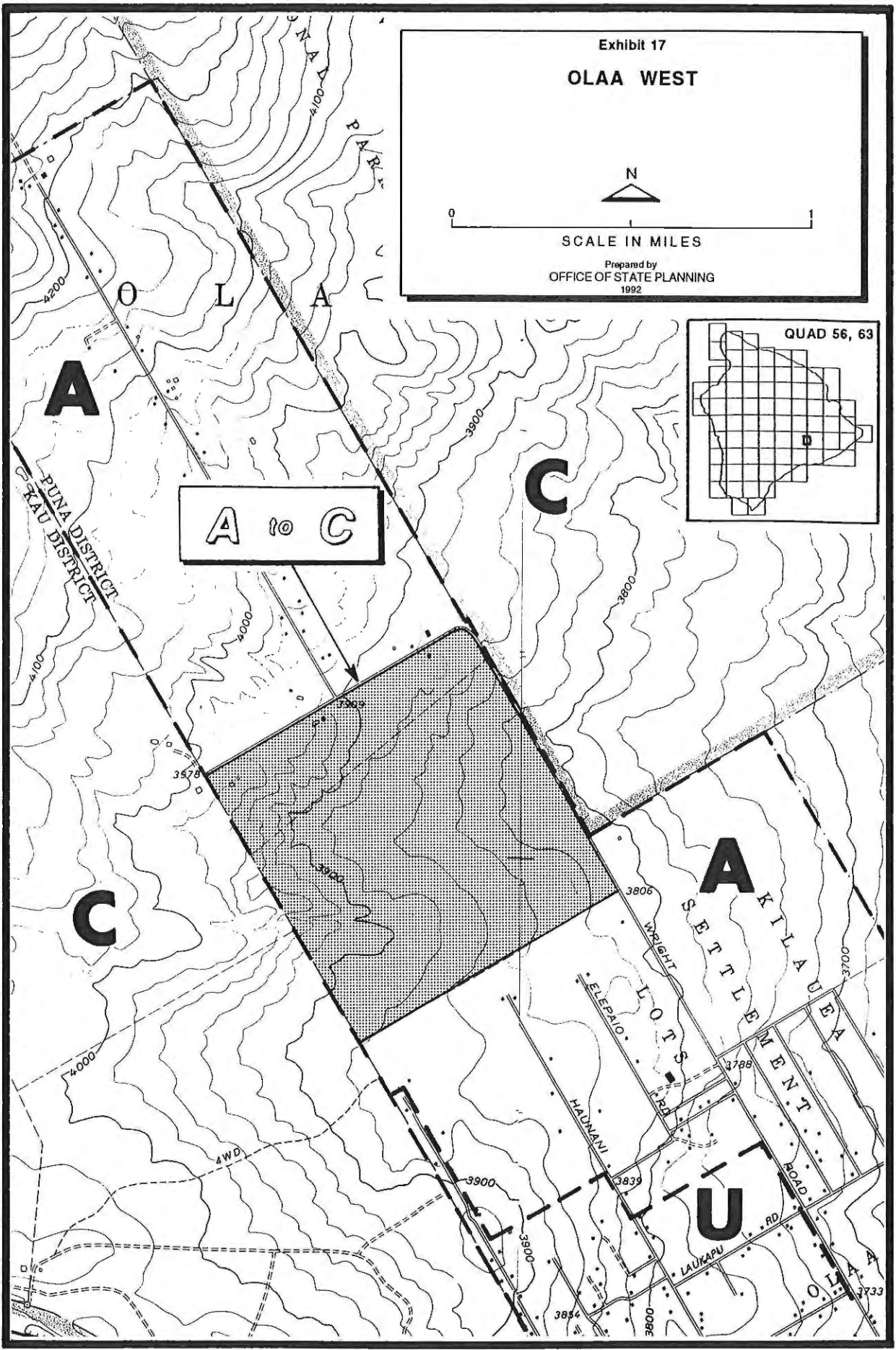
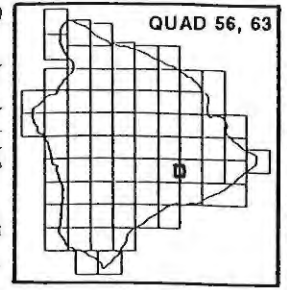
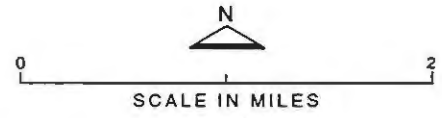
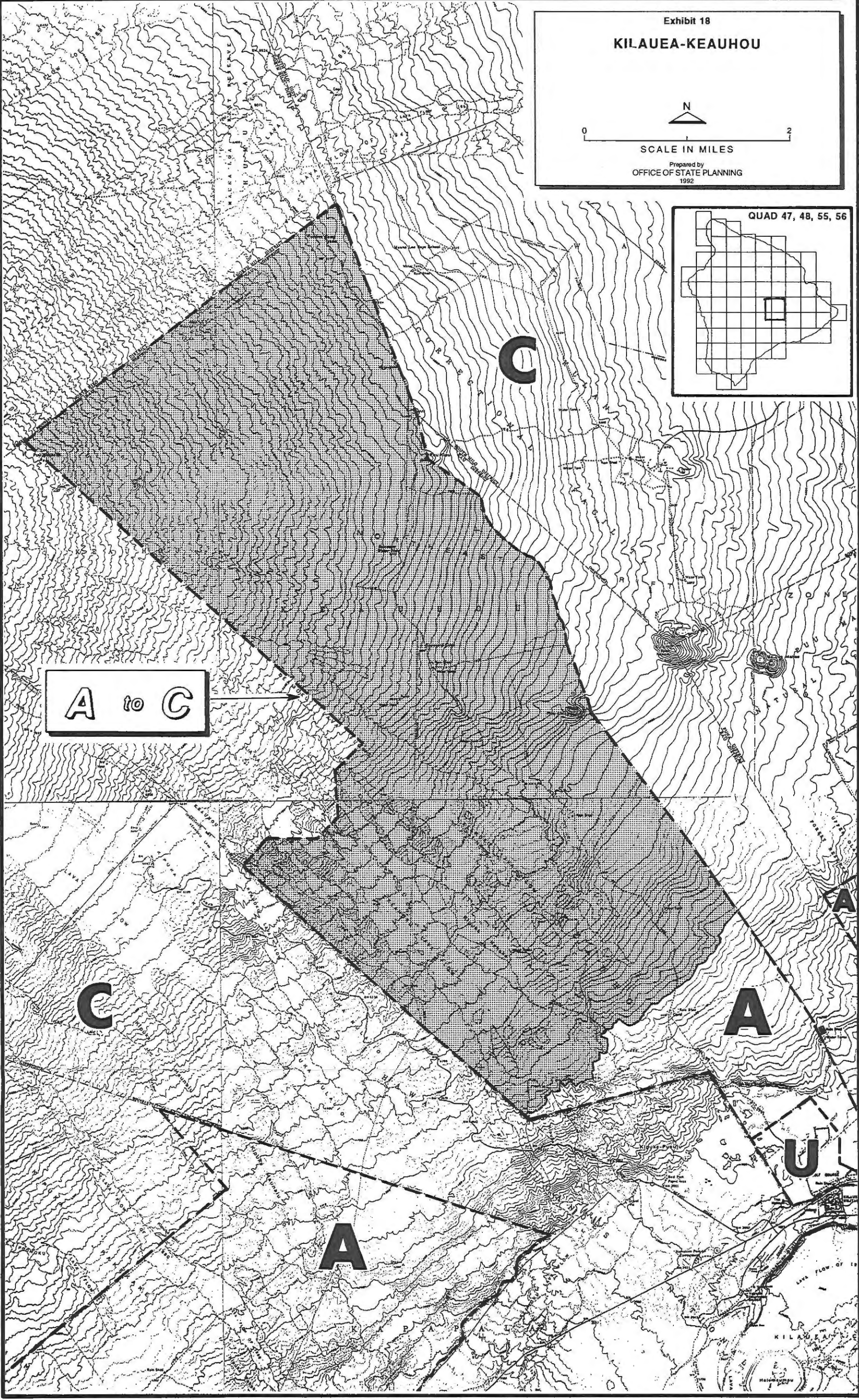
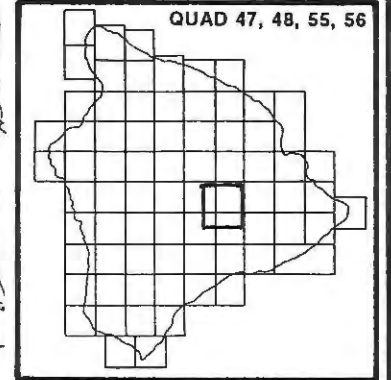




Exhibit 18  
KILAUEA-KEAUHOU



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1992





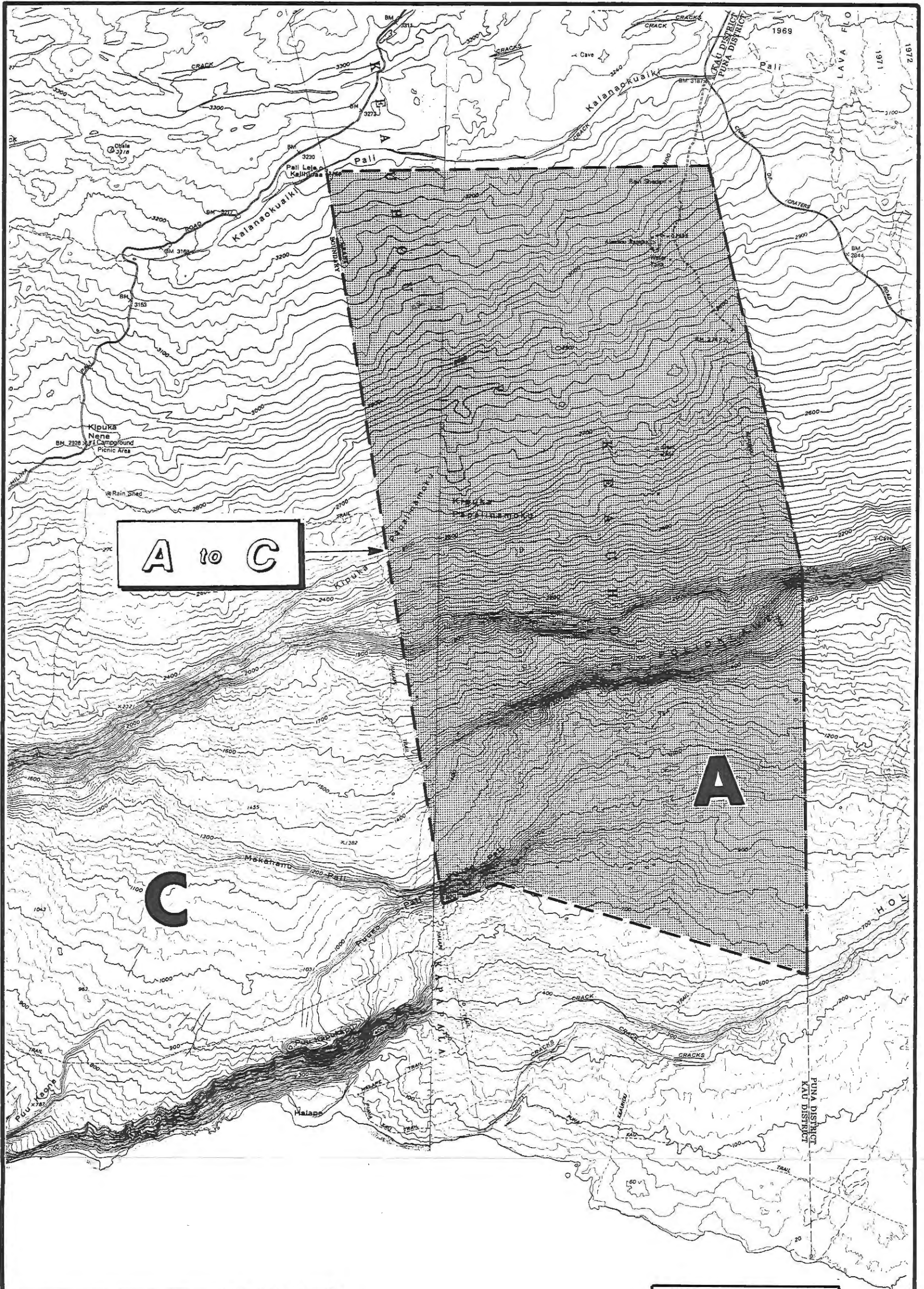
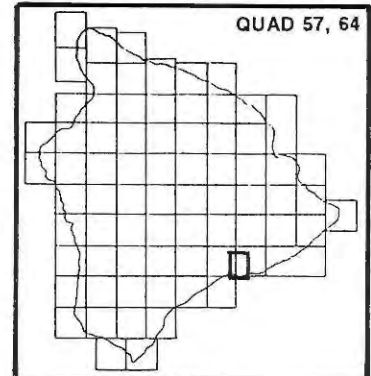


Exhibit 19  
**HAWAII VOLCANOES NATIONAL PARK  
 (PORTION)**

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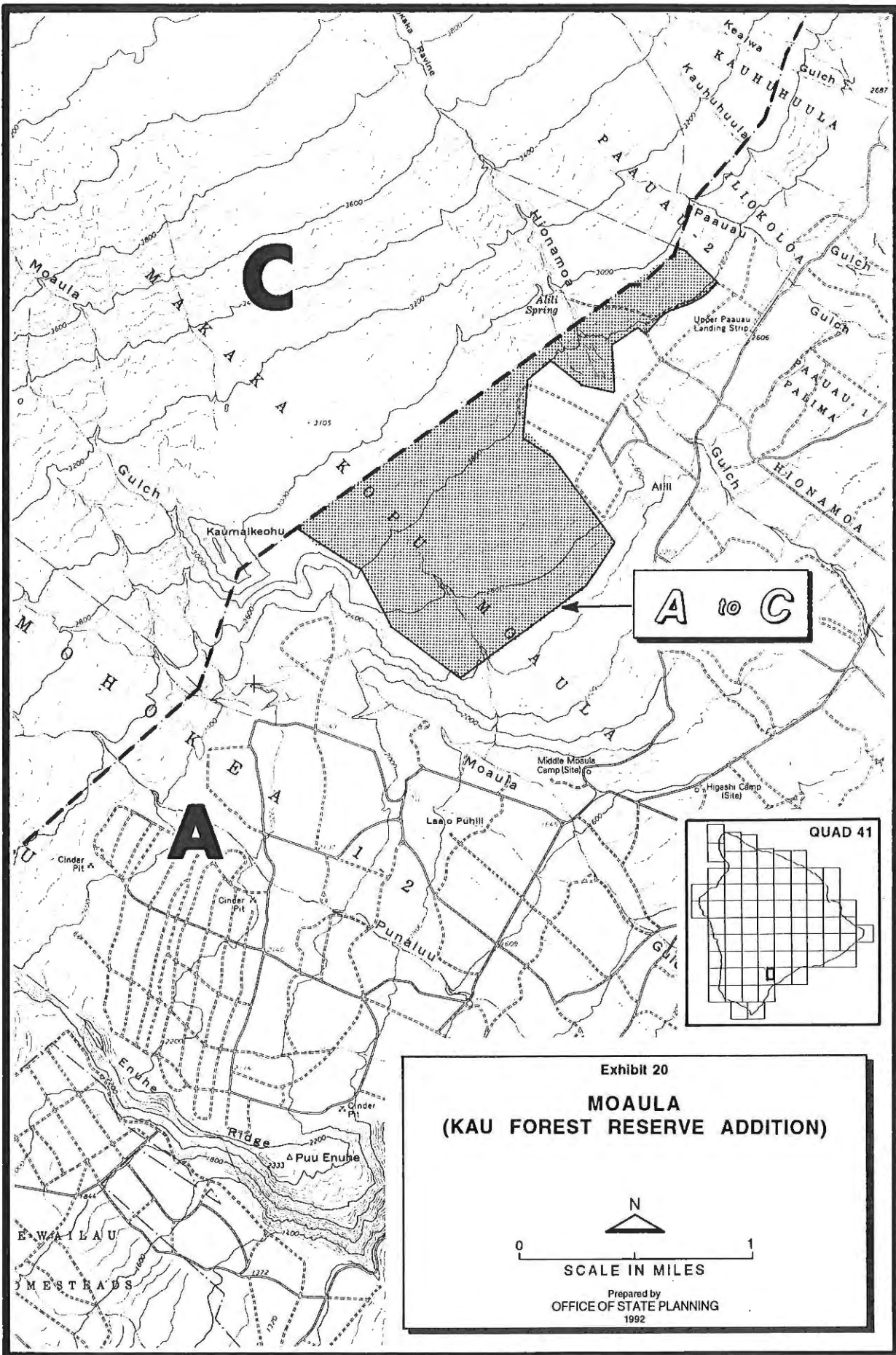


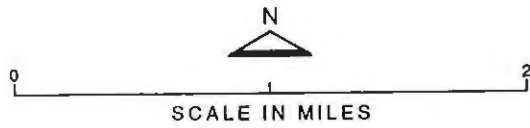
Exhibit 20  
**MOAULA  
 (KAU FOREST RESERVE ADDITION)**



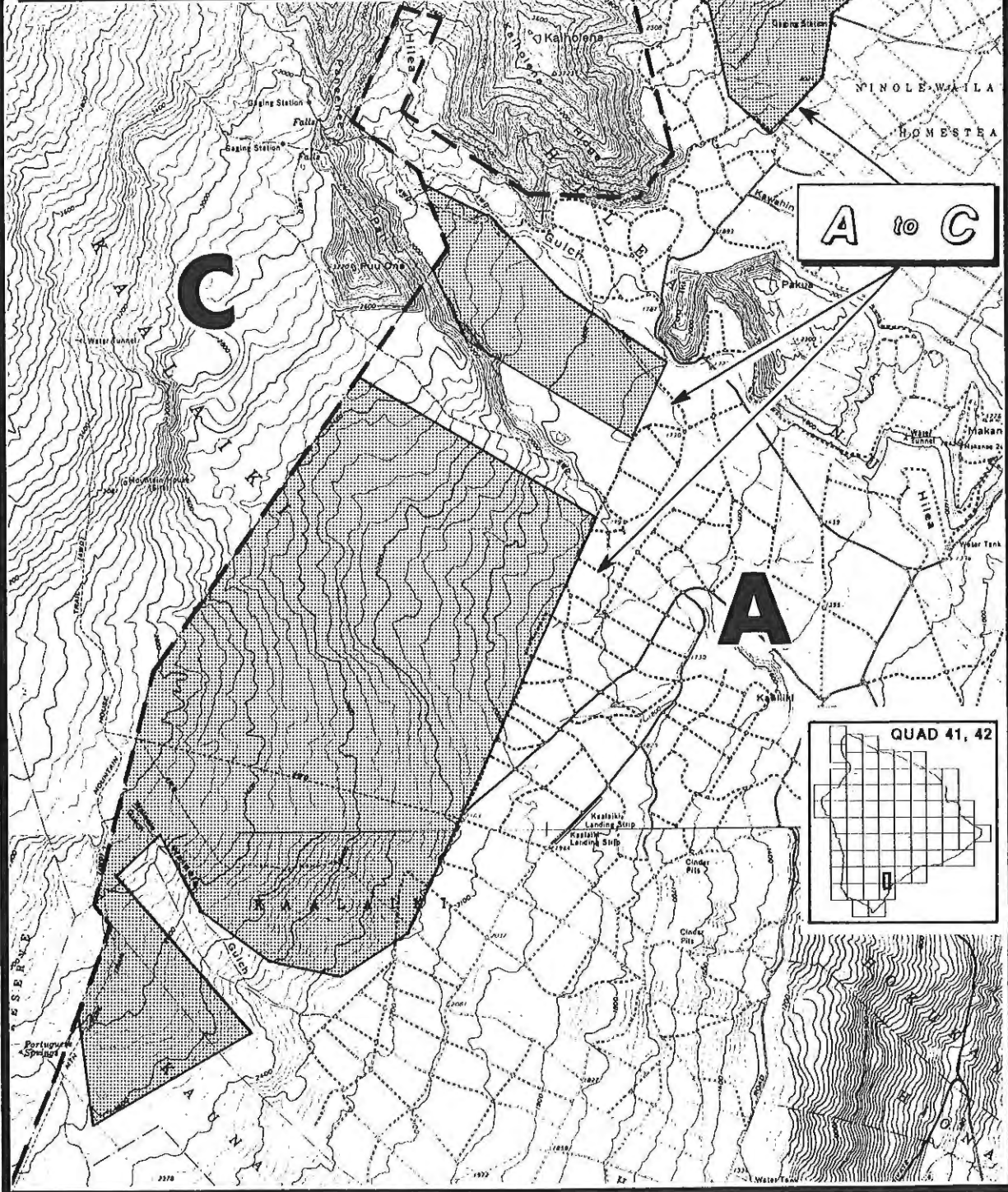
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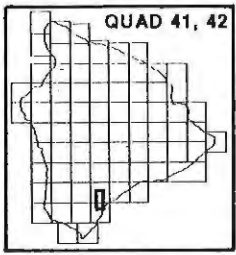
Exhibit 21  
**KAALAIKI-NINOLE  
(KAU FOREST RESERVE ADDITIONS)**



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1992



A to C





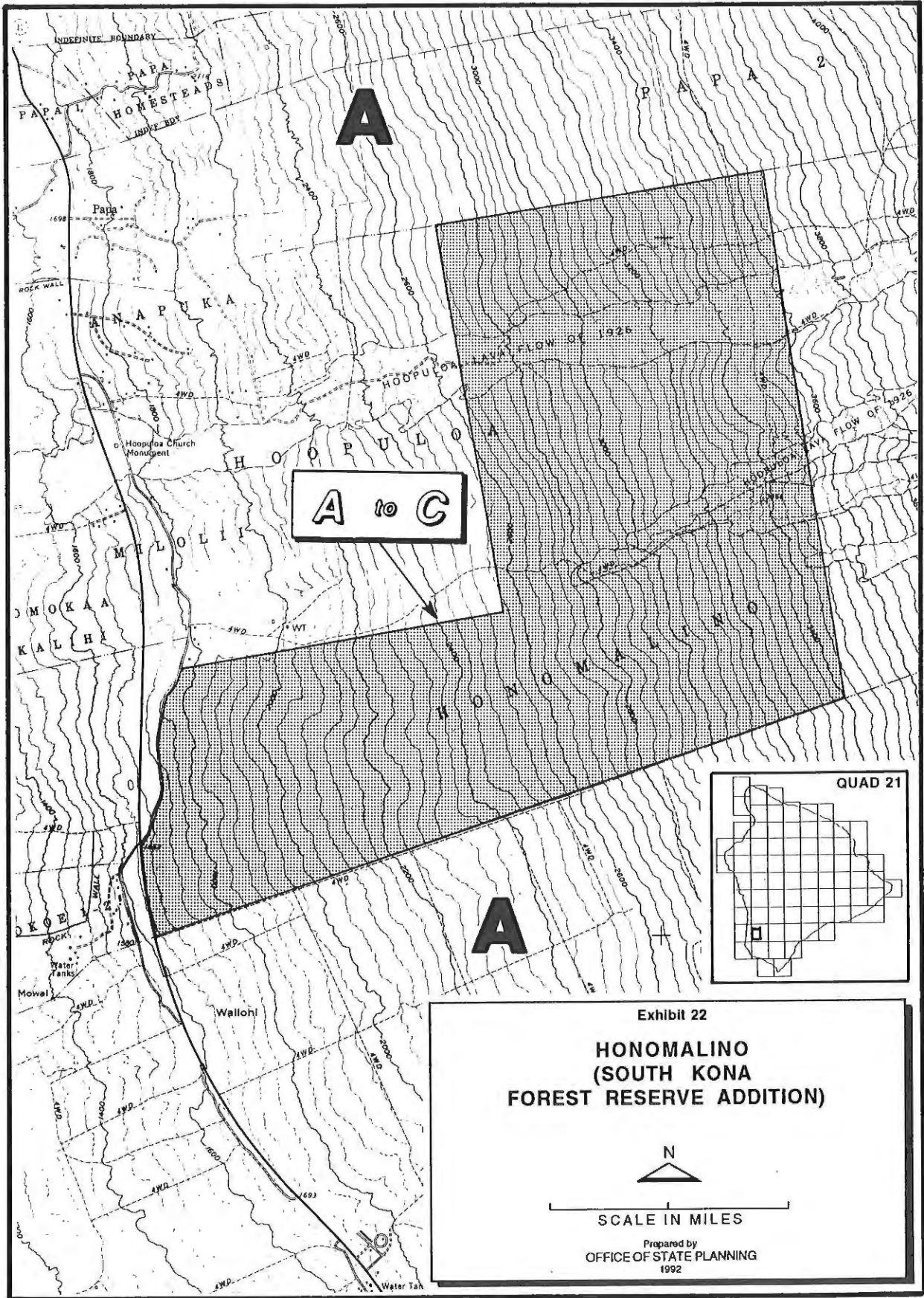


Exhibit 22  
**HONOMALINO  
 (SOUTH KONA  
 FOREST RESERVE ADDITION)**

N

SCALE IN MILES

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 1992



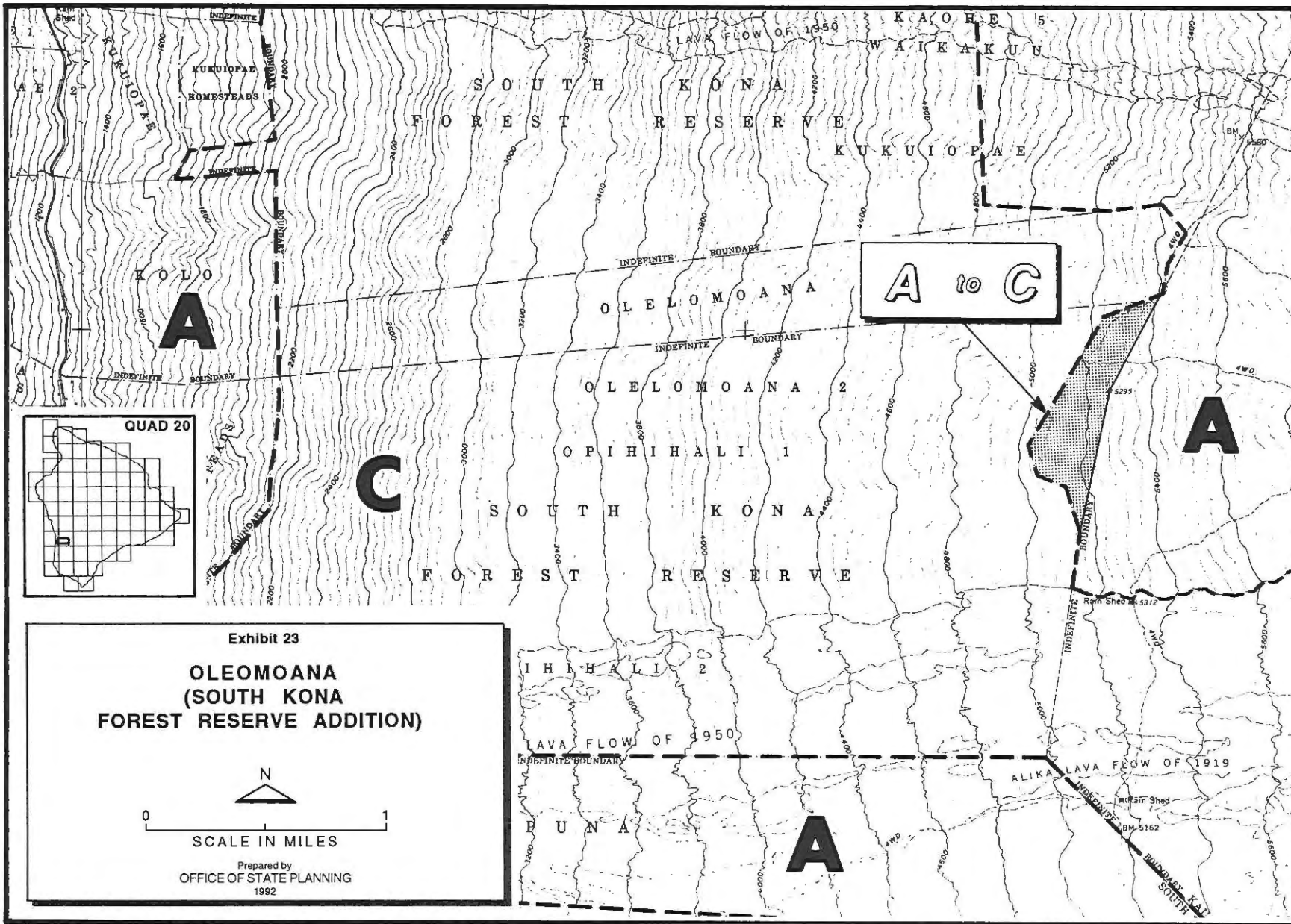


Exhibit 23  
**OLELOMOANA  
 (SOUTH KONA  
 FOREST RESERVE ADDITION)**

N  
 0 1  
 SCALE IN MILES

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 1992





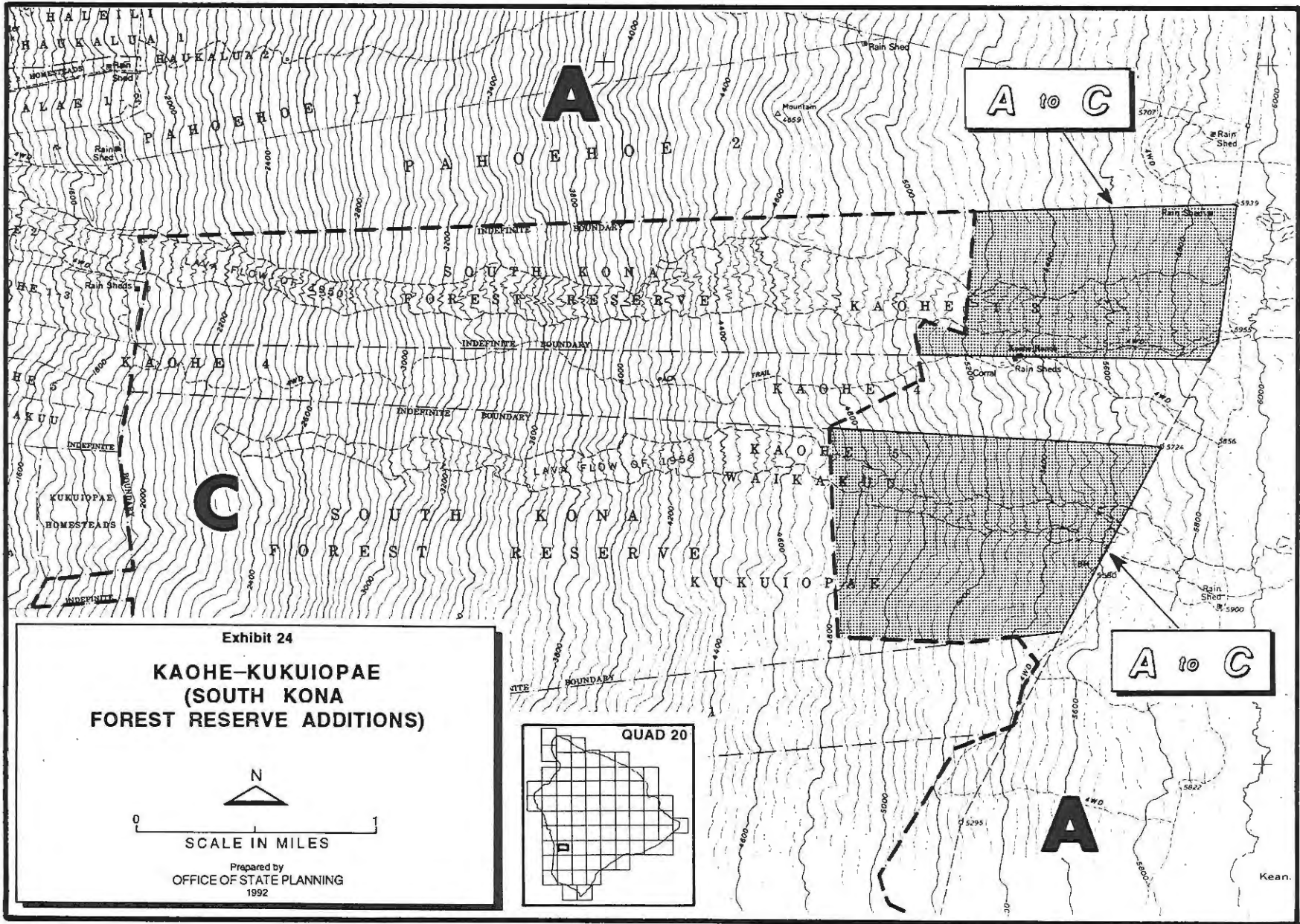




Exhibit 25

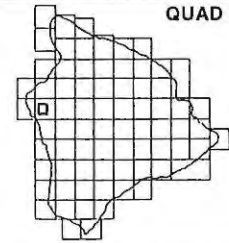
# HONUOLA TRACT 3 EXTENSION (NORTH KONA FOREST RESERVE ADDITION)



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1992

QUAD 7



A to C

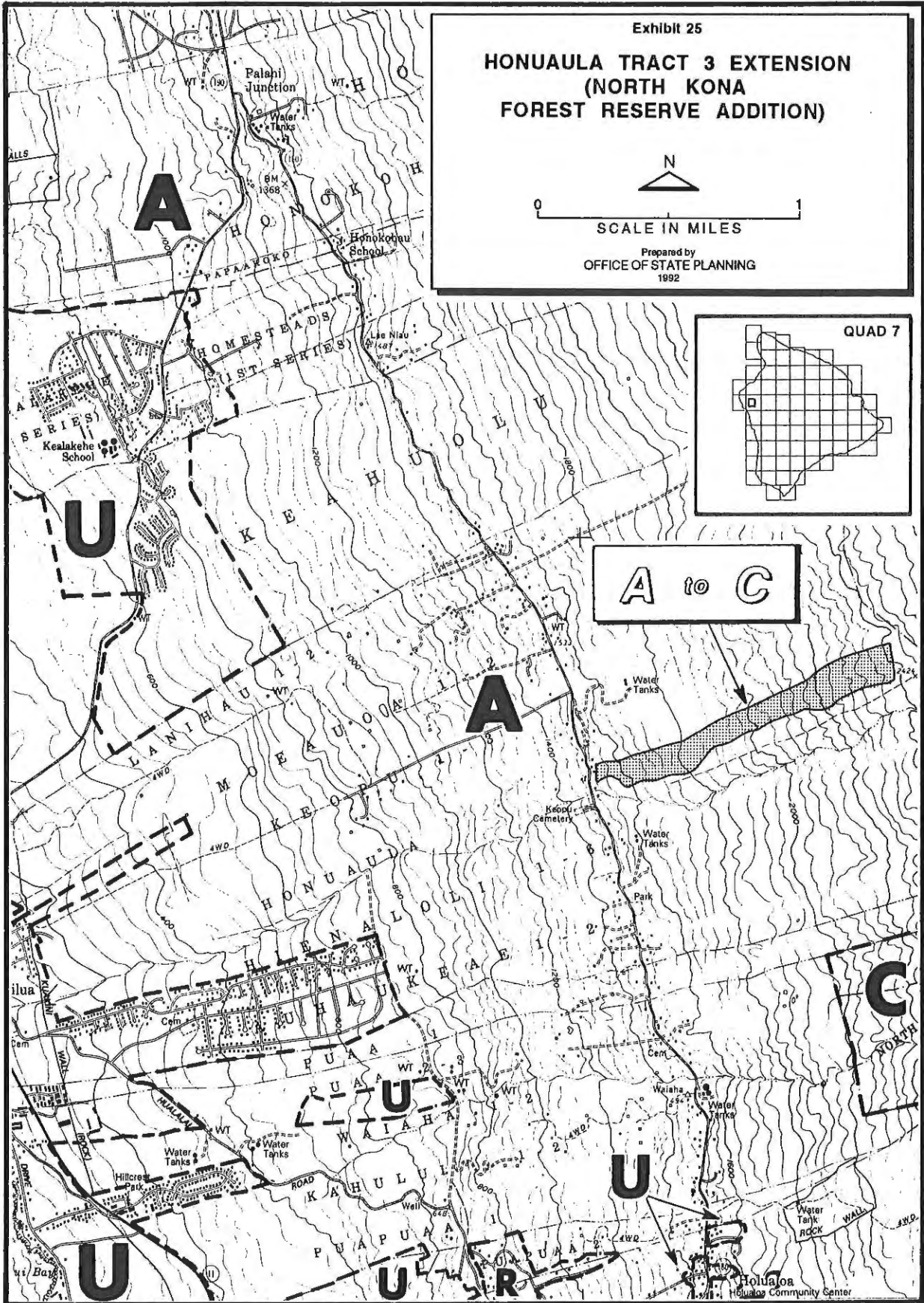
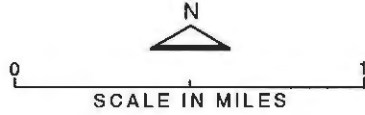




Exhibit 26

**HONUULA TRACT 3  
(NORTH KONA  
FOREST RESERVE ADDITION)**



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1992

**A to C**

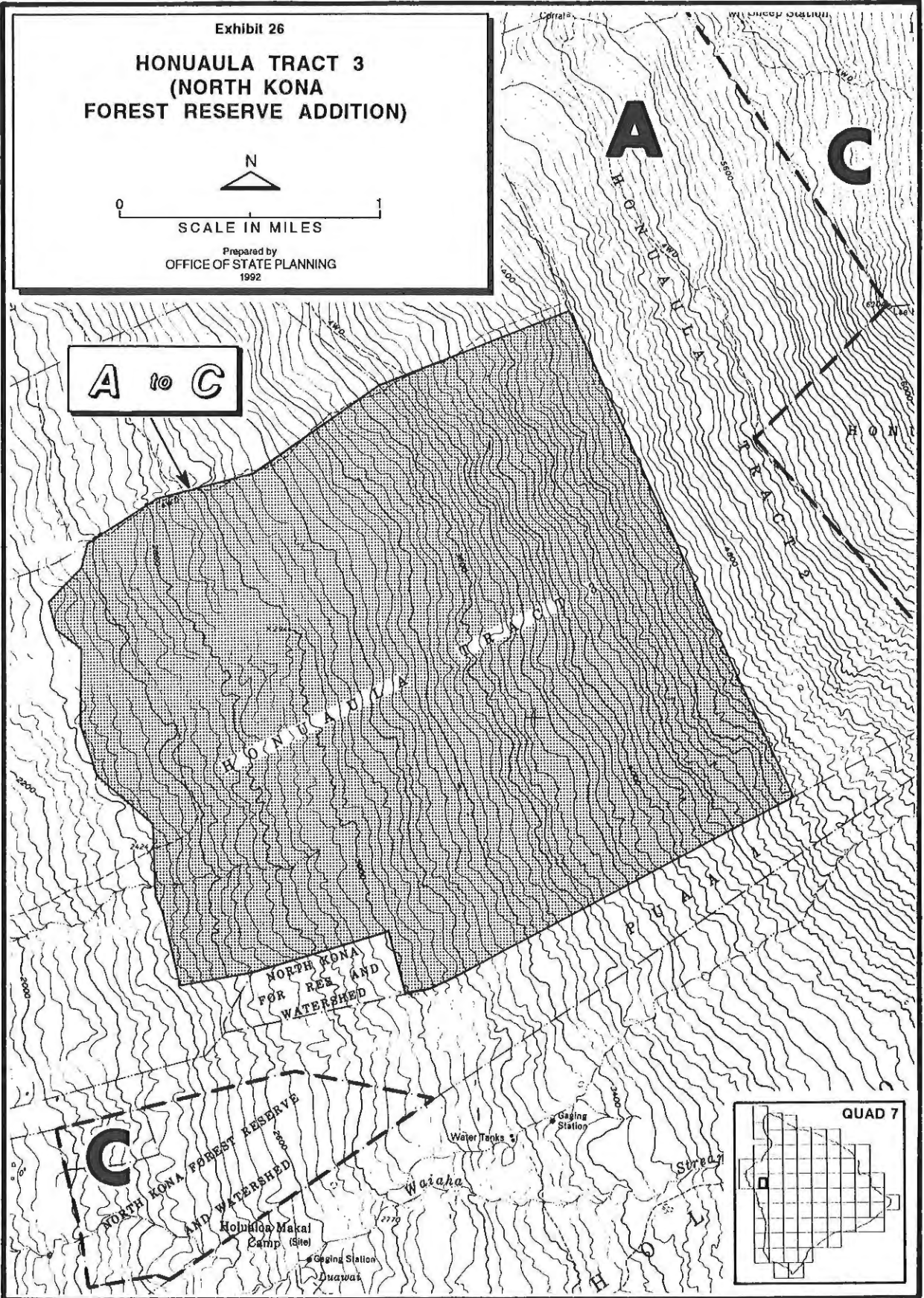
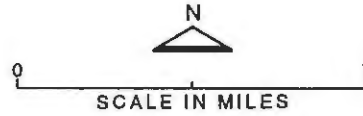
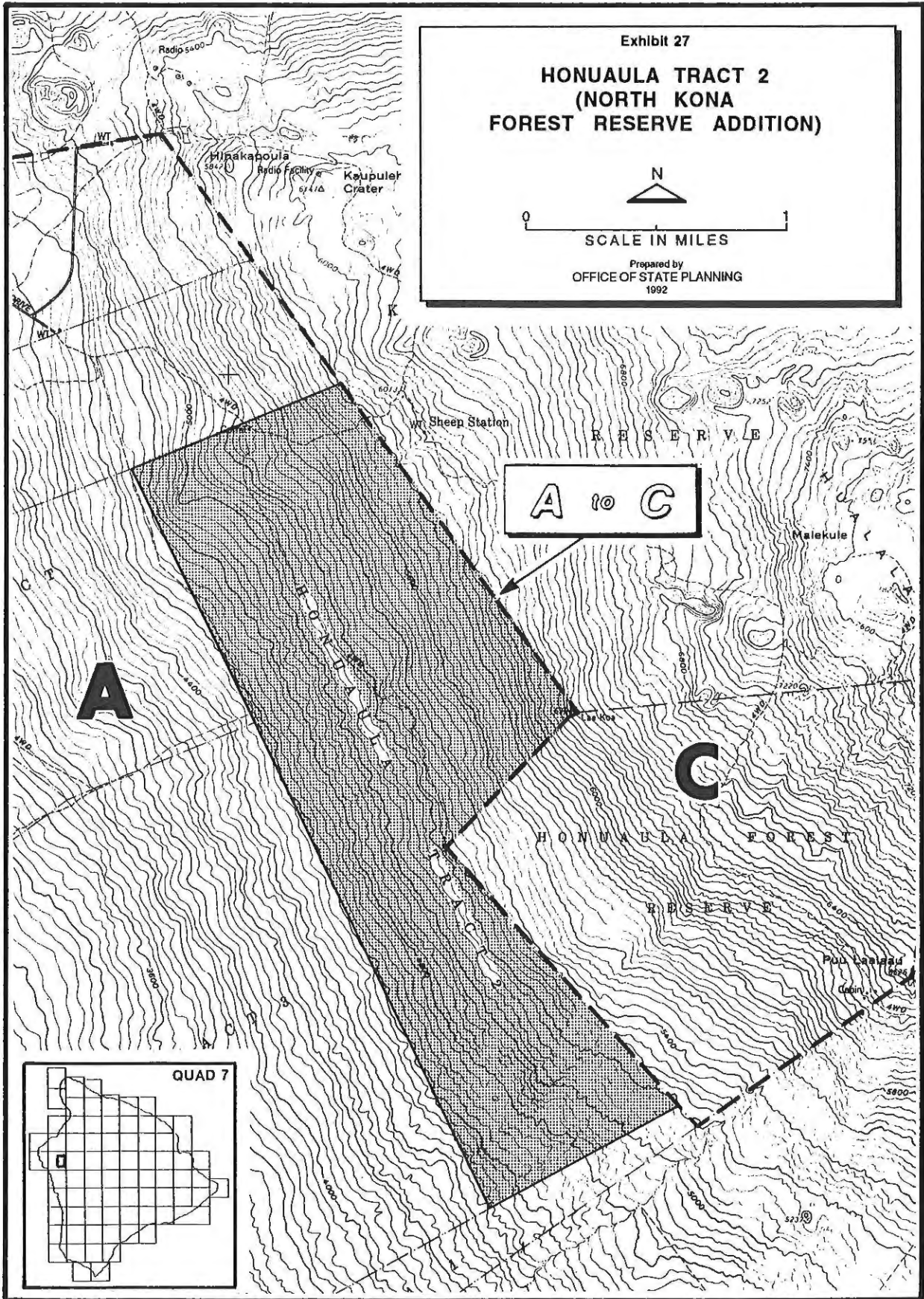




Exhibit 27  
**HONUULA TRACT 2  
(NORTH KONA  
FOREST RESERVE ADDITION)**

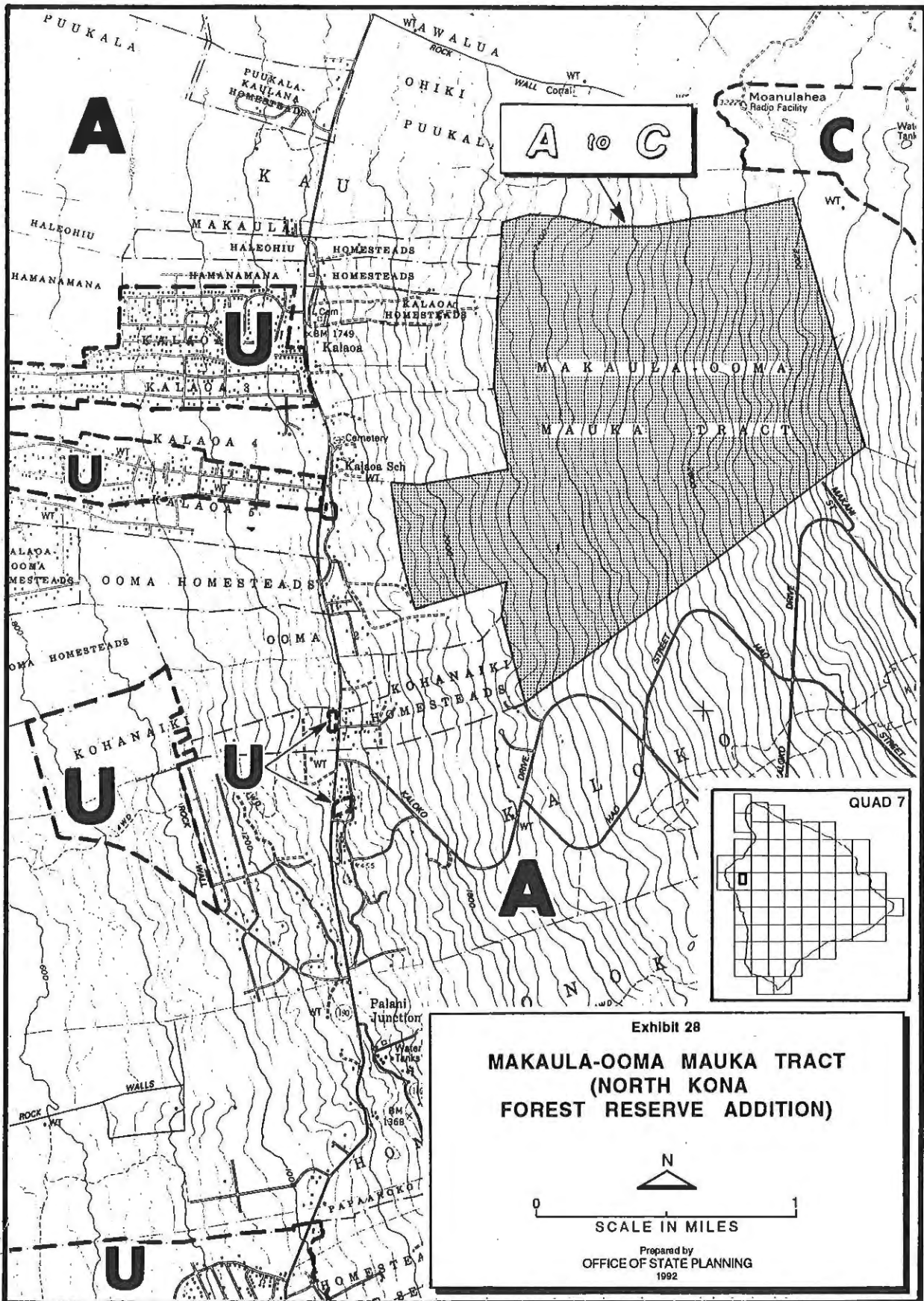


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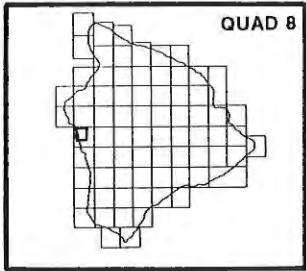
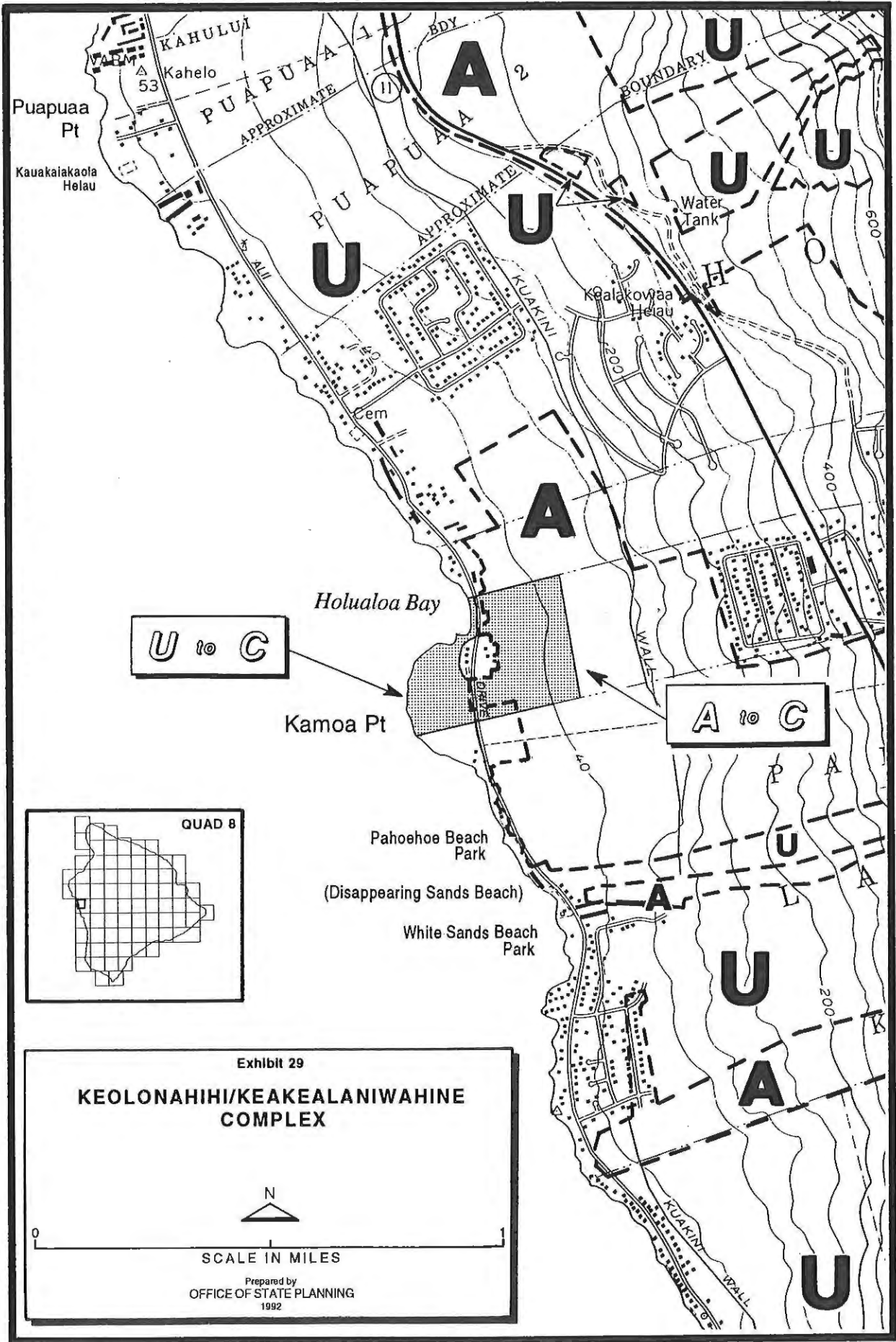


Exhibit 29

## KEOLONAHIHI/KEAKEALANIWAHINE COMPLEX

N

0 ————— 1

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1992



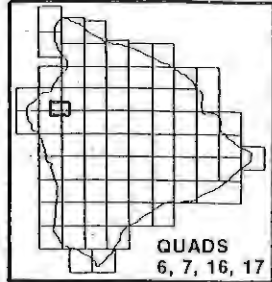
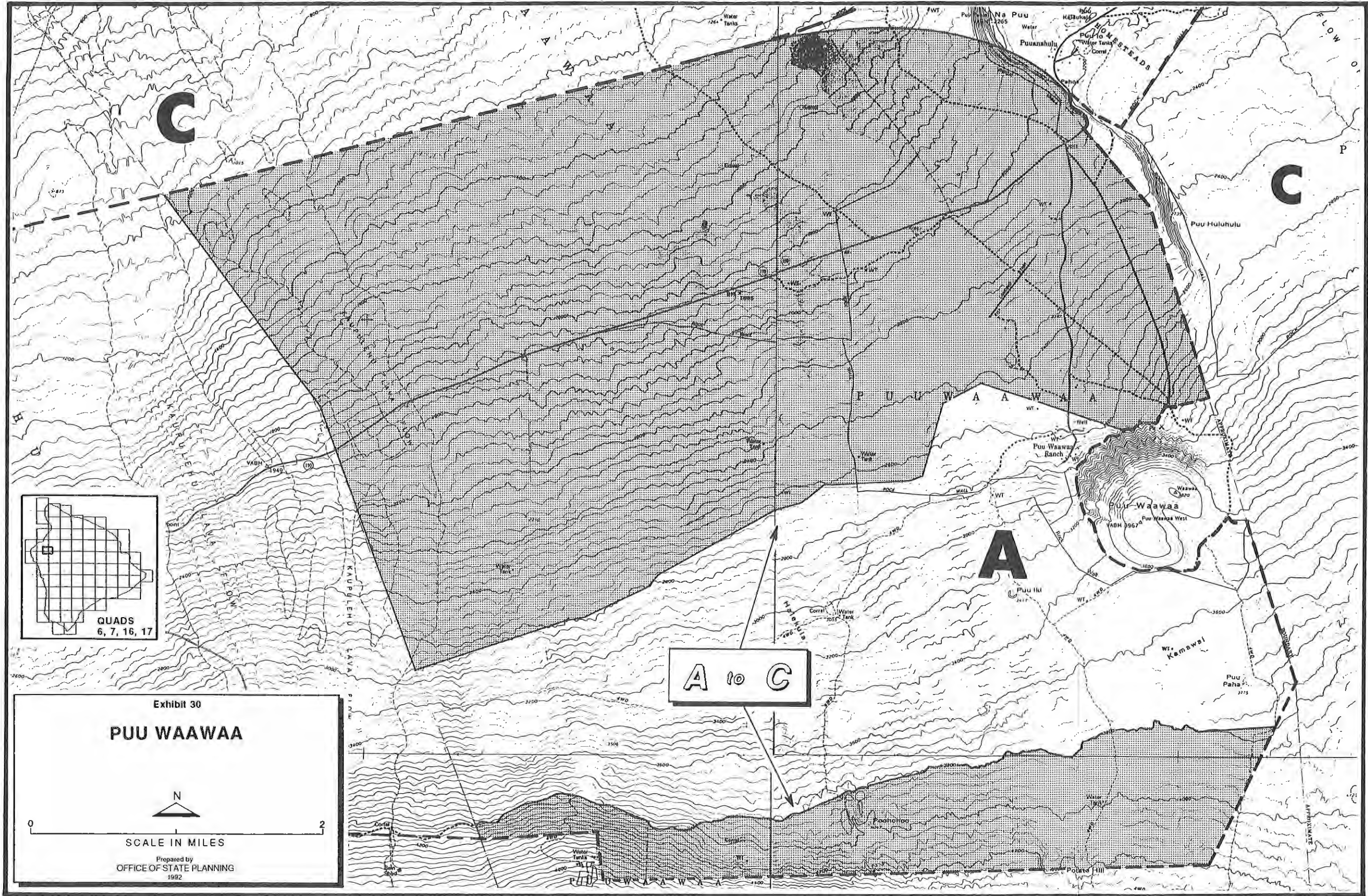


Exhibit 30  
**PUU WAAWAA**

N

0 2  
SCALE IN MILES

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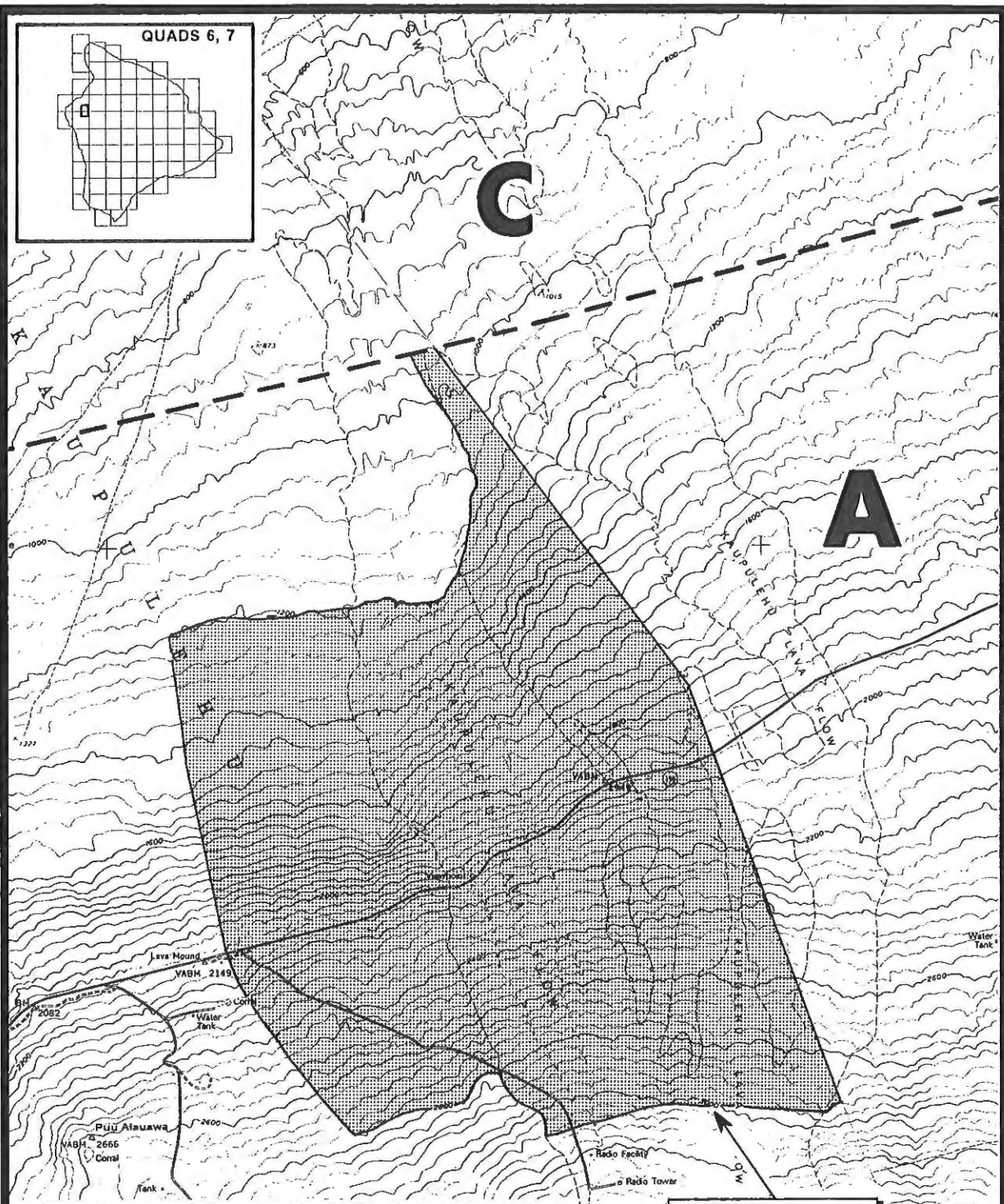
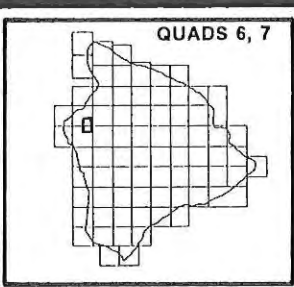


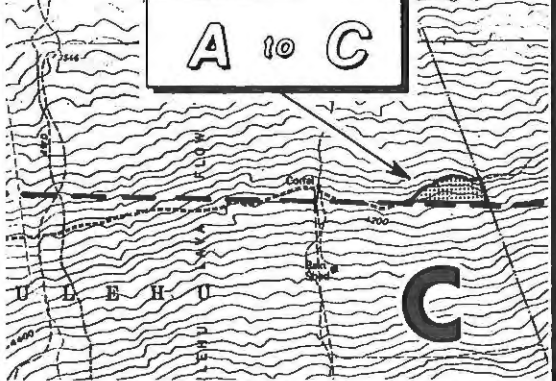
Exhibit 31  
**KAUPULEHU**

N

0 2

SCALE IN MILES

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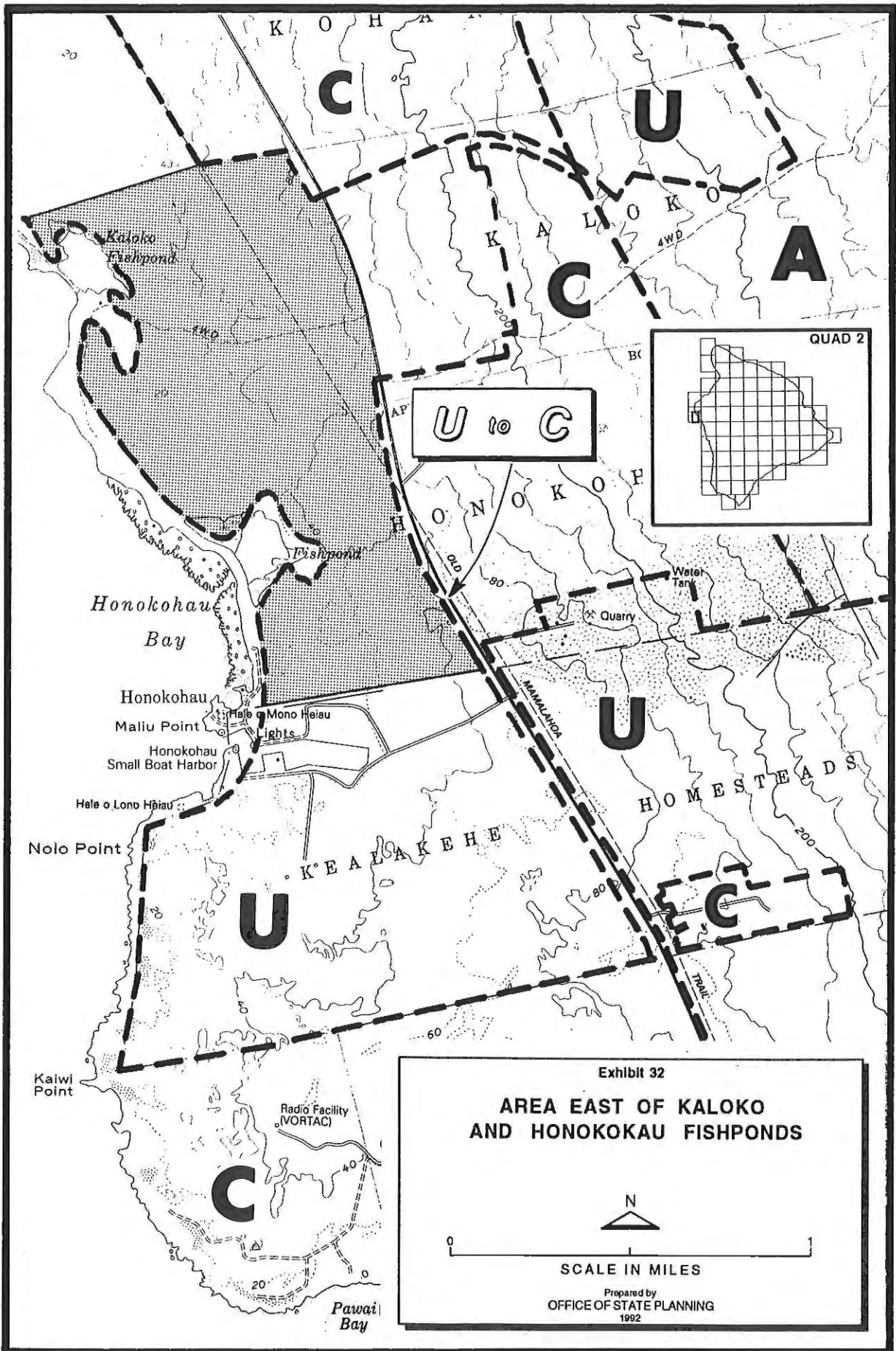


Exhibit 32  
**AREA EAST OF KALOKO  
 AND HONOKOKAU FISHPONDS**

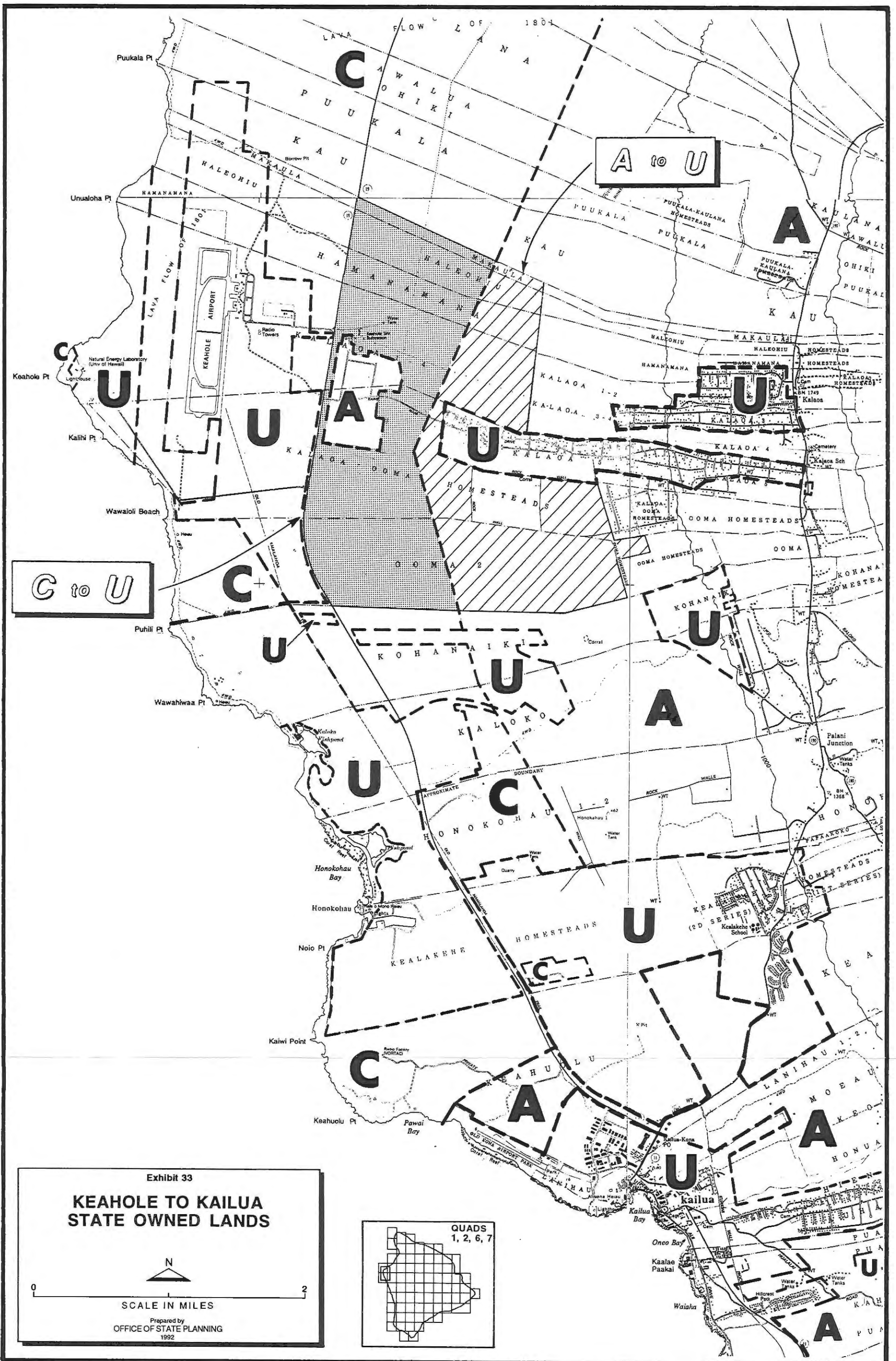
N

0 1

SCALE IN MILES

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C to U

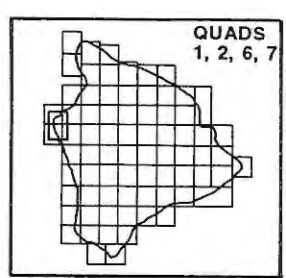
A to U

Exhibit 33  
**KEAHOLE TO KAILUA  
 STATE OWNED LANDS**

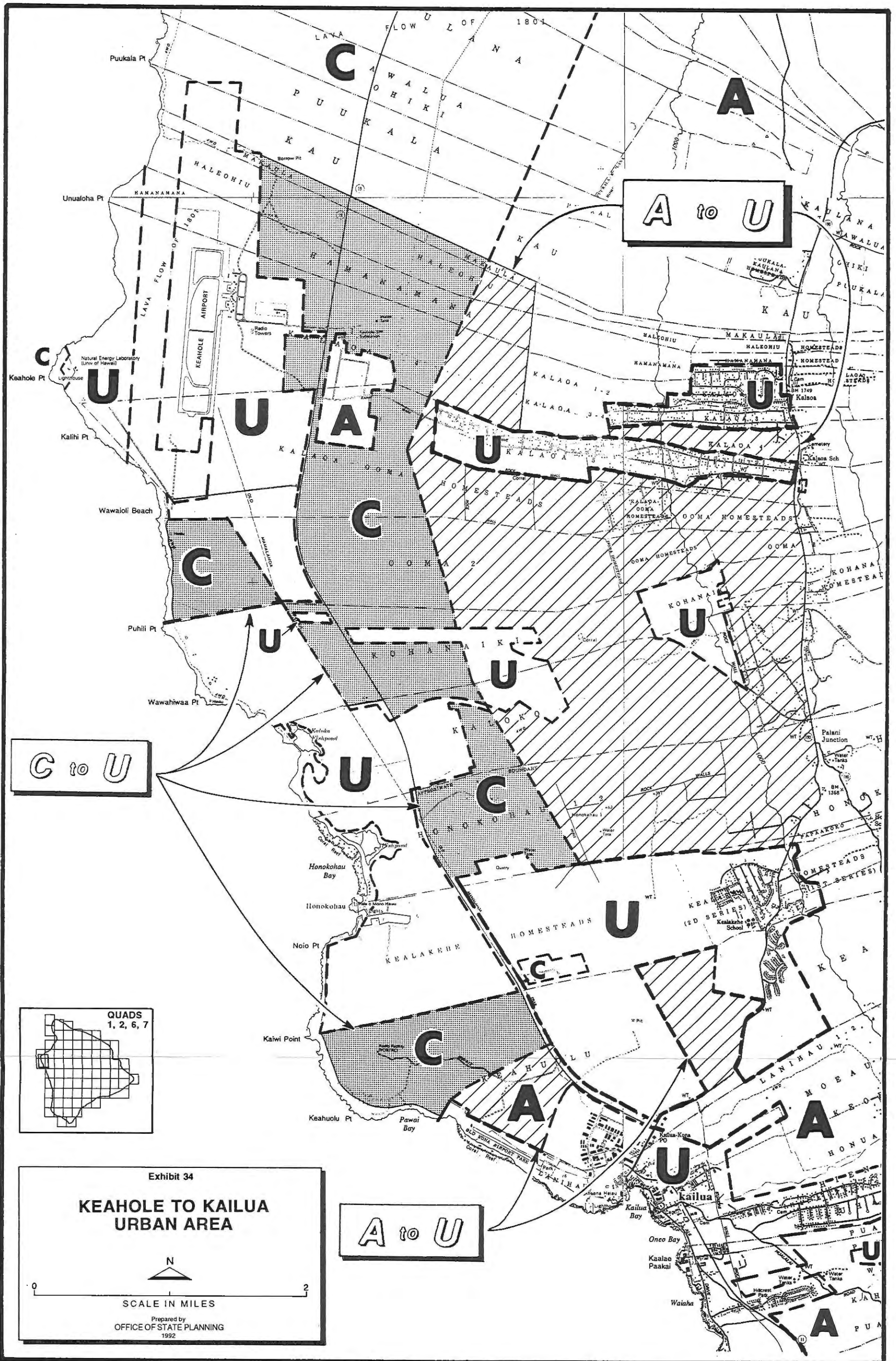
N

0 2  
 SCALE IN MILES

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**A to U**

**C to U**

**A to U**

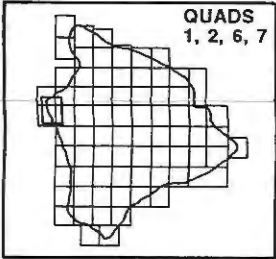


Exhibit 34

### KEAHOLE TO KAILUA URBAN AREA

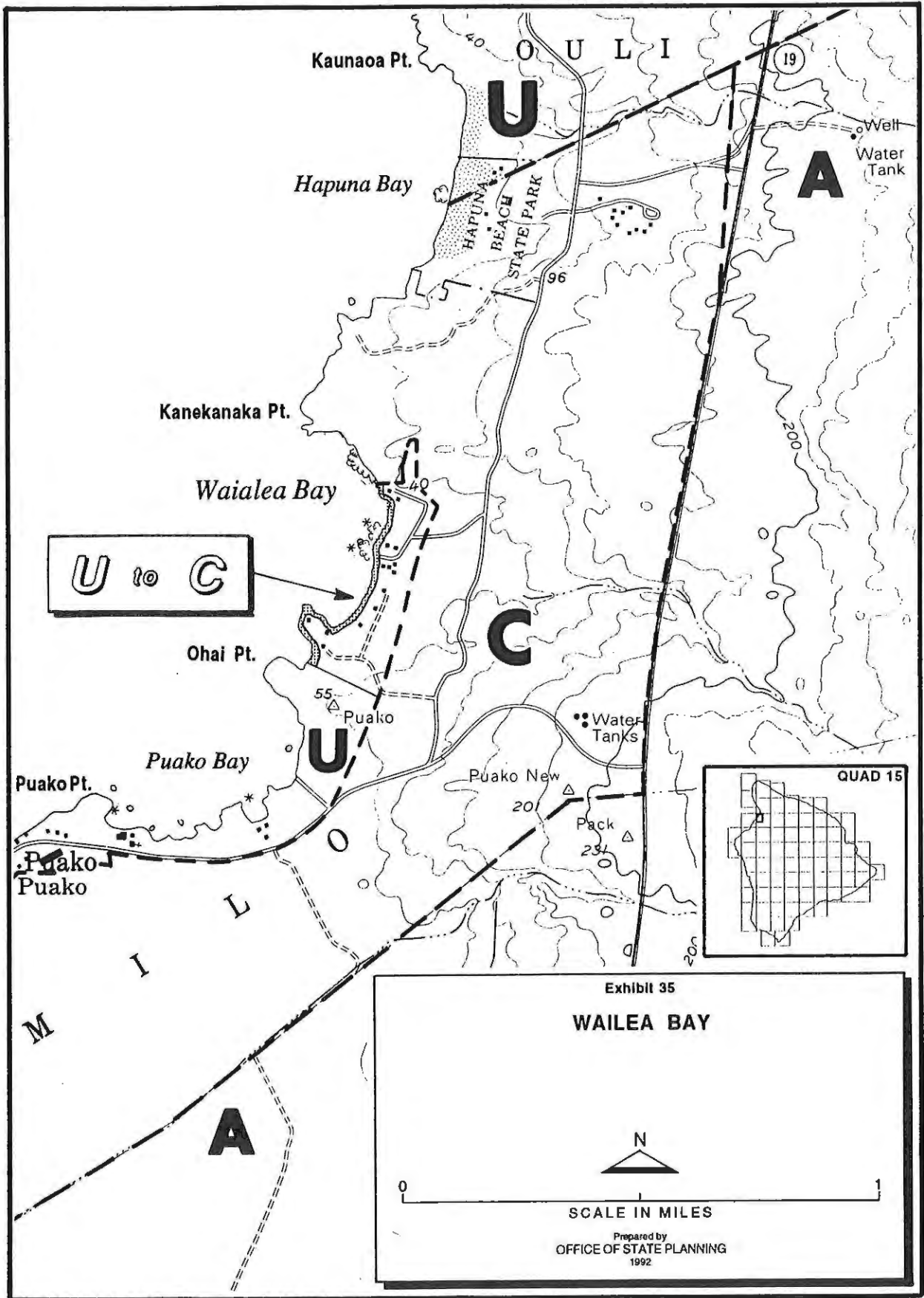
N

0 2

SCALE IN MILES

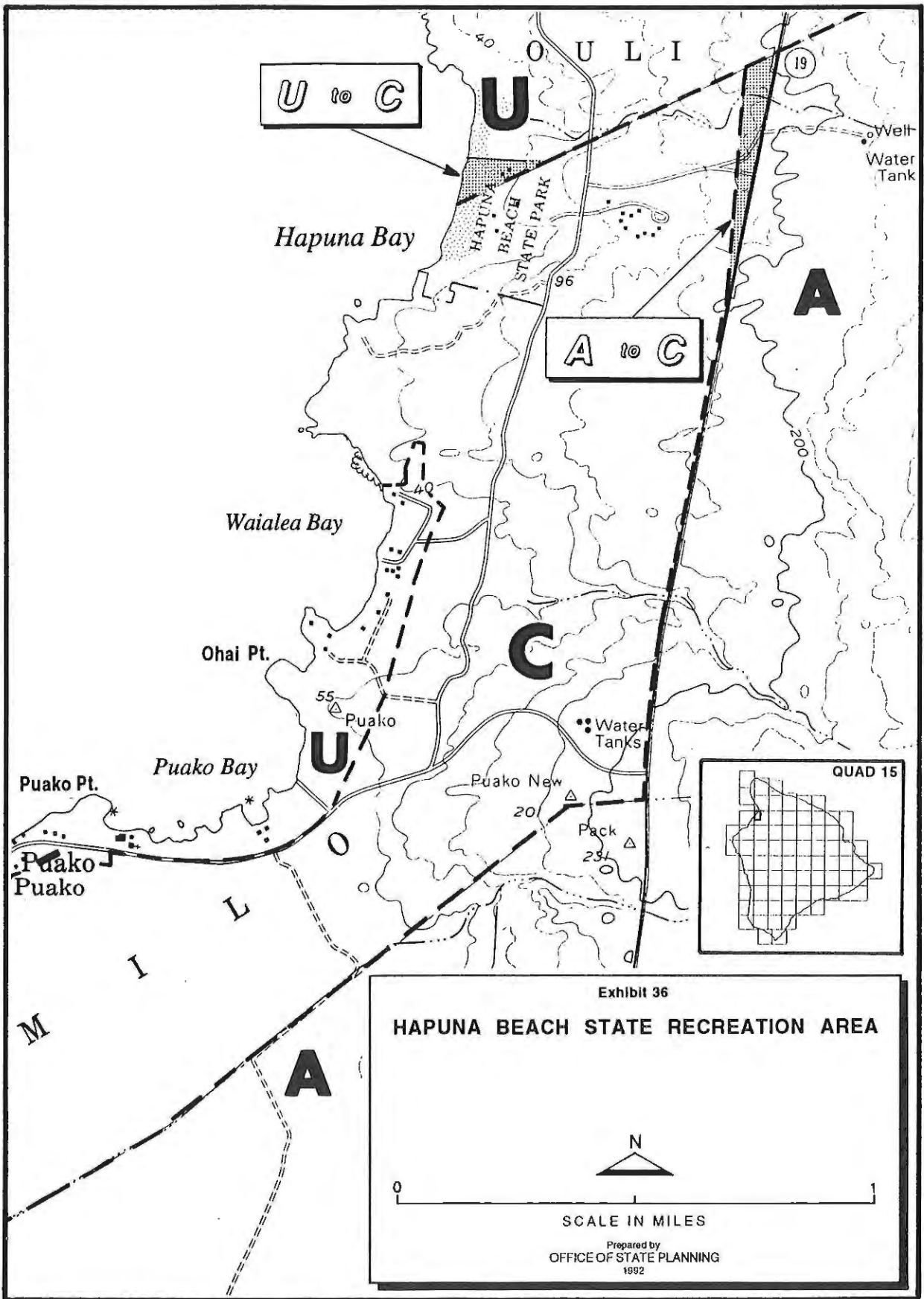
Prepared by  
OFFICE OF STATE PLANNING  
1992



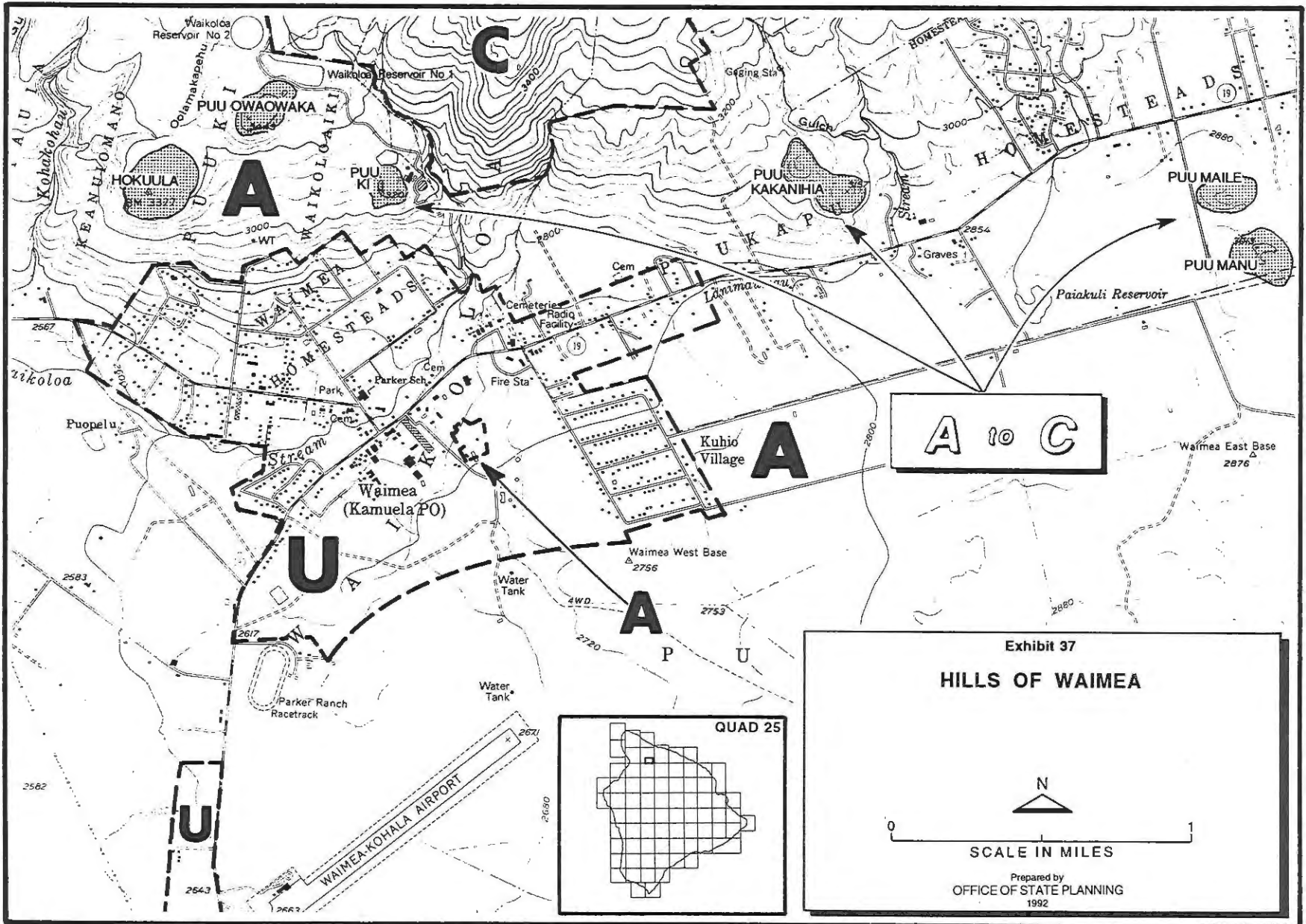












A to C

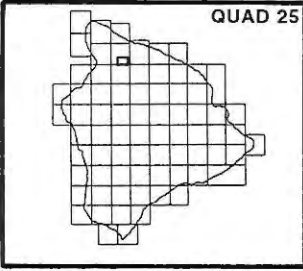
**Exhibit 37**  
**HILLS OF WAIMEA**

N

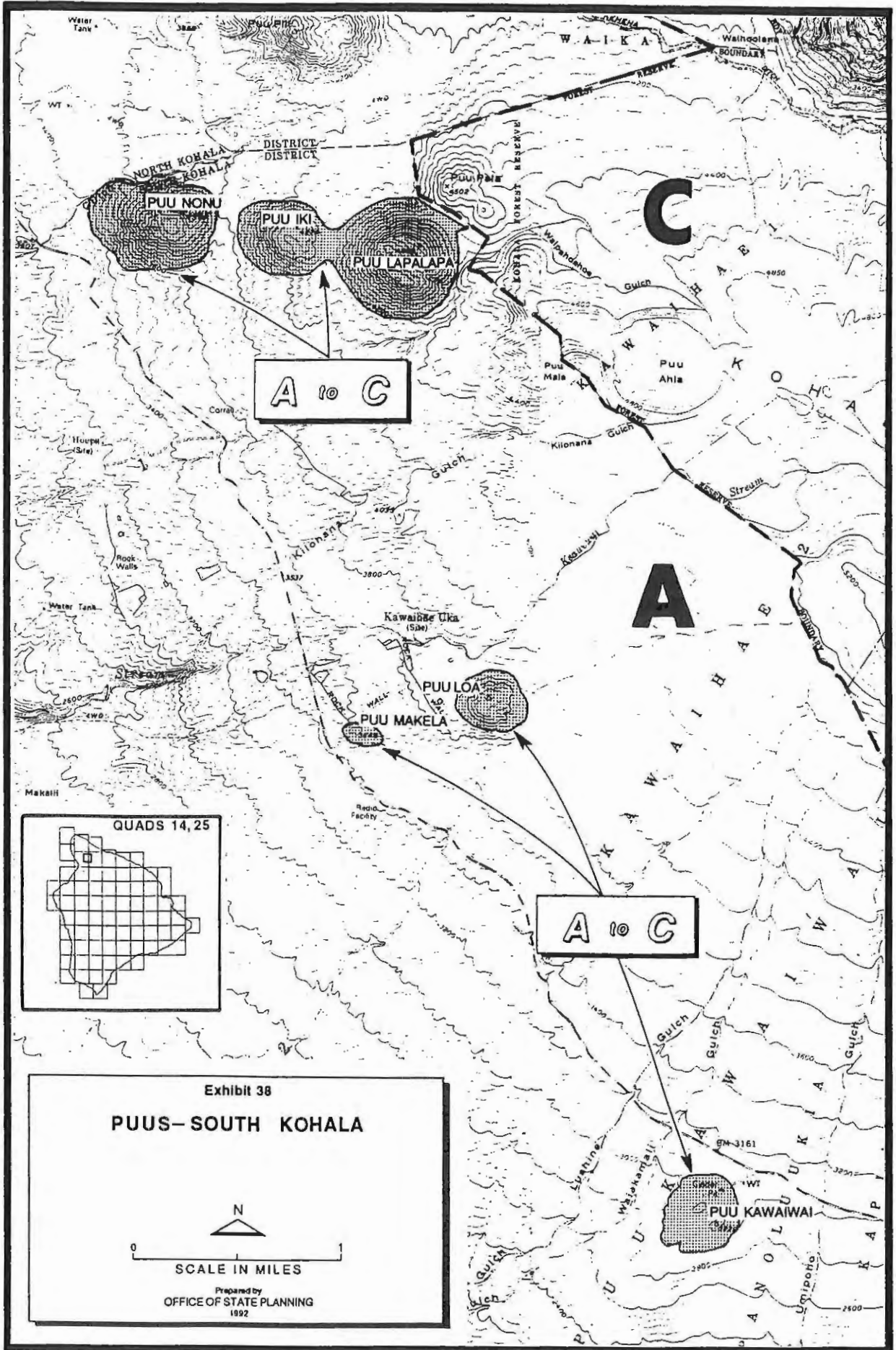
0 ————— 1

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1992







A to C

A to C

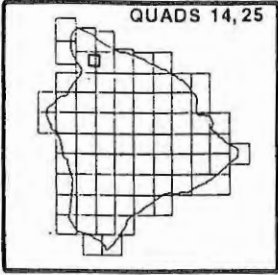


Exhibit 38  
**PUUS-SOUTH KOHALA**

N

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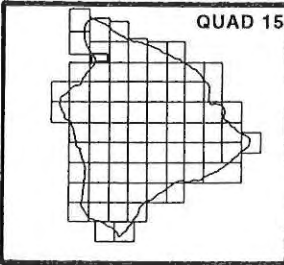
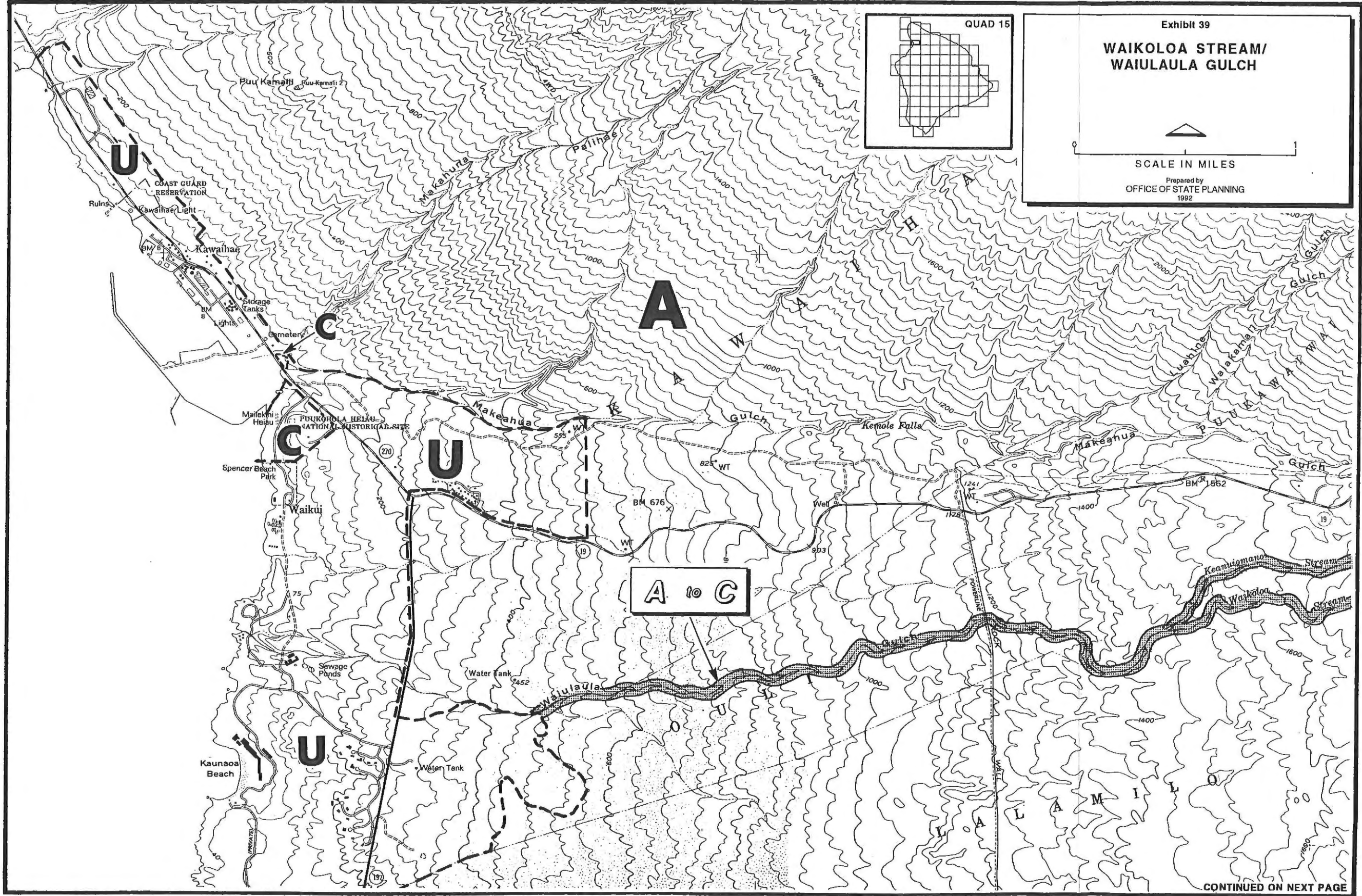


Exhibit 39

### WAIKOLOA STREAM/ WAIULAULA GULCH

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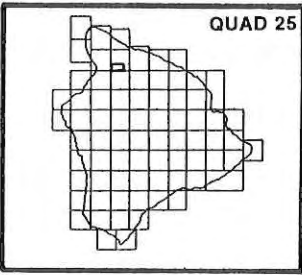
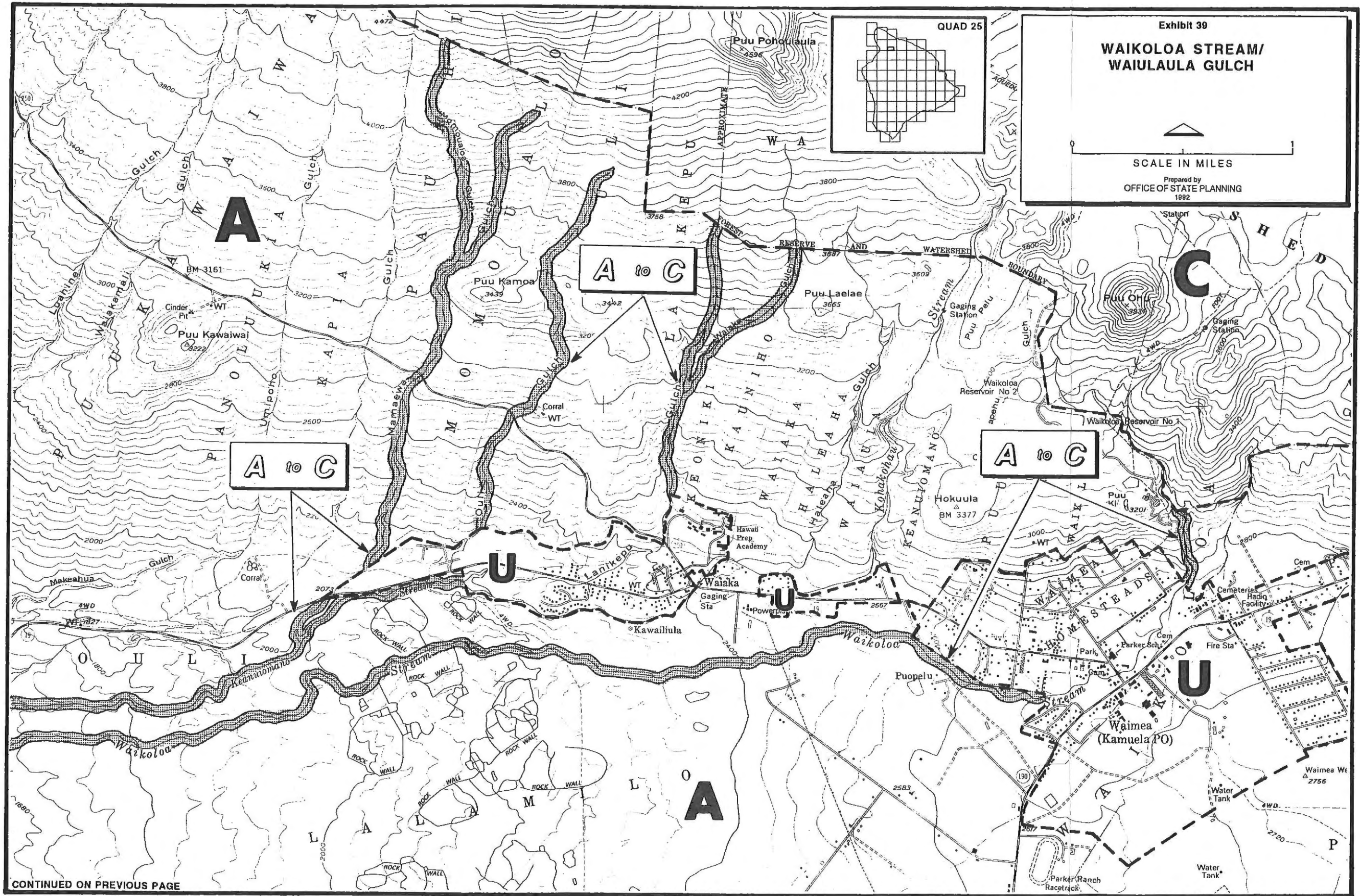


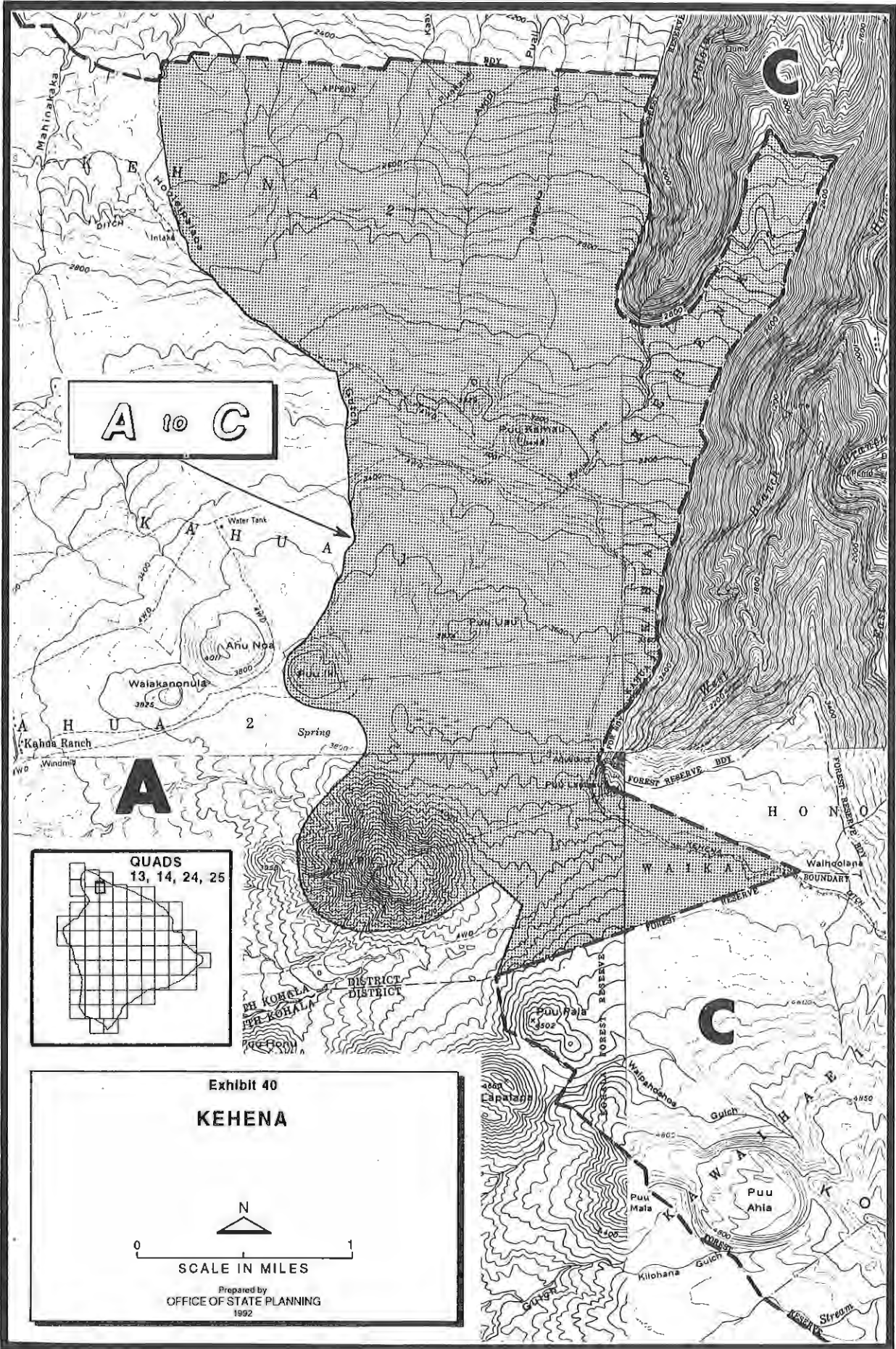
Exhibit 39  
**WAIKOLOA STREAM/  
WAIULAU LA GULCH**

SCALE IN MILES

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1992

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A to C

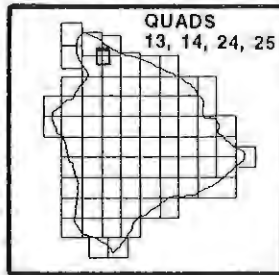


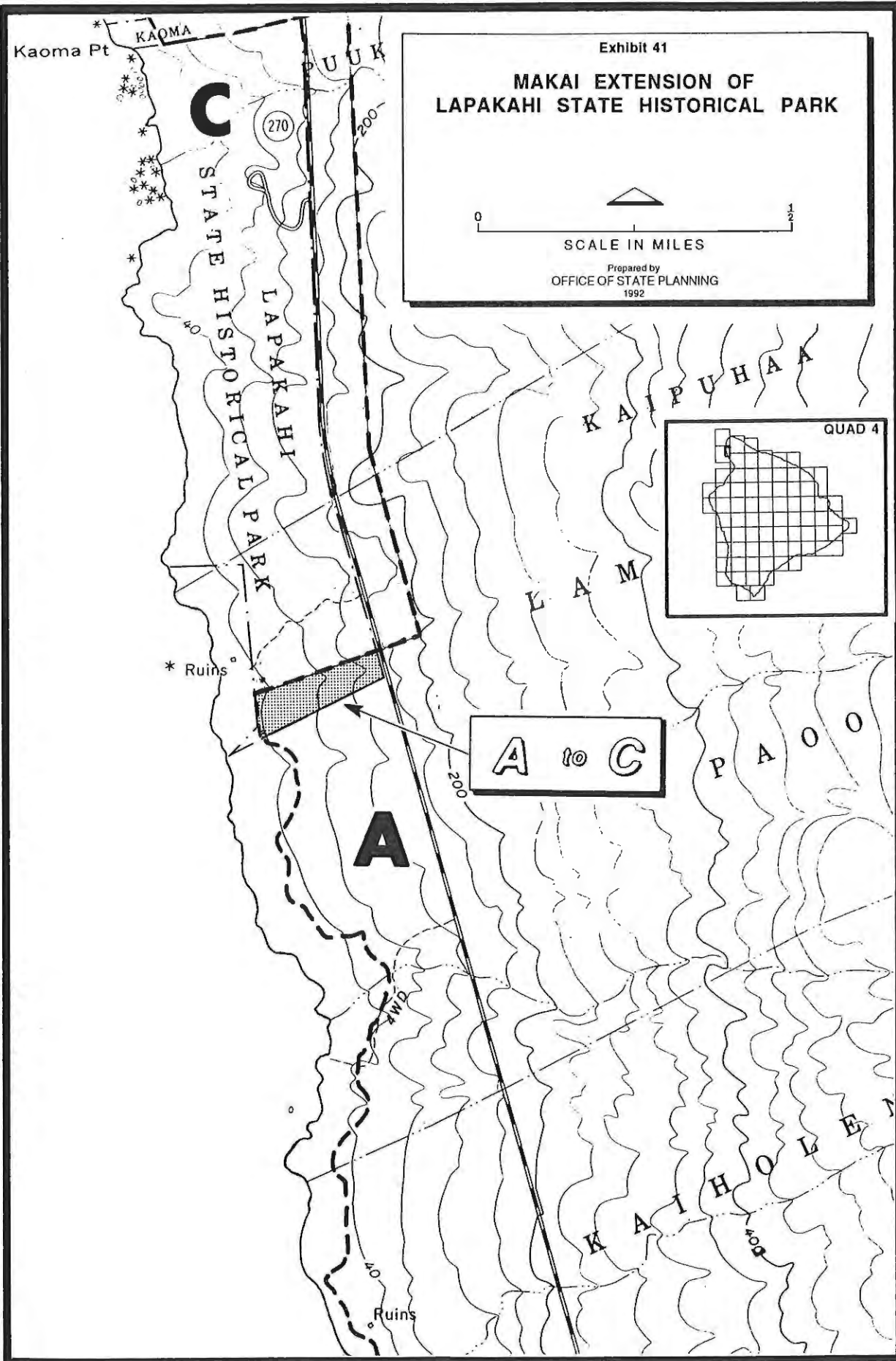
Exhibit 40  
**KEHENA**

N

0 1  
SCALE IN MILES

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1992





Kaoma Pt

KAOMA

POOK

(270)

200

STATE HISTORICAL PARK

LAPAKAHI

Exhibit 41

# MAKAI EXTENSION OF LAPAKAHI STATE HISTORICAL PARK

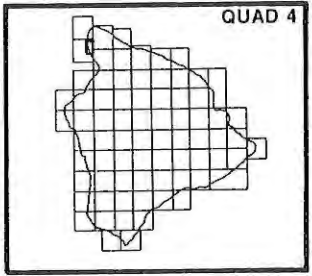


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1992

KAIPUHUA

EAM



QUAD 4

\* Ruins

A to C

PAOO

A

4WD

Ruins

KAIHOLE



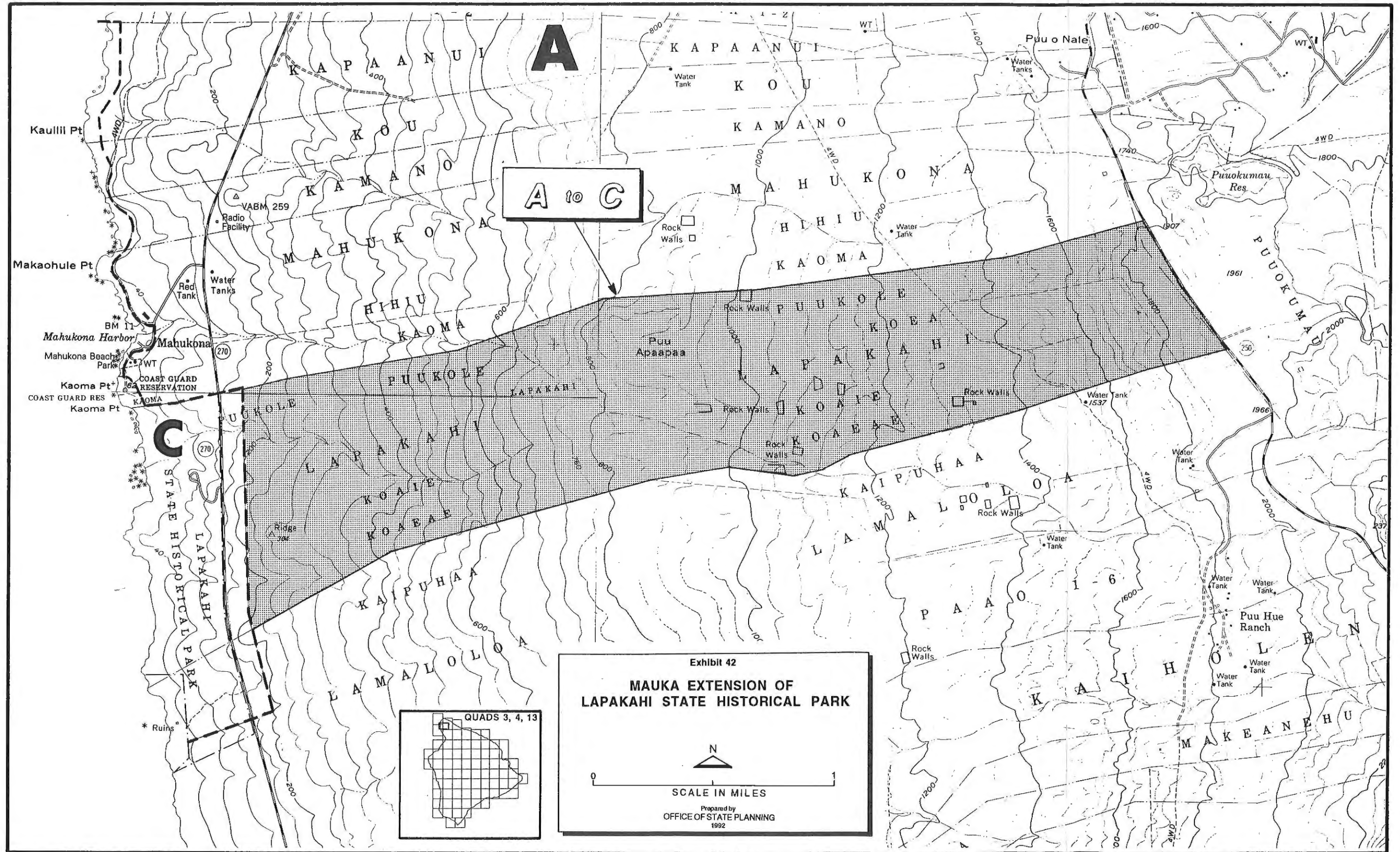
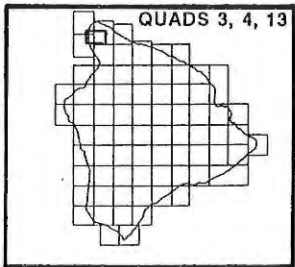


Exhibit 42  
**MAUKA EXTENSION OF  
 LAPAKAHI STATE HISTORICAL PARK**

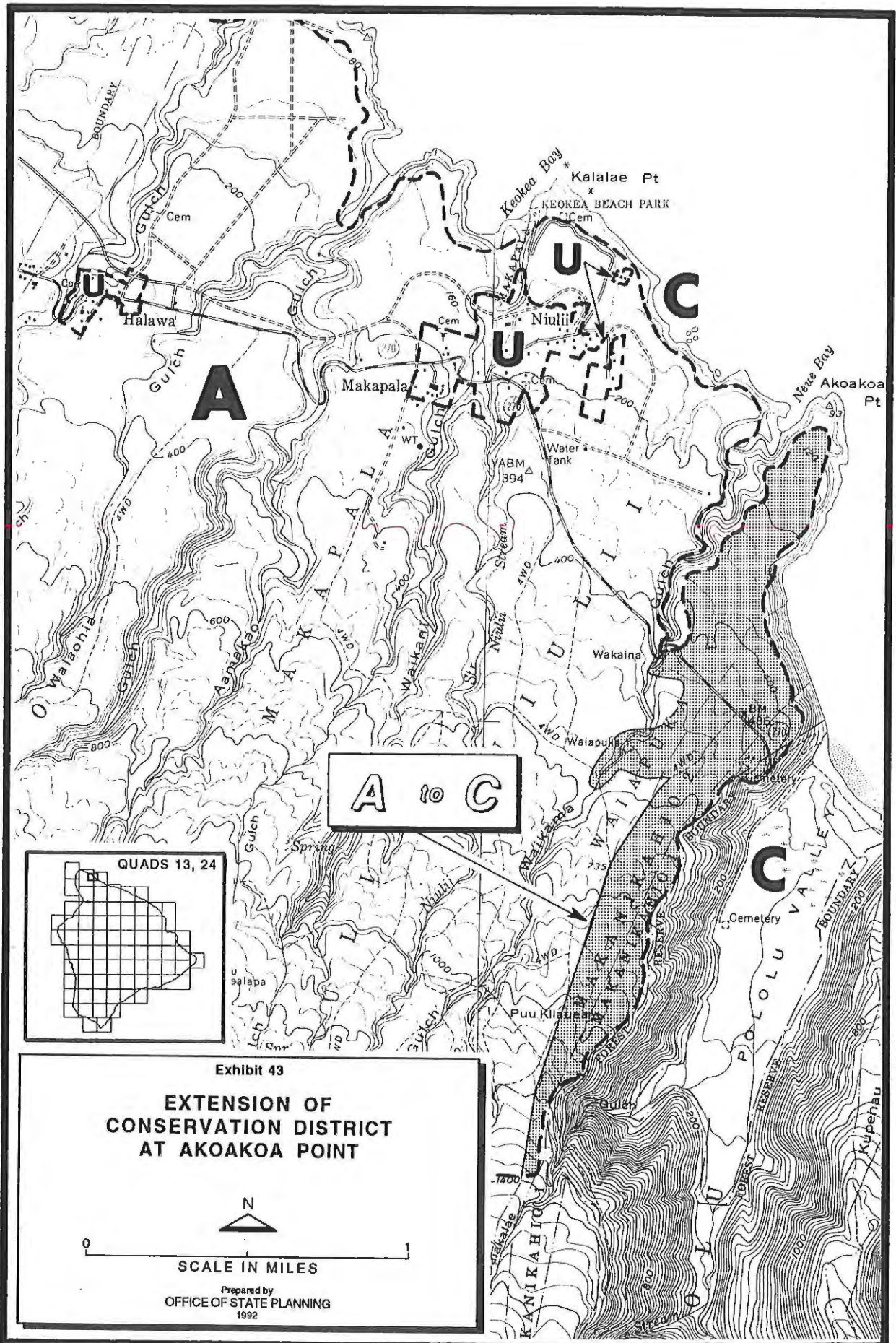
0 1  
 SCALE IN MILES

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 1992









A to C

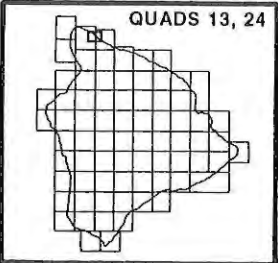


Exhibit 43

**EXTENSION OF CONSERVATION DISTRICT AT AKOAKOA POINT**

N

0 1

SCALE IN MILES

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1992



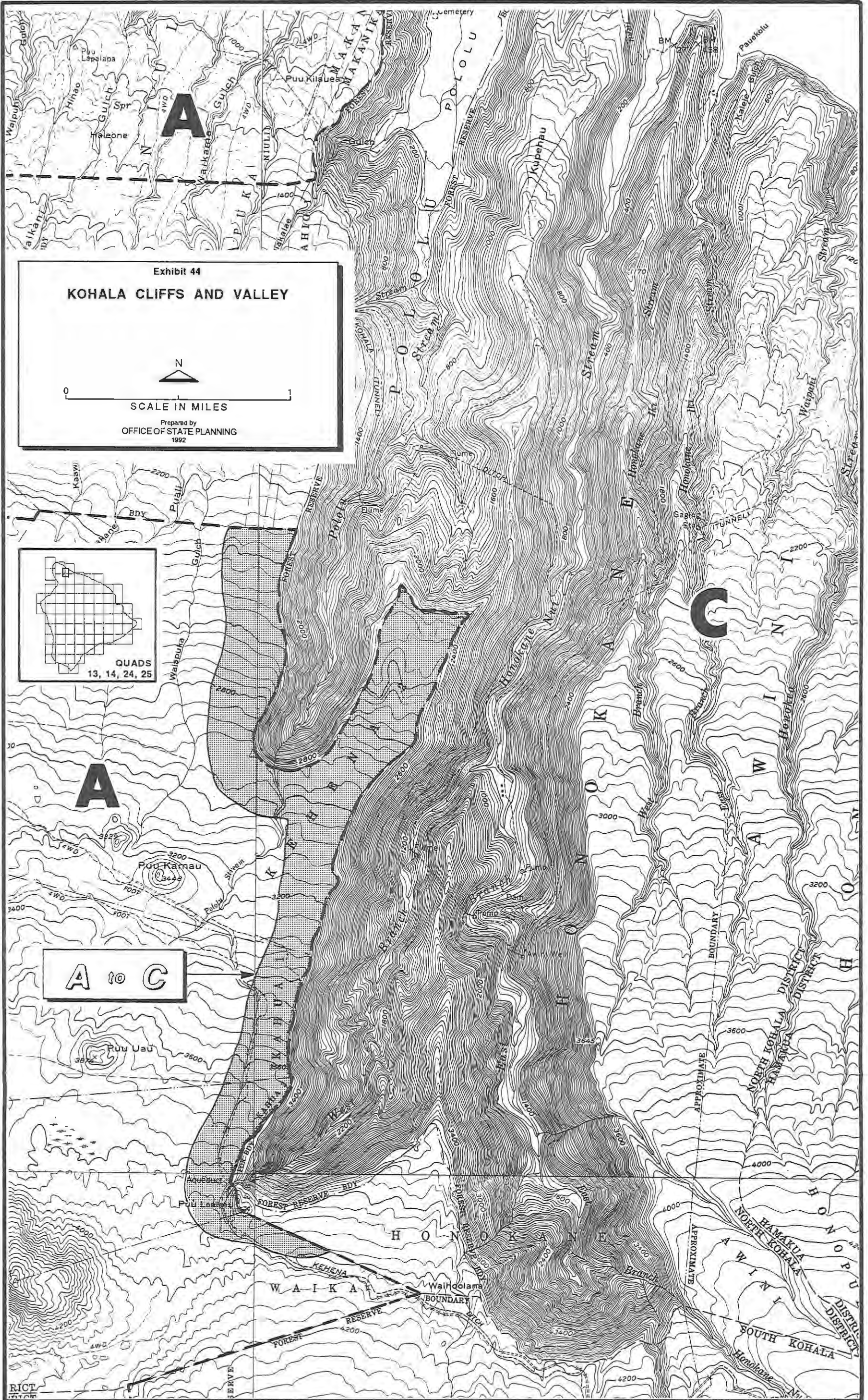
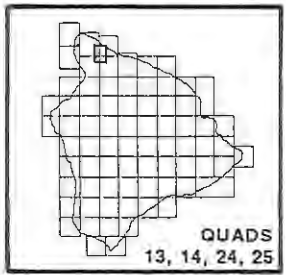


Exhibit 44  
**KOHALA CLIFFS AND VALLEY**

N

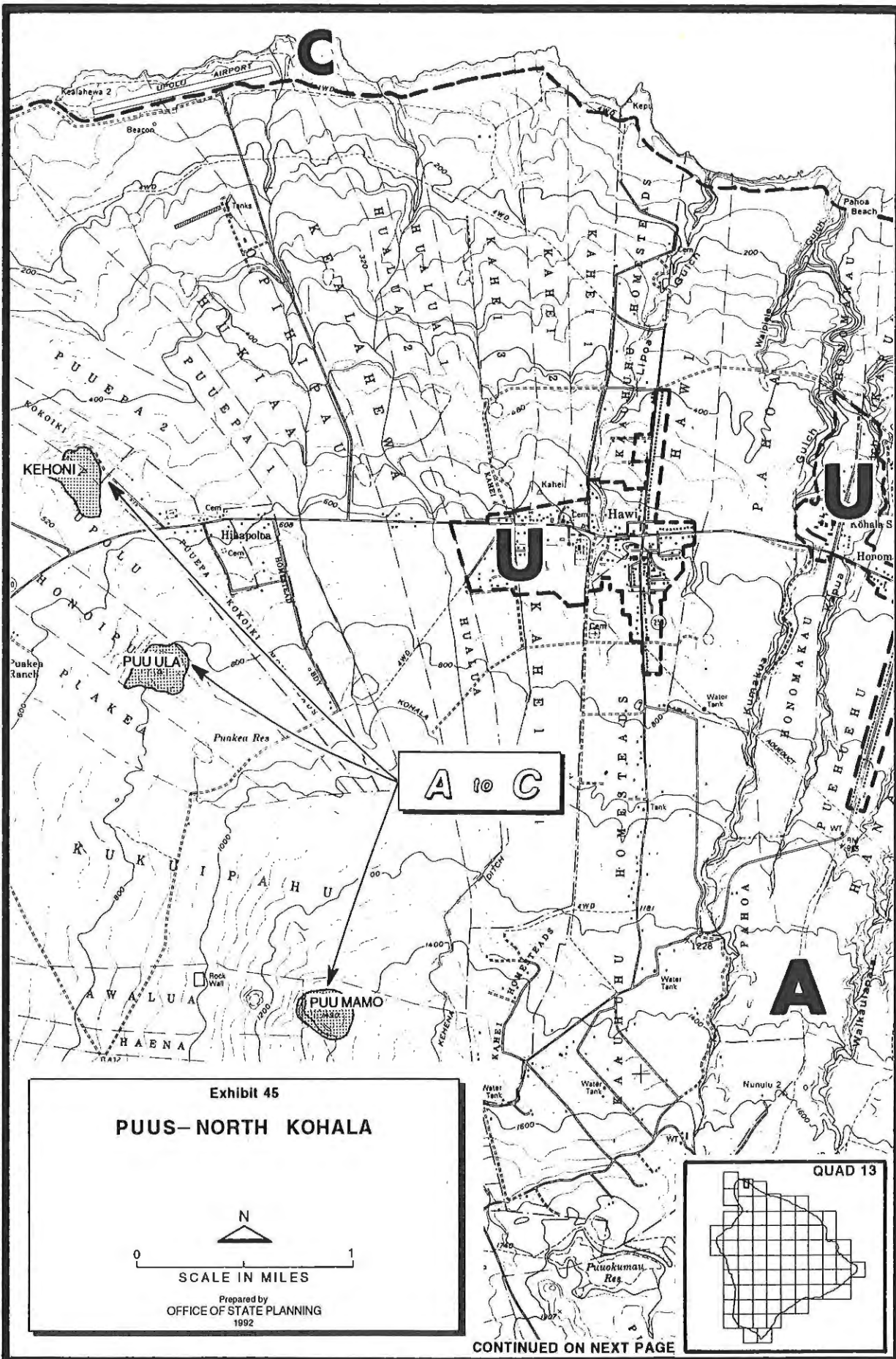
0 1  
SCALE IN MILES

Prepared by  
OFFICE OF STATE PLANNING  
1992



A to C



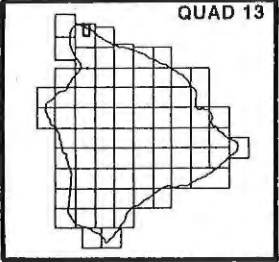


**Exhibit 45**  
**PUUS-NORTH KOHALA**

N  
 0 1  
 SCALE IN MILES

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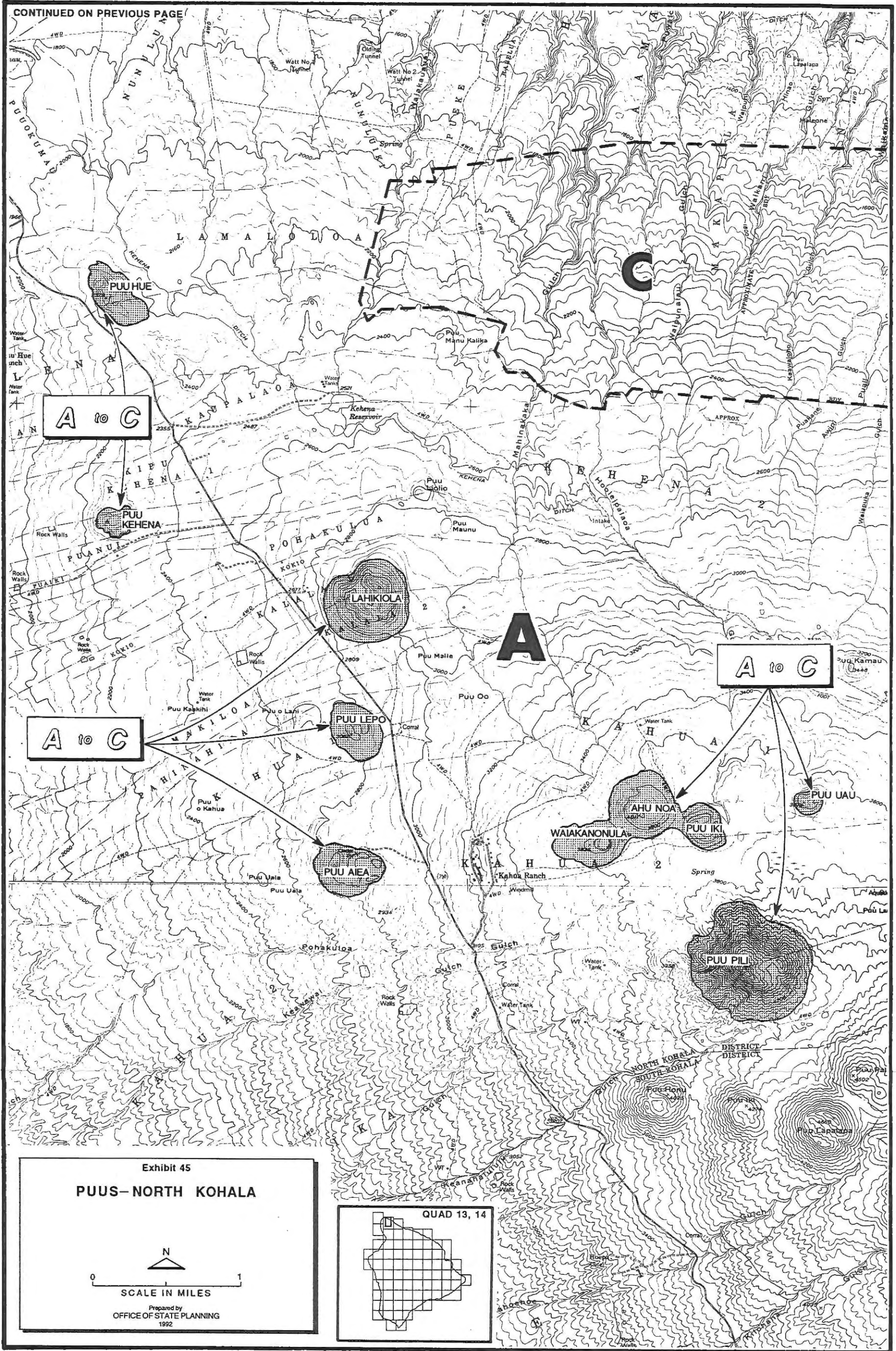
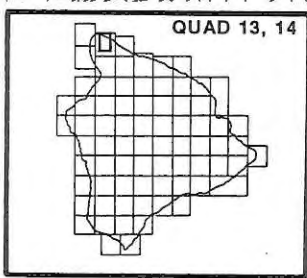


Exhibit 45  
**PUUS-NORTH KOHALA**

N

0 1  
 SCALE IN MILES

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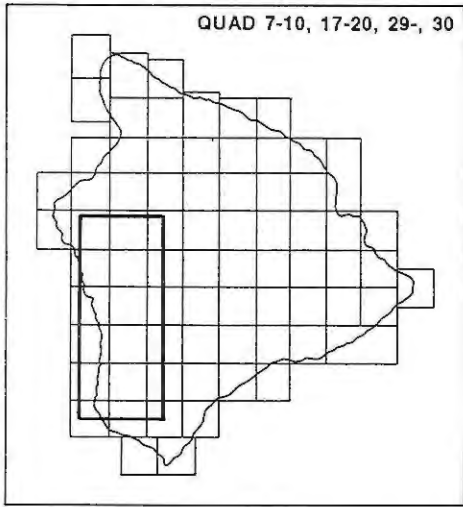
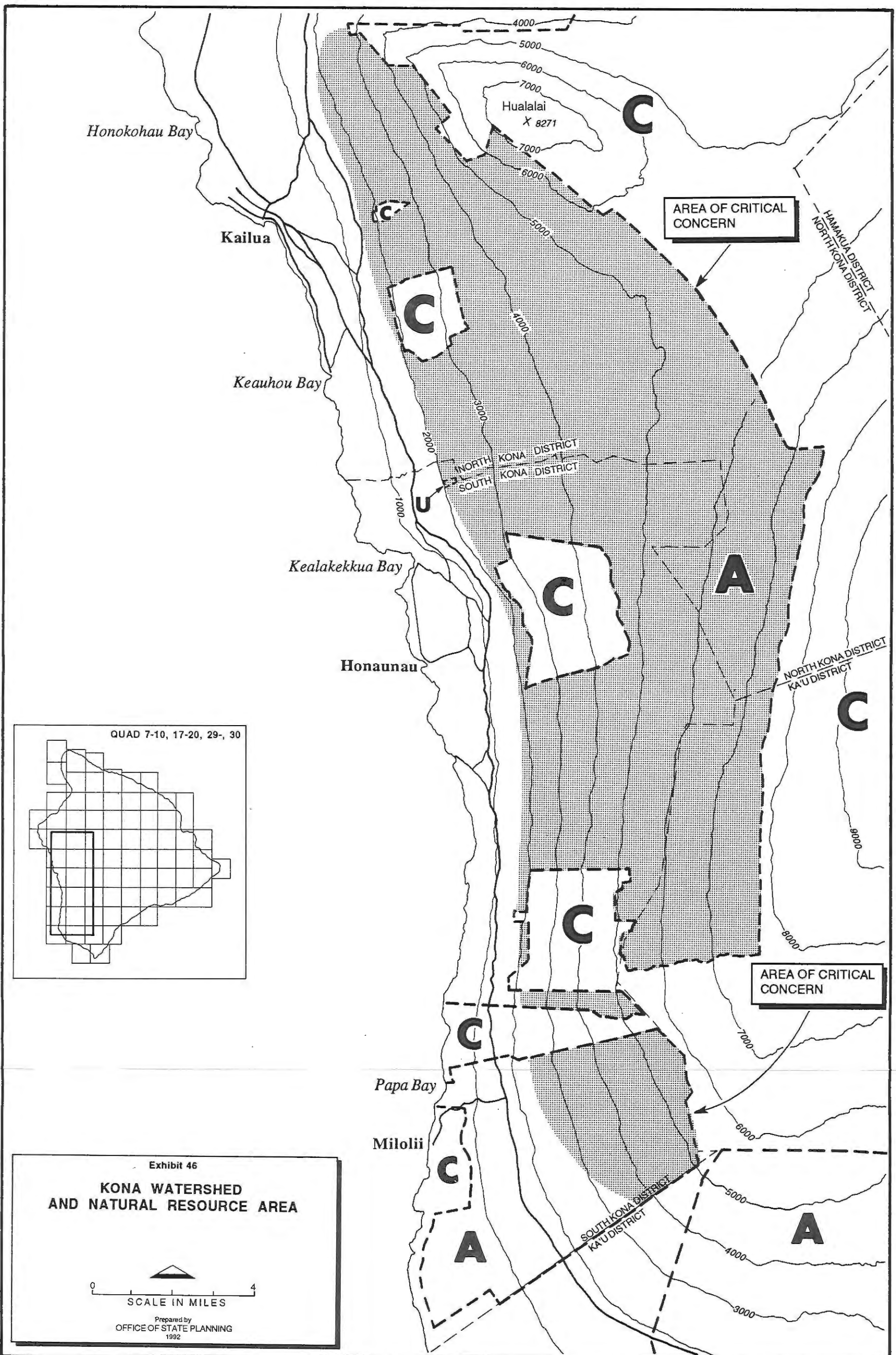


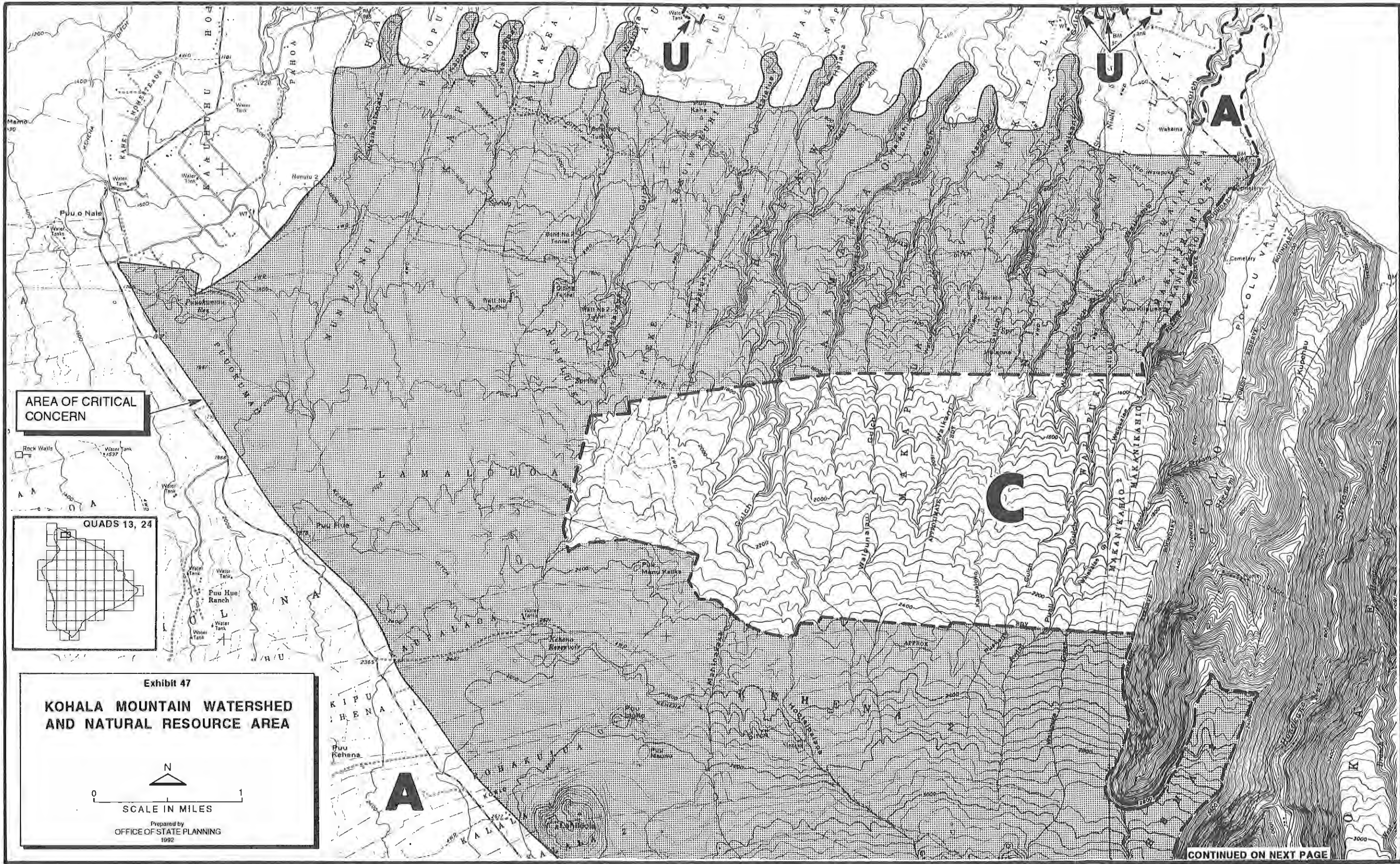
Exhibit 46

**KONA WATERSHED AND NATURAL RESOURCE AREA**

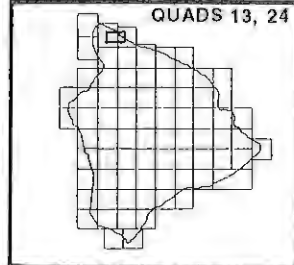
0 4  
SCALE IN MILES

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OFFICE OF STATE PLANNING  
1992





**AREA OF CRITICAL CONCERN**



**Exhibit 47**  
**KOHALA MOUNTAIN WATERSHED**  
**AND NATURAL RESOURCE AREA**

N

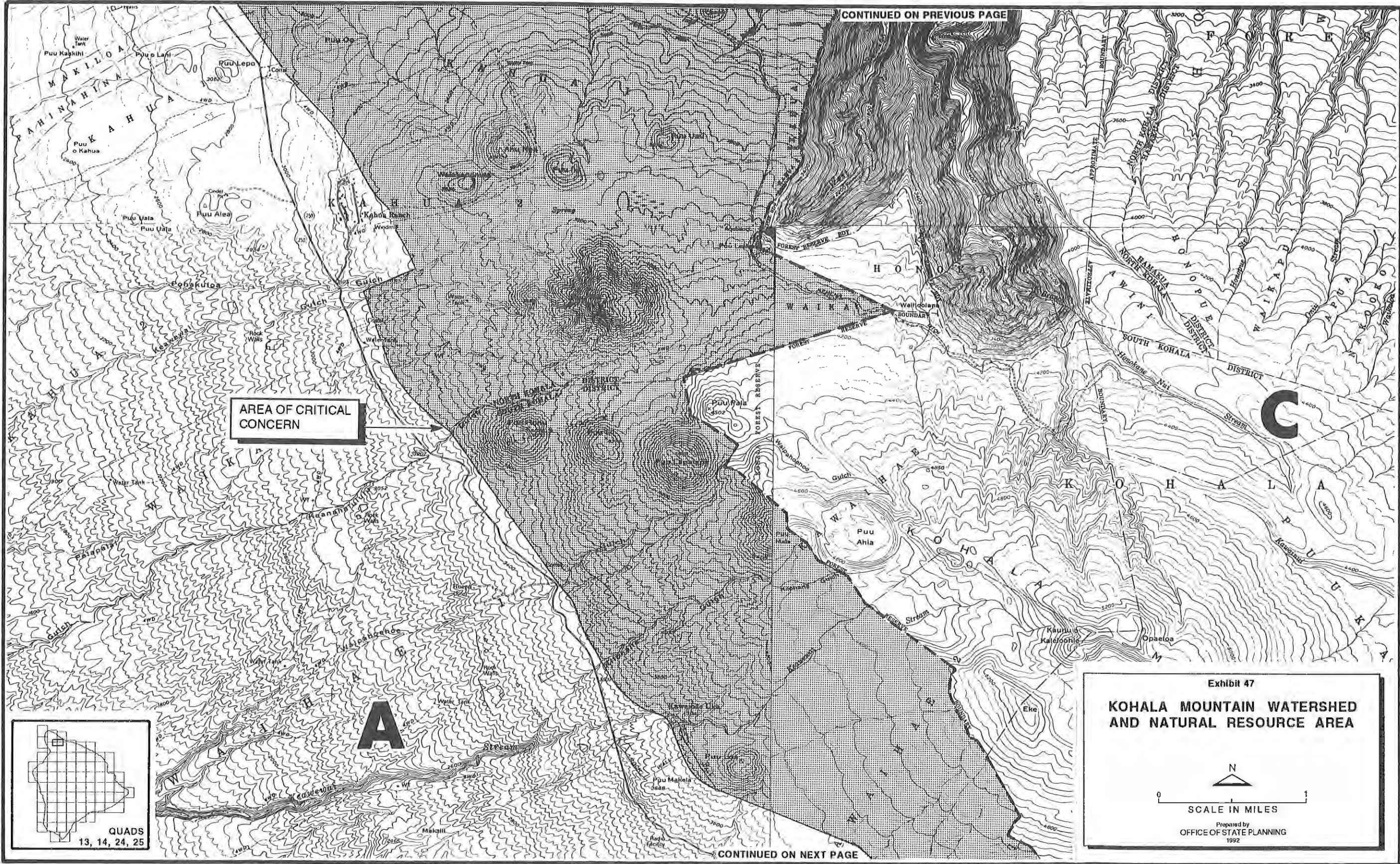
0 1  
 SCALE IN MILES

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AREA OF CRITICAL CONCERN

A

C

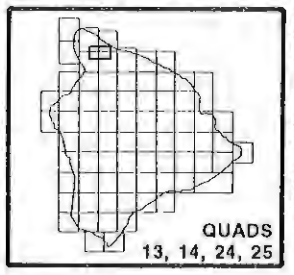


Exhibit 47  
**KOHALA MOUNTAIN WATERSHED  
 AND NATURAL RESOURCE AREA**

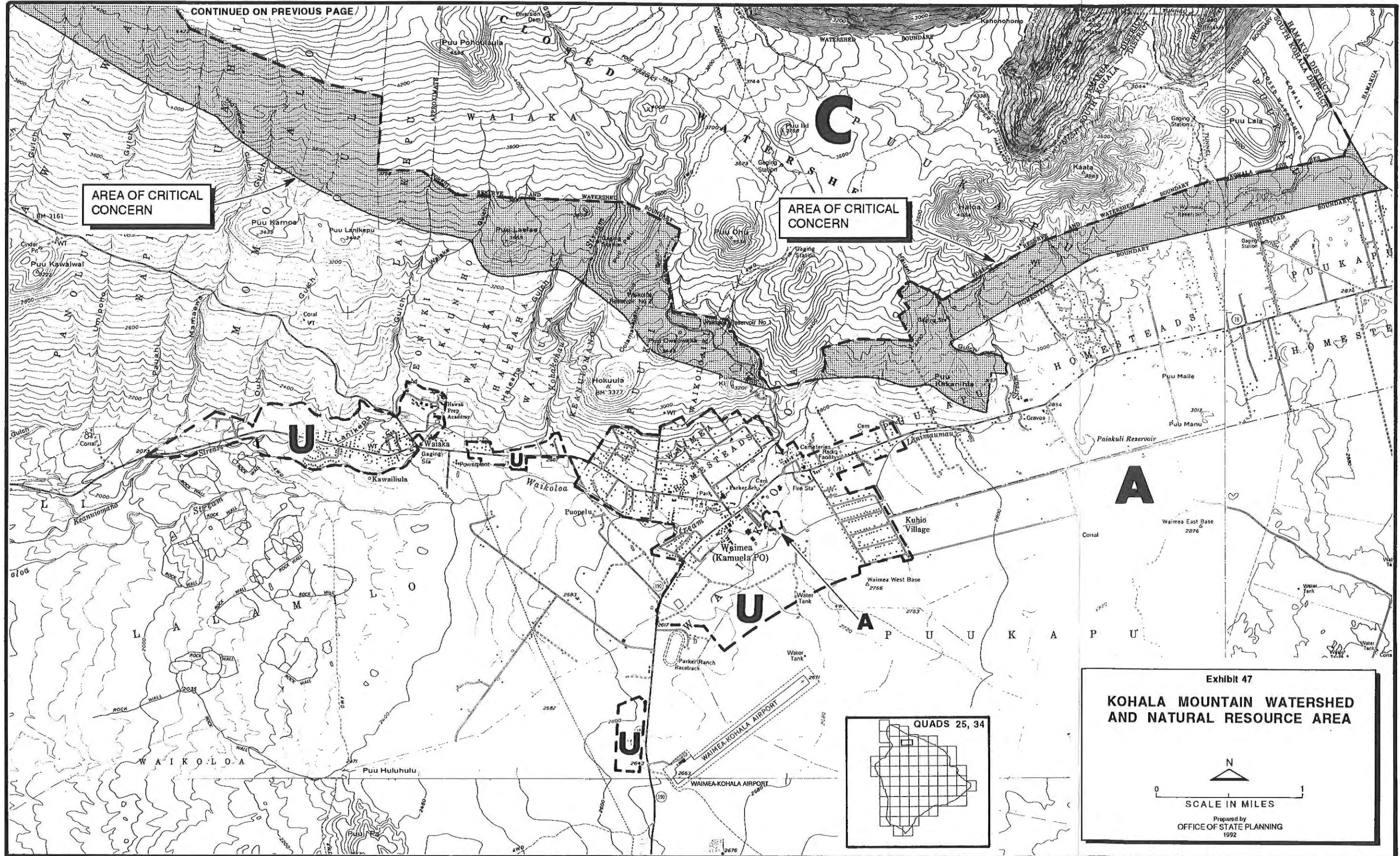
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0 1  
 SCALE IN MILES

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AREA OF CRITICAL CONCERN

AREA OF CRITICAL CONCERN

Exhibit 47

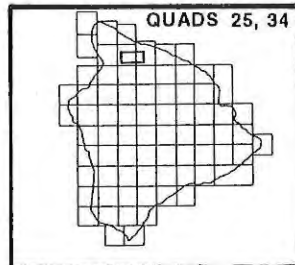
**KOHALA MOUNTAIN WATERSHED AND NATURAL RESOURCE AREA**

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SCALE IN MILES

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