BENJAMIN J. CAYETANO
GOVERNOR

BRIAN K. MINAAI
DIRECTOR

DEPUTY DIRECTORS
GLENN M. OKIMOTO
JADINE Y. URASAKI

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:
HWY-RM
3.78511

RECEIVED
'01 JUL 27 P4:04
OFC. OF ENVIRONMENTAL
QUALITY CONTROL

JUL 26 2001

TO: GENEVIEVE SALMONSON, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: BRIAN K. MINAAI, DIRECTOR OF TRANSPORTATION

SUBJECT: FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR COUNTY OF MAUI RURAL FIBER OPTIC DUCT LINES PROJECT BY SANDWICH ISLES COMMUNICATION, INC., ON BEHALF OF DEPARTMENT OF HAWAIIAN HOMELANDS

The State of Hawaii, Department of Transportation, has reviewed the comments received during the 30-days public comment period which began on March 23, 2001. We have determined that this project will not have significant environmental effects and have issued a FONSI. Please publish this notice in the August 8, 2001 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Forms and four copies of the final EA. Please call Ms. Angela Naito of our Highways Division, Right-of-Way Branch at 692-7331 if you have any questions.

Enclosures

100

Kahoolawe. The open space character is typified by the Elleair Golf Course and the vacant ranch lands mauka of the Piilani Highway. By nature of its design, the underground fiber optic ductline is not anticipated to have any negative impacts on the surrounding scenic and open space resources.

As previously noted for the Kihei area (refer to Chapter II), the proposed fiber optic project is not anticipated to have long-term effects on public services and socio-economic conditions in the Kihei and Wailea region.

Piilani Highway is the primary arterial highway for South Maui. It is a two-way, two-lane State arterial running parallel to South Kihei Road. The existing shoulder areas along the Piilani Highway will provide adequate space for the construction of the ductline with minimal impacts on existing traffic congestion. It is noted that the State Department of Transportation (DOT) is planning to restripe the roadway to add two (2) lanes to address traffic congestion issues in South Maui. Accordingly, construction coordination with the DOT will be required should this route be selected.

The construction of the underground ductline within the roadway rights-of-way are anticipated to have no long-term impacts on traffic operations. While potential traffic delays may be experienced during construction, use of appropriate traffic controls, including off duty

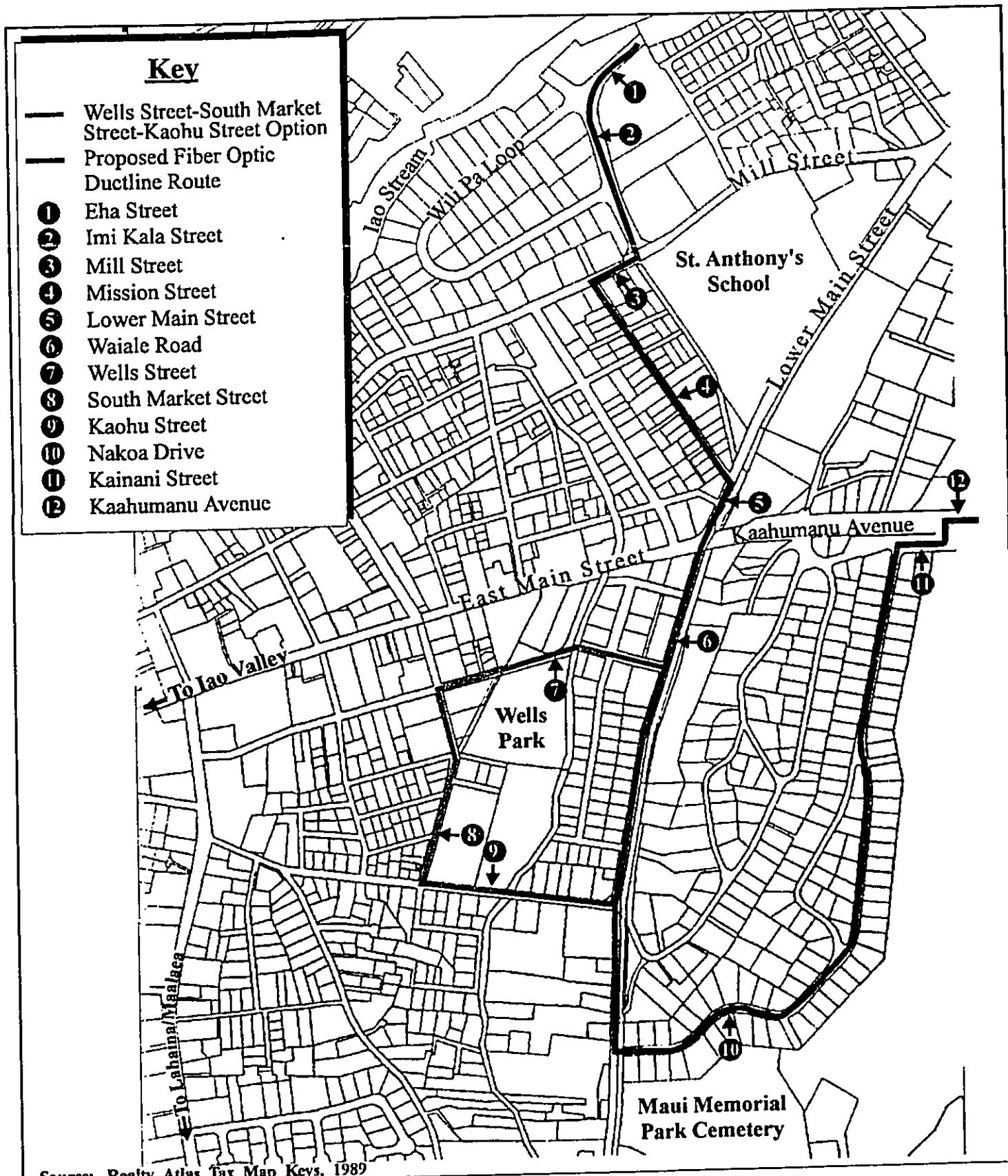
police officers, is expected to ensure the smooth and safe flow of traffic.

Should this option be selected, no significant environmental impacts are anticipated.

2. ***Wells Street-South Market Street-Kaohu Street Option***

Section 106 consultation with members of the Maui/Lana'i Islands Burial Council indicated the need to address the identified existence of burials located in the vicinity of the Waiale Road alignment. Therefore, an option through Wailuku Town was developed for possible consideration. The alternative route traverses Wells Street, South Market Street and Kaohu Street. See Figure 23. The following assessment is presented in order to address possible impacts and mitigation measures, should this option be selected.

Land uses along the proposed Wells Street-South Market Street-Kaohu Street option include a broad range of commercial, recreational, public/quasi public and residential uses. At the origin of the route, commercial land uses are located along both sides of Wells Street, as well as Wells Park and the Wailuku Fire Station. As the route turns south and traverses South Market Street, land uses include the Old Wailuku Gym, Iao Intermediate School and a mix of commercial and residential uses. At the South Market Street- Kaohu Street intersection, the route heads east towards Waiale Road. Land uses along Kaohu Street include Iao School, Kaohu Store, the County of Maui Baseyard and scattered residential and commercial uses. At Wailae Road, the route resumes it's original alignment, heading



Source: Realty Atlas Tax Map Keys, 1989

NOT TO SCALE

Figure 23 Sandwich Isles Communications Fiber Optic Ductline

Wells Street-South Market Street-Kaohu Street Option

MUNEKIYO & HIRAGA, INC.

Prepared for: Sandwich Isles Communications, Inc.

south. As with other route segments, the Wells Street-South Market Street-Kaohu Street option would provide for underground ductlines within the shoulder areas of the existing roadway corridor. As such, this option is not anticipated to have any adverse effects on the surrounding land uses. Further, the telecommunications cables and ancillary structures, proposed for utility purposes, are permitted in the land use districts through which the alternative route traverses. This alternative route is located outside the boundaries of the County of Maui's Special Management Area.

The underlying soil association of the alternate route is the Pulehu-Ewa jaucas soil association. Found on level to moderate sloping terrain, this soil association consists of deep, well drained soils that have a moderately fine textured to coarse textured subsoil. There are no anticipated adverse impacts on the existing underlying soils of the proposed alternative.

There are no identified streams encountered along the proposed alternative route. However, the route does encounter the Spreckels Ditch at the Wells Street-Kinipopo Street intersection and then again along Kaohu Street, immediately south of Iao Intermediate School.

Generally, the area of the proposed Wells Street-South Market-Kaohu Street option is designated by the Flood Insurance Rate Map as Zone C, or areas of minimal flooding. However, near the Kaohu Street-Waiale Road intersection, a limited section of the roadway corridor is located in Zone AO, areas of 100 year shallow flooding with depths between one (1) and three(3) feet. Further, the entire route

area is located outside the designated boundaries of the tsunami evacuation areas. The proposed alternative would involve the installation of an underground ductline system within an existing right-of-way. Should this route be utilized, it is not anticipated to have an adverse effect on existing drainage patterns, nor will the considered alternative alter the existing topography within the roadway corridors.

Natural vegetation along the Wells Street-South Market Street-Kaohu Street alternative route is typical of the Wailuku area. Refer to Chapter II.E. for a discussion of flora and fauna common to the Wailuku area in the vicinity of the proposed alternative route. As the proposed fiber optic ductline would be placed underground, there are no anticipated adverse impacts on the flora, fauna or avifauna of the project area. In addition, there are no identified rare or endangered species located within the immediate vicinity of the proposed Wells Street-South Market Street-Kaohu Street alternative route.

Air quality and noise characteristics of the proposed alternative route are primarily defined by automobile traffic along the roadway corridors. In addition, the burning of sugar cane to the south and southeast may also result in temporary decreased air quality during harvesting operations. However, these conditions are considered intermittent and temporary in nature.

Construction related activities associated with project implementation may result in temporary increases in noise and dust. Best Management Practices (BMP's) will be utilized to ensure that wind-blown emissions and other construction related impacts are

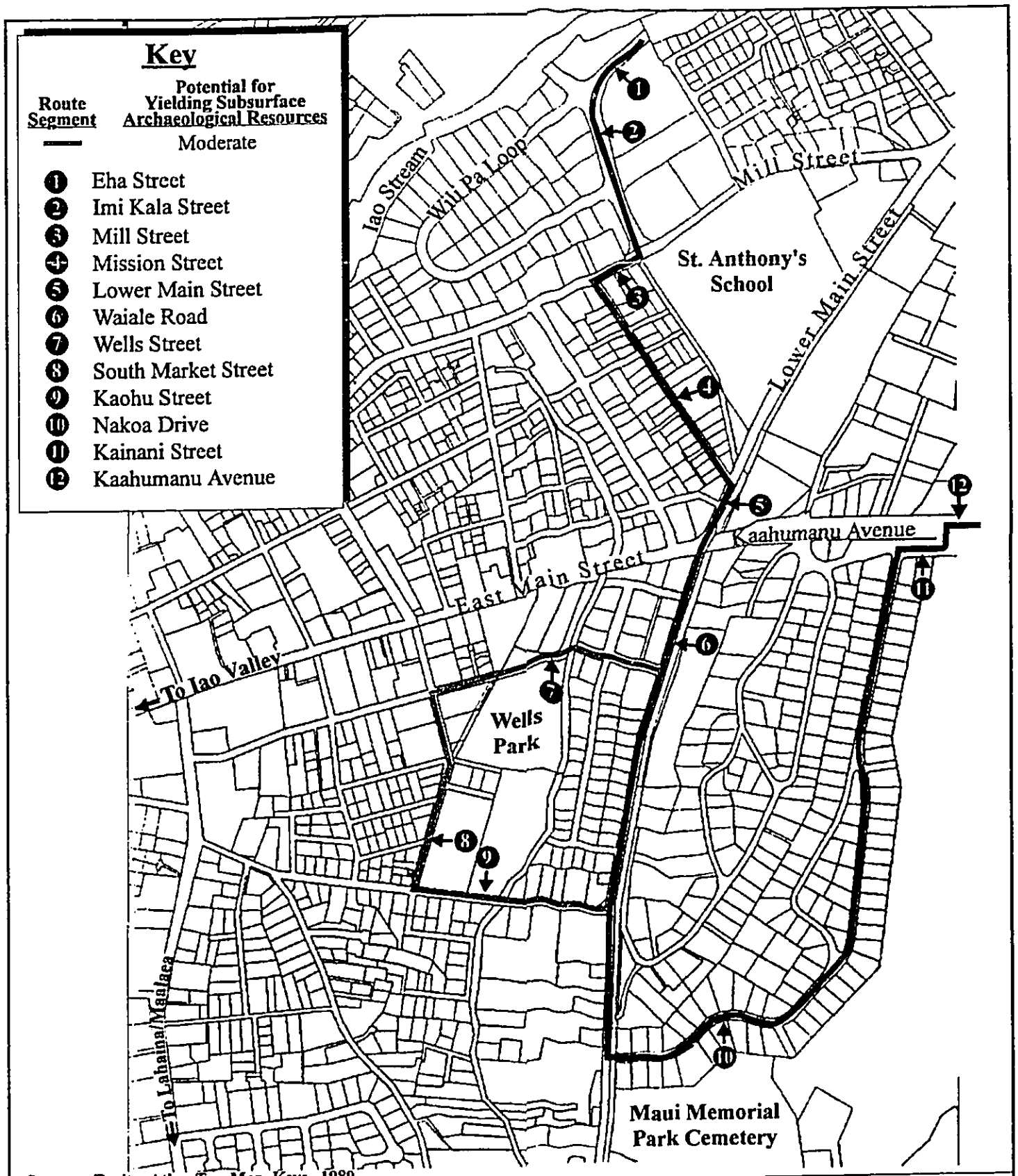
minimized. Should this route be selected, there are no anticipated long-term adverse impacts associated with the underground installation of the fiber optic cables on the existing air quality and ambient noise levels.

The proposed Market Street alternative route has been determined to have a moderate level of archaeological sensitivity. See Figure 24. Prior studies in the area have indicated minimal evidence of cultural materials present. However, the alignment's close proximity to the sensitive Lower Main Street/Waiale corridor necessitates the moderate assessment.

In order to minimize the adverse impacts of the utility line installation on the cultural environment possibly contained in the alternative route, both full time and part time monitoring will remain in effect, as warranted by specific site conditions. In addition, mechanical trenching will not proceed in increments larger than 12 inches and when the subsurface conditions have been adequately assessed. Lastly, spot-monitoring (twice daily) may be instituted at the discretion of the supervisory monitor.

From a cultural impact standpoint, this option is considered preferred to the Waiale Road alternative as it traverses an area having less potential for encounters with subsurface cultural material, including burials.

Should any historic sites or bridges be encountered along the proposed route, coordination with the Maui County Cultural



Source: Realty Atlas Tax Map Keys, 1989

NOT TO SCALE

Figure 24 Sandwich Isles Communications Fiber Optic Ductline

Wells Street-South Market Street-Kaohu Street Archaeological Assessment

MUNEKIYO & HIRAGA, INC.

Prepared for: Sandwich Isles Communications, Inc.

Resources Commission will be conducted during project design and implementation in order to minimize potential adverse impacts.

The existing scenic environment of the proposed alternative route is defined by the West Maui Mountains to the west and Haleakala to the east. By the nature of it's underground design, the fiber optic cables are not anticipated to have any negative impacts on the surrounding scenic and open space resources.

As previously noted in Chapter II, the proposed fiber optic project is not anticipated to adversely impact the public services and socio-economic conditions in the Wailuku area.

The roadway corridors along the alternative route are generally two-lane county roadways, with no sidewalks, curbs or gutters. The segment of the proposed alternative route is served by County water and wastewater systems. Underground distribution and collection lines are found along various sections of the route. Overhead utility telephone and electric lines are also located within the rights-of way for this proposed routing segment. During construction activities, potential traffic delays may be experienced during construction. However, use of appropriate traffic controls, including off duty police officers, is expected to ensure the smooth and safe flow of traffic. Further, project implementation will be coordinated with the County of Maui Department of Public Works and Waste Management and utility companies to ensure that potential adverse impacts on existing local infrastructure are minimized.

Should this option be selected, no significant environmental impacts are anticipated.

Chapter VII

Irreversible and Irretrievable Commitments of Resources

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed action does not result in the irreversible and irretrievable commitment of natural and manmade resources as existing rights-of-way are proposed to be used for the ductlines. Lands underlying the roadway rights-of-way were previously committed for roadway purposes and the proposed action involves the use of these same lands for additional telecommunication purposes.

Chapter VIII

Findings and Conclusions

VIII. FINDINGS AND CONCLUSIONS

The "Significance Criteria", Section 12 of the Administrative Rules, Title 11, Chapter 200, "Environmental Impact Statement Rules", were reviewed and analyzed to determine whether the proposed project will have significant impacts to the environment. The following analysis is provided.

1. ***No Irrevocable Commitment to Loss or Destruction of any Natural or Cultural Resource Would Occur as a Result of the Proposed Project***

   The proposed action is not anticipated to adversely impact known habitats of rare, endangered or threatened species of flora, fauna or avifauna that are located along the project's alignment. It is noted that portions of the Kihei to Maalaea route is bordered by the Kealia National Wildlife Refuge. However, work for the ductline installation will be confined to the North Kihei Road right-of-way, without encroachment into the refuge.

   Archaeological assessments have been conducted for each of the three (3) Maui County islands. Each route segment has been evaluated and categorized on the basis of potential to yield subsurface archaeological resources. Refer to Appendices "A-1" through "A-4". These levels address segments having lower potential for subsurface deposits to areas having higher potential, including areas which contain known burials or cultural layers. Recommendations for appropriate mitigation measures for each assessment level have been provided and will be implemented, as approved by the State Historic Preservation Division.

   It is noted that the proposed action utilizes existing roadway rights-of-way without affecting the surface physical characteristics and operational parameters of the roadway itself. In this context, the proposed ductline project will not affect cultural resources, practices and beliefs, including

gathering rights and access considerations.

2. ***The Proposed Action Would Not Curtail the Range of Beneficial Uses of the Environment***

The proposed action is not expected to curtail the range of beneficial uses of the environment. The proposed fiber optic ductlines will be a subsurface component of the telecommunications infrastructure system. With the exception of manholes, there will be no physical evidence of the system once the project is completed. Under this project scope therefore, there are no physical environmental impacts associated with the proposed action. Accordingly, the beneficial range of uses of the environment would not be curtailed.

3. ***The Proposed Action Does Not Conflict with the State's Long-term Environmental Policies or Goals or Guidelines as Expressed in Chapter 344, Hawaii Revised Statutes***

The State's Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes (HRS). The proposed action is in consonance with the policies and guidelines of Chapter 344, HRS.

4. ***The Economic or Social Welfare of the Community or State Would Not be Substantially Affected***

The proposed action will have a direct beneficial effect on the local economy during construction. In the long term, the proposed action will connect and serve DHHL on the islands of Lanai, Maui, and Molokai and provide these areas with modern telecommunications capabilities.

5. ***The Proposed Action Does Not Affect Public Health***

No adverse impacts to the public's health and welfare are anticipated as a result of the proposed project.

6. ***No Substantial Secondary Impacts, Such as Population Changes or Effects on Public Facilities are Anticipated***

No population changes are anticipated as a result of the proposed action.

In addition, the proposed action is not anticipated to adversely impact existing water, drainage, wastewater, and transportation systems. The design and construction of the project will be coordinated with the appropriate governmental agencies. The proposed action is not expected to significantly impact public services such as police, fire, and medical services, nor is it anticipated to adversely affect educational, recreational, and solid waste collection and disposal facilities and resources.

7. ***No Substantial Degradation of Environmental Quality is Anticipated***

During its construction phase, there will be short-term air quality and noise impacts as a result of the project. In the long term, there will be no effects upon air quality and ambient noise levels. The proposed project is not anticipated to affect scenic and open space resources along its alignment.

No substantial degradation of environmental quality resulting from the project is anticipated.

8. ***The Proposed Action Does Not Involve a Commitment to Larger Actions, Nor Would Cumulative Impacts Result in Considerable Effects on the Environment***

The proposed action is viewed as a stand alone land-side project for the islands of Lanai, Maui and Molokai. The proposed action represents the entire scope of work to be performed within State and County rights-of-way. Due to its large geographic scope, as well as logistics and mobilization factors, the installation of the proposed fiber optic ductlines will be constructed in phases that are sequenced to meet the scheduling objectives of the project's implementation time frame.

9. ***No Rare, Threatened or Endangered Species or Their Habitats Would be Adversely Affected by the Proposed Action***

Rare, threatened or endangered species of flora, fauna, avifauna or their habitats are not expected to be impacted by the proposed project as all work will be conducted within existing roadway rights-of-way.

10. ***Air Quality, Water Quality or Ambient Noise Levels Would Not be Detrimentally Affected by the Proposed Project***

Construction activities will result in short-term air quality and noise impacts. Dust control measures, such as regular watering and sprinkling, will be implemented to minimize wind-blown emissions. Noise impacts will occur primarily from construction-related activities. It is anticipated that construction will be limited to daylight working hours. Water quality is not expected to be affected.

In the long term, the project is not anticipated to have a significant impact on air, noise, and water quality.

11. ***The Proposed Project Would Not Affect Environmentally Sensitive Areas, Such as Flood Plains, Tsunami Zones, Erosion-prone Areas, Geologically Hazardous Lands, Estuaries, Fresh Waters or Coastal Waters***

With the exception of the lowlying coastal areas adjoining the shoreline and low areas along portions of Mokulele Highway, the vast majority of the lands underlying the project alignment are situated beyond the limits of flooding and tsunami inundation. The installation of the proposed fiber optic ductlines within these areas will be coordinated with the County's Planning Department to ensure that applicable flood hazard area development standards are addressed. The soils underlying the project's alignment are not especially erosion-prone. There are no known geologically hazardous lands, estuaries, or coastal waters within or adjacent to the project's alignment.

12. ***The Proposed Action Would Not Substantially Affect Scenic Vistas and Viewplanes Identified in County or State Plans or Studies***

The proposed action will not affect scenic corridors nor will it impact scenic coastal and open space resources as the proposed fiber optic ductlines will be placed underground within the roadway rights-of-way.

13. ***The Proposed Action Would Not Require Substantial Energy Consumption***

The proposed project will involve the short-term commitment of fuel for equipment, vehicles, and machinery during construction activities. However, this use is not anticipated to result in a substantial consumption of energy resources.

Based on the foregoing findings, it is concluded that the proposed action will not result in any significant impacts. Accordingly, this Draft Environmental Assessment is being processed in anticipation of a final Finding of No Significant Impact (FONSI).

Chapter IX

List of Permits and Approvals

IX. LIST OF PERMITS AND APPROVALS

The following permits and approvals will be required prior to the implementation of the project.

State of Hawaii

1. Work to Perform within State Highway Right-of-Way

County of Maui

1. Work to Perform on County Highways

In addition, the following approvals may be required depending on specific design requirements and agency determinations.

Federal Approval

1. Army Corps of Engineers Permit

State of Hawaii

1. Stream Channel Alteration Permit

County of Maui

1. Special Management Area Assessment

Chapter X

Agencies Consulted During the Preparation of the Draft Environmental Assessment; Letters Received and Responses to Substantive Comments

X. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies were consulted during the preparation of the Draft Environmental Assessment. Agency comments and responses to substantive comments are also included in this section.

1. Neal Fujiwara, Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793-2100

2. William Lennan
Department of the Army
U.S. Army Engineer District, Hnl.
Attn: Operations Division
Bldg. T-1, Room 105
Fort Shafter, Hawaii 96858-5440

3. Robert P. Smith
Pacific Islands Manager
U. S. Fish and Wildlife Service
P.O. Box 50167
Honolulu, Hawaii 96850

4. David Blane, Director
State of Hawaii
Office of Planning
Department of Business, Economic, Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804

5. Herbert Matsubayashi
District Environmental Health Program Chief
State of Hawaii
Department of Health
54 High Street
Wailuku, Hawaii 96793

6. Timothy Johns, Director
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

7. Don Hibbard
State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707

8. State of Hawaii
Department of Land and Natural Resources
Water Resources Management Division
P.O. Box 621
Honolulu, Hawaii 96809

9. Kazu Hayashida, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

10. Robert Siarot, Maui District Engineer
State of Hawaii
Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Hawaii 96732

11. Honorable Kimo Apana, Mayor
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

12. Clayton Ishikawa, Chief
County of Maui
Department of Fire Control
200 Dairy Road
Kahului, Hawaii 96732

13. Floyd Miyazono, Director
County of Maui
Department of Parks and Recreation
1580 C. Kaahumanu Avenue
Wailuku, Hawaii 96793

14. Alice Lee, Director
County of Maui
Department of Housing and Human Concerns
200 South High Street
Wailuku, Hawaii 96793

15. John Min, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

16. Tom Phillips, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

17. David Goode, Director
County of Maui
Department of Public Works and Waste Management
200 South High Street
Wailuku, Hawaii 96793

18. David Craddick, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793

19. Mr. Ed Reinhardt
Maui Electric Company, Ltd.
P. O. Box 398
Kahului, Hawaii 96732

20. **West Maui Taxpayers Association**
P.O. Box 10338
Lahaina, Hawaii 96761

21. Vince Bagoyo, Vice President
Lanai Company, Inc.
P.O. Box 630310
Lanai City, Hawaii 96763

22. Barney Eiting, Chair
Planning and Development Committee
Kihei Community Association
P.O. Box 2311
Kihei, Hawaii 96753

United States Department of Agriculture

Natural Resources Conservation Service

210 Imi Kala St.
Suite 209
Wailuku, HI 96793

USDA

Our People...Our Islands...In Harmony

DATE: December 11, 2000

Mr. Michael T. Munekiyo, A.I.C.P.
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo,

SUBJECT: Sandwich Isle Communications, Inc. Underground Fiber Optic Telecommunications Cables – County of Maui
Draft EA

Trench excavation near streams, drainage crossings or near the shoreline should require temporary measures to prevent spoil from entering these areas. It would be ideal for the trenching, laying of the conduits, installation of cabling and back filling be accomplished in unison so the environmental affects is minimal.

Sincerely,

Neal S. Fujiwara
District Conservationist

MUNEKIYO HIRAGA, INC.

January 17, 2001

Neal S. Fujiwara, District Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Mr. Fujiwara:

Thank you for your letter dated December 11, 2000 regarding the subject project. Appropriate measures would be developed during the design of the project to minimize spoils from trench excavation entering streams or the shoreline. Best management practices would be developed to address such mitigation measures to minimize environmental affects.

Thank you for your time and interest in this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers

mukihc@aloha.net
305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808)244-2015 fax: (808)244-8729

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF

DEC 13 2000

December 8, 2000

Regulatory Branch

Mr. Michael Munekiyo, A.I.C.P.
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

This letter responds to your request for comments on the Sandwich Isle Communications, Inc. project for fiber optic cables on Maui, Molokai and Lanai, dated November 21, 2000. Based on the information you provided it appears that the cables will cross numerous streams on each island; therefor, a Department of the Army (DA) permit will be required for this project. When planning is further along, we will be able to provide more details concerning the permit requirements.

If you have any questions concerning this determination, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200100074.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

MUNEKIYO HIRAGA, INC.

January 17, 2001

George P. Young, P.E., Chief
Regulatory Branch
U.S. Army Engineer District, Honolulu
Department of the Army
Ft. Shafter, Hawaii 96858-5440

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Mr. Young:

Thank you for your letter dated December 8, 2000 regarding the subject project. Appropriate coordination would be conducted with your department during the design of the various cable segments to address applicable permit requirements.

The installation of fiber optic duct lines at stream crossings would be designed to minimize impacts and alterations to existing stream beds or banks. Such installation methods considered would include directional drilling under stream beds or attaching the conduit system cables to existing bridges in accordance with State or County design requirements.

Thank you for your time and interest in this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers

mahinc@aloha.net
305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808)244-2015 fax: (808)244-8729

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

DEC 2 8 2000

GILBERT COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DEPUTIES
JANET E. KAWELO
LEONE NIHOOLA

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

December 19, 2000

Mr. Michael Munekiyo
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 26667
DOC NO: 0012SC01

Dear Mr. Munekiyo:

SUBJECT: **National Historic Preservation Act, Section 106 Compliance – Proposed Installation of Underground Fiber Optic Telecommunications Cables on Behalf of the Department of Hawaiian Homelands (DHHL), Islands of Maui Moloka'i, County of Maui**
TMKs: 1 - 5

Thank you for the opportunity to comment on the proposed installation of telecommunications cables and appurtenances for DHHL homestead areas on the Islands of Lana'i, Maui and Moloka'i.

It appears that the proposed cable installation is an undertaking, as defined in 36 CFR Part 800, both because federal licenses (through the Federal Communications Commission) are needed, and because the action is federally funded through the US Department of Agriculture. Therefore, the responsible federal agencies will need to ensure that the project is in compliance with Section 106 of the National Historic Preservation Act (NHPA). Compliance actions include appropriate identification of the area(s) of potential effect and historic sites, and consultation with consulting parties and the public on these matters. Consulting parties include but are not limited to the State Historic Preservation Office and Native Hawaiian organizations likely to have concerns with or knowledge of historic properties in the area.

With regard to the identification of historic sites, we have provided some general information below but it will be incumbent upon the federal agencies involved, or their designated representatives, to provide more specific information to all consulting parties. We would recommend that a consulting archaeologist be hired to go carefully over the material, in order to develop more specific plans to identify and treat significant historic sites. Also, you should be aware that if any portion of the proposed project areas is owned by DHHL, any Native Hawaiian burials found are subject to the provisions of the Native American Graves Protection and Repatriation Act, in addition to any requirements imposed by Section 106, NHPA.

ISLAND OF LANA'I

According to the submitted document, three segments are proposed for Lana'i, Lana'i City to Manele Boat Harbor (approximately 7 miles), Lana'i City Junction to Kaumalapau Harbor (approximately 6 miles), Lana'i City Junction to Lana'i City (approximately 1 mile). The installations will take place entirely within

State and County rights-of-way. The project consists of constructing an underground system of fiber optic cabling and/or copper cabling. Trenches for the duct system will, on average, be about one foot wide and two to three feet deep. Once the ducts are laid within the trench, the excavation will be backfilled with engineered material or concrete. In addition, manholes three feet wide by five feet deep will be installed at intervals of 2,000 to 3,000 feet. Methods of construction include open trenching, static plow placement, or directional drilling; it is not yet known exactly where each of these methods will be used along the three identified segments. With the exception of some small telephone cabinets to be placed at grade level, all improvements will be carried out below grade. Our review is based on historic maps, aerial photographs, records, and reports maintained at the State Historic Preservation Division; no field inspection was made of the proposed project areas.

Segment I: Lana'i City Junction to Manele Boat Harbor
The cable route begins at the Lana'i City Junction and follows Manele Highway to the southeast to the Manele Bay terminus.

Our records indicate that the mauka portion of this segment has been extensively altered previously as a result of modern commercial agriculture making it unlikely that significant historic sites remain within this portion of the Segment I road corridor/cable route.

Archaeological survey has been conducted inland of Hulopo'e Bay and Manele Bay, and a number of surface historic sites were found. The reports documenting the findings of these studies have been accepted by this office, and are on file in our library. It would seem unlikely that any subsurface deposits of these sites survive under the road corridor, but this consideration needs to be more carefully evaluated. If it is likely, then archaeological monitoring may be needed in the lower (makai) portion of Segment I.

Segment II: Lana'i City Junction to Kaumalapau
The cable route begins at the Lana'i City Junction and extends to the southwest to Kaumalapau Harbor, following the Kaumalapau Highway to the terminus at Kaumalapau Harbor.

Our records indicate that the mauka portion of this segment has been extensively altered previously as a result of modern commercial agriculture making it unlikely that significant historic sites remain within the mauka portion of the Segment II road corridor/cable route.

A search of our records indicates a formal archaeological inventory survey has not been conducted of the lower (makai) portion of the proposed project area. However, Kenneth Emory did include this area in his 1924 island-wide inventory survey of Lana'i. Based on Emory's survey, two significant historic sites (50-40-98-31, the Kaiulu Shrine; and 50-40-98-165, the Kaiulu Complex, part of the larger Kamoku Complex, 50-40-98-204) are located in the immediate vicinity of the proposed undertaking. These sites were re-located, re-mapped, and re-recorded during the statewide inventory survey, which was conducted in the 1970s. Other historic sites may be in this area also. We believe that an archaeological inventory survey of the project areas within this segment is needed, or at least an evaluation of the possible presence of significant sites be made based on field checks by a professional archaeologist.

Segment III: Lana'i City Junction to Lana'i City
The cable route begins at the Lana'i City Junction and extends north, following Kaumalapau Highway, Fraser Avenue, and Fifth Street to the terminus at the north end of Lana'i City.

Our records indicate that the area included in this segment has been extensively altered previously as a result of modern commercial agriculture making it unlikely that significant historic sites remain within the Segment III road corridor/cable route.

ISLAND OF MAUI

According to the submitted document, six segments are proposed for Maui: Waiehu to Pu'unene (approximately 10 miles long), Kahului to Kula (approximately 22 miles), Kula to Kahikinui (18 miles), Kihei to La Perouse (approximately 22 miles), Kihei to Ma'alaea (4 miles), and Ma'alaea to Honokowai (approximately 21 miles). The installations will take place entirely within State and County rights-of-way in a similar fashion as on Lana'i.

Segment I: Waiehu to Pu'unene
The cable route begins at Kahekili Highway, just north of Waiehu, and extends south toward Wailuku following Waiehu Beach Road. The cable route then extends into Wailuku following Eha, Imi Kala, Mill, and Mission Streets. The cable route then proceeds south down Waiale Road, with a short leg extending to the west on Wells Street. The cable route then turns east and north following Nakoa Drive to the intersection with Ka'ahumanu Avenue. The cable route proceeds to the east on Ka'ahumanu Avenue and then turns to the south on Wakea Avenue. The cable route follows Wakea Avenue to the intersection with Pu'unene Avenue. From this intersection, the cable route extends southeast to the intersection with Mokulele Highway to Pu'unene terminus.

Based on the USDA soil survey, the portions of this segment which extend from Waiehu through Wailuku to Mokulele Highway traverses Jaucas Sand Deposits and the Pu'uone Sand Dune. Both the Jaucas Sands and the Pu'uone Sand Dune are known to contain significant historic sites buried in the subsurface deposits. The Jaucas Sands are known to contain buried cultural deposits (such as habitation sites) and human burials; the Pu'uone Sand Dune is known to contain both isolated and clusters of human burials. These sites often survive under existing developments. Therefore, it is likely that significant historic sites are present in this area. Careful planning for identification and treatment of sites is needed in this area, possibly with archaeological inventory survey well before construction and then archaeological monitoring during construction.

The portion of this segment which extends approximately from Pu'unene Village to the Pu'uone terminus passes through soil areas which may have once been the location of pre-Contact farming, perhaps with scattered houses. However, this area has been subjected to considerable alteration due to modern agriculture, making it unlikely that significant historic sites remain.

Segment II: Kula to Kula
The cable route follows Hana Highway to Haleakala Highway. At the intersection of Haleakala Highway and the Kula Highway, the cable route follows Kula Highway to the Kula terminus.

According to the USDA soil survey the portion of this segment which includes the Hana Highway road corridor/cable route traverses filled lands. However, from the intersection with Haleakala Highway to just northwest of the Haleakala Highway/Dairy Road intersection the segment crosses Jaucus Sands. Given that the remainder of Segment II goes through soil areas which once had historic sites with shallow deposits and the fact that the road has likely destroyed any such sites, we believe that it is unlikely any significant historic sites survive in these areas.

Segment III: Kula to Kahikinui
From the intersection of Haleakala Highway and Kula Highway, the cable route follows Kula Highway until it turns ieto Pi'ilani Highway. The cable route follows Pi'ilani Highway east to the Kahikinui terminus.

Based on the USDA soil survey, Segment III goes through soil areas. Given the fact that historic sites had shallow deposits in these areas and prior highway development would have impacted such sites, we believe that it is unlikely any significant historic sites are present in these areas.

Segment IV: Kihei to La Perouse
The cable route begins at the intersection of Mokulele Highway and South Kihei Road. The cable route extends south on South Kihei Road to the intersection with Okolani Drive. The cable route then jogs to the east to the intersection of Okolani Drive and Wailea Alanui Road. The cable route then follows Wailea Alanui Road south to Makena Alanui Road to Makena-Keone'o'io Road to the La Perouse terminus.

According to the USDA soil survey, significant portions of Segment IV traverses through Dune Land and Jaucas Sand. Both the Jaucas Sands and the Dune Lands are known to contain significant historic sites buried in the subsurface deposits. The Jaucas Sands are known to contain buried cultural deposits (such as habitation sites) and human burials; the Dune Lands are known to contain both isolated and clusters of human burials, as well as habitation sites. Identification and treatment of any significant historic sites in these areas must be planned for.

The cable route does traverse several areas, however, which are not comprised of sand deposits. The first area extends approximately ½ mile to ¾ mile south of Wailea. This area is comprised of a sandy silt deposit. Based on archaeological inventory surveys conducted in this area it is likely that both habitation and burial sites are present in the subsurface deposits. The second area is adjacent to the first, and extends from approximately ¾ mile to 1.5 mile south of Wailea. The soil deposits in this area consist of a stony loam complex. At approximately 2 miles south of Wailea, the soil composition is again comprised of Jaucas Sand and Dune Land which extends to Makena. At Makena, the road corridor/cable route goes inland and traverses the stony loam complex until it reaches the La Perouse terminus. Plans to identify and treat any significant historic sites in these areas need to be developed.

Segment V: Kihei to Ma'alaeaThe cable route extends north from Kihei following North Kihei Road, through the marshland deposits of Kealia Pond, to the intersection with Honoapi'ilani Highway. The intersection of North Kihei Road and Honoapi'ilani Highway is the Segment V terminus.

Based on the USDA soil survey, the road corridor/cable route begins at the north end of Kihei and traverses through a short section, approximately ¼ mile, of Jaucas Sand, which is likely to contain both habitation and burial sites in the subsurface deposits. Identification and treatment of any significant historic sites that might be in this area needs to be planned for.

The next two miles of the cable route/road corridor traverses a silty loam deposit. This area is also likely to contain marshland deposits which may contain important information pertaining to paleoenvironmental conditions and to early Hawaiian use of this area. It is also likely that habitation and burial sites may be present in this area. Special plans must be developed for possible paleoenvironmental soil collection and lab analyses in this area.

The remaining 1 mile (approximately) of Segment V extends through an area that has undergone previous alteration resulting from modern commercial agriculture, making it unlikely that significant historic sites remain in this section.

Segment VI: Ma`alaea to Honokowai
The cable route extends south from the intersection of North Kihei Road and Honoapi`ilani Highway, following Honoapi`ilani Highway to the Honokowai terminus.

The initial approximately 6 miles of Segment VI are not likely to disturb significant buried historic sites as this area has either been previously disturbed by modern commercial agriculture or it is has been disturbed by the initial highway construction. A considerable portion of the rest of this segment, beginning approximately 3000 ft south of Kaua`ula Stream and extending to the Honokowai terminus traverses Jaucas Sands and silt deposits. Both of these areas are likely to contain significant historic sites (such as habitation and burials) in the subsurface deposits, so identification and treatment of any significant sites in these areas needs to be planned for.

ISLAND OF MOLOKA`I

According to your information, three segments are proposed for Moloka`i: Kalama`ula to Ho`olehua (11 miles long), Ho`olehua to Kalaupapa Lookout (12 miles long), and Kalama`ula to `Ualapu`e (15 miles long). The installations will take place entirely within State and County rights-of-way in the same fashion as on the other islands.

Segment I: Kalamaula to Hoolehua
The cable route appears to begin at Kalama`ula DHHL at the intersection of Maunaloa Highway and Ekaha Street and proceed west and north along Maunaloa Highway. At the intersection of Maunaloa Highway and Airport Loop, the cable route splits into two routes. One route proceeds north and west along the Airport Loop for a distance of about two-thirds of a mile to its terminus. The second route proceeds north from Airport Loop Road along an unnamed DHHL access road to Moomomi Avenue where it turns west for a short distance until turning north up Kolea Avenue. At the intersection of Kolea Avenue and Farrington Avenue, the cable route turns west along Farrington and proceeds west until reaching the terminus at the intersection of Farrington and Hanakea Avenues.

Judging from the USDA soils survey, this segment traverses terrigenous or alluvial sediments for nearly its entire length, with one exception. Given that historic sites in these areas had shallow deposits and these would likely have been destroyed by prior highway development, we believe that it is unlikely any significant historic sites are present in these soil areas.

It appears that there is a short section of Maunaloa Highway (perhaps 1,000 feet long or so) in the vicinity of the Kamehameha Coconut Grove that is underlain by Jaucas Sands deposits. Jaucas Sands are known to contain significant historic sites such as buried cultural layers and human burials. Identification and treatment of any significant hittoric sites in these areas needs to be planned for.

Segment II: Hoolehua to Kalaupapa Lookout
The cable route begins at the intersection of Farrington and Hanakea Avenues and proceeds east along Farrington to its intersection with Kalae Highway. At this intersection, the cable route follows Kalae Highway to the terminus of the segment at Palaau State Park.

This segment, including the two shorter sections in Ho`olehua, is in areas where sites would have had shallow archaeological deposits. Remnants of any such sites are unlikely to survive, due to prior highway development.

Segment III: Kalamaula to Ualapue
The cable route appears to begin just west of the intersection of Ekaha Street and Maunaloa Highway. The cable route then follows the highway through Kaunakakai Town where the roadway becomes Kamehameha V Highway. The cable route then follows Kamehameha V Highway east to the terminus of the segment just east of Kilohana School.

Judging from the USDA soils survey, the cable route begins at about the point where Jaucas Sands are present under the roadway corridor for a distance of approximately 1,000 feet. As noted above, Jaucas Sands are known to contain significant historic sites such as buried cultural layers and human burials. After this point, the cable route and highway corridor pass through soils until just west of Kawela Gulch where, for a distance of about 500 feet, the roadway cuts through Jaucas Sands deposits. From this point the roadway continues through a mix of soils to the junction of Kamehameha V Highway and Onioni Drive where Jaucas Sands are present for unknown distance beneath and adjacent to the roadway. In 1980, archaeological mitigation work done in connection with Kawela Plantation Development recorded the presence of cultural deposits and human burials near this intersection (The Archaeological Resources of Kawela, Moloka`i: Their Nature, Significance, and Management. 1982. Weisler & Kirch). East of Kawela Plantation development, the cable route and highway corridor continue through soils until the vicinity of Kanukuawa Fishpond where, for about 1,000 feet, deposits of Jaucas Sands appear to underlie the roadway. From this point until just east of Pahioma Fishpond, the roadway and cable route pass through soils. East of Pahioma Fishpond, for a distance of about 400 – 500 feet, the soils survey map shows Jaucas Sands as underlying the highway corridor. The remainder of Segment III, to its terminus, passes through soils.

Plans need to be developed to identify and treat any significant historic sites in sand areas. In soil areas, shallow sites are unlikely to have survived prior highway construction, so these areas are unlikely to contain significant historic sites.

As noted above, the responsible federal agencies or their designated representatives will need to provide more information to consulting parties, including SHPO, on the undertaking and its effects, if any, on significant historic sites. For example, it is not yet known which of the three excavation methods will be used where; undoubtedly, more specific information on this matter would be of use. Once the site identification and consultation required by Section 106, National Historic Preservation Act, is completed, we should have a more accurate understanding of precisely where mitigation of "adverse effects" is needed and can advise your office accordingly.

Should you have any questions, please feel free to contact Sara Collins at 692-8026 or Cathleen Dagher at 692-8023.

Aloha,

Timothy E. Johns,
State Historic Preservation Officer

SC:jen

c: John Min, Director, Dept of Planning, County of Maui, 250 S. High Street, Wailuku, HI 96793
Cultural Resources Commission, Dept of Planning, 250 S. High Street, Wailuku, HI 96793
Ms. Barbara Haliniak, Chair, Molokai Planning Commission, P.O. Box 976, Kaunakakai, HI 96748

MUNEKIYO & HIRAGA, INC.

January 17, 2001

Don Hibbard, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
Kakuhihewa Building Room 555
601 Kamokila Boulevard
Kapolei HI 96707

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Mr. Hibbard:

Thank you for your department's letter dated December 19, 2000 regarding the subject project. In response to the comments provided, we note the following:

1. Appropriate consultation efforts would be conducted to comply with Section 106 consultation as prescribed under the National Historic Preservation Act. No lands owned by the State Department of Hawaiian Home Lands are anticipated to be included under this project.

2. Thank you for the information provided on the various route segments. Archaeological assessments of the routes proposed are being conducted by our archaeological consultant, and a copy of your letter has been provided to them for their use. The general information provided regarding historic sites will be taken into consideration during the preparation of the Draft Environmental Assessment. Appropriate consultation will also be performed with your department to address necessary mitigative measures.

305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808)244-2015 fax: (808)244-8729 planning@maui.net

Thank you for your time and interest in this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

D. F.

Dean Frampton, Planner

DF:to

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809
DEC 14 2000

DEC 15 2000

TIMOTHY E. JOHNS
CHAIRPERSON

BRUCE S. ANDERSON
ROBERT G. GIRALD
BRIAN C. MISHIOA
DAVID A. NOBRIGA
HERBERT M. RICHARDS, JR.

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

Mr. Mike Munekiyo, AICP
Munekiyo, Arakawa, & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Munekiyo:

Thank you for allowing us to comment on the early consultation process for Sandwich Isle Communication's proposed Fiber Optic Telecommunication Cables for the islands of Maui, Molokai and Lanai.

We hope the following information will assist your client in complying with the requirements for stream channel alteration permits (Hawaii Revised Statutes §174C-71).

The following comments correspond to the figures in the attachments of your November 21, 2000 letter.

Figure 1: Lanai Route Segments. No streams will be affected; therefore no stream channel alteration permits will be required.

Figure 2: Waiehu to Puunene. Waiehu and Iao Streams may be affected, therefore stream channel alteration permits may be required if the bed or banks of these streams are altered.

Figure 3: Kahului to Kula and Kula to Kahikinui Segments. No streams will be affected; therefore no stream channel alteration permits will be required.

Figure 4: Kihei to LaPerouse Bay. Stream channel alteration permits may be required if the crossing affects the bed or banks of Waikapu Stream. Other watercourses along this segment may need to be assessed to determine whether they can be considered to be 'streams'.

Figure 5: Kihei to Maalaea. Stream channel alteration permits may be required for Waikapu Stream and Pohakea Gulch.

Figure 6: Maalaea to Honokowai. Stream channel alteration permits may be required for Olowalu, Ukumehame, Wainee, Kahoma and Honokowai Stream. Other watercourses along this segment may need to be assessed to determine whether they can be considered to be 'streams'.

Figure 7: Kalamaula to Hoolehua. No streams will be affected; therefore no stream channel alteration permits will be required.

Figure 8: Hoolehua to Kalaupapa Lookout. No streams will be affected; therefore no stream channel alteration permits will be required.

Figure 9: Kalamaula to Ualapue. Stream channel alteration permits may be required for Kaunakakai, Kawela, and Kamalo Streams. Other watercourses may need to be assessed to determine whether they are considered streams subject to stream channel alteration permits.

Thank you for coordinating with us on our permit requirements. We look forward to your future coordination as more detailed plans are formulated. If you have any questions, please call David Higa at 587-0249 or toll-free at 984-2400, extension 70249.

Sincerely,

LINNEL T. NISHIOKA
Deputy Director

DH:sd

MUNEKIYO & HIRAGA, INC.

January 17, 2001

Linnel T. Nishioka, Deputy Director
Commission on Water Resource
Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Ms. Nishioka:

Thank you for your letter dated December 14, 2000 regarding the subject project. The installation of fiber optic duct lines at stream crossings would be designed to minimize impacts and alterations to existing stream beds or banks. Such installation methods considered would include directional drilling under stream beds or attaching cables to existing bridges in accordance with State or County design requirements.

Appropriate coordination with your department would occur during the design phase of the various segments once more specific construction plans are developed. If necessary, stream channel alteration permits would be applied for with your department.

Thank you for your time and interest in this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

D. Frampton

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers

305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808)244-2015 fax: (808)244-8729

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

December 14, 2000

DEC 18 2000

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

IN REPLY REFER TO:
HWY-MZ-402-00

MEMORANDUM

TO: Michael Munekiyo
Munekiyo, Arakawa & Hiraga, Inc.

FROM: Paul M. Chung
State Highways

SUBJECT: Sandwich Isle Communications, Inc.
Under Ground Fiber Optic Cable
ME 00-80

The following comments are based on our review of the preliminary report for the subject project:

1. All conduits shall be installed with a minimum cover of 3'-0".

2. Wherever possible, install within the grassed shoulders along our highways.

3. Cutting into the pavement will not be allowed for a period of one (1) year after new pavement construction or resurfacing (Kaumalapau m.p. 4 to m.p. 5, Mokulele Highway, Kaahumanu Avenue, Haleakala Highway-4th lane, North Kihei Road, Kalae Highway and Kamehameha V Highway).

4. Submit the Draft Environmental Assessment for review and comment.

If there are any questions or concerns, please call me at 873-3535.

/pmc

MUNEKIYO HIRAGA, INC.

January 17, 2001

Mr. Paul M. Chung
Highways Division, Maui District
Department of Transportation
650 Palapala Drive
Kahului, Hawaii 96732

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Mr. Chung:

Thank you for your memorandum dated December 14, 2000 regarding the subject project. The installation of fiber optic duct lines will conform to State design standards, and are planned to have a minimum cover of 3 feet.

Consideration would be given to installing the cables within the grassed shoulders along State highways where feasible and practicable.

Appropriate coordination with your department would occur during the design phase of the various segments to ensure that new pavement constructed or resurfaced would not be disturbed for a one year period. The applicant would like to coordinate their work with your department's projects being implemented, and they have already been attending meetings with your department on this matter.

A copy of the Draft Environmental Assessment will be provided to your office for review and comment.

Thank you for your time and interest in this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

D. Frampton

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers

305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808)244-2015 fax: (808)244-8729

DEPARTMENT OF
PARKS AND RECREATION
COUNTY OF MAUI

1580-C KAAHUMANU AVENUE WAILUKU, HAWAII 96793

OCT 0 4 2000
JAMES "KIMO" APANA
Mayor

FLOYD S. MIYAZONO
Director

ELIZABETH D. MENOR
Deputy Director

(808) 270-7230
FAX (808) 270-7934

November 28, 2000

Michael T. Munekiyo, A.I.C.P.
Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

SUBJECT: Sandwich Isle Communications, Inc. Underground Fiber Optic Telecommunication Cables - County of Maui
Early Consultation For Draft Environmental Assessment

Thank you for the opportunity to review and comment on the subject project. At this time, we have no comments or objections to the proposed actions.

Should you have any questions or need of further information, please call me or Patrick Matsui, Chief of Parks Planning and Development at 270-7931.

Sincerely,

FLOYD S. MIYAZONO
Director

c: Patrick Matsui, Chief of Planning and Development

MUNEKIYO HIRAGA, INC.

January 17, 2001

Floyd S. Miyazono, Director
Department of Parks and Recreation
County of Maui
1580-C Kaahumanu Avenue
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Mr. Miyazono:

Thank you for your letter dated November 28, 2000 regarding the subject project. We note that your department has no objections to or comments on the proposed project.

Thank you for your time and interest in this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers

305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808)244-2015 fax: (808)244-8729

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

NOV 29 2000

JAMES "KIMO" APANA
Mayor
ALICE L. LEE
Director
PRISCILLA P. MCKELL
Deputy Director

86 KAMEHAMEHA AVENUE • KAHULUI, HAWAII 96732 • PHONE (808) 270-7351 • FAX (808) 270-6284

November 24, 2000

Mr. Michael Munekiyo, A.I.C.P.
Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

Subject: Sandwich Isle Communications, Inc.
Underground Fiber Optic Telecommunication
Cables - County of Maui
Early Consultation For Draft Environmental
Assessment

We have reviewed your November 21, 2000 letter and enclosures regarding the subject project and would like to recommend that you consult with Mr. David Ching of the Mayor's Office as he is coordinating and overseeing the County's fiber optic activities.

Thank you for the opportunity to comment.

Very truly yours,

ALICE L. LEE
Director of Housing
and Human Concerns

ETO:df

c: Housing Administrator

MUNEKIYO & HIRAGA, INC.

January 17, 2001

Alice L. Lee, Director
Department of Housing and
Human Concerns
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Ms. Lee:

Thank you for your letter dated November 24, 2000 regarding the subject project. Coordination with Mr. Ching of the Mayor's Office would be conducted as appropriate.

Thank you for your time and interest in this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers

305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808)244-2015 fax: (808)244-8729 planning@mhpc.net

JAMES "KIMO" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

December 8, 2000

Mr. Michael Munekiyo, AICP
Munekiyo, Arakawa, and Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793-2015

Dear Mr. Munekiyo:

RE: SANDWICH ISLE COMMUNICATIONS, INC., UNDERGROUND FIBER OPTIC TELECOMMUNICATION CABLES-COUNTY OF MAUI (VARIOUS LOCATIONS ON THE ISLANDS OF MAUI, LANAI, AND MOLOKAI)-EARLY CONSULTATION FOR DRAFT ENVIRONMENTAL ASSESSMENT (EA)

The Planning Department (Department) received your letter of November 21, 2000, requesting comments on the subject project for the preparation of a Draft Environmental Assessment for work performed within the State Department of Transportation and County of Maui ROWs. The majority of the work will be the construction of underground duct system that will be used for the installation of fiber optic cabling and/or copper cabling. Construction of the duct system will include excavating trenches approximately one (1) foot wide and two (2) to three (3) feet deep. In addition, three (3) feet by five (5) feet manholes will be installed approximately every 2,000 to 3,000 feet. All improvements including appurtenant pull boxes will be constructed below grade, except for a small number of small telephone cabinets installed at grade level.

It appears that the only above ground structures proposed are the telephone cabinets. If these telephone cabinets are in the Special Management Area (SMA) and are below four (4) feet in height, the cabinets may be exempt from the SMA major or minor permit requirements. However, an SMA Exemption Assessment and Determination Application should be filed with the Department. For the removal of sand and other beach material and the installation of the cables within the shoreline setback areas, a Shoreline Setback Variance is required and an application should be filed with the Department.

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

When applying for these permits, the Department requests that all of the sites within the SMA, where the activities and structures are located, be identified by Tax Map Key numbers.

The Department has determined that the cables and small structures proposed are utility uses permitted in all of the districts. Therefore, no other land use permits would be required.

Should you have any questions, please call Ms. Julie Higa, Staff Planner, at 270-7814.

Very truly yours,

JOHN E. MIN
Planning Director

JEM:JH:cmp
c: Clayton Yoshida, AICP, Deputy Planning Director
Aaron Shinmoto, Planning Program Administrator
Julie Higa, Planner
Project File
General File S:\ALL\JULIE\ENVIRONM\sandwich isles\prs5m.drshse.wpd

MUNEKIYO HIRAGA, INC.

January 17, 2001

John E. Min, Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Mr. Min:

Thank you for your letter dated December 8, 2000 regarding the subject project. Telephone cabinets associated with this project which are located within the Special Management Area (SMA) are anticipated to be about 4 feet in height or shorter. Such cabinets may be exempt from your SMA permit requirements, however, a SMA Exemption Assessment and Determination Application would be filed as appropriate for this project.

The installation of cables associated with this project is not expected to occur within the Shoreline Setback area, however, a Shoreline Setback Variance would be applied for with your department if applicable.

Tax Map Key numbers will be provided for permit applications applicable to this project to identify where the activities and structures are located.

We note your comment that the cables and small structures associated with this project are utility uses permitted in all of the districts, and that there are no other land use permits required.

[redacted]@aloha.net
305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808)244-2015 fax: (808)244-8729 [redacted]

Thank you for your time and interest in this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers
[redacted]001

JAMES "KIMO" APANA
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

RON R. RISKA, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

ANDREW M. HIROSE
Solid Waste Division

DEC 27. 2000

December 22, 2000

Mr. Michael T. Munekiyo
Munekiyo, Arakawa & Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

SUBJECT: EARLY CONSULTATION
SANDWICH ISLE COMMUNICATIONS - FIBER OPTIC CABLE
TMK: (2) VARIOUS

We reviewed the subject early consultation and have the following comments.

1. On page 2, it states, "All improvements including appurtenant pull boxes will be constructed below grade, except for a small number of small telephone cabinets installed at grade level." Pull boxes must be constructed flush with the existing ground or pavement and be structurally sufficient to accommodate traffic loading. The County will not allow above grade "small telephone cabinets" to be constructed within the County's right-of-way. These proposed cabinets must be placed outside the County's right-of-way.

2. Construction plans shall be submitted for review and approval for the work on the County roadways.

3. Easements for the lines within these roadways will need to be granted by the County through approval from the Maui County Council. Sandwich Isles should initiate the process by submitting the easement agreement for review and approval.

4. Some of the proposed areas of work may be archaeologically sensitive. Sandwich Isles should be advised to contact the State Historic Preservation Division (SHPD) for their review and comments on the proposed route. Prior to the issuance of a permit, a written approval from SHPD shall be submitted.

5. A "Work on County Highways" permit will be required prior to commencement. The permit application requires signature approvals from the utility companies. SHPD approval is also required prior to issuance. In addition, the contractor shall provide insurance to indemnify the County during the period when the work is performed. A performance bond covering 50% of the restoration cost is also required.

6. We would discourage the placement of the line along South Kihei Road and Lower Main Street as these areas are heavily developed with the roadway filled with existing utility lines and laterals, traffic signal loops, and other underground impediments. In addition, the road can be congested with traffic which will require strict traffic control.

If you have any questions, please call me at 270-7845.

Sincerely,

DAVID GOODE
Director of Public Works
and Waste Management

DG:msc/mt

S:\LUCA\CZM\sandwichisles.wpd

MUNEKIYO HIRAGA, INC.

January 18, 2001

David Goode, Director
Department of Public Works and
Waste Management
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Mr. Goode:

Thank you for your letter dated December 22, 2000 regarding the subject project. In response to the comments provided, we note the following:

1. Necessary coordination would be conducted with your department to ensure that man holes are constructed flush with the existing ground and are designed to be structurally sufficient to accommodate traffic loading. Our preliminary design indicates that no above ground appurtenances would be necessary. However, in the event above ground telephone equipment is necessary, they are planned to be located outside of the County's right-of-way.

2. Construction plans would be submitted to your department for review and approval during the design phase as appropriate.

3. Necessary easements for the project would be obtained from the County Council, and proposed easement agreements would be submitted at the appropriate time.

4. An archaeological consultant has been retained to identify areas of cultural sensitivity, and appropriate coordination would be performed with the State Historic Preservation Division to address necessary mitigative measures.

5. Appropriate construction-related documentation will be submitted to the County and necessary permits obtained prior to commencement of construction within the County's rights-of-way.

[redacted]@aloha.net
305 High Street, Suite 104 Wailuku, Hawaii 96793 ph. (808)244-2015 fax:(808)244-8729 planning[redacted]

6. Routes having minimal impacts to existing infrastructure while providing the broadest range of opportunities to benefit beneficiaries of Department of Hawaiian Home Lands were considered. This included consultation with your staff along with staff from the State Department of Transportation, Maui District Office, in developing the routes. Lower Main Street was avoided to the extent possible, however, only a short segment of it would be used to provide a practical connection from Mission Street to Waiale Road. Recognizing the potential for underground utility and infrastructure conflicts, sufficient coordination with your department would be conducted to minimize potential impacts. In addition, appropriate traffic control measures will be implemented to minimize impacts to local traffic operations.

Thank you for your time and interest on this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

D. Frampton

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers
[redacted]021

JAN 11 2001

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
Telephone (808) 270-7816 • Fax (808) 270-7833

January 9, 2001

Mr. Michael T. Munekiyo
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Re: Sandwich Isle Communications, Inc. Underground Fiber Optic Telecommunication Cables - County of Maui

Dear Mr. Munekiyo,

Thank you for the opportunity to provide comments in preparation of the draft environmental assessment (EA). The Water Department has the following comments:

The installation of cabling will affect our water lines located in county rights-of ways (ROWs) on Maui and Molokai. Construction plans must be reviewed by the Department in conjunction with work in ROWs. The applicant should refer to our fire protection maps showing the alignments of the waterlines in the project areas. Please contact our engineering division at 270-7835 regarding these issues.

The project will overlay several important aquifer systems. The Department of Water Supply strives to protect the integrity of both surface water and groundwater resources by encouraging the use of best management practices (BMPs) relevant to potentially polluting project activities. We have attached sample BMP for road construction and a reference list of BMP resources. Additional information can be obtained from the State Department of Health.

If you need additional information, please contact the Water Resources and Planning Division at 270-7199.

Sincerely,

David Craddick
Director
emb

By Water All Things Find Life

MUNEKIYO & HIRAGA, INC.

January 17, 2001

David Craddick, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Hawaii 96793-6109

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Mr. Craddick:

Thank you for your letter dated January 9, 2001 regarding the subject project. Appropriate coordination would be conducted with your department during the design of the various cable routes to ensure that departmental water lines are not negatively impacted. Such coordination would include review of construction plans by your department.

Appropriate measures would be developed during the design of the project to minimize spoils from trench excavation entering streams or the shoreline. Best management practices would be developed to address such mitigation measures to minimize environmental effects on these resources and any basal aquifers underlying the routes of the proposed rural fiber optic lines.

Thank you for your time and interest on this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers

305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808) 244-2015 fax: (808) 244-8729

Maui Electric Company, Ltd. • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8481

DEC 15 2000

December 11, 2000

Mr. Michael T. Munekiyo, A.I.C.P.
Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Min:

Subject: Sandwich Isle Communications, Inc. Underground Fiber Optic Telecommunication Cables –
County of Maui
Early Consultation For Draft Environmental Assessment

Thank you for allowing us to comment on the subject project.

In reviewing the information transmitted and our records, we have no objection to the subject project. We have the following comments:

1. We encourage the developer's electrical consultant to meet with MECO as soon as practical to verify the project's electrical requirements so that service can be provided on a timely basis.
2. We request a copy of the drawings to verify any clearance requirements to our existing overhead and underground facilities.
3. If for some reason the installation of Sandwich Isle Communication facilities in certain areas is to be done overhead with the joint use of our poles, a joint pole agreement will be required. MECO will then have a concern on the wind loading of these poles. MECO request for these installations that detailed construction drawings be provided so that wind loading calculations can be performed to ensure adequate wind loading characteristics with the addition of the communication facilities.
4. All locations of these underground communication facilities need to be identified prior to construction. In addition, MECO underground facilities also need to be identified prior to construction and located for any communication facility installation in its vicinity.
5. Please provide MECO information regarding leasing of these communication lines from the DHHL.

If you have any questions or concerns, please call Dan Takahata at 871-2385.

Sincerely,

Edward L. Reinhardt

Edward L. Reinhardt
Manager, Energy Delivery

ELR/dt:lkh

MUNEKIYO HIRAGA, INC.

January 17, 2001

Edward L. Reinhardt, Manager
Energy Delivery
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733-6898

SUBJECT: Sandwich Isles Communication, Inc.; County of Maui
Rural Fiber Optic Duct Lines Project
Early Consultation For Draft Environmental Assessment

Dear Mr. Reinhardt:

Thank you for your letter dated December 11, 2000 regarding the subject project. We note that Maui Electric Company, Ltd. has no objection to the subject project.

Coordination with your staff would be conducted at the appropriate time to verify the electrical requirements so that service can be provided on a timely basis. Construction plans would be coordinated with your staff to verify the location of existing underground electrical facilities and to allow review of clearance requirements for your existing facilities.

All fiber optic duct lines are planned to be located underground. As a result, the joint use of your poles is not expected to be necessary. However, appropriate information would be coordinated with your company if the joint use of your poles is necessary.

The fiber optic duct lines proposed under this project are intended to service State Department of Hawaiian Home Lands homestead areas. The possibility of leasing some conduits to Maui Electric Company, Ltd. can be discussed at an appropriate time with the applicant.

mhinc@aloha.net
305 High Street, Suite 104 Wailuku, Hawaii 96793 ph: (808)244-2015 fax: (808)244-8729

Thank you for your time and interest in this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers

The following comment letter from the Maui Police Department was received after the comment period deadline of the early consultation review process. The letter has been included to complete the early consultation record, along with a response letter dated June 13, 2001

JAMES "KIMO" APANA
MAYOR

OUR REFERENCE
ty
YOUR REFERENCE

POLICE DEPARTMENT
COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
Fax (808) 244-6411

JAN 17 2001

THOMAS M. PHILLIPS
CHIEF OF POLICE

KEKUHAUPIO R. AKANA
DEPUTY CHIEF OF POLICE

January 9, 2001

Mr. Michael T. Munekiyo
Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Munekiyo:

SUBJECT: Early Consultation for Draft Environmental Assessment
Sandwich Isle Communications, Inc. Underground Fiber Optic
Telecommunications Cables - County of Maui

Thank you for your letter of November 20, 2000 requesting comments on the above subject.

We have asked for officers in the Wailuku, Lanai, Molokai, and Kihei Districts to reviewed the proposed summary. Enclosed you will find our comments and recommendations from each district. Thank you for giving us the opportunity to comment on the proposed project.

Very truly yours,

Assistant Chief Robert Tam Ho
for: Thomas M. Phillips
Chief of Police

Enclosure

c: John E. Min, Planning Department

COPY

TO : THOMAS PHILLIPS, CHIEF OF POLICE MAUI COUNTY

VIA : CHANNELS

FROM : RYAN RODRIGUES, COMMUNITY POLICE OFFICER KAHULUI

SUBJECT : SANDWICH ISLE COMMUNICATIONS, INC. (RE. DRAFT OF ENVIRONMENTAL ASSESSMENT.)

Sir, this communication is in regards to the above mentioned subject matter.

Sandwich Isle Communications is planning to start construction and installation of fiber optic cables through out the County of Maui. Most of the work will be done on State Highways.

After reviewing the initial assessment on this project, no immediate concerns can be found. It appears that if the proper permits are completed, and safety precautions are taken for construction to be done on the roadway, this project should be able to proceed forward.

Submitted for your perusal.

THANK YOU
RYAN RODRIGUES 0312
12/6/00 0847

Noted, plan reviewed and covers the three islands in Maui County. If roadways need to be crossed, suggest traffic control be required.

Sgt. Barry Auld 1041
12/06/00 @ 1400 hours

12/6/00

COPY

TO : THOMAS PHILLIPS, CHIEF, MAUI POLICE DEPARTMENT

VIA : CHANNELS

FROM : KELLY ARLOS, POLICE OFFICER III, MOLOKAI PATROL

12/12/00

SUBJECT : UNDERGROUND DUCT SYSTEM FOR FIBER OPTIC CABLING

Sir this To/From is being respectfully submitted after reviewing the proposed plan by Sandwich Isle Communications Inc., to construct an underground duct system to be used for the installation of fiber optic cabling/ or copper cabling.

According to project manager Michael MUNEKIYO, construction is not set to begin on Molokai until sometime in the year 2003 or 2004. Work on Molokai will take approximately two years to complete.

The construction of the duct system would involve excavating a trench approximately 1 foot wide and 2-3 feet deep alongside State Highways and some roadways. The trench will be excavated beyond the travel way limits to an extent that is practicable.

The conduit system that would be placed within these trenches would consist of two 4-inch diameter ducts and/or a 6-inch diameter bundle of 1 1/4 inch inner ducts and then back filled with either engineered material or concrete. In addition to the ducts, 3 ft. by 5 ft. manholes would be installed at approximately every 2,000 to 3,000 feet, and used for the installation of the cable.

The project on Molokai has been broken into three segments:

Kalamaula to Hoolehua:

Map figure 7 shows construction beginning alongside Kamehameha V Highway in the area of Kiowea Park (Coconut Grove) in Kalamaula, Hawaii. Traveling west work will continue alongside an approximate 6-mile stretch of Maunaloa Highway reaching the west entrance of Keonelele Drive (Airport Loop)in Hoolehua. Work will continue north on Keonelele Drive and then will branch in two directions. The first direction will take construction west, and will end at an area just west of the Hoolehua airport on Keonelele Drive. The second direction will take construction north on Mokulele road, crossing Moomomi Avenue, and then alongside of an unpaved dirt road which will meet Farrington Avenue in Hoolehua. Work will then continue west alongside Farrington Avenue for approximately 2 miles. Traffic can be considered light.

Hoolehua to Kalaupapa Lookout:

Map figure 8 shows construction beginning on the west end of Farrington Avenue in Hoolehua. Hawaii. Traveling west construction will continue alongside a stretch of Farrington Avenue approximately 5 miles long and meets up with Kalae Highway.

Hoolehua to Kalaupapa Lookout Continued:

Work will then continue north alongside approximately 3 miles of Kalae Highway reaching the Kalaupapa Lookout. The traffic is relatively light at all times of the day.

Kalamaula to Hoolehua:

Map figure 9 shows construction running alongside 1 mile of Maunaloa Highway and 14 miles of Kamehameha V Highway which runs from Kiowea Park (Coconut Grove) in Kalamaula, to Ualapue (MP 14) an area located just east of Kilohana School.

Traveling east from Kiowea park, traffic will be light, becoming relatively heavy as you approach the 4-way intersection located at the entrance of Kaunakakai Town. Continuing east and passing the town area traffic will again become light. As you past mile marker 10 (Kamalo) the road begins to wind and the shoulders become narrow.

Suggestions:

Upon reviewing the proposed plans, and depicting maps for this project, I do not see any major problems besides minor inconvenience. However, I am suggesting the use of traffic control in certain areas of construction.

With safety of both the drivers and workers in mind, I suggest that traffic control be implemented while working off of Maunaloa and Kamehameha V Highway where vehicles tend to travel at a high rate of speed, where equipment and workers will be taking up any portion of the roadway, at major intersections, and where visibility is limited.

This is a project which will provide the island of Molokai with high quality telecommunication services which are not available at this time. This is a much needed improvement to the infrastructure of this economically depressed community. I recommend that this report be forwarded back to Sandwich Isle Communications Inc. for their review.

Concur with findings — Lt. [signature], 120800

Concur — [signature], 12/8/00 1340 hrs

Respectfully submitted:

[signature]
Kelly ARLOS E#10652
Molokai Patrol Division
120700 @ 1717 hours

COPY

TO : THOMAS PHILLIPS, CHIEF OF POLICE, MAUI POLICE DEPT.

VIA : CHANNELS

FROM : KIRK J. SMYTHE, POLICE OFFICER II, LANAI PATROL

SUBJECT : SANDWICH ISLE COMMUNICATIONS FIBER OPTIC DUCTLINE.

[handwritten initials] 12/8/0?

Sir, this TO/FROM is being submitted in regards to the evaluation of Sandwich Isle Communications underground fiber optic cables project site.

According to information submitted by the company the project will consist of three areas on the island of Lana'i.

Area #1. Lanai City Junction to Manele Boat Harbor via Manele Road. (7 miles)

Area #2. Lanai City Junction to Kaumalapau Harbor via Kaumalapau Hwy. (6 miles)

Area #3. Lanai City Junction to Lanai City via Fraser Ave. (1 mile)

Construction will consist of digging a 1 foot wide by 2 to 3 foot deep trench the length of the above areas along the shoulder of the roadway except were trenching directly into the roadway is necessary. They will then be installing conduit pipe for the fiber optic cables.

Per Mike MUNEKIYO, Project Coordinator for the contractor, the Lanai Phase is the last phase. It is scheduled at this point to begin in 2004 and last approximately one year.

Mr. MUNEKIYO has already stated that Off-Duty Police Officer's will be utilized throughout the project. Therefore I see no immediate problems with accessibility or response times for Emergency vehicles or personnel through those areas if needed.

Submitted for your perusal.

Noted, Sgt B [signature] C-C450 12/5/00

RESPECTFULLY SUBMITTED,
[signature]
KIRK J. SMYTHE, E10654
POLICE OFFICER II
12/04/00 @ 1730 HRS

COPY

TO : TOM PHILLIPS, CHIEF OF POLICE, COUNTY OF MAUI

VIA : CHANNELS

FROM : BRAD HICKLE, POLICE OFFICER III, DISTRICT VI KIHEI

SUBJECT : EARLY CONSULTATION FOR ENVIRONMENTAL DRAFT ASSESSMENT FOR SANDWICH ISLE COMMUNICATIONS

Sirs. I have reviewed the information provided by Michael MUNEKIYO on behalf of Sandwich Isle Communications, Inc.
Upon reviewing the information I discovered the Sandwich Isle Communication company is planning to construct underground fiber optic telecommunications cables within State and County right-of-ways. This will provide telecommunication services to Hawaiian Homestead Lands throughout the County of Maui.

The areas that will be mostly effected by the construction in and around Kihei, are depicted in figures 4, 5, & 6 of the information provided. They include LaPerouse Bay through Kihei (22 miles, mostly South Kihei road and Makena Alanui road), Kihei to Maalaea (4 miles, North Kihei road and Honoapiilani Highway), and Maalaea to the tunnel (approximately 4 miles on Honoapiilani Highway).

As a Police Officer my primary concerns are the safety and the best interest of the public. I can tell you the primary concern of the Kihei Community is the current traffic congestion problems we are experiencing on South Kihei road and Piilani Highway. A recent traffic study reported the negative impact traffic congestion has on tourism. Over the past two years traffic jams have been a daily occurrence in Kihei. Night time road work may help to prevent adding to current traffic problems, however the persons residing on or near South Kihei road will surely be affected by the loud heavy equipment, trucks and the voices of construction workers as they carry out their jobs.

The following are recommendations and comments concerning the construction work;

1). With the aforementioned concerns in mind, would your company consider *laying the fiber optic cable line down Piilani Highway during night time hours* rather than South Kihei road?

a. This will prevent making a bad traffic problem worse and should provide *more work space for workers on the shoulder of the roadway.*
b. This will move the construction from the residential/business area to a more rural location.

Respectfully Submitted.
Officer B. Hickle BH E-9966
12/08/00 1845 hours

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Thomas M. Phillips, Chief of Police
Maui Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Early Consultation for Draft Environmental Assessment
Sandwich Isle Communications, Inc., Underground Fiber Optic
Telecommunications Cables- County of Maui

Dear Chief Phillips:

Thank you for your letter of January 9, 2001 regarding the subject project. Your letter was received after printing of the Draft Environmental Assessment. However, it is being included in the Final Environmental Assessment so as to ensure a complete record of coordination for the project. Please allow us the opportunity to respond to the comments provided by your officers.

All necessary permits will be completed for work taking place within the affected County of Maui and State of Hawaii rights-of-way. Additionally, required safety precautions will be taken during the planning and implementation of the proposed project, including the use of off-duty police officers to assist with traffic control, as appropriate.

Routes having minimal impacts to existing infrastructure, while providing the broadest range of opportunities to beneficiaries of the Department of Hawaiian Home Lands were considered. Through consultation with the State Department of Transportation and the Maui County Department of Public Works, feasible routes were determined. Due to its proximity to a large population base, South Kihei Road was deemed the most favorable route for the subject project. However, an alternative route along the Piilani Highway is also being considered in an effort to minimize potential impacts on South Kihei Road and existing traffic congestion.

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph (808)244-2015 · fax (808)244-8729 · planning@mhmaui.com

We note that the department had no additional comments regarding the Draft Environmental Assessment, as reflected in your letter dated May 2, 2001. Thank you very much for your input regarding the subject project. If you have any questions or require additional information, please do not hesitate to call me at 244-2015.

Very truly yours,

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM International

Chapter XI

Letters Received During the Draft Environmental Assessment Public Comment Period and Responses to Comments

XI. LETTERS RECEIVED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT PUBLIC COMMENT PERIOD AND RESPONSES TO COMMENTS

Agencies and organizations listed below were provided a copy of the Draft Environmental Assessment for review and comment during the public comment period. Letters received from agencies and organizations during this period, along with response letters are incorporated in this section.

1. Mr. George P. Young, P.E.
Department of the Army
Regulatory Branch
U.S. Army Engineer Division, Pacific Ocean
Bldg. T-1, Room 105
Fort Shafter, Hawaii 96858-5440

2. Robert P. Smith
Pacific Islands Manager
Pacific Islands Ecoregion
Fish and Wildlife Service
U. S. Department of the Interior
300 Ala Moana Boulevard, Rm. 3-122
Honolulu, Hawaii 96813

3. Neal Fujiwara, Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793-2100

4. Raymond H. Sato, Comptroller
Department of Accounting and General Services
State of Hawaii
Kalanimoku Building
1151 Punchbowl Street
Honolulu, Hawaii 96813

5. Bert Saruwatari, Acting Executive Officer
Land Use Commission
Department of Business, Economic Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804-2359

6. David Blane, Director
State of Hawaii
Office of Planning
Department of Business, Economic, Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804-2359

7. Dr. Paul LeMahieu, Superintendent
Office of the Superintendent
Department of Education
State of Hawaii
Queen Liliuokalani Building
1390 Miller Street
Honolulu, Hawaii 96813

8. Dr. Bruce S. Anderson, Director
Department of Health
State of Hawaii
Kinau Hale
1250 Punchbowl Street
Honolulu, Hawaii 96813

9. Raynard Soon, Chair
Department of Hawaiian Home Lands
State of Hawaii
P.O. Box 1879
Honolulu, Hawaii 96805

10. Gilbert Coloma-Agaran
State of Hawaii
Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street
Honolulu, Hawaii 96813

11. Don Hibbard
State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707

12. Charles K. Maxwell, Sr. Chairperson
Maui/Lanai Islands Burial Council
c/o State Historic Preservation Division
Department of Land and Natural Resources
State of Hawaii
601 Kamokila Blvd.
Kapolei, Hawaii 96707

13. Ronald Kimball, Chairperson
Molokai Island Burial Council
c/o State Historic Preservation Division
State of Hawaii
601 Kamokila Blvd.
Kapolei, Hawaii 96707

14. Robert Siarot, Maui District Engineer
State of Hawaii
Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Hawaii 96732

15. Randall K. Ogata, Administrator
Office of the Administrator
Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Boulevard, Suite 1250
Honolulu, Hawaii 96813

16. Honorable Kimo Apana, Mayor
County of Maui
200 S. High Street
Wailuku, Hawaii 96732

17. Clayton Ishikawa, Chief
County of Maui
Department of Fire Control
200 Dairy Road
Kahului, Hawaii 96732

18. Floyd Miyazono, Director
County of Maui
Department of Parks and Recreation
1580 C. Kaahumanu Avenue
Wailuku, Hawaii 96793

19. Alice Lee, Director
County of Maui
Department of Housing and Human Concerns
200 S. High Street
Wailuku, Hawaii 96793

20. John Min, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

21. Tom Phillips, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

22. David Goode, Director
County of Maui
Department of Public Works and Waste Management
200 South High Street
Wailuku, Hawaii 96793

23. David Craddick, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793

24. **West Maui Taxpayers Association**
P. O. Box 10338
Lahaina, Hawaii 96761

25. Vince Bagoyo, Vice President
Castle & Cooke Resorts, LLC
P. O. Box 630310
Lanai City, Hawaii 96763

26. Barney Eiting, Chair
Planning and Development Committee
Kihei Community Association
P. O. Box 2311
Kihei, Hawaii 96753

27. James Kimo Falconer, Chairman
Maui Cultural Resources Commission
c/o Department of Planning
250 South High Street
Wailuku, Hawaii 96793

28. Rev. Tasha Kama
State Council of Hawaiian Homestead Associations
Ahupua'a O Maui
715 Kilihau Street
Wailuku, Hawaii 96793

29. Anthony Sang, President
State Council of Hawaiian Homestead Associations
41-167 Nalu Street
Waimanalo, Hawaii 96795

30. Mr. Edward Ayau
Hui Malama I Na Kapuna 'O Hawaii Nei
2117 Piilani Place
Honolulu, Hawaii 96822

31. **Kahului Library**
90 School Street
Kahului, Hawaii 96732

32. **Kihei Library**
35 Waimahaihai Street
Kihei, Hawaii 96753

33. **Makawao Library**
1159 Makawao Avenue
Makawao, Hawaii 96768

34. **Wailuku Library**
251 High Street
Wailuku, Hawaii 96793

35. **Lahaina Library**
680 Wharf Street
Lahaina, Hawaii 96761

36. **Hana Library**
P.O. Box 490
Hana, Hawaii 96713

37. **Lanai Library**
P.O. Box 630550
Lanai City, Hawaii 96763

38. **Molokai Library**
P.O. Box 395
Kaunakakai, Hawaii 96748

39. UH Environmental Center
2500 Dole Street
Kraus Annex 19
Honolulu, Hawaii 96822

40. Terryl Vencl
Maui Hotel Association
1727 Wili Pa Loop
Wailuku, Hawaii 96793

41. Mary Evanson
Friends of Haleakala National Park
P.O. Box 694
Makawao, Hawaii 96768

42. Valerie Monson
Maui News
100 Mahalani Street
Wailuku, Hawaii 96793-2529

MAR 2 3 2001

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
FORT SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF

March 22, 2001

Regulatory Branch

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

This letter responds to your request for comments on the draft Environmental Assessment for Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai, dated March 2001. Based on the information you provided it appears that the cables will cross numerous streams on each island; therefor, one or more Department of the Army (DA) permits will be required for this project. When planning is further along, we will be able to provide more details concerning the permit requirements. When the Final Environmental Assessment is prepared, it should include information about the streams which will be crossed.

If you have any questions concerning this determination, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200100074.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

MUNEKIYO & HIRAGA, INC.

July 27, 2001

George P. Young, P.E., Chief
Regulatory Branch
U.S. Army Engineer District, Honolulu
Department of the Army
Ft. Shafter, Hawaii 96858-5440

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Young,

Thank you for your letter dated March 22, 2001 regarding the subject project. Appropriate coordination will be conducted with your department during the design of the various cable segments in order to address applicable permit requirements with regards to stream crossings.

Please note that recent consultation with the State Department of Transportation has confirmed that the installation of the fiber optic ductlines at stream crossings may utilize a method of bridge attachments in accordance with applicable State and County design requirements. The bridge attachment method will eliminate the need for stream bank alteration and minimize potential adverse impacts to existing stream beds associated with the proposed project.

As requested in your comment letter, the Final Environmental Assessment will include information regarding streams that will be traversed along the proposed route.

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhinc.com

Thank you for your time and interest in the proposed project. Should have any questions or require additional information, please do not hesitate to call.

Very truly yours,

D-K-F—
Dean K. Frampton
Planner

DKF:to
cc: Ronald Sato, SSFM International

BENJAMIN J. CAYETANO
GOVERNOR

APR 0 6 2001

PAUL G. LeMAHIEU, Ph.D.
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF THE SUPERINTENDENT

April 4, 2001

Mr. Dean K. Frampton
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Dear Mr. Frampton:

Subject: Sandwich Isles Communication
Lanai, Maui and Moloka'i Rural Fiber
Optic Communication Lines Draft Environmental Assessment

The Department of Education requests that two-weeks advance notice be provided to any school in the immediate vicinity of the trenching. The advance notification will allow the affected school to prepare for possible noise and traffic disruptions.

Thank you for the opportunity to comment.

Very truly yours,

Paul G. LeMahieu, Ph.D.
Superintendent of Education

PLeM:hy

cc: P. Yoshioka, DAS
M. Amuro, DOT
G. Salmonson, OEQC

MUNEKIYO HIRAGA, INC.

July 27, 2001

Paul LeMahieu, Superintendent
Department of Education
State of Hawaii
P.O. Box 2630
Honolulu HI 96804

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. LeMahieu:

Thank you for your comment letter of April 4, 2001 regarding the subject project. The applicants will provide the advance two-week notification requested for all schools located in the immediate vicinity of the proposed project.

Thank you for your time and interest in the proposed project. Should you have any questions or require additional information, please do not hesitate to call.

Very truly yours,

Dean K. Frampton, Planner

DKF:to
cc: Ronald Sato, SSFM International

APR 16 2001

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. (P)1252.1

APR 12 2001

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton

Subject: Rural Fiber Optics Communications Lines for Lanai, Maui and Molokai
Draft Environmental Assessment

Thank you for the opportunity to review the subject Draft Environmental Assessment. The project does not impact any Department of Accounting and General Services projects or existing facilities. Therefore, we have no comments to offer.

Should you have any questions, please have your staff call Mr. Allen Yamanoha of the Planning Branch at 586-0488.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

AY:mo
c: Mr. Mike Amuro, DOT Highways Div
OEQC

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Gordon Matsuoka, Administrator, Public Works
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawaii 96810

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Matsuoka:

Thank your for your letter dated April 12, 2001 regarding the Draft Environmental Assessment for the subject project. We note that your department has no comments or objections regarding the proposed action.

Should you have any questions or require information regarding this project, please do not hesitate to call.

Very truly yours,

D. K. F.
Dean K. Frampton, Planner

DKF:to
cc: Ronald Sato, SSFM International
[redacted]

305 High Street, Suite 104 Wailuku, Hawaii 96793 Ph. (808) 244-2015 Fax (808) 244-8729 e-mail: mhi@maui.net

APR 2 3 2001

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

April 23, 2001

Mr. Larry Fukunaga
Sandwich Isles Communications, Inc.
Pauahi Tower, 27th Floor
1001 Bishop Street
Honolulu, Hawai'i 96813

Mr. Raymond Soon, Chairperson
Department of Hawaiian Home Lands, State of Hawai'i
1099 Alakea Street, Suite 2000
Honolulu, Hawai'i 96813

Mr. Brian Minaai, Director
Department of Transportation, State of Hawai'i
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

Dear Messrs. Fukunaga, Soon and Minaai:

This letter is written with respect to your filings of anticipated findings of no significant impact and draft environmental assessments for rural fiber optic duct lines projects in the counties of Honolulu, Maui, Hawai'i and Kaua'i. Please instruct your consultants to include a copy of this letter and your responses to these questions in each of the four environmental assessments being processed.

1. Cumulative Impacts Must Be Assessed: One draft environmental assessment cites the provisions of section 11-200-8(a), Item 3(d), Hawai'i Administrative rules, stating that "construction and location of single, new, small facilities or structures and the alteration and modification of the same and installation of new, small, equipment and facilities and the alteration and modification of same including but not limited to: ... (b) [w]ater, sewage, electrical, gas, telephone, and other essential public utility services extensions to serve such structures or facilities..." is exempt from the preparation of an environmental assessment. We do not believe that the exemption applies at all due to the many cumulative impacts of the project which have yet to be assessed. We respectfully call to your attention the language of section 11-200-8(b), which states in pertinent part that "[a]ll exemptions under the classes ... are inapplicable when the cumulative impact of planned successive actions in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment" [underscoring supplied] and request that your consultants review the overall statewide project and in each draft environmental assessment discuss the cumulative impacts of the overall project. Some questions to guide you in assessing the cumulative impacts of the project include the following:

   a. We understand that a primary component of the project is to link the various properties of the Hawaiian Homes Land Trust. Once such a land-based fiber optic trunk has been established, to what extent will persons or entities proximal to the network and who are not beneficiaries of the Hawaiian Homes Land trust be allowed to use the fiber optic network?
   b. Interisland cable landings which fall in the shoreline setback area (under County jurisdiction) and submerged lands (under the jurisdiction of the Department of Land and Natural Resources) will eventually connect the statewide system. Although the project is focusing on the land based components under the jurisdiction of the Department of Transportation, what possible sites will SIC use to connect the system? Will new sites be used? Has SIC spoken to utilities Verizon and GST for the possibility of collocation? What kinds of impacts (i.e., cultural, archaeological, historical, biological) will result from the use of existing as opposed to new sites? What mitigative measures will be taken? What alternatives are available?

2. Use of Federal Funds and Compliance with Federal Requirements: We understand that the project will be making use of federal funds through the Rural Utilities Service of the United States Department of Agriculture. Please provide documentation of compliance with section 106 of the National Historic Preservation Act. Please also provide documentation that the disbursement of funds for this purpose has been categorically exempted or issued a finding of no significant impact under the National Environmental Policy Act.

3. Interaction with Other Planned Projects: Each environmental assessment must discuss the project's interaction with other planned projects along the corridor routes for each island (see page 52 of the DEA for the County of Hawai'i Rural Fiber Optic Duct Lines project for an example).

4. Secondary (or Indirect) Impacts: Chapter 343 Hawai'i Revised Statutes and its implementing administrative rules define three types of impacts: direct, indirect and cumulative. While direct impacts are normally discussed, the latter two are often neglected or given cursory review in environmental documents. It should be realized that actions that involve the construction of highways, airports, utility corridors, water resource projects, etc., may well stimulate or induce secondary or indirect effects. These indirect effects may be equally important as, or more important than direct impacts. Discuss the indirect impacts of the project using the following question as a guide: will development (such as high-tech parks) grow as a result of this project? What impacts will such growth and development have? We are aware of one such case - Sandwich Isles Network Operation Center on 100 + acres of land (zone agricultural) in Waikakaua, Oahu.

5. Cultural Impact Requirements of Act 50, SLH 2000: Act 50 of the Session Laws of Hawai'i for 2000 require that projects subject to Chapter 343, Hawai'i Revised Statutes assess the impact of project on cultural practices. The inclusion of an archaeological assessments with no reference to current cultural practices or resources does not fulfill the requirements of Act 50. The environmental assessment for the Hawaii County Fiber Optic Line Project was the only one of the four that actually attempted to assess cultural impacts. Please advise your consultants to comply with Act 50, if they have not done so already, in light of the new information you will obtain in response to our requests above which you should transmit to them for their use in revising your documents. A copy of the cultural impact assessment guidance is enclosed.

Thank you for the opportunity to comment. If you have any questions, please call Mr. Leslie Segundo of my staff at (808) 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director of Environmental Quality Control

Enclosures
c: Mr. Michael Amuro, Department of Transportation, State of Hawai'i
→ Munekiyo & Hiraga, Inc.
Ron Terry, Ph.D.
Mr. Ronald Sato, AICP, SSFM International, Inc.

GUIDELINES FOR ASSESSING CULTURAL IMPACTS
Adopted by the Environmental Council, State of Hawaii
November 19, 1997

I. INTRODUCTION

It is the policy of the State of Hawaii under Chapter 343, HRS, to alert decision makers, through the environmental assessment process, about significant environmental effects which may result from the implementation of certain actions. An environmental assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by actions subject to Chapter 343, and promotes responsible decision making. Articles IX and XII of the State Constitution, other state laws, and the courts of the state require government agencies to promote and preserve cultural beliefs, practices, and resources of native Hawaiians and other ethnic groups. Chapter 343 also requires environmental assessment of cultural resources, in determining the significance of a proposed project.

The Environmental Council encourages preparers of environmental assessments and environmental impact statements to analyze the impact of a proposed action on cultural practices and features associated with the project area. The Council provides the following methodology and content protocol as guidance for any assessment of a project that may significantly affect cultural resources.

II. CULTURAL IMPACT ASSESSMENT METHODOLOGY

Cultural impacts differ from other types of impacts assessed in environmental assessments or environmental impact statements. A cultural impact assessment includes information relating to the practices and beliefs of a particular cultural or ethnic group or groups.

Such information may be obtained through scoping, community meetings, ethnographic interviews and oral histories. Information provided by knowledgeable informants, including traditional cultural practitioners, can be applied to the analysis of cultural impacts in conjunction with information concerning cultural practices and features obtained through consultation and from documentary research.

In scoping the cultural portion of an environmental assessment, the geographical extent of the inquiry should, in most instances, be greater than the area over which the proposed action will take place. This is to ensure that cultural practices which may not occur within the boundaries of the project area, but which may nonetheless be affected, are included in the assessment. Thus, for example, a proposed action that may not physically alter gathering practices, but may affect access to gathering areas would be included in the assessment. An ahupua'a is usually the appropriate geographical unit to begin an assessment of cultural impacts of a proposed action, particularly if it includes all of the types of cultural practices associated with the project area. In some cases, cultural practices are likely to extend beyond the ahupua'a and the geographical extent of the study area should take into account those cultural practices.

The historical period studied in a cultural impact assessment should commence with the initial presence in the area of the particular group whose cultural practices and features are being assessed. The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs.

The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural, including submerged cultural resources, which support such cultural practices and beliefs.

The Environmental Council recommends that preparers of assessments analyzing cultural impacts adopt the following protocol:

(1) identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupua'a;

(2) identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;

(3) receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area;

(4) conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research;

(5) identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and

(6) assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

Interviews and oral histories with knowledgeable individuals may be recorded, if consent is given, and field visits by preparers accompanied by informants are encouraged. Persons interviewed should be afforded an opportunity to review the record of the interview, and consent to publish the record should be obtained whenever possible. For example, the precise location of human burials are likely to be withheld from a cultural impact assessment, but it is important that the document identify the impact a project would have on the burials. At times an informant may provide information only on the condition that it remain in confidence. The wishes of the informant should be respected.

Primary source materials reviewed and analyzed may include, as appropriate: Mahele, land court, census and tax records, including testimonies; vital statistics records; family histories and genealogies; previously published or recorded ethnographic interviews and oral histories; community studies, old maps and photographs; and other archival documents, including correspondence, newspaper or almanac articles, and visitor journals. Secondary source materials such as historical, sociological, and anthropological texts, manuscripts, and similar materials, published and unpublished, should also be consulted. Other materials which should be examined include prior land use proposals, decisions, and rulings which pertain to the study area.

III. CULTURAL IMPACT ASSESSMENT CONTENTS

In addition to the content requirements for environmental assessments and environmental impact statements, which are set out in HAR §§ 11-200-10 and 16 through 18, the portion of the assessment concerning cultural impacts should address, but not necessarily be limited to, the following matters:

1. A discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained.

2. A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.

3. Ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.

4. Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.

5. A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations or biases.

6. A discussion concerning the cultural resources, practices and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site.

7. A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project.

8. An explanation of confidential information that has been withheld from public disclosure in the assessment.

9. A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.

10. An analysis of the potential effect of any proposed physical alteration on cultural resources, practices or beliefs; the potential of the proposed action to isolate cultural resources, practices or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place.

11. A bibliography of references, and attached records of interviews which were allowed to be disclosed.

The inclusion of this information will help make environmental assessments and environmental impact statements complete and meet the requirements of Chapter 343, HRS. If you have any questions, please call us at 586-4185.

HUNEKIYO HIRAGA, INC.

July 27, 2001

Genevieve Salmonson, Director
State of Hawaii
Office of Environmental Quality Control
235 S. Beretania Street #702
Honolulu, Hawaii 96813

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Ms. Salmonson:

We have received a copy of your April 23, 2001 letter to Messrs. Larry Fukunaga, Brian Minaai and Raynard Soon regarding the Office of Environmental Quality Control's comments on the Draft Environmental Assessment for the subject project. We would like to provide the following responses to address and clarify the comments provided.

1. ***Cumulative Impacts***

The Final EA will expand the discussion on the cumulative impacts associated with this project.

Based upon meetings held with your office in May and October of last year, this project was discussed and it was agreed upon that separate environmental assessment documents for each county were appropriate and should be prepared. Impacts associated with the fiber optic duct line project would mainly be related to construction activities such as traffic congestion, dust, underground archaeological sites, noise, etc. Thus, construction related impacts are more appropriately addressed at the individual county level.

The project objective is to provide emergency, basic, and advanced telecommunication services to State Department of Hawaiian Home Land (DHHL) parcels, and this fiber optic duct line would allow Sandwich Isles Communications, Inc. (SIC) to provide such service. SIC has not developed any plans for services outside of DHHL.

With regard to the comment on cable landing sites, there are no specific landing sites established at this time as SIC still needs to conduct planning and feasibility

studies to evaluate them. Thus, addressing possible co-location of landing sites, new sites, or alternatives is premature at this time. As discussed and agreed to at the meetings held with your office last year, an appropriate environmental document will be prepared to address these landing sites once project details are established.

2. ***Use of Federal Funds and Compliance with Federal Requirements***

The Rural Utilities Service (RUS) is an agency within the U.S. Department of Agriculture that provides long-term, low interest loans to rural telephone companies like SIC for projects such as that being proposed on Lanai, Maui and Molokai. Under the RUS's Environmental Policies and Procedures, the proposed project is categorically excluded under the National Environmental Policy Act.

SIC is presently conducting a Section 106 consultation review for the project, and is coordinating such efforts with the State Historic Preservation Division.

3. ***Interaction with Other Planned Projects***

The Final EA will address interaction issues with other utility projects that would be implementing along the corridor routes. SIC is also coordinating with other telecommunications companies to ensure that potential interaction issues are properly addressed.

4. ***Secondary Impacts***

The Final EA will better clarify potential secondary impacts that may result from this fiber optic cable project. SIC's main focus is to provide emergency, basic, and advanced telecommunication services to DHHL properties. The project could improve the existing communication service being provided by other utility companies. However, we do not expect adverse impacts on the environment from this improvement in telecommunication service.

5. ***Cultural Impacts***

A new section on cultural impacts will be included in the Final EA. The cultural resource parameter to be addressed in particular relates to subsurface cultural materials, including burials. SIC and its consulting team are working with the Maui/Lanai Islands Burial Council to ensure that a coordinated effort is undertaken in addressing Section 106 requirements, including the preparation of addendum archaeological research and assessments, monitoring plan and Memorandum of Agreement. The addendum archaeological research work addresses more recent

archaeological studies along the proposed routes. Other parties included in the Section 106 process include the Maui County Cultural Resources Commission, the Molokai Island Burial Council, Office of Hawaiian Affairs, and various Hawaiian civic clubs and homestead associations.

We appreciate the comments provided. If there are any questions or if additional information is needed on the responses provided herein, please do not hesitate to call.

Very truly yours,

D. K. F—

Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International

APR 2 6 2001

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

April 24, 2001

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Subject: Draft Environmental Assessment ("DEA")
Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai
Sandwich Isles Communication, Inc.
Various segments on the Islands of Lanai, Molokai, and Maui

We have reviewed the subject draft environmental assessment forwarded by your letter dated March 20, 2001.

Based upon our review of the subject DEA, we have the following comments:

1. The State Land Use District ("SLUD") Summaries identifying the SLUD boundaries in Tables 4, 5, and 6 appear to be identified correctly except for the following segments on Table 5:
   - the sub-segment of the segment from Maalaea to Honokowai traversing through Ukumehame appears to be in the Conservation District; and
   - the sub-segment of the segment from Kihei to Maalaea traversing through Kealia Pond to Kanalo appears to be in the Conservation District.

   The Final Environmental Assessment ("FEA") should correct these omissions.

2. In regard to Chapter II. F., Archaeological and Historic Resources, the FEA should clarify if the Applicant will alter the route of the subject lines if burials or very high yielding resources are encountered.

   Also, in regard to Chapter II. F. 3. c., Archaeological and Historic Resources, Island of Molokai, Kalamaula to Ualapue, the FEA should clarify if mitigation measures for the sub-segment of the Kalamaula to Ualapue segment traversing through Kanoa Fishpond to Ualapue will include consultation with the Island of Molokai Burial Council, if burials are encountered.

We have no further comments to offer at this time. We appreciate the opportunity to review and comment on the DEA. If you have questions regarding this matter, please contact me or Russell Kumabe of our office at 587-3822.

Sincerely,

BERT SARUWATARI
Acting Executive Officer

c: DOT, Highways Division, Right-of-Way Branch
Attention: Mike Amuro
Office of Environmental Quality Control

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Anthony Ching, Executive Officer
State of Hawaii
Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Ching:

Thank you for your letter dated April 24, 2001 regarding the subject project. The Final Environmental Assessment (FEA) will reflect that routes traversing areas near Ukumehame and the Kealia Pond are within the Conservation District.

With regard to archaeological and historic resources, a memorandum of agreement (MOA) will be entered into between the State Historic Preservation Division and the responsible federal official from the Rural Utilities Service pursuant to the National Historic Preservation Act. The MOA will identify specific mitigation measures in the event burials or high yielding resources are encountered.

In the event burials are encountered, the respective Burial Council from the affected island will be consulted. Coordination efforts between the applicant and the respective Burial Council will ensure that appropriate treatment plans are developed for any sites inadvertently encountered.

Thank you very much for your comments on the subject project. If you have any additional questions or require additional information, please do not hesitate to call.

Very truly yours,

D. K. F.
Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

MAY 0 2 2001

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

In reply, please refer to:
File:

01-005/epo

April 25, 2001

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Subject: Rural Fiber Optics Communication Lines

Thank you for allowing us to review and comment on the subject document. We have the following comments to offer:

Control of Fugitive Dust

There is a significant potential for fugitive dust emissions during the construction activities. Implementation of adequate dust control measures during all phases of construction is warranted.

Construction activities must comply with provisions of Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, Fugitive Dust.

The contractor should provide adequate measures to control dust from the road areas and during the various phases of construction. These measures include, but are not limited to:

1. Planning the different phases of construction, focusing on minimizing the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes, and locating potentially dusty equipment in areas of the least impact;

2. Providing an adequate water source at the site prior to start up of construction activities;

3. Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;

4. Controlling of dust from shoulders and access roads;

5. Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and

6. Controlling of dust from debris being hauled away from project site.

If you have any questions regarding these issues on fugitive dust, please contact the Clean Air Branch at 586-4200.

Noise, Radiation and Indoor Air Quality Branch

1. The contractor shall obtain a Community Noise Permit and/or Community Noise Variance if the noise levels from the construction activities exceeds or are expected to exceed the maximum permissible sound levels of the regulations as stated in Section 11-46-6(a), Hawaii Administrative Rules, Chapter 11-46, Community Noise Control.

2. Construction equipment and on-site vehicles requiring an exhaust of gas or air shall be equipped with mufflers as stated in Section 11-46-6(b)(1)(A).

3. Community Noise Permits are issued for construction activities that occur between the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 p.m. on Saturdays. The contractor shall comply with the requirements pertaining to construction activities as specified in the rules and the conditions issued with the permit as stated in Section 11-46-7(a).

4. Community Noise Variances are issued for construction activities that occur outside of the indicated permit hours. The contractor shall comply with the requirements pertaining to construction activities as specified in the rules and the conditions issued with the variance as stated in Section 11-46-8(c)(6).

If there are any questions, please contact Russell S. Takata, Environmental Health Program Manager, Noise, Radiation and Indoor Air Quality Branch, at 586-4700.

Sincerely,

GARY GILL
Deputy Director
Environmental Health Administration

c Dept. of Transportation
Attn: Mr. Mike Amuro
OEQC

MUNEKIYO HIRAGA, INC.

July 27, 2001

Gary Gill, Deputy Director
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu HI 96801

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Gill:

Thank you for your comment letter dated April 25, 2001 regarding the subject project. Please note that appropriate measures and Best Management Practices (BMP's) will be employed during project implementation to minimize fugitive dust, machinery noise levels and related adverse environmental affects.

Thank you for your time and interest in the subject project. Should you have any questions or require additional information, please do not hesitate to call.

Very truly yours,

D. K. F.
Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International

MAY 17 2001

PHONE (808) 594-1888 FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

May 15, 2001

Dean Frampton
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Subject: Rural Fiber Optic Communication Lines for Lanai, Maui, and Molokai

Dear Mr. Frampton,

Thank you for the opportunity to comment on the draft environmental assessment (EA) for the above-referenced project. OHA apologizes for our tardy comments and as we discussed with you today, we understand that you will still attempt to include the comments in the final EA.

OHA agrees with the State Historic Preservation District's assessment that this project constitutes a federal undertaking and implicates Section 106 of the National Historic Preservation Act. OHA has the following concerns about the project's impacts on cultural practices, cultural resources, and water resources. Our concerns about the draft EA may resurface in our future Section 106 consultation on this project.

Cultural Practices
The draft EA's analysis of the project's impacts on traditional Hawaiian cultural practices does not suffice. The draft environmental assessment for Maui county states that there are no known traditional cultural practices which would be affected by the project. However, the document does not reveal how it arrived at this conclusion nor does it include a cultural impact statement required by Act 50, Session Laws of 2000. OHA requests that the DEA identify and address the effects on Hawai'i's culture and traditional and customary rights pursuant to Section 343-2, Hawai'i Revised Statutes, as amended.

Consultation with Native Hawaiian Organizations under Section 106 and NAGPRA

As this project is federally funded, Section 106 of the National Historic Preservation Act is implicated. Under Section 106 of NHPA, the Native Hawaiian organizations must be consulted. The EA states that there will be coordination with SHPD during project design and construction to address potential issues associated with cultural practices. However, consultation with native Hawaiian organizations is critical to determining a project's impacts on cultural practices and is mandated by Section 106 of the National Historic Preservation Act. The draft EA does not indicate that Native Hawaiian organizations were consulted regarding the project's area of potential effect or necessary mitigation measures. OHA is concerned about this significant oversight.

Further, any human remains found on Department of Hawaiian Homeland land is subject to the Native American Graves Protection and Repatriation Act.

Protection of Cultural Resources
The draft EA recommends establishing a monitoring program for areas assessed as having moderate to very high potential for containing cultural properties. This kind of blanket recommendation does not ensure adequate mitigation of adverse effects on cultural resources. The draft EA should include a detailed monitoring plan with protocol for evaluation of cultural and archeological findings, notification, and site management. The plan should also include quality control measures and guidelines for work stoppage.

Segments of the project on Maui and Molokai are of particular concern. The State Historic Preservation Division recommended preparing identification and treatment plans for three segments of the route on Maui and two segments on Molokai. Despite this recommendation, the draft EA does not mention even the need for identification and treatment plans for the sites, let alone include the plans themselves.

On the island of Maui, the Kihei to Ma'alaea segment may contain important information on paleo-environmental conditions and early Hawaiian use of this area. SHPD wrote that special plans must be made for soil collection and lab analyses in this area. OHA is concerned that the draft EA does not include this assessment of this area nor does it include this recommendation as a mitigative measure.

The proposal says three methods will be used: open trenching, static plow placement, or directional drilling. SHPD recommends that the developer specify which kinds of excavation methods would be used in specific areas. OHA agrees that clear guidelines should be established with respect to the most appropriate excavation method in a given area with sensitivity for cultural deposits.

Water Resources
The draft EA fails to address the project's impacts to existing streams or aquatic resources. The Commission on Water Resources Management indicates ten streams on Maui and three on Molokai may be affected and permits for stream channel alteration may be required. However, the draft EA must identify the streams that will be crossed, the aquatic resources in these streams, and water pollution impacts such as excess sediment discharge and contaminants associated with heavy equipment. The draft EA should also recommend mitigation measures for these impacts. These plans should be made subject to review as part of the EA as a means of determining if in fact, the project's impacts will adequately be mitigated.

OHA is concerned because the current draft EA is an incomplete document that does not adequately address all relevant impacts and mitigation measures. OHA requests that your final environmental assessment address the afore-mentioned components currently missing from the draft EA. We also look forward to receiving a written Request for a Section 106 Consultation on this project.

If you have any questions, please contact Sharla Manley, Assistant Policy Analyst at 594-1944, or email her at sharlam@oha.org.

Sincerely,

Colin C. Kippen, Jr.
Deputy Administrator

CK: sam

cc: OHA Board of Trustees
Randall K. Ogata, Administrator
Office of Environmental Quality Control
Michael Amuro, Department of Transportation, Highways Division
Maui CAC
Molokai CAC

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Colin C. Kippen, Deputy Administrator
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optic Communication Lines for Lanai, Maui and Molokai

Dear Mr. Kippen:

Thank you for the Office of Hawaiian Affair's May 15, 2001 comment letter to the draft environmental assessment for the above-referenced project. We would like to take this opportunity to respond to your comments.

Cultural Practices

Sandwich Isle Communications, Inc's (SIC) project for Maui County, as with all other counties, is to install underground fiber optic cables through existing State and County public rights-of-ways. Most of these public rights-of-ways have in existence for decades and have been subject to regular road construction and maintenance work by the State and local governments as well as other utility companies. Therefore, traditional and customary practices occurring within the existing developed road right-of-ways was determined to be unlikely.

However, an addendum archaeological assessment was prepared for this project, which thoroughly researched the project routes for purposes of identifying potential areas for subsurface or other types of historic properties, including human burials. The archaeological assessment was developed in consultation with State Historic Preservation Division (SHPD) and the Maui/Lana'i Islands Burial Council (MIBC).

Hence, the final EA (FEA) will include discussions related to the proposed project's potential impact on native Hawaiian traditional and customary practices, particularly those related to historic properties, including burial remains, consistent with the requirements of Act 50, 2000 Haw. Sess. Laws.

305 H A Street, Suite 104 Wailuku, Hawaii 96793 ph (808)244-2015 fax (808)244-8729 planning@munekiyohiraga.com

Consultation with Native Hawaiian Organizations Under Section 106 and NAGPRA and Protection of Cultural Resources

SIC and its consulting teams are working with SHPD, MIBC, the Maui County Cultural Resources Commission, and native Hawaiian organizations in a coordinated effort to address Section 106 consultation requirements pursuant to the National Historic Preservation Act.

The consultation process, as well as the archaeological assessment, identifies culturally sensitive areas, to assist in the preparation of an archaeological monitoring plan. This information will be incorporated into a Memorandum of Agreement between the U.S. Department of Agriculture, Rural Utilities Service (RUS) and the State Historic Preservation Officer (SHPO). The archaeological monitoring plan and the MOA will detail specific protocol should culturally sensitive areas and/or resources be encountered.

Water Resources

The FEA will identify streams to be crossed and existing aquatic resources as inventoried by the 1990 Hawaii Stream Assessment prepared by the Commission on Water Resource Management. Individual stream crossing methods will be determined on a case by case basis, utilizing either directional drilling or bridge attachments. Directional drilling or micro-tunnelling, as well as the bridge attachment methods of construction are intended to minimize sediment discharge to streams. Best Management Practices (BMP's) will also be utilized in an effort to eliminate the potential for adverse impacts on streams and surrounding environments.

We appreciate the comments provided. If there are any questions or additional information is needed regarding the responses provided herein, please do not hesitate to call.

Very truly yours,

D. K. F.
Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

JUN 05 2001

JUN 0 5 2001

BRIAN K. MINAAI
DIRECTOR

DEPUTY DIRECTORS
GLENN M. OKIMOTO
JADINE Y. URASAKI

IN REPLY REFER TO:

HWY-PS
2.3050

Mr. Michael T. Munekiyo, A.I.C.P.
Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

Subject: Draft Environmental Assessment, Early Consultation, Underground Fiber Optic Telecommunications Cables, County of Maui, Sandwich Isles Communication, Inc.

Thank you for the opportunity to review the subject document.

We have the following comments:

1. On the State routes, we request the installation one fiber optic conduit for our future intelligent transportation system (ITS), traffic management, traffic counts, and other roadway data needs.

2. At stream crossings or where conduits are proposed for attachment to State owned bridges, Sandwich Isles Communications shall be responsible to analyze its effect on the bridges and if necessary, upgrade the structure to meet current standards.

3. The cable alignment should be located outside of the road pavement and as close to the right- of-way line as possible, a minimum of three feet deep and four feet four inches deep at guardrail crossings.

4. We prefer that each alignment be within a utility corridor. We recommend coordination with other utility companies to place all compatible utilities underground within this utility corridor.

5. Installation of utilities within the State Highway right-of-way must comply with the Americans with Disabilities Act.

6. The small telephone equipped cabinets must be located so they don't block sight distance or obstruct any part of the right-of-way used as a pedestrian and bicycle facility.

7. Traffic control plans must be submitted for our review and approval.

8. The applicant is advised to contact the Highways Division, Right-Of-Way Branch at 692-7325 for information on consideration for use of the highway right-of-way.

9. Plans for construction within the State Highway right-of-way must be submitted for our review and approval.

10. All construction within the State Highway right-of-way must meet all current State design requirements.

If you have any questions, please contact Ronald Tsuzuki, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,

For BRIAN K. MINAAI
Director of Transportation

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Brian Minaai, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Minaai:

Thank you for your comment letter dated June 5, 2001 relative to the Draft Environmental Assessment for the subject project. In response to the comments provided, we note the following:

1. Sandwich Isles Communications (SIC) will coordinate with the Department of Transportation (DOT) to identify and address opportunities for fiber optic conduit use for DOT roadway data needs.
2. Where stream crossings or attachments to State owned bridges are required, SIC will analyze potential effects on the bridges, and as necessary, upgrade the structures to meet current standards.
3. The basis of design for the fiber optic communication line will include the placement of the underground lines as close to the right-of-way line as possible. In addition, all construction related to the installation of the fiber optic duct lines will conform to State design standards, including a minimum cover of three feet, and four feet four inches of cover at guardrail crossings.
4. SIC will coordinate with existing utility companies in an effort to utilize common and compatible underground utility corridors.
5. Project installation within State Highway rights-of-way will comply with the Americans with Disabilities Act.
6. Telephone equipment cabinets are not anticipated to be placed within rights-of-way.
7. Traffic control plans will be submitted to the DOT for review and approval prior to initiation of construction.

8. The applicant has been in previous contact with the Right-Of-Way Branch in an effort to address DOT concerns pertaining to the use of highway right-of-way.
9. Construction plans for the installation of the fiber optic conduits will be designed in conformance with State standards and submitted to the DOT for review and approval.

Thank you for your time and interest in the subject project. Should you have any questions or require additional information, please do not hesitate to call me at 244-2015.

Very truly yours,

D. K. F.

Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International

JAMES "KIMO" APANA
Mayor

DAVID C. GOODE
Director

MILTON M. ARAKAWA, A.I.C.P.
Deputy Director

MAY 29 2001

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT
LAND USE AND CODES ADMINISTRATION
250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

May 16, 2001

RALPH M. NAGAMINE, L.S., P.E.
Land Use and Codes Administration

RONALD R. RISKA, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

Solid Waste Division

BRIAN HASHIRO, P.E.
Highways Division

Mr. Dean K. Frampton, Planner
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Hawaii 96793

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
RURAL FIBER OPTICS COMMUNICATION LINES FOR LANAI, MAUI
AND MOLOKAI

Dear Mr. Frampton:

We reviewed the subject application and have the following comments:

1. Consultant to check all clearances between existing sewer lines and new utility lines (18" or less requires a concrete jacket).

2. Construction plans should show all existing wastewater lines including vertical clearance on crossings with proposed fiber optic installation.

3. Unless otherwise permitted, "above ground (grade)" facilities shall not be constructed within all county owned roadway right-of-ways. These above ground facilities create an obstruction and a public safety hazard.

4. The proposed installation of these underground conduits shall be coordinated with the DPWWM CIP Countywide programs to mitigate trenching newly constructed County roadways.

5. Construction plans shall be submitted for review and approval for the work on the County roadways.

6. Easement for the lines within County roadways will need to be

Council. Sandwich Isles should initiate the process by submitting the easement agreement for review and approval.

7. The applicant should clarify its rationale as to whether other non-DHHL entities would be allowed to utilize the conduit system. Issues of rental or lease fees to the County or from other users should also be discussed.

8. Some of the proposed areas of work may be archaeologically sensitive. Sandwich Isles should be advised to contact the State Historic Preservation Division (SHPD) for their review and comments on the proposed route. Prior to issuance of a permit, a written approval from SHPD shall be submitted.

9. A "Work on County Highways" permit will be required prior to commencement. The permit application requires signature approvals from the utility companies. In addition, the contractor shall provide insurance to indemnify the County during the period when the work is performed. A performance bond covering 50% of the restoration cost is also required.

10. We would discourage the placement of the line along South Kihei Road as traffic is congested, and the roadway is filled with existing utility lines and laterals, traffic signal loops, and other underground impediments.

If you have any questions, please call me at 270-7845.

Sincerely,

DAVID GOODE
Department of Public Works
and Waste Management

DG:rs
c: Land Use and Codes Administration

MUNEKIYO & HIRAGA, INC.

July 27, 2001

David Goode, Director
Department of Public Works and
Waste Management
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Goode:

Thank you for your letter dated May 16th regarding the subject project. In response to your comments, we note the following.

Comment Nos. 1 and 2: Construction plans will be designed in accordance with existing departmental standards, and will be submitted to your department for review and approval during the permitting phase, as appropriate.

Comment No. 3: Preliminary designs for the subject project indicate that no above ground appurtenances will be necessary. However, in the event that above ground telephone equipment is necessary, they are planned to be located outside the County's right-of-way.

Comment No. 4: Project installation will be coordinated with the DPWWM CIP Countywide programs in order to mitigate trenching newly constructed County roadways.

Comment No. 5: Construction plans will be submitted for review and approval to the DPWWM.

Comment No. 6: Required easements for the project will be obtained in accordance with County Council protocol. In addition, SIC has initiated the processing of easement agreements for review and approval by the County of Maui.

Comment No. 7: The Final Environmental Assessment (FEA) will include discussion relative to non-DHHL entities utilizing conduit capacity.

Comment No. 8: An archaeological consultant has been retained to identify areas of archaeological sensitivity. Appropriate coordination with the State Historic Preservation Division (SHPD) and the Maui/Lanai Islands Burial Council will be performed to address necessary mitigative measures.

Comment No. 9: A "Work on County Highway" permit will be obtained prior to commencement of construction within the County's right-of-way. Further, the contractor will provide the County with necessary insurance to indemnify the County, and a performance bond covering 50 percent of the restoration cost.

Comment No. 10: Routes having minimal impacts to the existing infrastructure while providing the broadest range of opportunities to benefit beneficiaries of Department of Hawaiian Homelands were considered. Coordination with your office will be conducted during project design and implementation in order to minimize potential adverse impacts on existing traffic conditions in the Kihei area. In this regard, SIC is willing to address alternative alignments which could be practically implemented in the context of project objectives and design parameters.

Thank you for your interest in the subject project. Please do not hesitate to call me at 244-2015 should you have any questions or require additional information.

Very truly yours,

D. K. F.

Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International, LLC
[illegible] 002

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

MAR 2 9 2001

JAMES "KIMO" APANA
Mayor
ALICE L. LEE
Director
PRISCILLA P. MIXELL
Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165

March 23, 2001

Mr. Dean K. Frampton
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

Subject: RURAL FIBER OPTICS COMMUNICATION LINES FOR LANAI, MAUI AND MOLOKAI

We have reviewed the Draft Environmental Assessment report for the subject project and have no comments to offer.

We are returning the Draft Environmental Assessment report for your use.

Thank you for the opportunity to comment.

Very truly yours,

ALICE L. LEE
Director

Enclosure

c: Department of Transportation
Office of Environmental Quality Control

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Alice Lee, Director
Department of Housing and
Human Concerns
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Ms. Lee:

Thank your for your letter dated March 23, 2001 regarding the Draft Environmental Assessment for the subject project. We note that your department has no comments or objections regarding the proposed action.

Should you have any questions or require information regarding this project, please do not hesitate to call.

Very truly yours,

D. K. F.

Dean K. Frampton, Planner

DKF:to
cc: Ronald Sato, SSFM International

DEPARTMENT OF
PARKS AND RECREATION
COUNTY OF MAUI

1580-C KAAHUMANU AVENUE WAILUKU, HAWAII 96793

JAMES "KIMO" APANA
Mayor

FLOYD S. MIYAZONO
Director

ELIZABETH D. MENOR
Deputy Director

(808) 270-7230
FAX (808) 270-7934

APR 0 4 2001

March 30, 2001

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

SUBJECT: RURAL FIBER OPTICS COMMUNICATION LINES FOR LANAI, MAUI AND MOLOKAI

We have reviewed the Draft Environmental Assessment for the subject project and have no objections to the proposed action.

Thank you for the opportunity to review and comment. Please feel free to call me or Mr. Patrick Matsui, Chief of Planning and Development, at 270-7387 should you have any questions.

Sincerely,

Floyd S. Miyazono

FLOYD S. MIYAZONO
Director

c: Patrick Matsui, Chief of Planning and Development
Mike Amuro, State of Hawaii - DOT Highways Division
Office of Environmental Quality Control

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Floyd Miyazono, Director
Department of Parks and Recreation
County of Maui
1580-C Kaahumanu Avenue
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Miyazono:

Thank your for your letter dated March 30, 2001 regarding the Draft Environmental Assessment for the subject project. We note that your department has no comments or objections regarding the proposed action.

Should you have any questions or require information regarding this project, please do not hesitate to call.

Very truly yours,

D. K. F.

Dean K. Frampton, Planner

DKF:to
cc: Ronald Sato, SSFM International

305 High Street, Suite 104, Wailuku, Hawaii 96793 ph. (808) 244-2015 fax. (808) 244-8729 planning@munekiyohiraga.com

APR 1 2 2001

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
Telephone (808) 270-7816 • Fax (808) 270-7833

April 10, 2001

Mr. Dean K. Frampton
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Re: Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Frampton,

Thank you for the opportunity to provide comments on the draft environmental assessment (EA). Please find attached our comment letter to the proposed project of January 9, 2001. The Department of Water Supply has the following additional comment:

We recommend that Best Management Practices be specified in the final EA to ensure that any impact on water resources is minimized.

If you need additional information, please contact the Water Resources and Planning Division at 270-7199.

Sincerely,

David Craddick
Director
emb

c: engineering division
State of Hawaii Department of Transportation
State of Hawaii Department of Health

By Water All Things Find Life

APR 1 2 2001

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
Telephone (808) 270-7816 • Fax (808) 270-7833

January 9, 2001

Mr. Michael T. Munekiyo
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Re: Sandwich Isle Communications, Inc. Underground Fiber Optic Telecommunication Cables - County of Maui

Dear Mr. Munekiyo,

Thank you for the opportunity to provide comments in preparation of the draft environmental assessment (EA). The Water Department has the following comments:

The installation of cabling will affect our water lines located in county rights-of ways (ROWs) on Maui and Molokai. Construction plans must be reviewed by the Department in conjunction with work in ROWs. The applicant should refer to our fire protection maps showing the alignments of the waterlines in the project areas. Please contact our engineering division at 270-7835 regarding these issues.

The project will overlay several important aquifer systems. The Department of Water Supply strives to protect the integrity of both surface water and groundwater resources by encouraging the use of best management practices (BMPs) relevant to potentially polluting project activities. We have attached sample BMP for road construction and a reference list of BMP resources. Additional information can be obtained from the State Department of Health.

If you need additional information, please contact the Water Resources and Planning Division at 270-7199.

Sincerely,

David Craddick
Director
emb

By Water All Things Find Life

c: engineering division

attachments:

Selected BMPs from "Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters." U.S. EPA.
References for Further Reading from "The Megamanual - Nonpoint Source Management Manual." Commonwealth of Massachusetts

United States Environmental Protection Agency

Office of Water
Washington, DC 20460

840-B-92-002
January 1993

Guidance Specifying Management Measures For Sources Of Nonpoint Pollution In Coastal Waters

Issued Under the Authority of
Section 6217(g) of the Coastal Zone Act
Reauthorization Amendments of 1990

VII. ROADS, HIGHWAYS, AND BRIDGES

NOTE: Management Measures II.A and II.B of this chapter also apply to planning, siting, and developing roads and highways.[4]

A. Management Measure for Planning, Siting, and Developing Roads and Highways

Plan, site, and develop roads and highways to:

(1) Protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss;

(2) Limit land disturbance such as clearing and grading and cut and fill to reduce erosion and sediment loss; and

(3) Limit disturbance of natural drainage features and vegetation.

1. Applicability

This measure is intended to be applied by States to site development and land disturbing activities for new, relocated, and reconstructed (widened) roads (including residential streets) and highways in order to reduce the generation of nonpoint source pollutants and to mitigate the impacts of urban runoff and associated pollutants from such activities. Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformity with this management measure and will have some flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

The best time to address control of NPS pollution from roads and highways is during the initial planning and design phase. New roads and highways should be located with consideration of natural drainage patterns and planned to avoid encroachment on surface waters and wet areas. Where this is not possible, appropriate controls will be needed to minimize the impacts of NPS runoff on surface waters.

This management measure emphasizes the importance of planning to identify potential NPS problems early in the design process. This process involves a detailed analysis of environmental features most associated with NPS pollution, erosion and sediment problems such as topography, drainage patterns, soils, climate, existing land use, estimated traffic volume, and sensitive land areas. Highway locations selected, planned, and designed with consideration of these features will greatly minimize erosion and sedimentation and prevent NPS pollutants from entering watercourses during and after construction. An important consideration in planning is the distance between

[4] Management measure II.A applies only to runoff that emanates from the road, highway, and bridge right-of-way. This management measure does not apply to runoff and total suspended solid loadings from upland areas outside the road, highway, or bridge project.

a highway and a watercourse that is needed to buffer the runoff flow and prevent potential contaminants from entering surface waters. Other design elements such as project alignment, gradient, cross section, and the number of stream crossings also must be taken into account to achieve successful control of erosion and nonpoint sources of pollution. (Refer to Chapter 3 of this guidance for details on road designs for different terrains.)

The following case study illustrates some of the problems and associated costs that may occur due to poor road construction and design. These issues should be addressed in the planning and design phase.

> ***CASE STUDY - ANNAPOLIS, MARYLAND***
>
> Poor road siting and design resulted in concentrated runoff flows and heavy erosion that threatened several house foundations adjacent to the road. Sediment-laden runoff was also discharged into Herring Bay. To protect the Chesapeake Bay and the nearby houses, the county corrected the problem by installing diversions, a curb-and-drain urban runoff conveyance, and a rock wall filtration system, at a total cost of $100,000 (Munsey, 1992).

3. Management Measure Selection

This management measure was selected because it follows the approach to highway development recommended by the American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Administration (FHWA) guidance, and highway location and design guidelines used by the States of Virginia, Maryland, Washington, and others.

Additionally, AASHTO has location and design guidelines (AASHTO, 1990, 1991) available for State highway agency use that describe the considerations necessary to control erosion and highway-related pollutants. Federal Highway Administration policy (FHWA, 1991) requires that Federal-aid highway projects and highways constructed under direct supervision of the FHWA be located, designed, constructed, and operated according to standards that will minimize erosion and sediment damage to the highway and adjacent properties and abate pollution of surface water and ground-water resources.

4. Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

- *a. Consider type and location of permanent erosion and sediment controls (e.g., vegetated filter strips, grassed swales, pond systems, infiltration systems, constructed urban runoff wetlands, and energy dissipators and velocity controls) during the planning phase of roads, highway, and bridges. (AASHTO, 1991; Hartigan et al., 1989)*

- *b. All wetlands that are within the highway corridor and that cannot be avoided should be mitigated. These actions will be subject to Federal Clean Water Act section 404 requirements and State regulations.*

- *c. Assess and establish adequate setback distances near wetlands, waterbodies, and riparian areas to ensure protection from encroachment in the vicinity of these areas.*

Setback distances should be determined on a site-specific basis since several variables may be involved such as topography, soils, floodplains, cut-and-fill slopes, and design geometry. In level or gently sloping terrain, a general rule of thumb is to establish a setback of 50 to 100 feet from the edge of the wetland or riparian area and the right-of-way. In areas of steeply sloping terrain (20 percent or greater), setbacks of 100 feet or more are recommended. Right-of-way setbacks from major waterbodies (oceans, lakes, estuaries, rivers) should be in excess of 100 to 1000 feet.

- *d. Avoid locations requiring excessive cut and fill. (AASHTO, 1991)*

- *e. Avoid locations subject to subsidence, sink holes, landslides, rock outcroppings, and highly erodible soils. (AASHTO, 1991; TRB, Campbell, 1988)*

- *f. Size rights-of-way to include space for siting runoff pollution control structures as appropriate. (AASHTO, 1991; Hartigan, et al., 1989)*

Erosion and sediment control structures (extended detention dry ponds, permanent sediment traps, catchment basins, etc.) should be planned and located during the design phase and included as part of the design specifications to ensure that such structures, where needed, are provided within the highway right-of-way.

- *g. Plan residential roads and streets in accordance with local subdivision regulations, zoning ordinances, and other local site planning requirements (International City Managers Association, Model Zoning/Subdivision Codes). Residential road and street pavements should be designed with minimum widths.*

Local roads and streets should have right-of-way widths of 36 to 50 feet, with lane widths of 10 to 12 feet. Minimum pavement widths for residential streets where street parking is permitted range from 24 to 28 feet between curbs. In large-lot subdivisions (1 acre or more), grassed drainage swales can be used in lieu of curbs and gutters and the width of paved road surface can be between 18 and 20 feet.

- *h. Select the most economic and environmentally sound route location. (FHWA, 1991)*

- *i. Use appropriate computer models and methods to determine urban runoff impacts with all proposed route corridors. (Driscoll, 1990)*

Computer models to determine urban runoff from streets and highways include TR-55 (Soil Conservation Service model for controlling peak runoff); the P-8 model to determine storage capacity (Palmstrom and Walker); the FHWA highway runoff model (Driscoll et al., 1990); and others (e.g., SWMM, EPA's stormwater management model; HSP continuous simulation model by Hydrocomp, Inc.).

- *j. Comply with National Environmental Policy Act requirements including other State and local requirements. (FHWA, T6640.8A)*

- *k. Coordinate the design of pollution controls with appropriate State and Federal environmental agencies. (Maryland DOE, 1983)*

l. Develop local official mapping to show location of proposed highway corridors.

Official mapping can be used to reserve land areas needed for public facilities such as roads, highways, bridges, and urban runoff treatment devices. Areas that require protection, such as those which are sensitive to disturbance or development-related nonpoint source pollution, can be reserved by planning and mapping necessary infrastructure for location in suitable areas.

5. Effectiveness Information and Cost Information

The most economical time to consider the type and location of erosion, sediment, and NPS pollution control is early in the planning and design phase of roads and highways. It is much more costly to correct polluted runoff problems after a road or highway has already been built. The most effective and often the most economical control is to design roads and highways as close to existing grade as possible to minimize the area that must be cut or filled and to avoid locations that encroach upon adjacent watercourses and wet areas. However, some portions of roads and highways cannot always be located where NPS pollution does not pose a threat to surface waters. In these cases, the impact from potential pollutant loadings should be mitigated. Interactive computer models designed to run on a PC are available (e.g., FHWA's model, Driscoll et al., 1990) and can be used to examine and project the runoff impacts of a proposed road or highway design on surface waters. Where controls are determined to be needed, several cost-effective management practices, such as vegetated filter strips, grassed swales, and pond systems, can be considered and used to treat the polluted runoff. These mitigating practices are described in detail in the discussion on urban developments (Management Measure IV.A).

B. Management Measure for Bridges

Site, design, and maintain bridge structures so that sensitive and valuable aquatic ecosystems and areas providing important water quality benefits are protected from adverse effects.

1. Applicability

This management measure is intended to be applied by States to new, relocated, and rehabilitated bridge structures in order to control erosion, streambed scouring, and surface runoff from such activities. Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformity with this management measure and will have some flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

This measure requires that NPS runoff impacts on surface waters from bridge decks be assessed and that appropriate management and treatment be employed to protect critical habitats, wetlands, fisheries, shellfish beds, and domestic water supplies. The siting of bridges should be a coordinated effort among the States, the FHWA, the U.S. Coast Guard, and the Army Corps of Engineers. Locating bridges in coastal areas can cause significant erosion and sedimentation, resulting in the loss of wetlands and riparian areas. Additionally, since bridge pavements are extensions of the connecting highway, runoff waters from bridge decks also deliver loadings of heavy metals, hydrocarbons, toxic substances, and deicing chemicals to surface waters as a result of discharge through scupper drains with no overland buffering. Bridge maintenance can also contribute heavy loads of lead, rust particles, paint, abrasive, solvents, and cleaners into surface waters. Protection against possible pollutant overloads can be afforded by minimizing the use of scuppers on bridges traversing very sensitive waters and conveying deck drainage to land for treatment. Whenever practical, bridge structures should be located to avoid crossing over sensitive fisheries and shellfish-harvesting areas to prevent washing polluted runoff through scuppers into the waters below. Also, bridge design should account for potential scour and erosion, which may affect shellfish beds and bottom sediments.

3. Management Measure Selection

This management measure was selected because of its documented effectiveness and to protect against potential pollution impacts from siting bridges over sensitive waters and tributaries in the coastal zone. There are several examples of siting bridges to protect sensitive areas. The Isle of Palms Bridge near Charleston, South Carolina, was designed without scupper drains to protect a local fishery from polluted runoff by preventing direct discharge into the waters below. In another example, the Louisiana Department of Transportation and Development specified stringent requirements before allowing the construction of a bridge to protect destruction of fragile wetlands near New Orleans. A similar requirement was specified for bridge construction in the Tampa Bay area in Florida (ENR, 1991).

4. Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

Additional erosion and sediment control management practices are listed in the construction section for urban sources of pollution (Management Measure IV.A).

a. Coordinate design with FHWA, USCG, COE, and other State and Federal agencies as appropriate.

b. Review National Environmental Policy Act requirements to ensure that environmental concerns are met (FHWA, T6640.8A and 23 CFR 771).

c. Avoid highway locations requiring numerous river crossings. (AASHTO, 1991)

d. Direct pollutant loadings away from bridge decks by diverting runoff waters to land for treatment.

Bridge decks should be designed to keep runoff velocities low and control pollutant loadings. Runoff waters should be conveyed away from contact with the watercourse and directed to a stable storm drainage, wetland, or detention pond. Conveyance systems should be designed to withstand the velocities of projected peak discharge.

e. Restrict the use of scupper drains on bridges less than 400 feet in length and on bridges crossing very sensitive ecosystems.

Scupper drains allow direct discharge of runoff into surface waters below the bridge deck. Such discharges can be of concern where the waterbody is highly susceptible to degradation or is an outstanding resource such as a spawning area or shellfish bed. Other sensitive waters include water supply sources, recreational waters, and irrigation systems. Care should be taken to protect these areas from contaminated runoff.

f. Site and design new bridges to avoid sensitive ecosystems.

Pristine waters and sensitive ecosystems should be protected from degradation as much as possible. Bridge structures should be located in alternative areas where only minimal environmental damage would result.

g. On bridges with scupper drains, provide equivalent urban runoff treatment in terms of pollutant load reduction elsewhere on the project to compensate for the loading discharged off the bridge.

5. Effectiveness Information and Cost Information

Effectively controlling NPS pollutants such as road contaminants, fugitive dirt, and debris and preventing accidental spills from entering surface waters via bridge decks are necessary to protect wetlands and other sensitive ecosystems. Therefore, management practices such as minimizing the use of scupper drains and diverting runoff waters to land for treatment in detention ponds and infiltration systems are known to be effective in mitigating pollutant loadings. Tables 4-7 and 4-8 in Section II provide cost and effectiveness data for ponds, constructed wetlands, and filtration devices.

C. Management Measure for Construction Projects

(1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction and

(2) Prior to land disturbance, prepare and implement an approved erosion control plan or similar administrative document that contains erosion and sediment control provisions.

1. Applicability

This management measure is intended to be applied by States to new, replaced, restored, and rehabilitated road, highway, and bridge construction projects in order to control erosion and offsite movement of sediment from such project sites. Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformity with this management measure and will have some flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

Erosion and sedimentation from construction of roads, highways, and bridges, and from unstabilized cut-and-fill areas, can significantly impact surface waters and wetlands with silt and other pollutants including heavy metals, hydrocarbons, and toxic substances. Erosion and sediment control plans are effective in describing procedures for mitigating erosion problems at construction sites before any land-disturbing activity begins. Additional relevant practices are described in Management Measures III.A and III.B of this chapter.

Bridge construction projects include grade separations (bridges over roads) and waterbody crossings. Erosion problems at grade separations result from water running off the bridge deck and runoff waters flowing onto the bridge deck during construction. Controlling this runoff can prevent erosion of slope fills and the undermining failure of the concrete slab at the bridge approach. Bridge construction over waterbodies requires careful planning to limit the disturbance of streambanks. Soil materials excavated for footings in or near the water should be removed and relocated to prevent the material from being washed back into the waterbody. Protective berms, diversion ditches, and silt fences parallel to the waterway can be effective in preventing sediment from reaching the waterbody.

Wetland areas will need special consideration if affected by highway construction, particularly in areas where construction involves adding fill, dredging, or installing pilings. Highway development is most disruptive in wetlands since it may cause increased sediment loss, alteration of surface drainage patterns, changes in the subsurface water table, and loss of wetland habitat. Highway structures should not restrict tidal flows into salt marshes and other coastal wetland areas because this might allow the intrusion of freshwater plants and reduce the growth of salt-tolerant species. To safeguard these fragile areas, the best practice is to locate roads and highways with sufficient setback distances between the highway right-of-way and any wetlands or riparian areas. Bridge construction also can impact water circulation and quality in wetland areas, making special techniques necessary to accommodate construction. The following case study provides an example of a construction project where special considerations were given to wetlands.

CASE STUDY - BRIDGING WETLANDS IN LOUISIANA

To provide protection for an environmentally critical wetland outside New Orleans, the Louisiana Department of Transportation and Development (DOTD) required a special construction technique to build almost 2 miles of twin elevated structures for the Interstate 310 link between I-10 and U.S. Route 90. A technique known as "end-on" construction was devised to work from the decks of the structures, building each section of the bridge from the top of the last completed section and using heavy cranes to push each section forward one bay at a time. The cranes were also used to position steel platforms, drive in support pilings, and lay deck slabs, alternating this procedure between each bay. Without this technique, the Louisiana DOTD would not have been permitted to build this structure. The twin 9,200-foot bridges took 485 days to complete at a cost of $25.3 million (*Engineering News Record*, 1991).

3. Management Measure Selection

This management measure was selected because it supports FHWA's erosion and sediment control policy for all highway and bridge construction projects and is the administrative policy of several State highway departments and local governmental agencies involved in land development activity. Examples of erosion and sediment controls and NPS pollutant control practices are described in AASHTO guidelines and in several State erosion control manuals (AASHTO, 1991; North Carolina DOT, 1991; Washington State DOT, 1988). A detailed discussion of cost-effective management practices is available in the urban development section (Section II) of this chapter. These example practices are also effective for highway construction projects.

4. Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

Additional erosion and sediment control management practices are listed in the construction section (Section III) of this chapter.

a. *Write erosion and sediment control requirements into plans, specifications, and estimates for Federal aid construction projects for highways and bridges (FHWA, 1991) and develop erosion control plans for earth-disturbing activities.*

Erosion and sediment control decisions made during the planning and location phase should be written into the contract, plans, specifications, and special provisions provided to the construction contractor. This approach can establish contractor responsibility to carry out the explicit contract plan recommendations for the project and the erosion control practices needed.

b. *Coordinate erosion and sediment controls with FHWA, AASHTO, and State guidelines.*

Coordination and scheduling of the project work with State and local authorities are major considerations in controlling anticipated erosion and sediment problems. In addition, the contractor should submit a general work schedule and plan that indicates planned implementation of temporary and permanent erosion control practices, including shutdown procedures for winter and other work interruptions. The plan also should include proposed methods of control on restoring borrow pits and the disposal of waste and hazardous materials.

c. *Install permanent erosion and sediment control structures at the earliest practicable time in the construction phase.*

Permanent or temporary soil stabilization practices should be applied to cleared areas within 15 days after final grade is reached on any portion of the site. Soil stabilization should also be applied within 15 days to denuded areas that may not be at final grade but will remain exposed to rain for 30 days or more. Soil stabilization practices protect soil from the erosive forces of raindrop impact and flowing water. Temporary erosion control practices usually include seeding, mulching, establishing general vegetation, and early application of a gravel base on areas to be paved. Permanent soil stabilization practices include vegetation, filter strips, and structural devices.

Sediment basins and traps, perimeter dikes, sediment barriers, and other practices intended to trap sediment on site should be constructed as a first step in grading and should be functional before upslope land disturbance takes place. Structural practices such as earthen dams, dikes, and diversions should be seeded and mulched within 15 days of installation.

d. *Coordinate temporary erosion and sediment control structures with permanent practices.*

All temporary erosion and sediment controls should be removed and disposed of within 30 days after final site stabilization is achieved or after the temporary practices are no longer needed. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary controls should be permanently stabilized to prevent further erosion and sedimentation (AASHTO, 1991).

e. *Wash all vehicles prior to leaving the construction site to remove mud and other deposits. Vehicles entering or leaving the site with trash or other loose materials should be covered to prevent transport of dust, dirt, and debris. Install and maintain mud and silt traps.*

f. *Mitigate wetland areas destroyed during construction.*

Marshes and some types of wetlands can often be developed in areas where fill material was extracted or in ponds designed for sediment control during construction. Vegetated strips of native marsh grasses established along highway embankments near wetlands or riparian areas can be effective to protect these areas from erosion and sedimentation (FHWA, 1991).

g. *Minimize the area that is cleared for construction.*

h. *Construct cut-and-fill slopes in a manner that will minimize erosion.*

Cut-and-fill slopes should be constructed in a manner that will minimize erosion by taking into consideration the length and steepness of slopes, soil types, upslope drainage areas, and ground-water conditions. Suggested recommendations are as follows: reduce the length of long steep slopes by adding diversions or terraces; prevent concentrated runoff from flowing down cut-and-fill slopes by containing these flows within flumes or slope drain structures; and create roughened soil surfaces on cut-and-fill slopes to slow runoff flows. Wherever a slope face crosses a water seepage plane, thereby endangering the stability of the slope, adequate subsurface drainage should be provided.

i. *Minimize runoff entering and leaving the site through perimeter and onsite sediment controls.*

j. *Inspect and maintain erosion and sediment control practices (both on-site and perimeter) until disturbed areas are permanently stabilized.*

k. *Divert and convey offsite runoff around disturbed soils and steep slopes to stable areas in order to prevent transport of pollutants off site.*

l. *After construction, remove temporary control structures and restore the affected area. Dispose of sediments in accordance with State and Federal regulations.*

m. *All storm drain inlets that are made operable during construction should be protected so that sediment-laden water will not enter the conveyance system without first being filtered or otherwise treated to remove sediment.*

5. Effectiveness Information and Cost Information

The detailed cost and effectiveness information presented under the construction measure for urban development is also applicable to road, highway, and bridge construction. See Tables 4-15 and 4-16 in Section III.

D. Management Measure for Construction Site Chemical Control

(1) Limit the application, generation, and migration of toxic substances;

(2) Ensure the proper storage and disposal of toxic materials; and

(3) Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface water.

1. Applicability

This management measure is intended to be applied by States to new, resurfaced, restored, and rehabilitated road, highway, and bridge construction projects in order to reduce toxic and nutrient loadings from such project sites. Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformity with this management measure and will have some flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

The objective of this measure is to guard against toxic spills and hazardous loadings at construction sites from equipment and fuel storage sites. Toxic substances tend to bind to fine soil particles; however, by controlling sediment mobilization, it is possible to limit the loadings of these pollutants. Also, some substances such as fuels and solvents are hazardous and excess applications or spills during construction can pose significant environmental impacts. Proper management and control of toxic substances and hazardous materials should be the adopted procedure for all construction projects and should be established by erosion and sediment control plans. Additional relevant practices are described in Management Measure III.B of this chapter.

3. Management Measure Selection

This management measure was selected because of existing practices that have been shown to be effective in mitigating construction-generated NPS pollution at highway project sites and equipment storage yards. In addition, maintenance areas containing road salt storage, fertilizers and pesticides, snowplows and trucks, and tractor mowers have the potential to contribute NPS pollutants to adjacent watercourses if not properly managed (AASHTO, 1988, 1991a). This measure is intended to safeguard surface waters and ground water from toxic and hazardous pollutants generated at construction sites. Examples of effective implementation of this measure are presented in the section on construction in urban areas. Several State environmental agencies are using this approach to regulate toxic and hazardous pollutants (Florida DER, 1988; Puget Sound Basin, 1991).

4. Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

The practices that are applicable to this management measure are described in Section IIIB.

5. Effectiveness Information and Cost Information

The detailed cost and effectiveness data presented in the Section IIIA of this chapter describing NPS controls for construction projects in urban development areas are also applicable to highway construction projects.

E. Management Measure for Operation and Maintenance

Incorporate pollution prevention procedures into the operation and maintenance of roads, highways, and bridges to reduce pollutant loadings to surface waters.

1. Applicability

This management measure is intended to be applied by States to existing, restored, and rehabilitated roads, highways, and bridges. Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformity with this management measures and will have some flexibility in doing so. The application of measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

Substantial amounts of eroded material and other pollutants can be generated by operation and maintenance procedures for roads, highways, and bridges, and from sparsely vegetated areas, cracked pavements, potholes, and poorly operating urban runoff control structures. This measure is intended to ensure that pollutant loadings from roads, highways, and bridges are minimized by the development and implementation of a program and associated practices to ensure that sediment and toxic substance loadings from operation and maintenance activities do not impair coastal surface waters. The program to be developed, using the practices described in this management measure, should consist of and identify standard operating procedures for nutrient and pesticide management, road salt use minimization, and maintenance guidelines (e.g., capture and contain paint chips and other particulates from bridge maintenance operations, resurfacing, and pothole repairs).

3. Management Measure Selection

This management measure for operation and maintenance was selected because (1) it is recommended by FHWA as a cost-effective practice (FHWA, 1991); (2) it is protective of the human environment (Puget Sound Water Quality Authority, 1989); (3) it is effective in controlling erosion by revegetating bare slopes (AASHTO, 1991b); (4) it is helpful in minimizing polluted runoff from road pavements (Transportation Research Board, 1991); and (5) both Federal (Richardson, 1974) and State highway agencies (Minnesota Pollution Control Agency, 1989; Pitt, 1973) advocate highway maintenance as an effective practice for minimizing pollutant loadings.

Maintenance of erosion and sediment control practices is of critical importance. Both temporary and permanent controls require frequent and periodic cleanout of accumulated sediment. Any trapping or filtering device, such as silt fences, sediment basins, buffers, inlets, and check dams, should be checked and cleaned out when approximately 50 percent of their capacity is reached, as determined by the erodible nature of the soil, flow velocity, and quantity of runoff. Seasonal and climatic differences may require more frequent cleanout of these structures. The sediments removed from these control devices should be deposited in permanently stabilized areas to prevent further erosion and sediment from reaching drainages and receiving streams. After periods of use, control devices may require replacement of deteriorated materials such as straw bales and silt fence fabrics, or restoration and reconstruction of sediment basins and riprap installations.

Permanent erosion controls such as vegetated filter strips, grassed swales, and velocity dissipators should be inspected periodically to determine their integrity and continued effectiveness. Continual deterioration or damage to these controls may indicate a need for better design or construction.

4. Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully apply to achieve the management measure described above.

a. *Seed and fertilize, seed and mulch, and/or sod damaged vegetated areas and slopes.*

b. *Establish pesticide/herbicide use and nutrient management programs.*

Refer to the Management Measure for Construction Site Chemical Control in this chapter.

c. *Restrict herbicide and pesticide use in highway rights-of-way to applicators certified under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) to ensure safe and effective application.*

d. *The use of chemicals such as soil stabilizers, dust palliatives, sterilants, and growth inhibitors should be limited to the best estimate of optimum application rates. All feasible measures should be taken to avoid excess application and consequent intrusion of such chemicals into surface runoff.*

e. *Sweep, vacuum, and wash residential/urban streets and parking lots.*

f. *Collect and remove road debris.*

g. *Cover salt storage piles and other deicing materials to reduce contamination of surface waters. Locate them outside the 100-year floodplain.*

h. *Regulate the application of deicing salts to prevent oversalting of pavement.*

i. *Use specially equipped salt application trucks.*

j. *Use alternative deicing materials, such as sand or salt substitutes, where sensitive ecosystems should be protected.*

k. *Prevent dumping of accumulated snow into surface waters.*

l. *Maintain retaining walls and pavements to minimize cracks and leakage.*

m. *Repair potholes.*

n. *Encourage litter and debris control management.*

o. *Develop an inspection program to ensure that general maintenance is performed on urban runoff and NPS pollution control facilities.*

To be effective, erosion and sediment control devices and practices must receive thorough and periodic inspection checks. The following is a suggested checklist for the inspection of erosion and sediment controls (AASHTO Operating Subcommittee on Design, 1990):

- Clean out sediment basins and traps; ensure that structures are stable.
- Inspect silt fences and replace deteriorated fabrics and wire connections; properly dispose of deteriorated materials.
- Renew riprapped areas and reapply supplemental rock as necessary.
- Repair/replace check dams and brush barriers; replace or stabilize straw bales as needed.
- Regrade and shape berms and drainage ditches to ensure that runoff is properly channeled.
- Apply seed and mulch where bare spots appear, and replace matting material if deteriorated.
- Ensure that culverts and inlets are protected from siltation.
- Inspect all permanent erosion and sediment controls on a scheduled, programmed basis.

p. *Ensure that energy dissipators and velocity controls to minimize runoff velocity and erosion are maintained.*

q. *Dispose of accumulated sediment collected from urban runoff management and pollution control facilities, and any wastes generated during maintenance operations, in accordance with appropriate local, State, and Federal regulations.*

r. *Use techniques such as suspended tarps, vacuums, or booms to reduce, to the extent practicable, the delivery to surface waters of pollutants used or generated during bridge maintenance (e.g., paint, solvents, scrapings).*

s. *Develop education programs to promote the practices listed above.*

5. Effectiveness Information and Cost Information

Preventive maintenance is a time-proven, cost-effective management approach. Operation schedules and maintenance procedures to restore vegetation, proper management of salt and fertilizer application, regular cleaning of urban runoff structures, and frequent sweeping and vacuuming of urban streets have effective results in pollution control. Litter control, clean-up, and fix-up practices are a low-cost means for eliminating causes of pollution, as is the proper handling of fertilizers, pesticides, and other toxic materials including deicing salts and abrasives. Table 4-30 presents summary information on the cost and effectiveness of operation and maintenance practices for roads, highways, and bridges. Many States and communities are already implementing several of these practices within their budget limitations. As shown in Table 4-30, the use of road salt alternatives such as calcium magnesium acetate (CMA) can be very costly. Some researchers have indicated, however, that reductions in corrosion of infrastructure, damage to roadside vegetation, and the quantity of material that needs to be applied may offset the higher cost of CMA. Use of road salt minimization practices such as salt storage protection and special salt spreading equipment reduces the amount of salt that a State or community must purchase. Consequently, implementation of these practices can pay for itself through savings in salt purchasing costs. Similar programs such as nutrient and pesticide management can also lead to decreased expenditures for materials.

CWA Eligible for Matching Funds

Calcium magnesium acetate (CMA) is now eligible for Federal matching funds under the Bridge Program of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. The Act provides 80 percent funding for use of CMA on salt-sensitive bridges in order to protect against corrosion and to extend their useful life. CMA can also be used to protect vegetation from salt damage in environmentally sensitive areas.

Table 4-30. Effectiveness and Cost Summary for Roads, Highways, and Bridges Operation and Maintenance Management Practices

Management Practice	% Removal						Cost
	TSS	TP	TN	COD	Pb	Zn	
MAINTAIN VEGETATION For Sediment Control							
Average:	90	NA	NA	NA	NA	NA	Natural succession allowed to occur - Avg: $100/acl/year Reported Range: $50-$200/ac/year
Reported Range:	50-100	NA	NA	NA	NA	NA	
Probable Range:	80-100	-	-	-	-	-	
For Pollutant Removal							
Average:	60	40	40	40	50	50	Natural succession not allowed to occur - Avg: $800/ac/year Reported Range: $700-$900/ac/year
Reported Range	0-100	0-100	0-70	20-80	0-100	0-100	
Probable Range:	0-100	0-100	0-100	0-100	0-100	0-100	
PESTICIDE/HERBICIDE USE MANAGEMENT							Generally accepted as an economical program to control excessive use
Average:	NA						
Reported Range:	NA						
Probable Range:							
STREET SWEEPING							
Smooth Street, Frequent Cleaning (One or More Passes Per Week)							Avg: $20/curb mile Reported Range: $10-$30/curb mile
Average:	20	NA	NA	NA	NA	NA	
Reported Range:	20	NA	NA	5	25	NA	
Probable Range:	20-50	-	-	0-10	5-35	NA	
Infrequent Cleaning (One Pass Per Month or Less)							
Average:	NA	NA	NA	NA	NA	NA	Generally accepted as an economical approach to control excessive use
Reported Range:	NA	NA	NA	NA	NA	NA	
Probable Range:	0-20	-	-	-	0-10	0-10	
LITTER CONTROL							
Average:	NA						
Reported Range:	NA						
Probable Range:							

Table 4-30. (Continued)

Management Practice	TSS	TP	Zn	Pb	% Removal COD	% Removal TN	Cost
GENERAL MAINTENANCE (e.g. pothole and roadside repairs)							Generally accepted as an economical preventive maintenance program by local and State agencies
Average:	NA						
Reported Range:	NA						
Probable Range:							
PROTECTION OF SALT PILES							For salt storage building - Ave: $30/ton salt Reported Range: $10-$70/ton salt
Average:	NA						
Reported Range:	NA						
Probable Range:	90-100[a]						Generally accepted as an economical preventive maintenance program by local and State agencies
MINIMIZATION OF APPLICATION OF DEICING SALTS							
Average:	NA						
Reported Range:	NA						
Probable Range:	Deicing salts that are not applied to roads will not enter runoff[a]						
SPECIALLY EQUIPPED SALT APPLICATION TRUCKS							For spread rate control on truck - Ave: $6,000/truck Reported Range: $6,000/truck
Average:	NA						
Reported Range:	NA						
Probable Range:	Deicing salts that are not applied to roads will not enter runoff[a]						
USE OF ALTERNATIVE DEICING MATERIALS							CMA - Ave: $650/ton Reported Range: $650/ton (note: cost of salt $30/ton)
Average:	NA						
Reported Range:	NA						
Probable Range:	Deicing salts that are not applied to roads will not enter runoff[a]						
CONTAIN POLLUTANTS GENERATED DURING BRIDGE MAINTENANCE							Varies with method of containment use
Average:	NA						
Reported Range:	NA						
Probable Range:	50-100[b]						

NA = Not applicable.
[a]Measured as reduction in salt.
[b]Measured as reduction of all pollutants.

F. Management Measure for Road, Highway, and Bridge Runoff Systems

Develop and implement runoff management systems for existing roads, highways, and bridges to reduce runoff pollutant concentrations and volumes entering surface waters.

(1) Identify priority and watershed pollutant reduction opportunities (e.g., improvements to existing urban runoff control structures; and

(2) Establish schedules for implementing appropriate controls.

1. Applicability

This management measure is intended to be applied by States to existing, resurfaced, restored, and rehabilitated roads, highways, and bridges that contribute to adverse effects in surface waters. Under the Coastal Zone Act Reauthorization Amendments of 1990, States are subject to a number of requirements as they develop coastal NPS programs in conformity with this management measure and will have some flexibility in doing so. The application of management measures by States is described more fully in *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*, published jointly by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

2. Description

This measure requires that operation and maintenance systems include the development of retrofit projects, where needed, to collect NPS pollutant loadings from existing, reconstructed, and rehabilitated roads, highways, and bridges. Poorly designed or maintained roads and bridges can generate significant erosion and pollution loads containing heavy metals, hydrocarbons, sediment, and debris that run off into and threaten the quality of surface waters and their tributaries. In areas where such adverse impacts to surface waters can be attributed to adjacent roads or bridges, retrofit management projects to protect these waters may be needed (e.g., installation of structural or nonstructural pollution controls). Retrofit projects can be located in existing rights-of-way, within interchange loops, or on adjacent land areas. Areas with severe erosion and pollution runoff problems may require relocation or reconstruction to mitigate these impacts.

Runoff management systems are a combination of nonstructural and structural practices selected to reduce nonpoint source loadings from roads, highways, and bridges. These systems are expected to include structural improvements to existing runoff control structures for water quality purposes; construction of new runoff control devices, where necessary to protect water quality; and scheduled operation and maintenance activities for these runoff control practices. Typical runoff controls for roads, highways, and bridges include vegetated filter strips, grassed swales, detention basins, constructed wetlands, and infiltration trenches.

3. Management Measure Selection

This management measure was selected because of the demonstrated effectiveness of retrofit systems for existing roads and highways that were constructed with inadequate nonpoint source pollution controls or without such controls. Structural practices for mitigating polluted runoff from existing highways are described in the literature (Silverman, 1988).

4. Practices

As discussed more fully at the beginning of this chapter and in Chapter 1, the following practices are described for illustrative purposes only. State programs need not require implementation of these practices. However, as a practical matter, EPA anticipates that the management measure set forth above generally will be implemented by applying one or more management practices appropriate to the source, location, and climate. The practices set forth below have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the management measure described above.

- a. *Locate runoff treatment facilities within existing rights-of-way or in medians and interchange loops.*
- b. *Develop multiple-use treatment facilities on adjacent lands (e.g., parks and golf courses).*
- c. *Acquire additional land for locating treatment facilities.*
- d. *Use underground storage where no alternative is available.*
- e. *Maximize the length and width of vegetated filter strips to slow the travel time of sheet flow and increase the infiltration rate of urban runoff.*

5. Effectiveness Information and Cost Information

Cost and effectiveness data for structural urban runoff management and pollution control facilities are outlined in Tables 4-15 and 4-16 in Section III and discussed in Section IV of this chapter and are applicable to determine the cost and effectiveness of retrofit projects. Retrofit projects can often be more costly to construct because of the need to locate the required structures within existing space or the need to locate the structures within adjacent property that requires purchase. However, the use of multiple-use facilities on adjacent lands, such as diverting runoff waters to parkland or golf courses, can offset this cost. Nonstructural practices described in the urban section also can be effective in achieving source control. As with other sections of this document, the costs of loss of habitat, fisheries, and recreational areas must be weighed against the cost of retrofitting control structures within existing rights-of-way.

6. Pollutants of Concern

Table 4-31 lists the pollutants commonly found in urban runoff from roads, highways, and bridges and their sources. The disposition and subsequent magnitude of pollutants found in highway runoff are site-specific and are affected by traffic volume, road or highway design, surrounding land use, climate, and accidental spills.

The FHWA conducted an extensive field monitoring and laboratory analysis program to determine the pollutant concentration in highway runoff from 31 sites in 11 States (Driscoll et al., 1990). The event mean concentrations (EMCs) developed in the study for a number of pollutants are presented in Table 4-32. The study also indicated that for highways discharging into lakes, the pollutants of major concern are phosphorus and heavy metals. For highways discharging into streams, the pollutants of major concern are heavy metals—cadmium, copper, lead, and zinc.

Table 4-31. Highway Runoff Constituents and Their Primary Sources

Constituents	Primary Sources
Particulates	Pavement wear, vehicles, atmosphere, maintenance
Nitrogen, Phosphorus	Atmosphere, roadside fertilizer application
Lead	Leaded gasoline (auto exhaust), tire wear (lead oxide filler material, lubricating oil and grease, bearing wear)
Zinc	Tire wear (filler material), motor oil (stabilizing additive), grease
Iron	Auto body rust, steel highway structures (guard rails, bridges, etc.), moving engine parts
Copper	Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicides and insecticides
Cadmium	Tire wear (filler material), insecticide application
Chromium	Metal plating, moving engine parts, break lining wear
Nickel	Diesel fuel and gasoline (exhaust), lubricating oil, metal plating, bushing wear, brake lining wear, asphalt paving
Manganese	Moving engine parts
Cyanide	Anticaks compound (ferric ferrocyanide, sodium ferrocyanide, yellow prussiate of soda) used to keep deicing salt granular
Sodium, Calcium, Chloride	Deicing salts
Sulphate	Roadway beds, fuel, deicing salts
Petroleum	Spills, leaks or blow-by of motor lubricants, antifreeze and hydraulic fluids, asphalt surface leachate

In colder regions where deicing agents are used, deicing chemicals and abrasives are the largest source of pollutants during winter months. Deicing salt (primarily sodium chloride, NaCl) is the most commonly used deicing agent. Potential pollutants from deicing salt include sodium chloride, ferric ferrocyanide (used to keep the salt in granular form), and sulfates such as gypsum. Table 4-33 summarizes potential environmental impacts caused by road salt. Other chemicals used as a salt substitute include calcium magnesium acetate (CMA) and, less frequently, urea and glycol compounds. Researchers have differing opinions on the environmental impacts of CMA compared to those of road salt (Chevron Chemical Company, 1991; Salt Institute, undated; Transportation Research Board, 1991).

Table 4-32. Pollutant Concentrations in Highway Runoff (Driscoll et al., 1990)

Pollutant	Event Mean Concentration for Highways With Fewer Than 30,000 Vehicles/Day[a] (mg/L)	Event Mean Concentration for Highways With More Than 30,000 Vehicles/Day[a] (mg/L)
Total Suspended Solids	41	142
Volatile Suspended Solids	12	39
Total Organic Carbon	8	25
Chemical Oxygen Demand	49	114
Nitrite and Nitrate	0.48	0.78
Total Kjeldahl Nitrogen	0.87	1.83
Phosphate Phosphorus	0.16	0.40
Copper	0.022	0.054
Lead	0.080	0.400
Zinc	0.080	0.329

[a]Event mean concentrations are for the 50% median site.

Table 4-33. Potential Environmental Impacts of Road Salts

Environmental Resource	Potential Environmental Impact of Road Salt (NaCl)
Soils	May accumulate in soil. Breaks down soil structure, increases erosion. Causes soil compaction that results in decreased permeability.
Vegetation	Osmotic stress and soil compaction harm root systems. Spray causes foliage dehydration damage. Many plant species are salt-sensitive.
Ground Water	Mobile Na and Cl ions readily reach ground water. Increases NaCl concentration in well water, as well as alkalinity and hardness.
Surface Water	Causes density stratification in ponds and lakes that can prevent reoxygenation. Increases runoff of heavy metals and nutrients through increased erosion.
Aquatic Life	Monovalent Na and Cl ions stress osmotic balances. Toxic levels: Na - 500 ppm for stickleback; Cl - 400 ppm for trout.
Human/Mammalian	Sodium is linked to heart disease and hypertension. Chlorine causes unpleasant taste in drinking water. Mild skin and eye irritant. Acute oral LD_{50} in rats is approximately 3,000 mg/kg (slightly toxic).

MASSACHUSETTS NONPOINT SOURCE MANAGEMENT MANUAL

"THE MEGAMANUAL"

A GUIDANCE DOCUMENT FOR MUNICIPAL OFFICIALS

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May 1994
Revised

Publication No. 17356-500-500-6/93-67.00
Approved by: Philmore Anderson III, State Purchasing Agent

APPENDIX C

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MUNEKIYO & HIRAGA, INC.

July 27, 2001

David Craddick, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Hawaii 96793-6109

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Craddick:

Thank you for your letter dated April 10, 2001 regarding the subject project. Appropriate coordination will be conducted with your department during the design of the various cable routes to ensure that departmental water lines are not negatively impacted. Such coordination will include review of construction plans by your department.

Appropriate measures will be developed during the design of the project to minimize spoils from trench excavation entering streams or the shoreline. Best management practices (BMP's) will be developed to address such mitigation measures to minimize environmental effects on these resources and any basal aquifers underlying the routes of the proposed rural fiber optic lines. Pertinent BMP's provided by your department will be considered in this regard.

Thank you for your time and interest on this important project. Please give me a call at 244-2015 should you have any other further questions. Thank you.

Very truly yours,

D-7

Dean Frampton, Planner

DF:to
cc: Ronald Sato, SSFM Engineers

JAMES "KIMO" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director

APR 16 2001

COUNTY OF MAUI
DEPARTMENT OF PLANNING

April 12, 2001

Mr. Dean Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Frampton:

RE: Draft Environmental Assessment - Sandwich Isle Communications, Inc., (SIC), Rural Fiber Optics Communication Lines to Service Department of Hawaiian Home Lands Properties in Maui County for Islands of Lanai, Maui and Molokai

The Maui Planning Department (Department) has reviewed the Draft Environmental Assessment for the installation of a broadband, high-speed fiber optic cable telecommunications system to connect and service all State Department of Hawaiian Home Land (DHHL) homestead properties in the County of Maui, including the islands of Lanai, Molokai, and Maui. The DHHL has granted a license to SIC to construct the system infrastructure. These telecommunications services will provide to Maui County DHHL homestead properties with access to cost-competitive telephone service. It would allow for providing telecommunication innovations, such as educational programming, internet services, video teleconferencing, and other fiber optic-based services in the future.

The proposed action involves the construction of an underground duct system that will be used for the installation of fiber optic cabling and/or other copper cabling. The proposed duct system will be installed within existing State and County roadway rights-of-way. The proposed methods of installation will include either open trench or Trenchless Technology. The open trench construction method would be the primary means of installation. Trenchless Technology would be given consideration in areas where open trenching is not feasible and at intersections to minimize disruptions to vehicular operations, as well as bridge crossings. All improvements including appurtenant pull boxes will be constructed below grade, except for a small number of small telephone cabinets installed at grade level. The design for cable crossings at bridge crossings would consider either bridge attachments or directional drilling under streams or gulches if practicable and will be determined on a case-by-case basis.

Installation of the duct system via the open trench method would require excavation of a trench approximately one (1) foot wide and approximately two (2) to three (3) feet deep. The conduit system would consist of two (2) 4-inch diameter ducts and/or a single 76-inch diameter bundles of seven (7) 1.25-inch inner ducts placed in the trench and backfilled with approved material or concrete. In addition to the ducts, three (3) feet by five (5) feet manholes would be installed approximately every 2,000 to 3,000 lineal feet.

For the island of Lanai, three (3) route segments totaling about 14 miles in length are identified. For the island of Maui, six (6) route segments totaling about 97 miles in length have been defined. There are three (3) route segments for the Island of Molokai, totaling 38 miles. The proposed project will be completed in phases. Phase 1 projects will be on the Island of Maui Route No. 1, Waiehu to Puunene, and Molokai's Route No. 1 Kalamaula to Hoolehua. Phase 1 is anticipated to begin in 2001 upon securing of required easements from the State of Hawaii Department of Transportation and the County of Maui.

The Planning Department has the following comments:

1. Because of the magnitude of the project, an executive summary should be included describing the project in total and the phasing of the project.

2. Comments from agencies should be incorporated in the report. For example, the Planning Department stated in its letter of December 8, 2001, that if the telephone cabinets are located in the Special Management Area and are below four feet in height, the cabinets may be exempt from the SMA major or minor permit requirement. The Department further stated that the cables and small structures proposed for utility uses are permitted in all of the districts. This information should be discussed in the Land Use section on Page 24.

   Comments were also made by the Department of Public Works and Waste Management (DPWWM) in their letter of December 22, 2000, that the County will not allow above grade "small telephone cabinets" to be constructed within the County's right-of-way. In response to the DPWWM comment, it was noted that the preliminary design indicates that no above ground appurtenances would be necessary. However, in the event that

above ground telephone equipment is necessary, they are planned to be located outside the County's right-of-way.

In addition, comments made by the Department of Land and Natural Resources, Commission on Water Resources and the Historic Preservation Division were not addressed in the text of the DEA relating to stream crossings, compliance to Section 106 of the National Historic Preservation Act (NHPA). All significant comments made by all agencies and any proposed mitigative measures should be identified and discussed in the text of the DEA.

There are a number of other agency comments and applicant responses that should be incorporated in the text of the Draft EA.

3. Page 6 of the report states that bridge crossings that may be encountered along the planned route and the design for cable crossings would be determined on a case-by-case basis. A concern would be if a cable is attached to a historic bridge, the Cultural Resources Commission should review the design of the cables on the bridges.

4. The State Historic Preservation Division and the Cultural Resources Commission's review and comment on the Archaeological Assessments should be incorporated in the final EA.

The Department has no further comments at this time. Should you have any questions, please call, Julie Higa, Staff Planner, of this office at 270-7814.

Very truly yours,

JOHN E. MIN
Planning Director

JEM:JH:cmb
c: Clayton Yoshida, AICP, Deputy Director of Planning
Julie Higa, Staff Planner
Simone Bosco, Staff Planner
Project File
General File S:\ALL\UUUEVHYIRONM\sandwich isles\Comments\DraftEA

MUNEKIYO & HIRAGA, INC.

July 27, 2001

John Min, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Min:

Thank you for your letter of April 12, 2001 commenting on the subject environmental assessment (EA). We offer the following responses to clarify and address the comments raised. The responses are numbered to correspond to the comments provided by the Department.

1. ***Provide an executive summary.***

   An executive summary will be included in the Final EA.

2. ***Early consultation comments from agencies should be incorporated in the Final EA.***

   Additional information pertinent to the substance of the proposed action (as noted in early consultation comment letters) will be included in the Final EA. This will include, as appropriate, comments offered by the Department of Land and Natural Resources, Commission on Water Resources Management and the State Historic Preservation Division (SHPD).

3. ***Cultural Resources Commission (CRC) should review proposed designs for crossing of historic bridges.***

   Coordination will be undertaken with the CRC to ensure appropriate review of historic bridge crossings if cables are attached to said bridges.

4. ***The SHPD's and CRC's comments on the proposed action should be incorporated in the Final EA.***

   Comments provided by the SHPD and the CRC will be addressed in the Final EA.

Thank you again for your valuable comments. If there are any questions or if additional information is required, please do not hesitate to call.

Very truly yours,

D. K. F.
Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International

JAMES "KIMO" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

April 17, 2001

Mr. Michael Munekiyo
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Munekiyo:

RE: Draft Environmental Assessment - Sandwich Isle Communications, Inc., (SIC), Rural Fiber Optics Communication Lines to Service Department of Hawaiian Home Lands Properties in Maui County for Islands of Lanai, Maui and Molokai

The Maui County Cultural Resources Commission (CRC) has reviewed at its April 5, 2001, meeting the Draft Environmental Assessment (DEA) for the installation of a broadband, high-speed fiber optic cable telecommunications system to connect and service all State Department of Hawaiian Home Land (DHHL) homestead properties in the County of Maui, including the islands of Lanai, Molokai, and Maui by Sandwich Isles Communications, Inc., (SIC), a native-Hawaiian Corporation. The CRC has the following comments:

1. Commission members request clarification on the source of the $500 million for the proposed project, as well as the reasons for routing on existing overcrowded corridors when there is more direct routing to DHHL properties available. In addition, based on limited DHHL customer base, how is it financially feasible to provide services at a reasonable cost? Will non-DHHL customers be serviced?

2. There is no reference made to Section 106 in the D EA document except for the comment made by the State Historic Preservation Division's letter attached in the Appendix of the report. Section 106 is designed to be done in conjunction with the National Environmental Policy Act (NEPA). If Section 106 is designed to identify potential adverse effects on historic properties,

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
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determination of a Finding of No Significant Impact (FONSI) under Chapter 343, HRS, cannot be made until the Section 106 process is complete. The Notice in the OEQC Bulletin should not be published until the NEPA and Section 106 consultations take place. Who is the federal official responsible for Section 106 compliance? As part of the Certified Local Government program, the CRC is a consulting agency and should be included in the Section 106 process.

3. Historic resources more than 50 years old that are not archaeological should be identified and addressed separately. A good faith effort should be made to identify all known historic resources, as well as archaeological resources. All bridges more than 50 years old along the routes should be identified. If cable crossings or anything else affect historic resources, including bridges, the plans must be reviewed by the CRC. The design of the cable crossings should also be identified or provisions made that the design of the cable crossings will be reviewed and approved by the CRC.

4. Archaeological sites. The DEA relies too heavily on SHPD's GIS files which are incomplete. The DEA should identify all known archaeological sites along the routes. A determination of the effects of the project on historic properties should be made and if adverse effects may occur, mitigative measures should be identified in the DEA. A good faith effort should be made to identify all known sites prior to development. When detailed plans are available, there should be provision that there will be further review by the CRC and other agencies, including the Maui/Lanai Island Burial Council.

5. Flora and fauna. In addition to *ilima* and *uhaloa*, the DEA should identify all native species along the routes on Maui.

6. Depth of Trenches. The DEA should reflect the actual depth and dimensions that need to be dug in order to have finished trenches that will be one (1) foot wide and two (2) to three (3) feet deep. Figure 4 shows that the trench depth is 3'-00" minimum which would indicate that it may be more than 3 feet. This should be clarified. The trenches should be kept as shallow as possible. The

type of trenching that will be done along the routes should be identified within the DEA.

7. The CRC requests that the notice published in the Office of Environmental Quality Control (OEQC) Bulletin be amended to provide a more accurate description of the project to clarify that the project is not limited to DHHL lands and will not only serve Hawaiian Homesteads and that concurrent NEPA process is being undertaken along with Section 106 consultation pursuant to the National Historic Preservation Act and that the deadline for comments is extended. The new deadline should be one which allows ample time for the NEPA and Section 106 consultations to take place.

Should you have any questions, please call, Julie Higa, Staff Planner, at 270-7814.

Very truly yours,

Clayton I. Yoshida

for JAMES "KIMO" FALCONER, Chair
Maui County Cultural Resources Commission

JKF:JMH:cjt
c: Clayton Yoshida, Deputy Director of Planning
David Goode, Director of Public Works and Waste Management
Maui/Lanai Island Burial Council
Dana Naone Hall
Michael Omuro, Department of Transportation
Don Hibbard, SHPD
Ray Soon, DHHL
Genevieve Salmonson, OEQC
Julie Higa, Planner
LUCA (2)
Project File
General File
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JAMES "KIMO" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director

APR 10 2001

COUNTY OF MAUI
DEPARTMENT OF PLANNING

April 17, 2001

Mr. Michael Omuro
Right of Way Branch
Department of Transportation
Highways Division
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Dear Mr. Omuro:

RE: Draft Environmental Assessment - Sandwich Isle Communications, Inc., (SIC), Rural Fiber Optics Communication Lines to Service Department of Hawaiian Home Lands Properties in Maui County for Islands of Lanai, Maui and Molokai

The Maui County Cultural Resources Commission (CRC) reviewed the Draft Environmental Assessment (DEA) at its April 5, 2001 meeting for the installation of a broadband, high-speed fiber optic cable telecommunications system to connect and service all State Department of Hawaiian Home Land (DHHL) homestead properties in the County of Maui, including the islands of Lanai, Molokai, and Maui by SIC, a native-Hawaiian Corporation. The CRC requests that the deadline for comments on the DEA be extended to comply with the National Environmental Policy Act (NEPA) and Section 106 consultations prior to completion of Chapter 343, Hawaii Revised Statutes' finding of no significant impact (FONSI) and publication in the Office of Environmental Quality Control (OEQC) notice. In addition, the Maui/Lanai Island Burial Council should first review and comment on the proposed development, and their comments should be incorporated in the final EA.

Should you have any questions, please call, Julie Higa, Staff Planner, at 270-7814.

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
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Quality Seamless Service - Now and for the Future

Very truly yours,

Clayton I. Yoshida

for JAMES "KIMO" FALCONER, Chair
Maui County Cultural Resources Commission

JKF:JMH:cjt
c: Clayton Yoshida, Deputy Director of Planning
David Goode, Director of Public Works and Waste Management
Maui/Lanai Island Burial Council
Dana Hall
Don Hibbard, SHPD
Ray Soon, DHHL
Genevieve Salmonson, OEQC
Julie Higa, Planner
LUCA (2)
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cc: Dean Frampton, Munekiyo & Hiraga, Inc.

MUNEKIYO & HIRAGA, INC.

July 27, 2001

James "Kimo" Falconer
Maui County Cultural Resources Commission
c/o County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Falconer:

Thank you for your letter of April 17, 2001 commenting on the subject environmental assessment (EA). We offer the following responses to clarify and address the comments raised. The responses are numbered to correspond to the comments provided by the Cultural Resources Commission (CRC).

1. ***Clarify: (a) source of funding; (b) basis for alignment routing; (c) financial feasibility; and (d) service to non-DHHL customers.***

   (a) Source of funding

   SIC has received project funding from the U.S. Department of Agriculture, Rural Utilities Service (RUS) through a low-interest loan program to cover the capital investment along with private funding as needed. The RUS is an agency that provides long-term, low interest loans to rural telephone companies like SIC for projects such as that proposed to serve DHHL lands.

   (b) Basis for alignment routing

   The primary basis for route alignment is the use of established utility corridors. Additionally, use of established State and County rights-of-way is deemed an important criterion for route selection.

   (c) Financial feasibility

   Financial feasibility for the project is based on RUS funding commitments, as well as SIC's anticipated service base.

   (d) Service to non-DHHL customers

   The purpose of the project is to provide emergency, basic, and advanced telecommunication services to DHHL properties. Although there may be opportunity to provide services outside of DHHL properties, this has not been SIC's primary focus and there are no definitive plans in the current design to provide any services other than those proposed for DHHL parcels.

2. ***Section 106 compliance should be provided in conjunction with the National Environmental Policy Act.***

   Under the RUS's Environmental Policies and Procedures, the proposed project is "Categorically Excluded" under the National Environmental Policy Act. Section 106 consultation under the National Historic Preservation Act is being undertaken by the RUS separate from the State's Chapter 343, HRS process. Consultation with the CRC will be conducted as part of this Federal consultation process.

3. ***Historic resources, including historic bridges, more than 50 years old should be identified and addressed separately. If the proposed action is anticipated to affect these resources, plans must be reviewed by the CRC.***

   A listing of historic resources which may be affected by the proposed action (including historic bridges) will be addressed in the Final EA. Plans and designs affecting such resources will be coordinated with the CRC.

4. ***A good faith effort should be made to identify all known archaeological sites along the routes. A determination of the effects of the project on historic properties should be made and if adverse effects may occur, mitigative measures should be identified.***

   An update of the archaeological assessment report has been conducted which will include more recent information of archaeological sites along the route. Preparation of this update has been conducted in consultation with members of

the Maui/Lanai Islands Burial Council. Mitigative measures would consist of a monitoring plan developed for implementation during the project's construction.

5. ***The EA should identify all native species along the routes on Maui.***

All rare and endangered native species which may be found along Maui island routes will be included in the Final EA.

6. ***Actual trench depth and dimensions should be clarified. The type of trenching which will be done along routes should be identified.***

Trench depth will be set at between three (3) to four (4) feet. However, field conditions may dictate slightly deeper trenching to address conflicts with other utilities.

7. ***The CRC requests that the notice published in the OEQC Notice be amended to clarify that the project is not limited to DHHL lands and will not only serve Hawaiian Homesteads. In addition, the notice should be amended to clarify that there is concurrent processing of NEPA and Section 106 requirements and that the deadline for comments has been extended.***

The primary purpose of the proposed action is to provide state-of-the-art telecommunications infrastructure to beneficiaries and tenants residing on lands administered by the DHHL. This will allow the opportunity to provide such services as distance learning, tele-medicine, high speed internet access and video. The infrastructure will be made available for DHHL official use at no cost to the department. Although there may be opportunity to provide services outside of DHHL properties, this has not been the primary focus and there are no definitive plans in the current design to provide any services other than those proposed services for DHHL parcels. In addition, the proposed action has been determined by the Rural Utilities Service to be a categorically excluded project with regard to NEPA requirements. Section 106 requirements are being addressed with the CRC identified as a consulted party. With regard to time extension for comments, the applicant has accepted all written comments received through June 5, 2001.

Thank you again for the valuable input provided by the CRC. If there are any questions or if additional information is required, please do not hesitate to call.

Very truly yours,

Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International
[illegible] 001

JAMES "KIMO" APANA
MAYOR

OUR REFERENCE
TY
YOUR REFERENCE

POLICE DEPARTMENT
COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

THOMAS M. PHILLIPS
CHIEF OF POLICE

KEKUHAUPIO R. AKANA
DEPUTY CHIEF OF POLICE

May 2, 2001

MAY 0 7 2001

Mr. Glenn Tadaki
Planner
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Tadaki:

SUBJECT: Rural Fiber Optics Communication Lines for Lanai, Maui, and Molokai

Thank you for your letter of March 20, 2001 requesting comments on the above subject.

Your proposal was reviewed by all district commanders and we have no comments or recommendations to offer at this time. Thank you for giving us the opportunity to comment on this proposed project.

Very truly yours,

Assistant Chief Robert Tam Ho
for: Thomas M. Phillips
Chief of Police

Enclosure

c: John E. Min, Planning Department

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Thomas M. Phillips, Chief
Maui Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communications, Inc.
Rural Fiber Optics Communication Lines Project
for Lanai, Maui and Molokai

Dear Chief Phillips:

Thank you for your comment letter dated May 2, 2001 regarding the subject project. We note that your department has no objections or comments regarding the proposed project.

Thank you for your time and interest in this project. Should you have any additional questions or require additional information, please do not hesitate to call.

Very truly yours,

D. K. F.
Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International

Island of Lanai

April 13, 2001

Mr. Dean K. Frampton, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Subject: **Draft Environmental Assessment for the**
Rural Fiber Optics Communication Lines for Lanai

Dear Mr. Frampton:

Thank you for giving us the opportunity to review the above subject matter. We have no comments to offer on the Draft Environmental Assessment at this time.

Should you have any questions, please feel free to call me.

Sincerely,

Vince G. Bagoyo, Jr.
Vice President
a Hawaii limited liability company,
successor by merger to Lanai Company, Inc.

/emtt

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Vince Bagoyo
Castle & Cooke Resorts, LLC
P.O. Box 630310
Lanai City, Hawaii 96763

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Bagoyo:

Thank you for your letter dated April 13, 2001 regarding the Draft Environmental Assessment for the subject project. We note that your company has no comments or objections regarding the proposed project.

Should you have any questions or require information regarding this project, please do not hesitate to call.

Very truly yours,

D. K. F.
Dean K. Frampton, Planner

DKF:to
cc: Ronald Sato, SSFM International

APR 19 2001

ISAAC DAVIS HALL
ATTORNEY AT LAW
2087 WELLS STREET
WAILUKU, MAUI, HAWAII 96793
(808) 244-9017
FAX (808) 244-6775

April 18, 2001

Mr. Larry Fukunaga
Sandwich Isles Communications, Inc.
1001 Bishop Street
Pauahi Tower, 27th Floor
Honolulu, Hawaii 96813

Re: Comments on DEA for Statewide Rural Fiber Optics Project

Dear Larry Fukunaga:

I submit the following comments on the Draft Environmental Assessment ("DEA") for the "Rural Fiber Optics Communications Lines for Lanai, Maui and Molokai" component of a major statewide infrastructural project. These comments are equally applicable to the DEAs which have been prepared for like components of the project in the Counties of Kauai, Oahu and Hawaii as well as for the future DEA on the underwater cable component of the project to connect the islands.

A. The Description of the Project is Misleading

To describe the proposed undertaking as a Department of Hawaiian Homelands ("DHHL") project and to suggest that it primarily benefits Hawaiian homesteaders is misleading in the extreme. A simple review of the routes of the fiber optics communications lines shows that this claim is false. The cable route passes through certain urban and other areas when there is no need to do so to connect DHHL properties. It is apparent that the proposed project involves the construction of a major new telecommunications system, designed to serve much more than Hawaiian Homelands. In fact, the vast majority of users anticipated to be served by this new system will not be Hawaiian Homelands homesteaders.

B. Illegal Segmentation

This is a major statewide utility infrastructural project that is both land and water based. The proposed project will be located on Kauai, Oahu, Molokai, Lanai, Maui and Hawaii and cables will placed under the ocean connecting all of these islands.

There is no basis in environmental law for illegally segmenting this project into four (4) DEAs, one for each County. This segmentation prevents the statewide cumulative impacts of this project from being addressed.

Likewise, there is no basis in environmental law for postponing for an indefinite future date the study of the environmental impacts of the undersea cables connecting the islands. This too is illegal segmentation.

C. NEPA/Federal Funds and Permits are Involved

The United States Department of Agriculture is providing federal funds for this project. Federal approvals are also necessary, including a Federal Communications Commission license. Either of these federal actions triggers National Environmental Policy Act ("NEPA") review and Section 106 consultation under the National Historic Preservation Act.

When a DEA is required by both federal and state law, the document is required to be processed concurrently and must meet the minimal requirements of both laws. I am not aware that any DEA pursuant to NEPA is in progress. Certainly, the DEA under review here is not being prepared pursuant to both HEPA and NEPA and it is therefore being prepared in violation of the law.

D. This Project May Cause Significant Adverse Impacts

The fact that the cables are being installed underground instead of overhead will prevent visual blight. Nevertheless, considerable earthwork will occur within existing state and county rights-of-way. These rights-of-way extend, in places, into areas that are natural and/or previously undisturbed. Therefore, the potential for the disturbance of subsurface historic sites in both urban and rural areas exists.

The archaeological assessments contained in the DEA are inadequate. They are not thorough enough to determine that there will not be any significant adverse impacts on historic and cultural sites. It is likely, given the extensive routes for the project, that there may be significant adverse impacts to historic and cultural sites.

E. Section 106 Review

Because federal funds and approvals are involved, Section 106 review under the National Historic Preservation Act is also required, as mentioned above. Section 106 consultation with all appropriate consulting parties, including but not limited to the Maui County Cultural Resources Commission and the Maui/Lanai Islands Burial Council, must take place before any decision is made on whether or not to prepare an EIS.

F. Withdrawal of the DEAs and Resubmittal of Proper Document

I believe that you are currently following a course which violates federal and state laws and regulations for reasons including but not limited to those given above. I hereby incorporate by reference all of the other objecting comments which are submitted statewide to these DEAs. Based upon the foregoing, I respectfully request that you withdraw the multiple DEAs and resubmit a joint federal-state DEA (if you chose not to simply proceed to prepare an EIS at this juncture), incorporating the Section 106 review process, which accurately describes and analyzes the impacts of the whole project in one document.

Thank you for the opportunity to comment on this project.

Sincerely yours,

Isaac Hall

IH/sn

cc: Department of Transportation
Munekiyo, Arakawa & Hiraga, Inc.
Office of Environmental Quality Control

misc/letfukunaga

MUNEKIYO & HIRAGA, INC.

July 27, 2001

Isaac Hall
2087 Wells Street
Wailuku, Hawaii 96793

SUBJECT: Sandwich Isles Communications, Inc., Rural Fiber Optics Communication Lines for Lanai, Maui and Molokai

Dear Mr. Hall:

Thank you for your written comments of April 18, 2001 regarding the subject matter. We offer the following information to clarify and address the comments provided.

1. ***The Description of the Project is Misleading***

The primary purpose of the proposed action is to provide state-of-the-art telecommunications infrastructure to Department of Hawaiian Homelands (DHHL) parcels. It is with this in mind that beneficiaries of the project would be current and future homesteaders on DHHL lands.

While route alignments span a broad geographic area, the alignments were selected to meet operational, technical, and right-of-way criteria which would facilitate connections among the various DHHL holdings across the islands. For example, the alignment within the Waiehu to Puunene route segment on the island of Maui includes a route "spur" along Wells Street, requiring the alignment to traverse the urbanized Wailuku area. The Wells Street segment would provide connection to a DHHL-owned parcel just mauka of the Wailuku Fire Station to allow a physical tie-in with Verizon Hawaii's fiber system, thus enabling DHHL customers access to the broader telecommunications network.

2. ***Illegal Segmentation***

Once completed, the fiber optic cable system will provide connectivity to all DHHL parcels on each of the major islands. In addition, once the land based system is in place, ocean cable system will be implemented to provide a Statewide system connecting all of the serviced islands. In discussing the environmental assessment (EA) preparation approach with the Office of Environmental Quality Control, it was agreed that separate EA's for each island would be appropriate. Each

island's scope of work is defined as an independent project such that construction and service may be initiated on each island independent of the completion of land based installations on any of the other islands.

With regard to the undersea cable installation, Sandwich Isles Communications, Inc. has not completed technical studies needed to define and evaluate alternative landing sites. Once this phase of preliminary planning and engineering is completed, a separate EA document will be prepared. As with the land-side projects, we have identified the undersea cable component as a separate project to enable the separate implementation and operation of the land-side fiber optic system.

The EA will note that fiber optic cable systems are also being implemented on other islands with the ultimate goal of having an integrated system via an undersea cable network.

3. ***NEPA/Federal Funds and Permits are Involved***

The U.S. Department of Agriculture, Rural Utilities Service has reviewed the proposed action and has determined that the project meets the criteria for categorical exclusion. In this regard, a Federal EA will not be required for the project. This determination notwithstanding, Section 106 requirements under the National Historic Preservation Act are being fully complied with. Both the Maui/Lana'i Islands Burial Council and the Maui County Cultural Resources Commission will be consulting parties in the Section 106 process.

4. ***This Project May Cause Significant Adverse Impacts***

The potential for encountering subsurface cultural sites has been discussed with both the Maui/Lana'i Islands Burial Council and the Maui County Cultural Resources Commission. Sandwich Isles Communications, Inc. will be formulating a memorandum of agreement which will set forth detailed monitoring and appropriate mitigation measures for project implementation in order to minimize any impacts to historic and cultural resources.

With regard to the archaeological assessments contained in the Draft EA, Sandwich Isles Communications, Inc. has retained the services of the Maui firm, Archaeological Services Hawaii to provide additional documentation and assessment relative to archaeological resource issues.

5. ***Section 106 Review***

As noted above, requirements of Section 106 of the National Historic Preservation Act are being addressed.

6. ***Withdrawal of the DEAs and Resubmittal of Proper Document***

Given the categorical exclusion determination by the Rural Utilities Service, we will continue our efforts to ensure full compliance with Chapter 343, Hawaii Revised Statutes, as well as Section 106 of the National Historic Preservation Act. While projects for each island are being pursued as independent projects, we will consider comments provided for the other EA documents which may have applicability to Maui, Lana'i and Moloka'i. With this in mind, we are continuing with the processing of the EA's for the other islands so that work can be initiated on an island-by-island basis. SIC believes this approach is appropriate as it allows DHHL lands on other islands to receive service on a timely basis while allowing cooperative work with the Maui/Lana'i Islands Burial Council and the Maui County Cultural Resources Commission to continue.

We appreciate the comments provided as it does ensure that the Final EA for Maui, Lanai and Molokai addresses key issues which are of particular pertinence and sensitivity to those in the Maui County community. Thank you for your interest in the project.

Very truly yours,

D. K. F

Dean K. Frampton, Planner

DKF:to
cc: Ron Sato, SSFM International

References

References

APA Publications, Insight Guides - Hawaii, Eighth Edition, 1990.

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Appendices

Appendix A-1

Archaeological Assessment of the Proposed Sandwich Isles Communication Fiberoptic Cable Project Within Approximately 14 Miles (22.6 Kilometers) of Road Corridor on the Island of Lanai

ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED SANDWICH ISLES COMMUNICATION FIBEROPTIC CABLE PROJECT WITHIN APPROXIMATELY 14 MILES (22.6 KILOMETERS) OF ROAD CORRIDOR ON THE ISLAND OF LANA`I

by

Hallett H. Hammatt, Ph.D.

Prepared for

SSFM INTERNATIONAL, INC.

CULTURAL SURVEYS HAWAI`I, INC.
January 2001

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I. INTRODUCTION

A. Project Background

Cultural Surveys Hawai`i, Inc. has completed an archaeological assessment of approximately 14 miles (22.6 kilometers) of road corridor on the island of Lana`i. These road corridors are proposed for the installation of a telecommunications cable system connecting Department of Hawaiian Home Lands (DHHL) properties on Lana`i (Figure 1). The line is to be installed entirely within state Department of Transportation right-of-way consisting of existing pavements or road shoulders at an average depth of three feet, typically in the *mauka* shoulder.

The objective of this assessment is to identify areas within the corridors that have potential for subsurface historic properties — including human burials and cultural deposits — which may be encountered during installation of the proposed cable system. The assessment is thus presented for preliminary planning purposes only. Final assessment of the levels of archaeological concern within the project area is the purview of the State Historic Preservation Division which determines necessary mitigation measures prior to and during construction activities.

B. Project Area Description

The study route commences at Kaumalapau Harbor in the immediate vicinity of the Kaumalapau Pier. It proceeds approximately 6 miles (9.7 kilometers) along Highway 440 to the Lanai City limits. The route then continues into Lanai City to the intersection with Fraser Street, then continues on Fraser Street and terminates at the intersection with Caldwell Street, an approximately 1-mile (1.6-kilometer) segment. The study route extends south out of Lanai City along Highway 440 and terminates at the Manele Boat Harbor, an approximately 7-mile (11.3-kilometer) segment.

C. Methodology

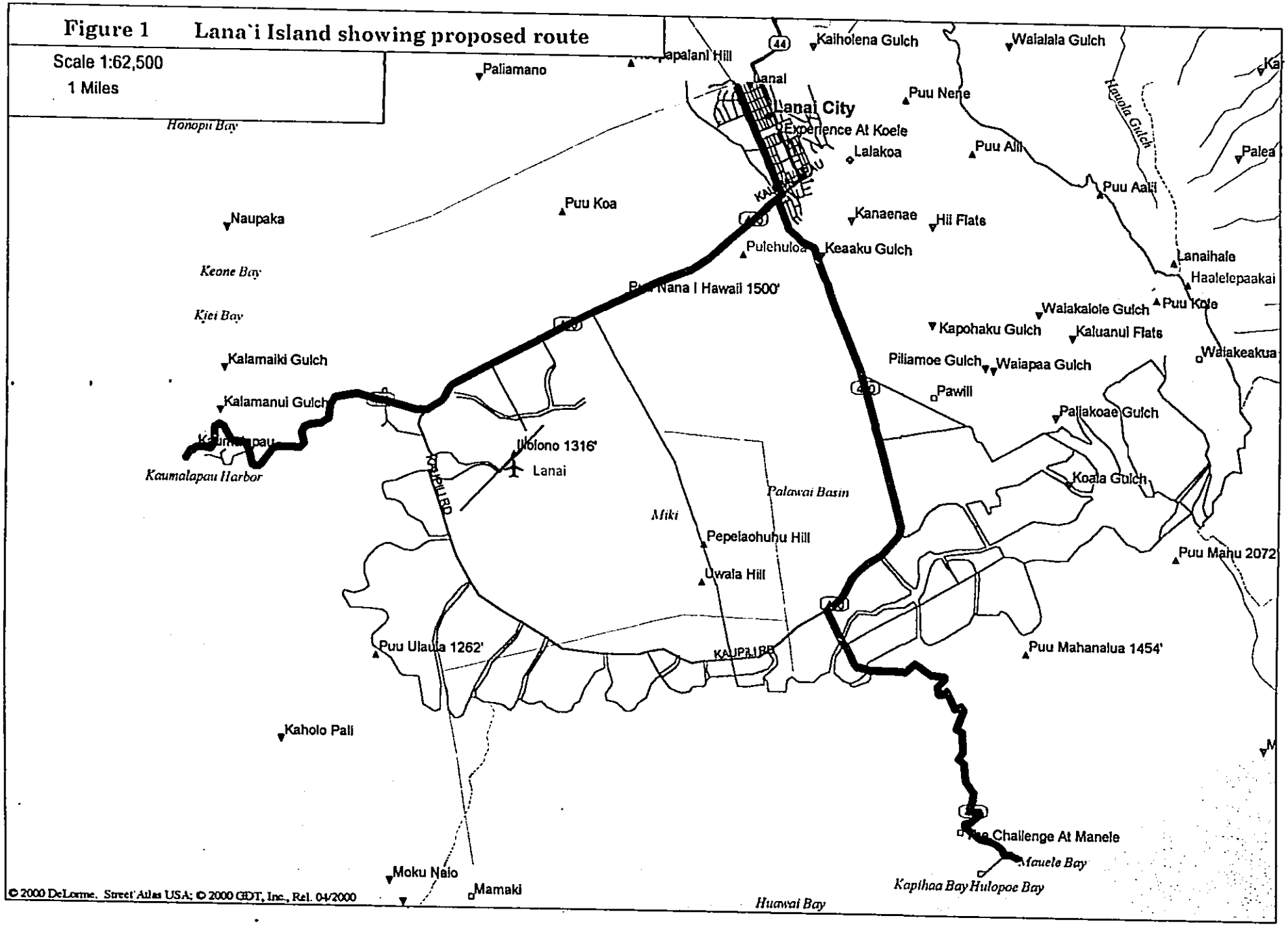
The following resources and activities were employed to identify areas of archaeological concern within the study route:

1) Inspection of soil surveys for presence of soils and sands — under or immediately adjacent to the study route — which, based on past experience, are more likely to contain cultural deposits.

2) Inspection of tax maps and historic maps showing presence of Land Commission Award (LCA) parcels within or adjacent to the study route.

   Toward the mid-19th century, the Organic Acts of 1845 and 1846 initiated the process of the *Māhele* — the division of Hawaiian lands — which introduced private property into Hawaiian society. In 1848 the crown, the Hawaiian government, and the *ali`i* (royalty) received their land titles. *Kuleana* awards for individual parcels within the *ahupua`a* were subsequently granted in 1850. These Land Commission Awards (LCAs) were

Figure 1 Lana`i Island showing proposed route



presented to tenants — native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners — who could prove occupancy on the parcels before 1845.

Maps and other documents associated with these awards may give clues to settlement areas within and nearby the study route in the mid-1850s. These areas may represent, in turn, traditional Hawaiian settlement areas.

3) Review of Geographic Information System (GIS) data and archaeological reports at the State Historic Preservation Division. The GIS data and archaeological reports may give specific information on the location and distribution of previously-recorded surface sites within or near the study route which may be associated with subsurface cultural properties. Additionally, archaeological reports may present results of subsurface testing in proximity to the study route.

4) Field inspection of the entire study route. The primary purpose of the field inspection is to evaluate the relationship of the study route to possible subsurface properties. Areas of anomalous sand deposits are examined to consider their potential for significant subsurface cultural deposits. Also noted are areas of fill and/or road cut in which the alignment has been brought significantly above grade. In many areas of potential archaeological sensitivity, the nature of the road bed — either graded or filled — effectively eliminates archaeological concern, given the shallow penetration of the proposed trenching.

Areas adjacent to streams and wetlands are examined for possible archaeological potential. These areas, although often undocumented in archaeological literature, are more likely to have been foci of human endeavor. The field inspection also examines urban areas which have the potential for historic deposits over fifty years old.

5) Consultation with staff of the State Historic Preservation Division (SHPD). Resources and expertise of the SHPD will be utilized. However, all evaluations and findings of the assessment report are those of Cultural Surveys Hawai`i, and should not be interpreted as reflecting those of the SHPD.

6) Cultural Surveys Hawai`i, Inc. staff's past experience of and familiarity with archaeological resources along the study route.

7) Consideration of any known community issues regarding culturally sensitive portions of the study route. Community groups in areas throughout the Hawaiian Islands have voiced concern for cultural resources in specific areas which may have to be addressed during the course of the present project.

This report presents the results of the research conducted by Cultural Surveys Hawai'i, Inc. Section II summarizes findings on soils, Land Commission Awards, and previous archaeological data in the immediate vicinity of the study route. These three research components are the primary basis for determining the potential for encountering further subsurface historical properties along the route. Section III presents Cultural Surveys Hawai'i, Inc.'s assessment of archaeological potential for all portions of the route. Finally, based on the background research and the route assessment, Section IV offers recommendations for further archaeological mitigation.

II. SOIL, LAND COMMISSION AWARD AND ARCHAEOLOGICAL DATA

Three research components — soils, Land Commission Awards, and previous archaeological research — are the primary indicators of possible archaeological potential within the study route. Results of the examination of these components are discussed below and shown on Figure 2.

Soils

On Lana`i, there is only one area in the vicinity of the proposed route which contains sandy soils. The proposed route intersects a deposit of Sandy Alluvial Land (rSL) right at Manele Bay. Sandy Alluvial Land is unique to Lana`i and is associated with recent stream deposits found along coastal flats (Foote *et al.* 1972).

Land Commission Awards

Inspection of tax maps and historic maps indicated the presence of two *kuleana* Land Commission Awards (LCAs) along the proposed route. Both LCAs were located just south of Lana`i City.

Previous Archaeological Study

Nine archaeological sites have been recorded in the vicinity of the proposed route. These sites were identified during archaeological studies conducted in two coastal areas: one near Kaumalapau Harbor and the other near Manele Bay.

Two sites are located in the Kaumalapau Harbor area: an historic house complex (Site 50-40-98-204), and a complex of sites including a terrace (50-40-98-1938), a mound (50-40-98-1939), and harbor-related infrastructure (water tank foundation, catchment, cement beams, and an irregular enclosure; 50-40-98-1940). A complete description of these sites is given in the Colin and Hammatt (1996) archaeological inventory survey of 36 acres near Kaumalapau Harbor.

Seven sites are located in the vicinity of the proposed route above Manele Bay. The sites are described in detail in the Kaschko and Athens (1987) archaeological inventory survey of the Hulopoe Bay and Manele Bay areas. Brief descriptions of the seven sites are presented below in Table 1.

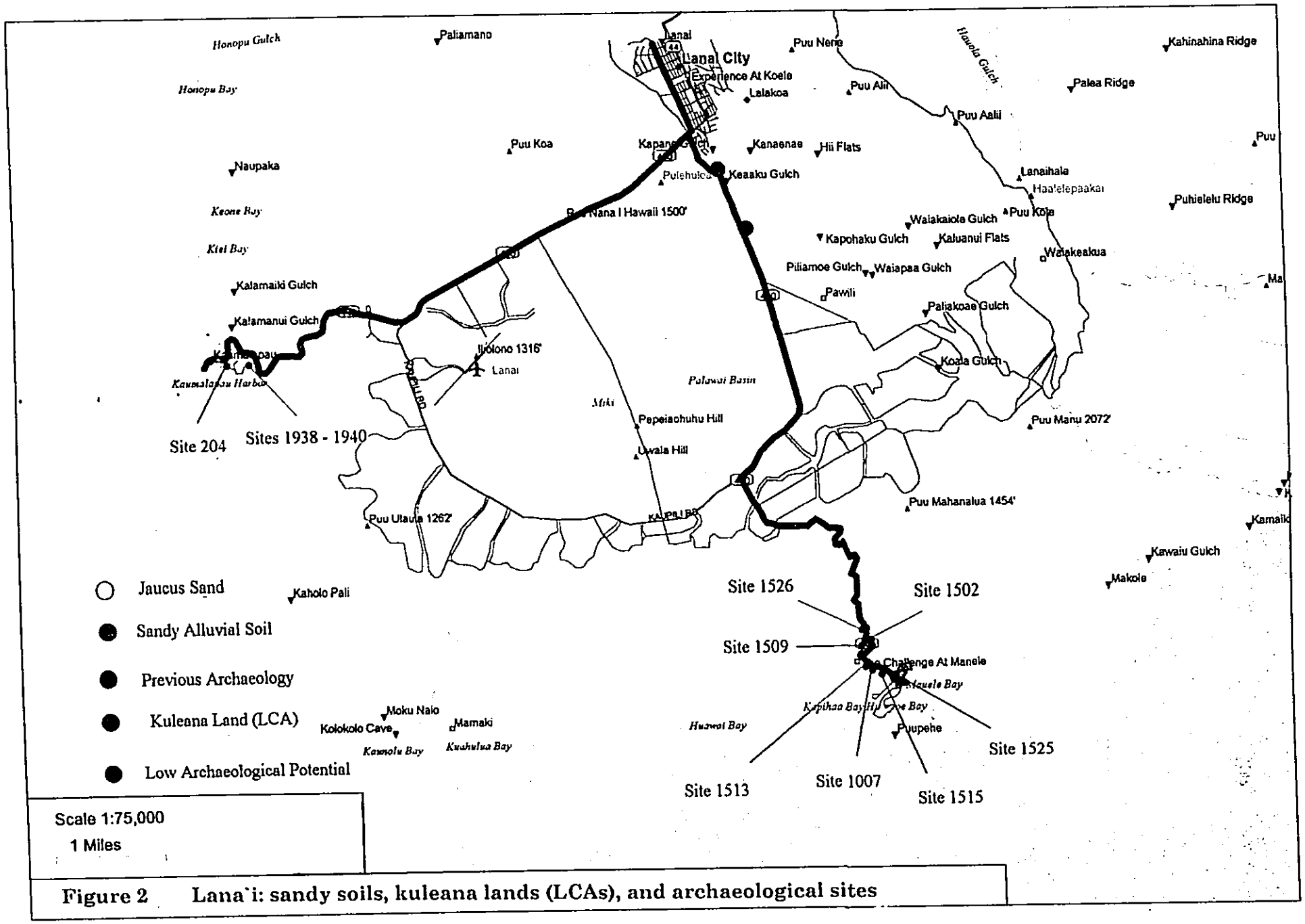


Figure 2 Lana`i: sandy soils, kuleana lands (LCAs), and archaeological sites

Table 1: Archaeological sites in the vicinity the proposed route near Manele Bay

State Site # 50-40-98-	Site Type	Description
1007	Historic Debris	An old boiler and associated historic debris.
1502	Site Complex of 3 features	Feature A, a rough platform, and Feature B, a large cairn, are possible burial mounds; Feature C is a very rough boulder wall segment.
1509	Site complex of 4 features	Feature A, a rectangular walled structure; Feature B, rectangular walled structure on a bedrock ledge; Feature C, a rough C-shaped shelter structure; Feature D, a low C-shaped shelter structure.
1513	Site complex of 3 features	Feature A, a long, roughly rectangular terrace; Feature B, a small C-shaped shelter structure; Feature C, a small C-shaped shelter structure.
1515	Wall	Large, collapsed, roughly rectangular.
1525	Coastal Habitation Site Complex (6 features)	Feature A, a rectangular walled structure; Feature B, a large rectangular walled structure; Feature C, an oval terrace; Feature D, a large rectangular walled structure; Feature E, a circular walled structure; and Feature F, a rectangular walled structure.
1526	Historic roadway and trail remnants (4 features)	Feature A1, a dirt road used prior to construction of present paved road; Feature A, a wide and curving, walled historic roadway; Feature B, an older, three-unit historic roadway; and Feature C, an early, narrow historic roadway/trail.

III. ASSESSMENT AND DISCUSSION

Based on the research procedures detailed in sections I and II above, all portions of the study route were evaluated according to a scale representing four levels of potential for yielding subsurface archaeological resources. The four levels are:

LOW	Low potential for subsurface deposits. This assessment is based on historic and archaeological data, soil survey data, and the absence of Land Commission Award parcels in the vicinity.
MODERATE	Area of known cultural activity but, based on other factors, probability of encountering archaeological resources is only moderate. Other factors include information in the soil survey and the history of ground disturbance in the area.
HIGH	Area contains sand and/or Land Commission Awards. Also present are historic properties, based on historic and archaeological data.
VERY HIGH	Area contains known burials or cultural layers.

The entire route is evaluated as having low archaeological potential based on the lack of sandy soils beneath the route, and the small number (two) of *kuleana* lands (LCAs) and the small number (nine) of archaeological sites along the route.

The field inspection of November 21, 2000 indicated no subsurface archaeological concerns whatever along the route from Kamalapau Harbor to Lana`i City. Particular attention was given to searching for any sites in the vicinity of Kamalapau. No sites were observed in close proximity to the highway. The seaward portion of the highway has largely been created by road cuts. The immediate harbor vicinity has been extensively graded, filled and reworked.

The immediate vicinity of Manele Harbor was of some concern because of a reference to "`an old burying ground' to the west of Manele Harbor (perhaps in the sand dunes area on the peninsula)" (in Kaschko and Athens 1987: 12) and the knowledge that sandy sediments exist adjacent to the road as it leaves Manele Harbor. In the field inspection, it was observed that the sandy soils adjacent to the road have a high percentage of terrigenous material. Thus these sandy soils are regarded as quite different from the large clean aeolian-deposited sands further to the south. It is our considered opinion that these clean deposits further to the south would have been preferred for traditional Hawaiian interment and that the soils adjacent to the Manele road have a low probability of containing human remains.

During the field inspection, specific attention was given to searching for any sign of specific sites noted in previous archaeological studies. None were observed in close proximity to the road bed.

IV. RECOMMENDATION

Based on the low potential for subsurface deposits, no further archaeological work is recommended along the entire study route on Lana`i Island. However, in the event that archaeological deposits are encountered during excavation activities for the cable line, all work should be halted in the area and staff of the State Historic Preservation Division should be notified immediately.

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Appendix A-2

Archaeological Assessment of the Proposed Sandwich Isles Communication Fiberoptic Cable Project Within Approximately 96 Miles (154.8 Kilometers) of Road Corridor on the Island of Maui

ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED SANDWICH ISLES COMMUNICATION FIBEROPTIC CABLE PROJECT WITHIN APPROXIMATELY 96 MILES (154.8 KILOMETERS) OF ROAD CORRIDOR ON THE ISLAND OF MAUI

by

Hallett H. Hammatt, Ph.D.

Prepared for

SSFM INTERNATIONAL, INC.

CULTURAL SURVEYS HAWAII, INC.
January 2001

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I. INTRODUCTION

A. Project Background

Cultural Surveys Hawai`i has completed an archaeological assessment of approximately 96 miles (154.8 kilometers) of road corridor on the Island of Maui. The road corridors are proposed for the installation of a telecommunications cable system connecting Department of Hawaiian Home Lands (DHHL) properties on Maui (Figure 1). The lines are to be installed within state Department of Transportation and Maui County rights-of-way consisting of existing pavements or road shoulders at an average depth of three feet (0.9 meters), typically in the *mauka* shoulder.

The objective of this assessment is to identify areas within the corridors that have potential for subsurface historic properties — including human burials and cultural deposits — which may be encountered during installation of the proposed cable system. The assessment is thus presented for preliminary planning purposes only. Final assessment of the levels of archaeological concern within the project area is the purview of the State Historic Preservation Division which determines necessary mitigation measures prior to and during construction activities.

B. Project Area Description

For the purposes of this report, the study route on Maui may be described as comprising a northern segment and a southern segment. The northern segment commences in Waiehu and runs southeast along Kahekili Highway (340) and Waiehu Beach Road to the intersection with Eha Road. Off Waiehu Beach Road, a short branch runs southwest on Kūhio Place, then turns northwest on Kalākaua Street to the street's end at Keali`i Drive. The main segment turns southwest on Eha Road to the intersection with Imi Kala Street, then turns southeast on Imi Kala Street to the intersection with Mill Street, then turns southwest on Mill Street to the intersection with Mission Street, then turns southeast on Mission Street to the junction with Lower Main Street. On Lower Main Street the route runs south to Waiale Road to the intersection with Nakoa Drive. Extending off Waiale Road before Nakoa Drive is a short segment running west on Kaohu Street to just past the intersection with South Market Street. The main route continues from Waiale Road to Nakoa Drive, running east then north to the intersection with Kainani Street, then running east and north on Kainani Street to the junction with Ka`ahumanu Avenue. On Ka`ahumanu Avenue the route turns east to the intersection with West Wakea Avenue, then continues south and east along West Wakea Avenue across the intersection with Pu`unēnē onto East Wakea Avenue to the intersection with Hana Highway (36). At the intersection with Pu`unēnē Avenue one arm of the route runs south along Pu`unēnē Avenue and Mokulele Highway (350) to Kīhei Road. The other arm runs southeast from East Wakea Avenue onto Hana Highway (36), then continues southeast onto Haleakalā Highway (37) and Pi`ilani Highway (31) to the terminus of the study route past Palaha Gulch.

The southern segment commences on the Honoapi`ilani Highway in Honokowai, just south of the intersection with Ala Hoku Road. The segment runs south on Honoapi`ilani

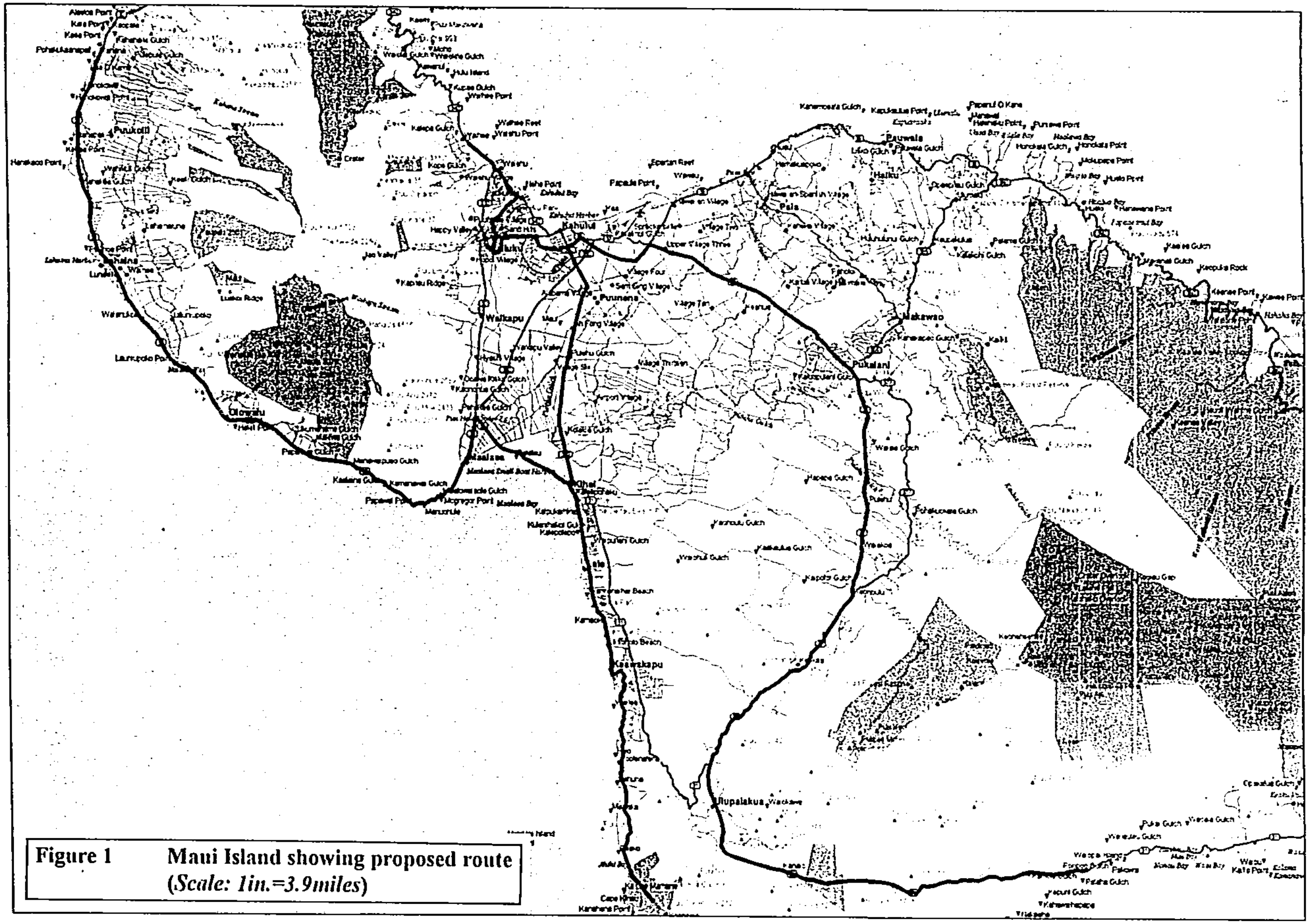

Figure 1 Maui Island showing proposed route
(*Scale: 1in.=3.9miles*)

Highway through West Maui, then northeast until the intersection with Kīhei Road. The segment continues south on North Kīhei Road and South Kīhei Road, then onto Kilohana Drive, Wailea Alanui and Makena Alanui to the terminus of the study route at Cape Kinau.

C. Methodology

The following resources and activities were employed to identify areas of archaeological concern within the study route:

1) Inspection of soil surveys for presence of soils and sands — under or immediately adjacent to the study route — which, based on past experience, are more likely to contain cultural deposits.

2) Inspection of tax maps and historic maps showing presence of Land Commission Award (LCA) parcels within or adjacent to the study route.

   Toward the mid-19th century, the Organic Acts of 1845 and 1846 initiated the process of the *Māhele* — the division of Hawaiian lands — which introduced private property into Hawaiian society. In 1848 the crown, the Hawaiian government, and the *ali`i* (royalty) received their land titles. *Kuleana* awards for individual parcels within the *ahupua`a* were subsequently granted in 1850. These Land Commission Awards (LCAs) were presented to tenants — native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners — who could prove occupancy on the parcels before 1845.

   Maps and other documents associated with these awards may give clues to settlement areas within and nearby the study route in the mid-1850s. These areas may represent, in turn, traditional Hawaiian settlement areas.

3) Review of Geographic Information System (GIS) data and archaeological reports at the State Historic Preservation Division. The GIS data and archaeological reports may give specific information on the location and distribution of previously-recorded surface sites within or near the study route which may be associated with subsurface historic properties. Additionally, archaeological reports may present results of subsurface testing in proximity to the study route.

4) Field inspection of the entire study route. The primary purpose of the field inspection is to evaluate the relationship of the study route to possible subsurface properties. Areas of anomalous sand deposits are examined to consider their potential for significant subsurface cultural deposits. Also noted are areas of fill and/or road cut in which the alignment has been brought significantly above grade. In many areas of potential archaeological sensitivity, the nature of the road bed — either graded or filled — effectively eliminates archaeological concern, given the shallow penetration of the proposed trenching.

Areas adjacent to streams and wetlands are examined for possible archaeological potential. These areas, although often undocumented in archaeological literature, are more likely to have been foci of human endeavor. The field inspection also examines urban areas which have the potential for historic deposits over fifty years old.

5) Consultation with the State Historic Preservation Division (SHPD). Resources and expertise of the SHPD will be utilized. However, all evaluations and findings of this assessment report are those of Cultural Surveys Hawai`i, and should not be interpreted as reflecting those of the SHPD.

6) Cultural Surveys Hawai`i staff's past experience of and familiarity with archaeological resources along the study route.

7) Consideration of any known community issues regarding culturally sensitive portions of the study route. Community groups in areas throughout the Hawaiian Islands have voiced concern for cultural resources in specific areas which may have to be addressed during the course of the present project.

This report presents the results of the research conducted by Cultural Surveys Hawai`i, Inc. Section II summarizes findings on soils, Land Commission Awards, and previous archaeological data in the immediate vicinity of the study route. These three research components are the primary basis for determining potential for encountering further subsurface historical properties along the route. Section III presents Cultural Surveys Hawai`i's assessment of archaeological potential for all portions of the route. Finally, based on the background research and the route assessment, Section IV offers recommendations for further archaeological mitigation.

II. SOIL, LAND COMMISSION AWARD AND ARCHAEOLOGICAL DATA

Three research components — soils, Land Commission Awards, and previous archaeological research — are the primary indicators of possible archaeological potential within the study route. Results of the examination of these components are presented below.

Soils

Three areas along the proposed route in Maui contain sand or sandy soils. These areas include Olowalu in West Maui, the Kahului and Wailuku Areas and the Kīhei coast down to just south of Wailea. Other areas worth mention are those containing sand deposits adjacent to the proposed route. These areas include north of Lahaina at Hahakea Gulch and just south of Makena Beach in East Maui. Figures 2 and 3 show the locations of sand and sandy soils along the route.

Just past Olowalu at Mopua, the proposed route intersects a deposit of Jaucus Sands (JaC) for approximately 900 m. Jaucus Sands is a well drained calcareous soils developed from coral and seashells and found on coastal plains near the ocean (Foote *et al.*, 1972). Jaucus Sands are found on most of the Hawaiian islands and are known to contain burials. Also in this area, Beach Sands extend about 4 km from Hekili Point at Olowalu to Ukumehame Beach State Park. From the east end of the Jaucus sand deposit to Ukumehame, the proposed route runs directly *mauka* of Beach Sands. Beach Sands (BS) are described as sand derived from coral and seashells (Foote *et al.*, 1972).

In the Kahului and Wailuku areas, there is a very large sand deposit extending *mauka* from the west side of Kahului Harbor with the approximate western border of Waiale Road and the eastern border of Highway 380 and the *mauka* border of Waikapu Road. The sand deposit here is known as the Pu`uone Sands (PZUE) and are manifested as sandhills comprised of coral and seashell material (Foote *et al.*, 1972). These soils are unique to the island of Maui and are known to contain burials. The proposed route crosses the Pu`uone Sands in Wailuku/Kahuilui between Waiale Road/Lower Main Street and a portion of Hana Highway. Heading northeast and *makai* along Waiale Road/ Lower Main Street, the proposed route lies adjacent to and just east of the western extent of the Pu`uone Sands deposit. Northwest of Wailuku Town, the route runs northwest along Kahekili Highway (340), traversing two different sand deposits beginning at approximately Paukukalo and extending to the route terminus at Waiehu. These sand deposits include Pu`uone Sands (PZUE) and Jaucus Sands (JaC).

Extensive deposits of sand and sandy soils are present along a large part of the eastern coast of West Maui beginning at Kihei and extending south to just beyond Wailea. Jaucus Sands and Dune Lands have developed in back of Beach Sands along the coast and Pu`uone Sands are generally seen further *mauka* in the low uplands. Dune Lands (DL) are described as hills and ridges consisting of wind deposited calcareous sand (Foote *et al.*,

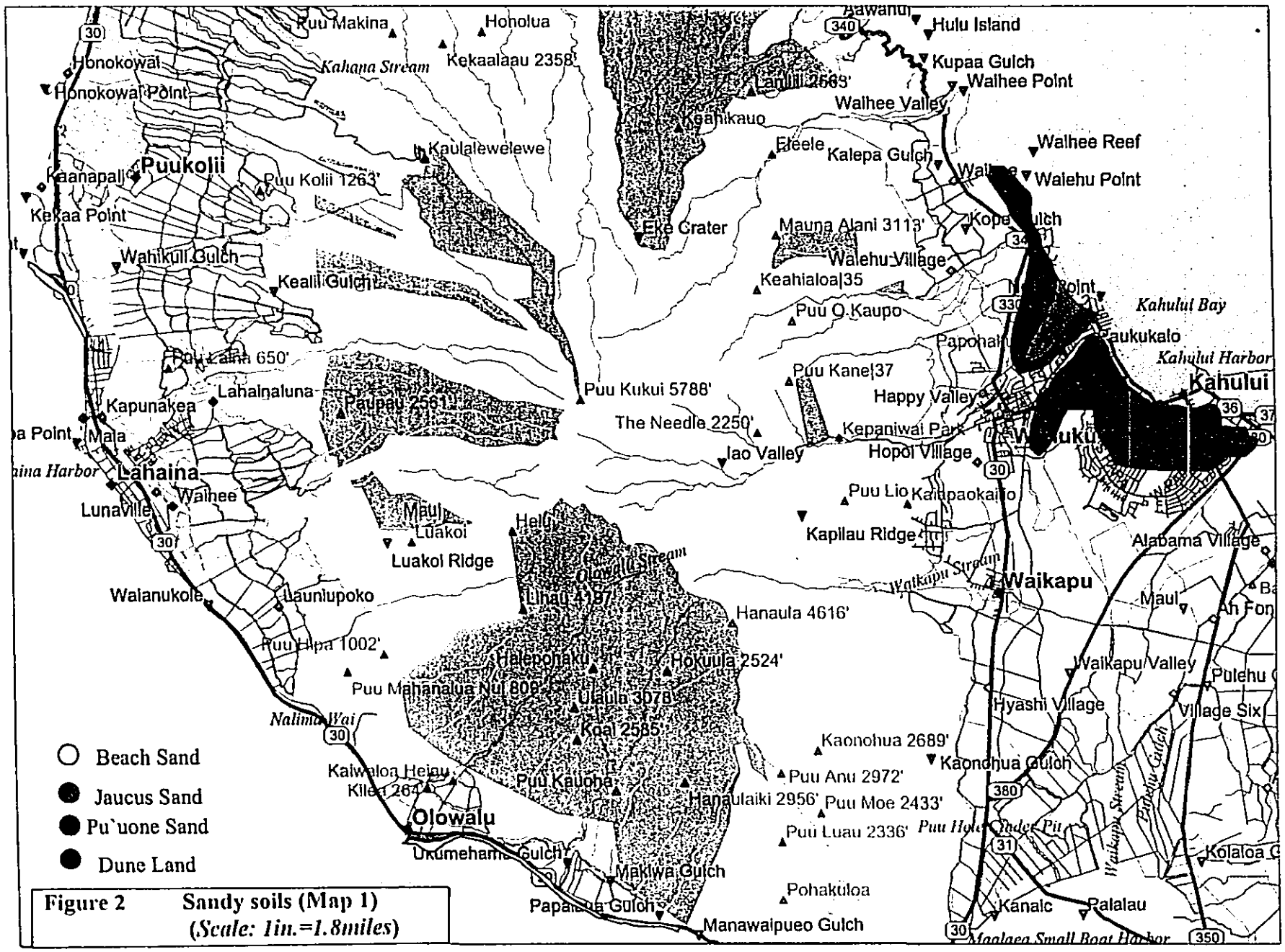

Figure 2 **Sandy soils (Map 1)**
(Scale: 1in.=1.8miles)

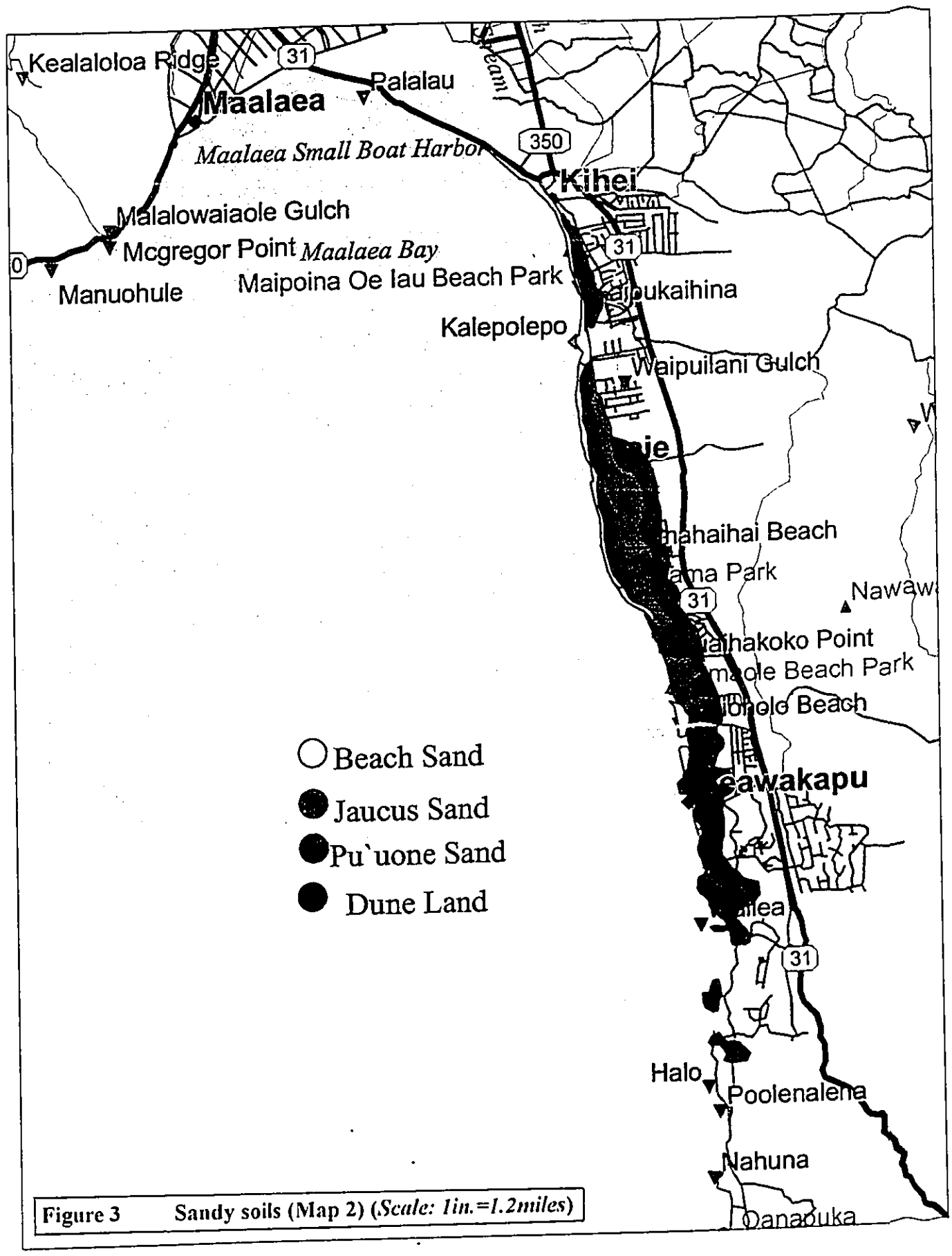

Figure 3 Sandy soils (Map 2) (*Scale: 1in.=1.2miles*)

1972). Starting at the junction of Upper Kīhei Road, a large Dune Land deposit underlies the proposed route until just north of Kalepolepo. Further south, the route traverses first Jaucus saline sand (JcC) starting in the area of Waiohuli and extending to the south part of Keokea Homesteads and then Jaucus sand (JaC) to Kaluaihakoko. Here, the proposed route intersects a small portion of a large Pu`uone Sands deposit. Jaucus sand picks up at the north end of Kamaole Beach Park and underlies the proposed route for less than one kilometer where it meets another large Dune Land deposit. The proposed route overlies this Dune Land for more than 2 km south where the route swings *mauka* and outside of the sandy soils. Further south, the proposed route again intersects this same dune deposit near the center of Wailea. A smaller pocket of Dune Land encompasses the proposed route just *makai* of the Wailea Golf Course buildings.

Land Commission Awards

Inspection of tax maps and historic maps indicated the presence of Land Commission Awards (LCAs) along the study route. In West Maui there are multiple LCAs at Honokowai, Lahaina, Olowalu and Ma`alaea with the largest concentration at Lahaina. An especially intense concentration of *kuleanas* is found in present-day Wailuku Town. In East Maui, there are several areas containing multiple LCAs including Pulehu, Waiakoa, Keokea, just north and south of Ulupalakua, Kanaio, and Maluaka. One isolated LCA was recorded at Pa`ako. The locations of these LCAs along the study route are indicated on Figures 4 and 5.

Previous Archaeological Study

According to GIS files at the State Historic Preservation Division, thirty-three archaeological sites have been recorded in the vicinity of the proposed route. Locations of these sites are shown on Figures 6 to 8.

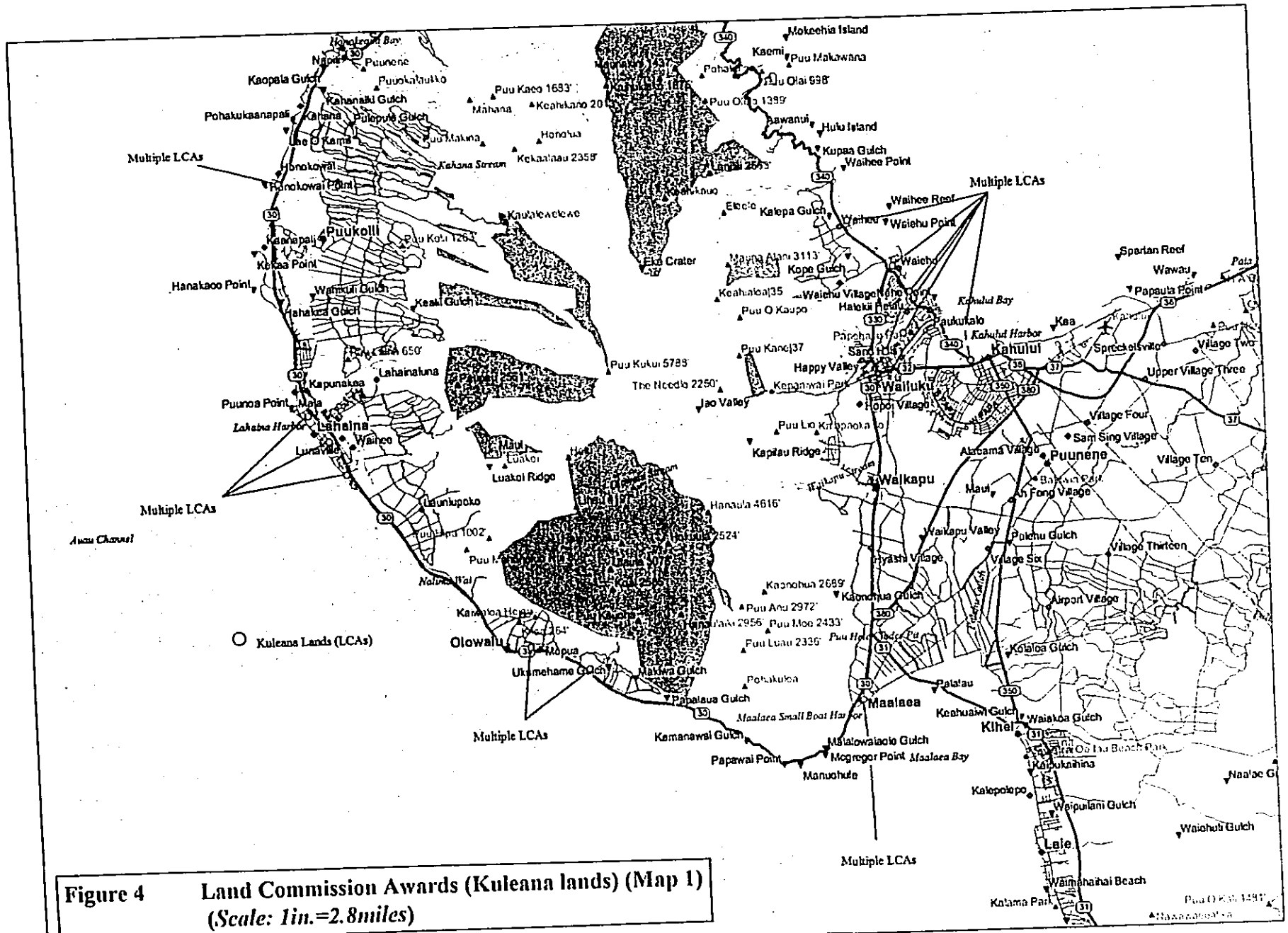

Figure 4 Land Commission Awards (Kuleana lands) (Map 1)
(Scale: 1in.=2.8miles)

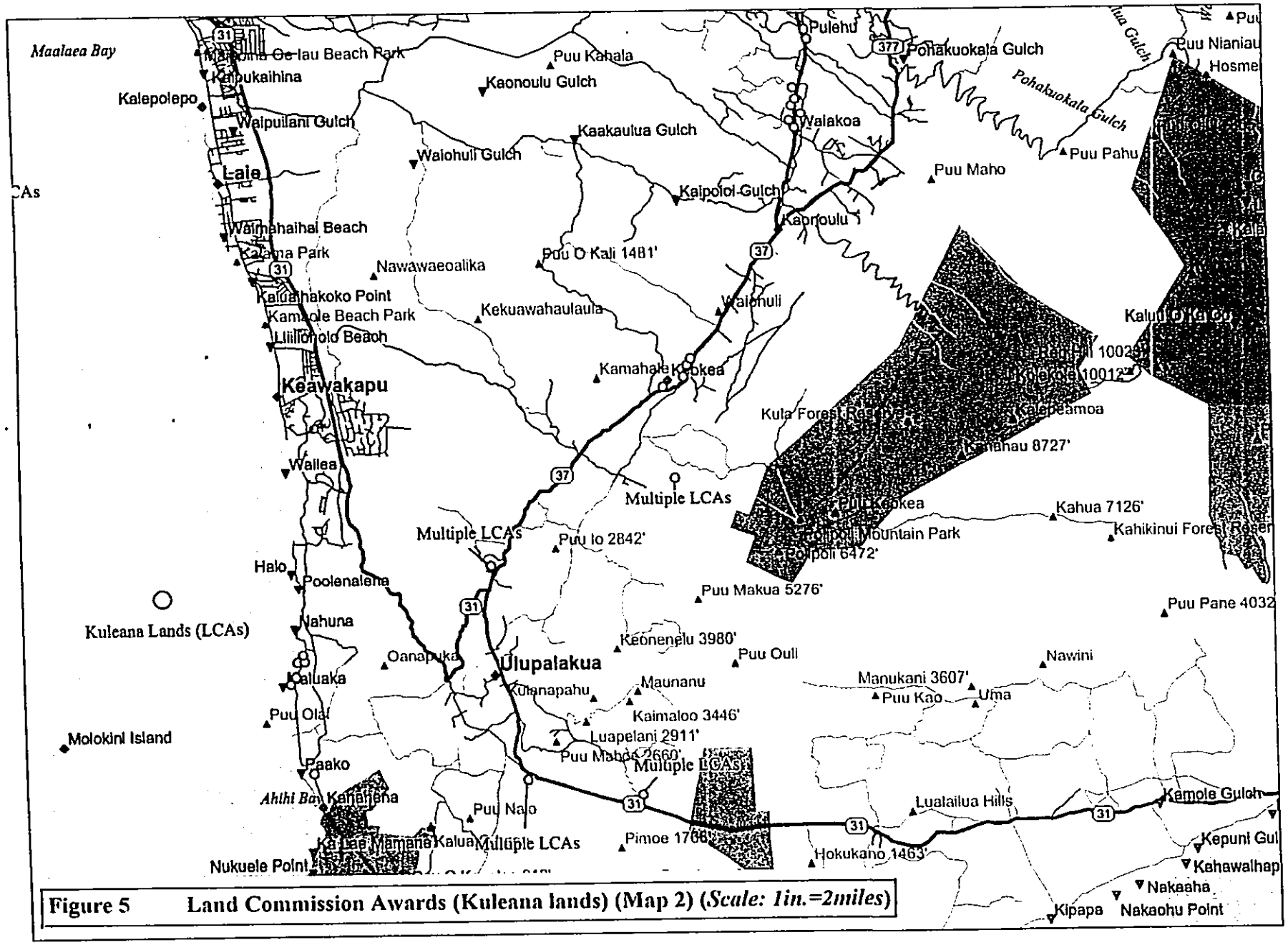

Figure 5 **Land Commission Awards (Kuleana lands) (Map 2) (*Scale: 1in.=2miles*)**

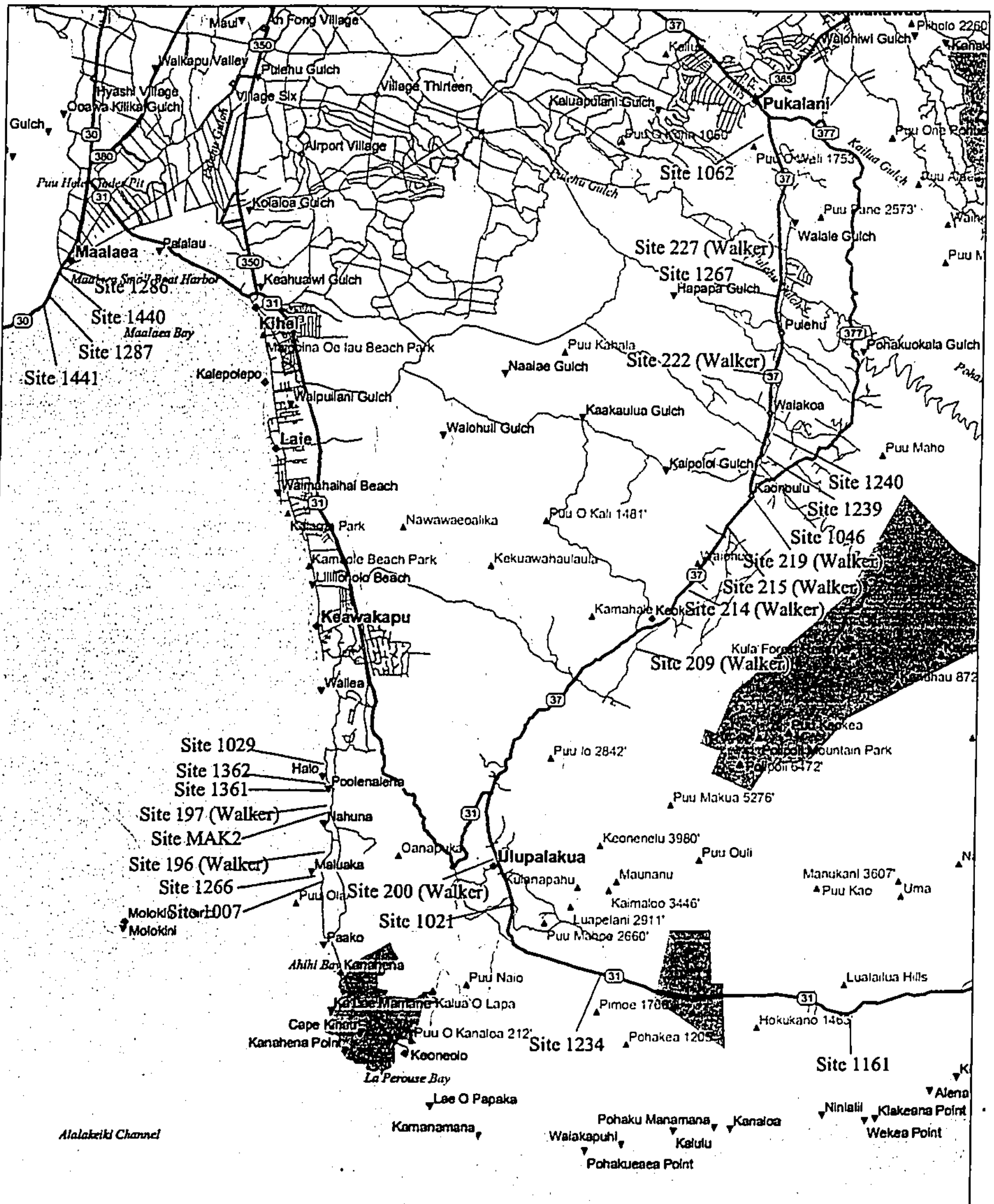

Figure 6 Archaeological sites (Map 1) (*Scale: 1in.=2.4miles*)

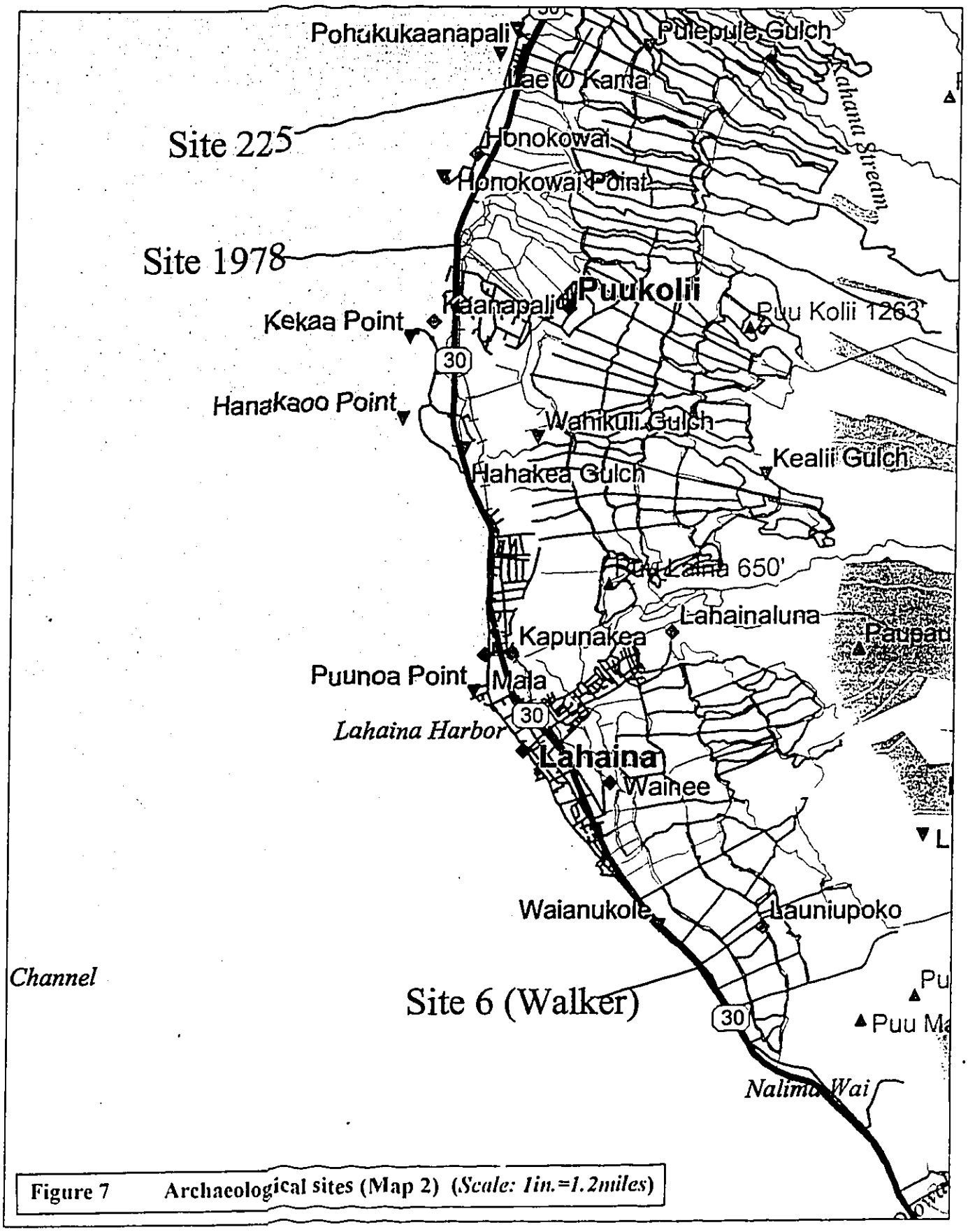

Figure 7 Archaeological sites (Map 2) (*Scale: 1in.=1.2miles*)

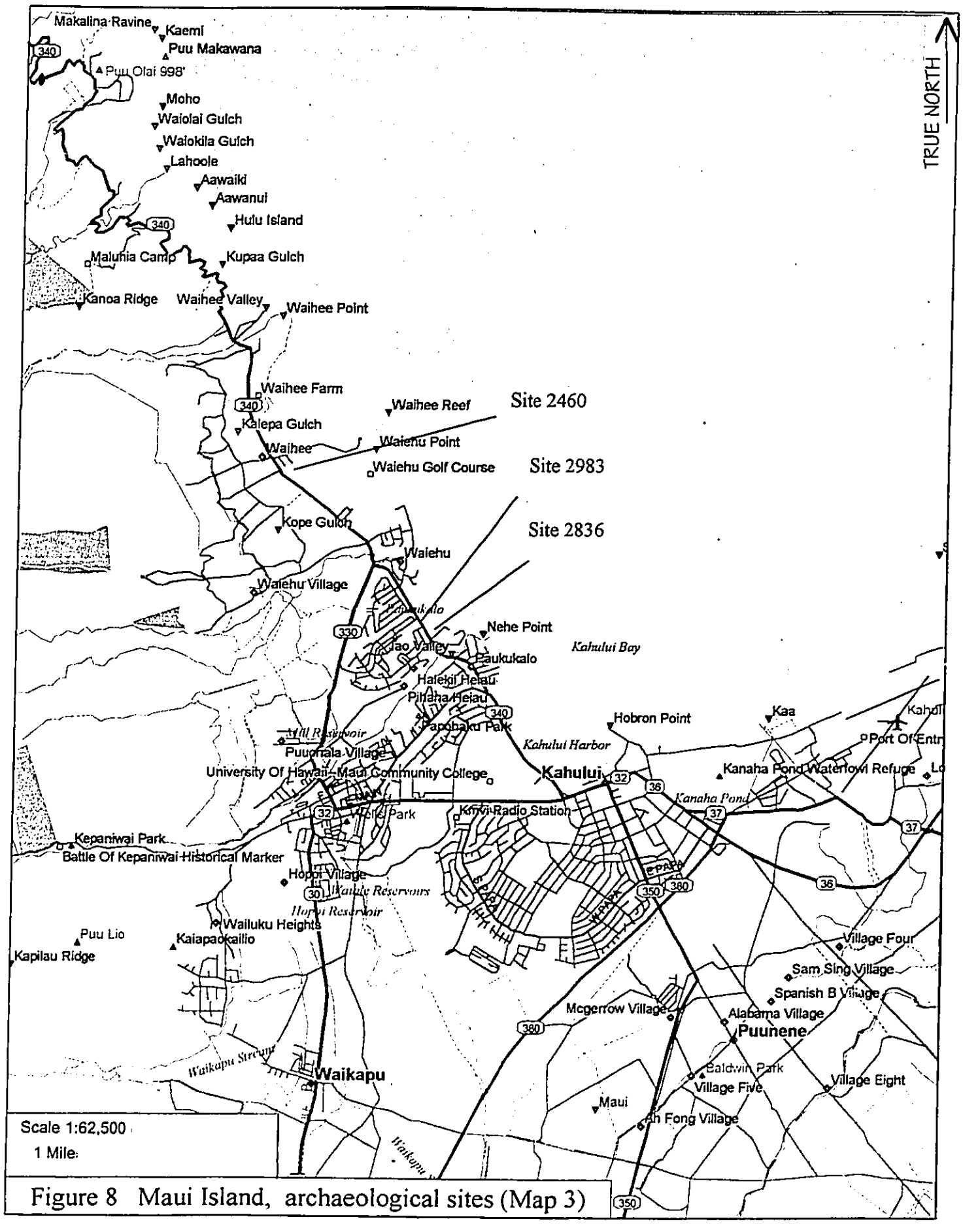

Figure 8 Maui Island, archaeological sites (Map 3)

III. ASSESSMENT AND DISCUSSION

Based on the research procedures detailed in sections I and II above, all portions of the study route have been evaluated and classified in four categories representing varied potential for yielding subsurface archaeological resources. The four categories are:

LOW	Low potential for subsurface deposits. This assessment is based on historic and archaeological data, soil survey data, and the absence of Land Commission Award parcels in the vicinity.
MODERATE	Area of known cultural activity but, based on other factors, probability of encountering archaeological resources is only moderate. Other factors include information in the soil survey and the history of ground disturbance in the area.
HIGH	Area contains sand and/or Land Commission Awards. Also present are historic properties, based on historic and archaeological data.
VERY HIGH	Area contains known burials or cultural layers.

Figure 9 presents the archaeological assessment of the study route on Maui Island. The route has been subdivided into sixteen sections based on the four categories of archaeological potential. Each section is discussed briefly below.

Section 1 Along Honoapi`ilani Highway from the intersection with Ala Hoku Road south to the intersection with Kapunakea Street — LOW POTENTIAL

As indicated on Figure 4 above, there are multiple Land Commission Awards (LCAs) located on the *makai* side of the northern end of Section 1. However, Honoapi`ilani Highway through Section 1 is a modern construction through former sugar cane lands. Ground disturbance and alteration caused by decades of commercial agricultural activities and by construction of the highway itself have probably eliminated any archaeological deposits beneath the route associated with former habitation. Additionally, the northern portion of Section 1 is well *mauka* of sandy soil deposits .

An archaeological site — Site 50-01-225 — is noted in Mahinahina Gulch within Section 1. The site is an "extensive, prehistoric cultural deposit covered by a layer of recent alluvial soil enclosed in an area approximately 120 by 80 m. (394 by 262 ft.) in size" (Griffin and Lovelace 1977: 31). The site was located and researched during surveys of the then to-be-constructed Honoapi`ilani. Salvage survey of the site was accomplished in 1977 before the site was eliminated by the highway's construction (Griffin and Lovelace 1977).

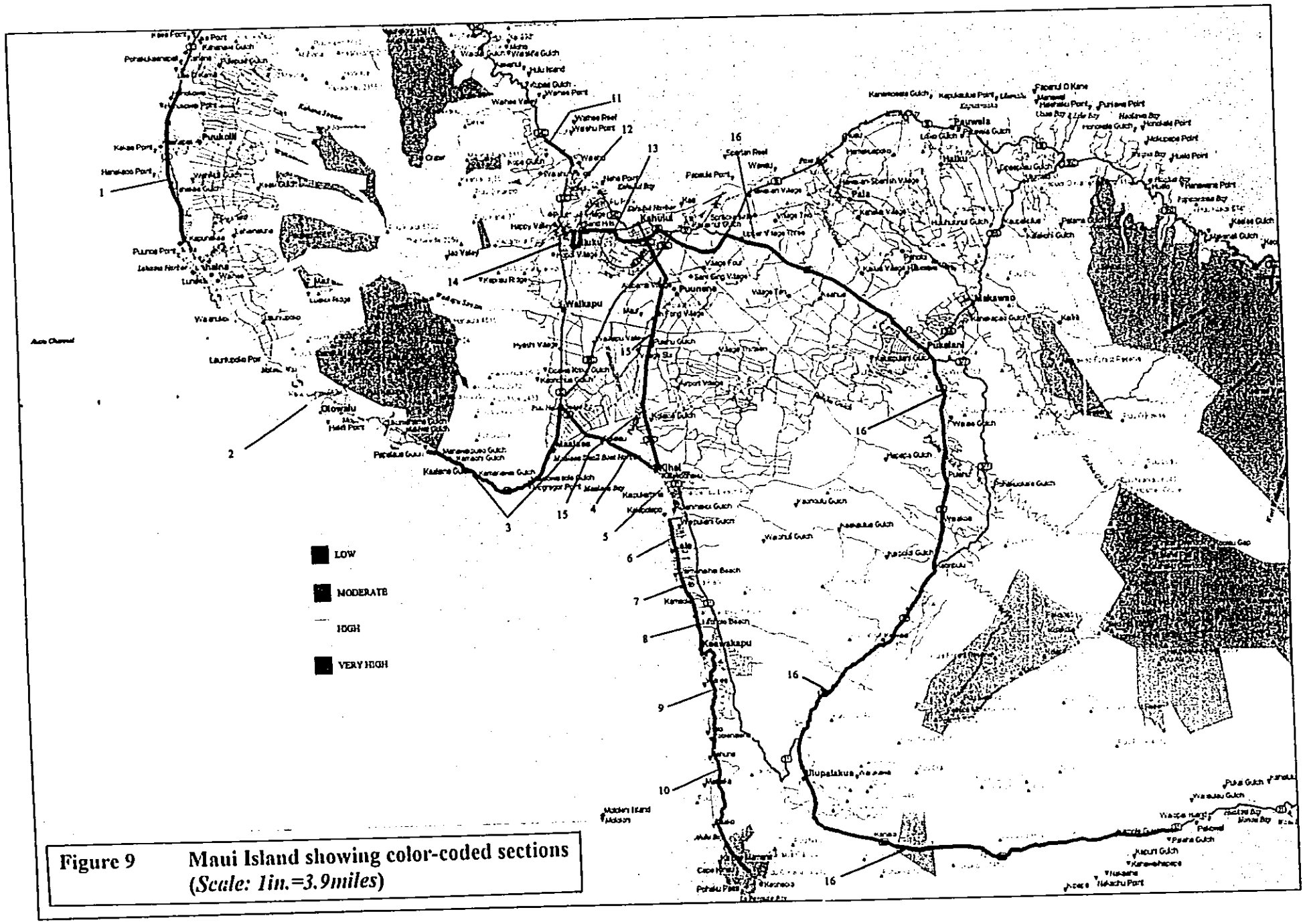

Figure 9 **Maui Island showing color-coded sections** (*Scale: 1in.=3.9miles*)

A second archaeological site — Site 1978 — is indicated *mauka* of Section 1 near the Ka`anapali Airport. However, the site does not appear to be in close proximity to the route.

In the southern end of Section 1, the route approaches — but does encroach upon — Jaucus Sand and Beach Sand deposits along the coast. It appears that, because of ground disturbance for the modern Honoapi`ilani Highway and the absence of relevant soils immediately beneath the highway, intact cultural deposits related to sandy soils are not present in this area.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 1.

Section 2 Honoapi`ilani Highway southeast from the intersection with Kapunakea Street through Lahaina Town and continuing southeast to the southeast end of Ukumehame Beach State Park — HIGH POTENTIAL

The northern portion of Section 2 goes through Lahaina Town. At the section's northern end it runs *mauka* of the sand berm along the Mala Wharf Boat Launch Ramp where human burials were identified during archaeological studies (Sinoto 1975; Davis 1974; Hammatt 1978). Additionally, a burial was encountered during construction of a shopping center in the Mala area.

Multiple Land Commission Awards (LCAs) were recorded in the near vicinity throughout this portion of the route through Lahaina Town. Additionally to be considered is the historical importance of Lahaina and the cultural sensitivity that importance necessitates.

Southeast of Lahaina Town, between Puamana Park and Olowalu, Section 2 runs along the coastline, adjacent to coastal sand deposits. While the soil survey does not indicate sand deposits beneath Honoapi`ilani Highway in this portion of Section 2, the proximity of the route to these deposits merits precaution that cultural material may indeed be intact below the highway.

Southeast of Olowalu to the southeast end of Ukumehame Beach State Park, Section 2 passes through areas where Land Commission Awards (LCAs) are noted in the vicinity and where beach sand underlies portions of the route.

Based on these factors, the potential to encounter historic properties is assessed as high in Section 2.

Section 3 **Honoapi`ilani Highway southeast from the southeast end of Ukumehame Beach State Park to Papawai Point; then northeast to the intersection with Highway 31; then southeast on Highway 31 to the northwest end of Kealia Pond — LOW POTENTIAL**

No Land Commission Awards (LCAs) were recorded and no sandy soil deposits are indicated through this section of the route. GIS files indicate four archaeological sites within Section 3 between McGregor Point and Ma`alaea Bay. The sites include:

Site 1287	identified as the Ma`alaea Complex along the coast between McGregor Point and Ma`alaea Bay. The site includes midden scatters and dispersed surface structures.
Sites 1440 & 1286	a grinder stone and a *piko* stone moved from unknown original locations to the lawn of a restaurant at Ma`alaea.
Site 1441	a cluster of C-shaped shelters associated with Site 1287

Since the study route through between McGregor Point and Ma`alaea Bay already comprises extensive road cut, any further excavation for the proposed project would not affect surface or subsurface archaeological sites.

The Highway 31 portion of Section 3 runs through lands which have been disturbed by decades of commercial agricultural activities and are unlikely to contain intact cultural material immediately beneath the road.

Based on these factors, the potential to encounter historic properties is assessed as low in Section 3.

Section 4 **Highway 31/North Kīhei Road southeast from the northwest end of Kealia Pond past the junction with Pi`ilani Highway to the intersection with Mokulele Highway (350). A branch of the section runs from North Kīhei Road onto Pi`ilani Highway to the intersection with Mokulele Highway (350) — MODERATE POTENTIAL**

Section 4, running between the shoreline and Kealia Pond, would have constituted a natural causeway funneling human pedestrian activity along the coast in pre-contact times. Temporary habitation sites and structures associated with Kealia Pond may have existed in the immediate area surrounding Section 4. Additionally, beach sand deposits are noted in close proximity to the section. Based on these factors, the potential to encounter historic properties is assessed as moderate for Section 4.

Section 5 South on Mokulele from the intersection with Highway 31, then southwest on South Kīhei Road to the intersection with Kūlanihāko`i Street — HIGH POTENTIAL

The South Kīhei Road portion of Section 5 crosses over dune sand deposits where human burials may be present. Based on this factor, the potential to encounter historic properties is assessed as high for Section 5.

Section 6 South Kīhei Road south from the intersection with Kūlanihāko`i Street to the north end of Kalama Park — MODERATE POTENTIAL

South Kīhei Road in Section 6 moves *mauka* of the coast where sand and sandy soils are indicated as present. However, based on the possibility that these deposits may encroach beneath portions of this section, the potential to encounter historic properties is assessed as moderate in Section 6.

Section 7 South Kīhei Road south along the length of Kalama Park — VERY HIGH POTENTIAL

Because of the presence of beach sand along Section 7 and because burials have been documented at Kalama Beach Park, the potential to encounter historic properties is assessed as very high in this section.

However, it should be noted that major construction projects were observed within both South Kīhei Road and the beach park area at the time of the field inspection (December 7, 2000). Activities included excavations for subsurface lines, storm drain construction, and a new entrance to the park. Several open trenches were observed. It is probable that subsurface archaeological issues for Section 7 have already been addressed in the review process for the projects observed during the field inspection..

Section 8 South Kīhei Road south from the south end of Kalama park to the intersection with Kilohana Drive — MODERATE POTENTIAL

South Kīhei Road in Section 8 crosses over dune land, as indicated in the Maui soil survey. However, up to the present, no burials or cultural layers have been identified in any of the archaeological studies that have focused on this portion of South Kīhei Road. Based on this factor, the potential to encounter historic properties is assessed as moderate for this section.

Section 9 **East on Kilohana Drive from the intersection with South Kīhei Road, then south on Wailea Alanui and Makena Alanui to the intersection with Makena Road — LOW POTENTIAL**

Section 9 moves *mauka* of coast through the new resort subdivision of Wailea. The study route through this section is a major recent road construction, four lanes wide in some portions. Because of the significant ground disturbance necessitated by the road's construction there is virtually no possibility that intact deposits remain immediately beneath the road surface. Based on this factor, the potential to encounter historic properties is assessed as low in Section 9.

Section 10 **Makena Alanui south from the intersection with Makena Road to the terminus of the corridor above Cape Kinau — MODERATE POTENTIAL**

Section 10 marks the study route's return toward the coastline. Toward Makena the route passes through an area where archaeological sites have been recorded in the near vicinity. These sites include *heiau* located by Winslow Walker in the 1930s. As the section nears the corridor terminus at Cape Kinau, surface archaeological features were noted in the near vicinity during the field inspection. However, subsurface archaeological features that are the concern of this study are less likely to be present, based on the lack of sandy soil deposits beneath most of Section 10. The only area where sand deposits may be a concern is south of Keawalai Church where beach sand is noted immediately *makai* of the route.

It should also be noted that community concerns about archaeological preservation in the Makena area have been expressed regarding previous projects.

Based on these factors, the potential to encounter historic properties is assessed as moderate in Section 10.

Section 11 **Commencement of corridor in Waiehu along Kahekili Highway (340) southeast to the intersection with Malaihi Road — LOW POTENTIAL**

Section 11 runs through lands that have been disturbed by decades of commercial agriculture. The section is also *mauka* of the coastline and no sandy soils are present. Archaeological sites have been recorded in the general vicinity but none appear to be in any proximity to the section. Based on these factors, the potential to encounter historic properties is assessed as low in Section 11.

Section 12 **Kahekili Highway (340) from the intersection with Malaihi Road southeast, then on Waiehu Beach Road road to the intersection with Eha Road. Off Waiehu Beach Road, a short branch runs southwest on Kūhio Place, then turns northwest on Kalākaua Street to the street's end at Keali`i Drive. At the intersection with Eha Road, Section 12 turns southwest on Eha Road to the intersection with Imi Kala Street; then southeast on Imi Kala Street to the intersection with Mill Street; then southwest on Mill Street to the intersection with Mission Street; then southeast on Mission Street to the junction with Lower Main Street — HIGH POTENTIAL**

The northwest portion of Section 12 runs near the coastline through sandy soils where the possibility of human burials exists. Additionally, small clusters of Land Commission Awards (LCAs) are located along this portion of the route. As it turns southwest into Wailuku Town the route runs through an extensive, continuous network of former taro *lo`i* beneath present-day Wailuku Town. It is likely that material related to traditional agriculture and habitation remain intact beneath portions of this section. Because of these factors, the potential to encounter historic properties is assessed as high in Section 12.

Section 13 **South along Lower Main Street from the junction with Mission Street; then south on Waiale Road to the intersection with Nakoa Street; then east and north on Nakoa Drive to the intersection with Kainani Street; then east and north on Kainani Street to the junction with Ka`ahumanu Avenue; then east on Ka`ahumanu Avenue to the junction West Wakea Avenue; then south and southeast on West Wakea across the intersection with Pu`unēnē Avenue to the intersection with Hana Highway (36); then southeast on Hana Highway to the intersectionwith Kuihelani Highway/Dairy Road (360). A branch of Section 13 runs on Pu`unēnē Avenue between Wakea Avenue and Kuihelani Highway/Dairy Road (380) — VERY HIGH POTENTIAL**

This section of the study route runs along the perimeter and atop of the Wailuku Sand Hills, an extensive Pu`uone Sand Dune formation known to contain human burials. The sand hills extend between Waiale Road/Lower Main Street and East Wakea Avenue.

Historic burials are an additional concern along the Lower Main Street portion of the section where three older cemeteries and one newer cemetery are located. Just north of the Waiale Drive Bridge is Wailuku Japanese Cemetery, containing 400+ recorded tombstones and 25+ unmarked graves. Next is Na Wai Eha Cemetery which contains 84 recorded tombstones and 20+ unmarked graves. A sign at the cemetery observed during the field inspection indicates that the cemetery was established *ca.* 1990. The next cemetery is St. Anthony Catholic Cemetery, owned by the Catholic Diocese of Hawai`i, which contains 915 recorded tombstones and 50+ unmarked graves; the cemetery was established in 1860. The fourth Lower Main Street cemetery, located near the intersection

with Mill Street, is the Wailuku County Cemetery, containing 84 recorded tombstones and 50+ unmarked graves. In other areas of the Hawaiian Islands, burials associated with older cemeteries have been encountered beneath adjacent roadways. This may be a concern along Lower Main Street because of the very close proximity of the cemeteries to the present study route.

By the mid-1990s at least five human burials (not associated with the Lower Main Street cemeteries) had been recorded within the encountered within or in close proximity to the portion of the Waiale Road/Lower Main Street right-of-way included in the present study route (Donham 1996).

Upon the Wailuku Sand Hills, seven human burials were identified during archaeological study within portions of the Maui Lani Development area adjacent to the southeast of Nakoa Drive (Rotunno-Hazuka *et al.* 1995; Pantaleo and Sinoto 1996).

Anecdotal accounts given to Cultural Surveys Hawai`i staff during previous work in Wailuku have mentioned numerous burials encountered during the construction of Ka`ahumanu Avenue — which occurred before burial reporting and treatment procedures were in place.

Based on these factors, the potential to encounter historic properties is assessed as very high in Section 13.

Section 14 West on Kaohu Street from the junction with Waiale Road to just past the intersection with South Market Street — HIGH POTENTIAL

Section 14 extends into the extensive network of former taro *lo`i* beneath present-day Wailuku Town. It is likely that material related to traditional agriculture and habitation remain intact beneath portions of this section. Based on this factor, the potential to encounter historic properties is assessed as high for Section 14.

Section 15 Along Pu`unēnē Avenue from the intersection with Kuihelani Highway (380) southeast to the intersection with Mokulele Highway (350); then south on Mokulele Highway (350) to Upper Kīhei Road and the junction with Kīhei Road — LOW POTENTIAL

Section 15 runs through lands which have been disturbed over decades for commercial sugar production. The soils through this area are not the sandy soils typically associated with burials and cultural deposits. The major portion of this section — Mokulele Highway (350) — is a very modern highway which does not appear to correlate to any traditional trail way. Based on these factors, the potential to encounter historic properties is assessed as low in Section 15.

Section 16 Northwest on Ka`ahumanu Avenue from the junction with Pu`unēnē Avenue to the junction with Hana Highway (36); then southeast and northeast on Hana Highway (36) to the intersection with Haleakalā Highway; then southeast on Haleakalā Highway (37) and Pi`ilani Highway (31) to the terminus of the study route past Palaha Gulch — LOW POTENTIAL

As indicated on Figures 5 and 6 above, Section 16 runs through areas where multiple Land Commission Awards (LCAs) and archaeological sites are located. However, several factors lessen the likelihood that archaeological deposits remain intact immediately beneath any portion of the roadways through this long section.

Section 16 along Ka`ahumanu Avenue runs beyond the Wailuku Sand Hills through land that comprises imported fill. As Section 16 extends southeast from Kahului on the Hana Highway and the Haleakalā Highway it passes over lands that have been disturbed by decades of sugar cane cultivation. The highways themselves are major modern thoroughfares with wide shoulders whose construction would have additionally disturbed the former cane land.

As Haleakalā Highway moves *mauka* through Pukalani to Kealahou it passes through concentrations of Land Commission Awards (LCAs) at Pulehuiki and Kealahou. However, the highway through Pulehuiki and Kealahou is a new thoroughfare whose construction necessitated road cuts on its *mauka* side, fill areas, new bridges, wide road shoulders, and major drainages. It is unlikely that any deposits associated with LCA parcels or earlier habitation remain intact below the highway.

Haleakalā Highway, southwest of the intersection with Kekaulike Highway, is no longer the new expanded thoroughfare noted above. The highway was observed during the field inspection to run essentially through old road cuts and fills. It has been improved with paving, guard rails and storm drains. Although LCAs are noted along this portion of Section 16 at Keokea, Palauea, Kaunahane (beneath Pu`u Mahoe), and Kanaio, it was observed during the field inspection that road construction techniques in these areas — including cuts and fills — make it unlikely that deposits associated with these LCAs or earlier habitation remain intact below the highway.

Along Section 16 between Keokea and Ulupalakua, elements of agricultural field systems — including stone walls and fences — were noted immediately adjacent to highway during the field inspection. As elsewhere in Section 16, much road cutting, filling and recent guard rails were also noted — indicators that intact subsurface deposits related to any historic ranching and agriculture are unlikely beneath the highway.

Section 16 through the Ulupakalua Town area was observed during the field inspection to be a greatly improved, widened roadway. As elsewhere through Section 16, there appear no specific concerns of subsurface deposits.

As Section 16 continues east past Pu`u Mahoe to the terminus of the corridor past Palaha Gulch, the route is an unimproved roadway that shows no signs of recent improvement. However, as through other portions of Section 16, construction of the route involved much road cutting through `a`a terrain, diminishing the likelihood of intact cultural deposits beneath the road surface.

Through this eastern end of Section 16, multiple surface archaeological features were observed on both sides of the road. These features included rock walls, agricultural mounds, probable habitation sites, and probable *heiau*. (These sites in Kahikinui are discussed Kirch 1997.) It should be noted that the concern in this area is not the road corridor itself but the adjacent ancillary construction activities — including base yards and movement of equipment off the road — that may impact these nearby surface sites.

Based on the above factors and the lack of any soil deposits likely to contain relevant cultural material, the potential to encounter historic properties is assessed as low for Section 16.

IV. RECOMMENDATIONS

As detailed above, the 96-mile study route on Maui Island has been divided into sixteen sections. Each section was assigned one of four levels of potential — low, moderate, high, or very high — for presence of subsurface historic properties. The following recommendations are suggested for each level:

LOW

Based on the low potential for subsurface deposits, no further archaeological work is recommended in the following sections of the study route:

Section 1 — Along Honoapi`ilani Highway from the intersection with Ala Hoku Road south to the intersection with Kapunakea Street

Section 3 — Honoapi`ilani Highway southeast from the southeast end of Ukumehame Beach State Park to Papawai Point; then northeast to the intersection with Highway 31; then southeast on Highway 31 to the northwest end of Kealia Pond

Section 9 — East on Kilohana Drive from the intersection with South Kīhei Road, then south on Wailea Alanui and Makena Alanui to the intersection with Makena Road

Section 11 — Commencement of corridor in Waiehu along Kahekili Highway (340) southeast to the intersection with Malaihi Road

Section 15 — Along Pu`unēnē Avenue from the intersection with Kuihelani Highway (380) southeast to the intersection with Mokulele Highway (350); then south on Mokulele Highway (350) to Upper Kīhei Road and the junction with Kīhei Road

Section 16 — Northwest on Ka`ahumanu Avenue from the junction with Pu`unēnē Avenue to the junction with Hana Highway (36); then southeast and northeast on Hana Highway (36) to the intersection with Haleakalā Highway; then southeast on Haleakalā Highway (37) and Pi`ilani Highway (31) to the terminus of the study route past Palaha Gulch

MODERATE

Areas deemed of moderate potential for encountering archaeological resources are recommended for a monitoring program with on-call monitoring. Spot checking or on-call monitoring with a cultural monitor are other options. Sections of the route where this recommendation is applicable are:

Section 4 — Highway 31/North Kīhei Road southeast from the northwest end of Kealia Pond past the junction with Pi`ilani Highway to the

	intersection with Mokulele Highway (350). A branch of the section runs from North Kīhei Road onto Pi`ilani Highway to the intersection with Mokulele Highway (350)
Section 6	South Kīhei Road south from the intersection with Kūlanihāko`i Street to the north end of Kalama Park
Section 8	South Kīhei Road south from the south end of Kalama park to the intersection with Kilohana Drive
Section 10	Makena Alanui south from the intersection with Makena Road to the terminus of the corridor above Cape Kinau

HIGH

Areas deemed of high potential for encountering archaeological resources — based on presence of sand, Land Commission Awards, or historic properties — are recommended for a monitoring program with continual on-site monitoring. Sections of the route where this recommendation is applicable are:

Section 2	Honoapi`ilani Highway southeast from the intersection with Kapunakea Street through Lahaina Town and continuing southeast to the southeast end of Ukumehame Beach State Park
Section 5	South on Mokulele from the intersection with Highway 31, then southwest on South Kīhei Road to the intersection with Kūlanihāko`i Street
Section 12	Kahekili Highway (340) from the intersection with Malaihi Road southeast, then on Waiehu Beach Road to the intersection with Eha Road; then southwest on Eha Road to the intersection with Mikala Street; then southeast on Mikala Street to the intersection with Mill Street; then southwest on Mill Street to the intersection with Mission Street; then southeast on Mission Street to the junction with Lower Main Street
Section 14	West on Kaohu Street from the junction with Waiale Road to just past the intersection with South Market Street

VERY HIGH

Based on the known presence of burials and cultural layers, areas assessed "very high" in this report may merit more detailed investigation and/or consultation before any determination is made on the specific archaeological mitigation steps to be followed.

In "very high"-designated areas, the client should anticipate delays and/or changes in excavation technique, based on likelihood of encountering burials, cultural layers.

We recommend that consultation with the archaeology and burial staffs of the State Historic Preservation Division and the Maui Island Burial Council be conducted during the project's design phase when more design details and construction methods are developed.Such consultation efforts would be intended to develop appropriate mitigative measures needed to address potential impacts on historic resources.

Sections of the study route for which these considerations apply are:

Section 7 South Kīhei Road south along the length of Kalama Park

Section 13 South along Lower Main Street from the junction with Mission Street; then south on Waiale Road to the intersection with Nakoa Street; then east and north on Nakoa Drive to the intersection with Kainani Street; then east and north on Kainani Street to the junction with Ka`ahumanu Avenue; then east on Ka`ahumanu Avenue to the junction West Wakea Avenue; then south and southeast on West Wakea across the intersection with Pu`unēnē Avenue to the intersection with Hana Highway (36); then southeast on Hana Highway to the intersectionwith Kuihelani Highway/Dairy Road (360). A branch of Section 13 runs on Pu`unēnē Avenue between Wakea Avenue and Kuihelani Highway/Dairy Road (380)

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WELLS STREET SEGMENT OF THE ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED SANDWICH ISLES COMMUNICATIONS, INC. RURAL FIBER OPTIC CABLE PROJECT WITHIN APPROXIMATELY 97 MILES (156.1 KILOMETERS) OF ROAD CORRIDOR ON THE ISLAND OF MAUI

I. Introduction

Cultural Surveys Hawai'i (CSH) has completed an archaeological assessment of the proposed Sandwich Isles Communications, Inc. fiber optic cable project within approximately 97 miles of road corridor on the island of Maui. The assessment originally included Kaohu Street, based on provided maps. Subsequently, CSH was informed that Wells Street, not Kaohu Street, will be utilized.

Wells Street is within an area assessed as having a "high potential" for encountering historic properties.

II. Route Discussion and Assessment

The study route on Wells Street extends into the extensive network of former taro *lo`i* beneath present-day Wailuku Town. It is likely that material related to traditional agriculture and habitation remain intact beneath portions of this section. Based on this factor, the potential to encounter historic properties is assessed as high for the study route.

Areas assessed as having high potential are defined in the Maui island-wide assessment as:

> ...[containing] sand and/or Land Commission Awards. Also present are historic properties, based on historic and archaeological data.

III. Recommendation

Based on the high potential for encountering historic properties, the Wells Street segment is recommended for a monitoring program with continual on-site monitoring.

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ARCHAEOLOGICAL ASSESSMENT OF AN ALTERNATIVE ROUTE IN KĪHEI, MAUI: AN ADDENDUM TO AN ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED SANDWICH ISLES COMMUNICATIONS, INC. RURAL FIBER OPTIC CABLE PROJECT WITHIN APPROXIMATELY 97 MILES (156.1 KILOMETERS) OF ROAD CORRIDOR ON THE ISLAND OF MAUI

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I. Introduction

Cultural Surveys Hawai`i has completed an archaeological assessment of a section of road corridor in Kihei, Maui. This corridor is an alternative route being addressed as part of a proposed Sandwich Isles Communications, Inc. fiber optic cable project within approximately 97 miles of road corridor on the island of Maui for which Cultural Surveys Hawai`i has already completed an archaeological assessment report. This alternative corridor is being assessed in response to comments from the county Department of Public Works and Waste Management on the draft Environmental Assessment. A description of the cable system project and the methodology for the assessment are presented in that report. This addendum report assesses the alternative route following the methodology outlined in the Maui island-wide report.

At its north end, the alternative corridor travels along Pi`ilani Highway from the Mokulele Highway intersection area. At the intersection of Pi`ilani Highway and Kanani Road, the corridor turns right onto Kanani Road, then onto Auhana Road. From Auhana Road, the corridor continues onto Kanakanui Road, running south toward Wailea, *makai* of Pi`ilani Highway. At the intersection of Kanakanui Road with Keonekai Road, the corridor turns right and proceeds down Keonekai to South Kihei Road. Continuing south on South Kihei Road, the corridor rejoins the route that has already been examined and assessed in the Maui island-wide report.

II. Soil, Land Commission Award and Archaeological Data

According to the soil survey for Maui island (Foote *et al.* 1972), no sandy soils are present beneath most of the alternative route, which runs well *mauka* of the Kihei coast (see Figure 3 in the Maui island-wide assessment report). However, at the southern end of the alternative route where it turns *makai* on Keonekai Road to connect with South Kihei Road, the portion of Keonekai Road between Kauhale Street and South Kihei Road runs over dune sand deposits.

An inspection of tax maps and historic maps indicates that no Land Commission Award are located within or immediately adjacent to the alternative route corridor.

Numerous archaeological studies have been conducted in the Kīhei area, as indicated in Figure 1 and Table 1 below.

Table 1: Previous Archaeological Studies in Kīhei

Date	Author	Ahupua`a	Nature of Study	Findings
1931	W. Walker	Entire Island	Reconnaissance	three *heiau* in the *ahupua`a* of Waiohuli above 3,000' elevation
1971	P. Kirch	Palauea	Survey & Excavations	Documents a coastal settlement and settlement patterns
1973	W. Kikuchi	State-wide fishpond survey	Fishpond survey	Notes 3 fishponds in the Kalepolepo area
1976	D. Cox	Pulehunui to Kama`ole	Surface Survey	Identified 6 sites
1977	R. Cordy	Pulehunui to Paeahu	Reconnaissance	Identified 38 sites: 30 in Waiohuli, 0 in Kaonoulu and 8 in Kēōkea
1978	A. Sinoto	Coastal Kama`ole	Reconnaissance	Recorded 6 sites including 4 probable habitation features
1981	R. Hommon	Coastal Waiakoa	Reconnaissance	No archaeological findings
1981 (a)	C. Keau	Coastal Kama`ole	Reconnaissance	No archaeological findings
1981 (b)	C. Keau	Coastal Kaonoulu	Reconnaissance	Notes historic features & significance of area
1982	M. Miura (R. Bordner & D. Cox)	Coastal Waiohuli & Kēōkea	Reconnaissance	Reports 9 sites
1982 (a)	E. Neller	Coastal Kama`ole	Reconnaissance	Relates report of "large number of burials"
1982 (b)	E. Neller	Coastal Kaonoulu	Reconnaissance	No archaeological findings but relates history on pond & graves
1986	W. Kam	Waiohuli & Kēōkea 2100' to 2700' elevation	Field Inspection	2 possible pre-contact house sites & walls
1986a	J. Kennedy	Coastal Kēōkea	Reconnaissance	No archaeological features were located

1986b	J. Kennedy	Coastal Waikapu	Reconnaissance	Notes mounds (discounted in 1988a)
1986c	J. Kennedy	Coastal Waiohuli	Reconnaissance	No archaeological sites were found
1987	M. Riford	Uplands (1800' to 3000') of Waiohuli & Kēōkea	Monitoring & Reconnaissance Survey	Identified 113 sites mostly pre-contact
1987	F. Watanabe	Uplands (280' to 380') of Waiohuli	Reconnaissance	No archaeological sites were found
1988	A. Estioko-Griffin	Uplands (2680') of Kēōkea	Field Inspection	Notes human remains in a cave site
1988	A. Haun	Kama`ole	Reconnaissance	Identified 33 sites, mostly military, revisited by Mayberry & Haun 1988
1988 (a)	J. Kennedy	Coastal Waikapu	Testing & Monitoring	No archaeological findings
1988 (b)	J. Kennedy	Coastal Kaonoulu	Reconnaissance	No archaeological findings
1988 (c)	J. Kennedy	Coastal Waiohuli	Reconnaissance	No archaeological Findings
1988 (d)	J. Kennedy	Coastal Waiohuli	Reconnaissance	No archaeological Findings
1988	J. Mayberry & A. Haun	Coastal Kama`ole	Reconnaissance	Identified 33 sites
1989	R. Brown	Upland (1800' to 3000') Kēōkea and Waiohuli	Inventory Survey	Identified 159 sites (part of this area was studied by Riford in 1987)
1989	R. Brown & A. Haun	Kēōkea and Waiohuli	Inventory Survey	A more detailed study of the same parcels described by Brown 1989
1989	T. Donham	Waiohuli	Inventory Survey	Identified 4 sites in a portion of the Miura 1982 study area and recommended data recovery
1989	W. Fredericksen *et al.*	Coastal Kama`ole	Inventory Survey	No archaeological findings
1989	H. Hammatt & D. Shideler	Coastal Kama`ole	Reconnaissance	Identified 8 sites

1989 (a)	J. Kennedy	Coastal Kama`ole	Survey	No archaeological findings judged significant
1989 (b)	J. Kennedy	Coastal Kama`ole	Reconnaissance	No archaeological findings
1989 (c)	J. Kennedy	Coastal Pulehu	Inspection	No archaeological findings
1989 (d)	J. Kennedy	Coastal Waiohuli	Subsurface Testing	No archaeological findings
1989	H. Leidemann	Coastal Kama`ole	Reconnaissance	No archaeological findings, area extensively bulldozed
1989	A. Sinoto	Coastal Kama`ole	Surface Survey	Identified 8 sites
1990 (a)	T. Donham	Coastal Waiohuli	Data Recovery	Site 2475 was excavated
1990 (b)	T. Donham	Coastal Kēōkea	Inventory survey	Part of Miura 1982 study area. 16 sites were identified
1990 (a)	W. Fredericksen & D. Fredericksen	Coastal Kēōkea	Monitoring	No archaeological findings
1990 (b)	W. Fredericksen & D. Fredericksen	Coastal Kēōkea	Survey & Monitoring	No archaeological findings
1990	W. Fredericksen *et al.*	Coastal Kama`ole	Inventory Survey	No archaeological findings
1990	H. Hammatt & D. Shideler	Coastal Kama`ole	Reconnaissance	No archaeological findings
1990a	J. Kennedy	Coastal Waiakoa	Survey	No archaeological findings
1990b	J. Kennedy	Kama`ole, 300' elevation	Archaeological Inventory Survey	No archaeological findings
1990 (a)	A. Sinoto	Coastal Waiakoa	Survey & Testing	No archaeological findings (other than 2 pieces of midden)
1990 (b)	A. Sinoto	Coastal Kama`ole	Reconnaissance	No archaeological findings
1991	T. Donham	Upland (3200') Kaonoulu	Field Inspection	Study of the Wonderland Mushroom House (1933-1936) historic structures

1991a	W. Fredericksen *et al.*	Coastal Kama`ole	Subsurface Inventory Survey	No significant archaeological findings (2 modern dog burials and a modern trash pit)
1991b	W. Fredericksen *et al.*	Coastal Kama`ole	Subsurface Inventory Survey	No significant archaeological findings (only modern trash)
1991	J. Kennedy	Coastal Kama`ole	Reconnaissance	No archaeological findings
1991	J. Kennedy & M. Breithaupt	Coastal Kēōkea	Inventory survey	No archaeological findings
1991	J. Pantaleo *et al.*	Coastal Kama`ole	Inventory Survey	Covered part of same area as Hammatt & Shideler 1989, 1991
1991	L. Hazuka & J. Pantaleo	Coastal Kama`ole	Surface Survey	No archaeological findings
1992	H. Hammatt & D. Shideler	Coastal Kama`ole	Survey & Testing of H. Hammatt & D. Shideler 1989 study area	Identified 2 probable *koa* (fishing shrines) among 8 sites
1992	J. Kennedy	Coastal Kama`ole	Inventory survey	Identified 4 sites including a permanent pre-contact habitation/religious site
1992	J. Kennedy *et al.*	Coastal Kama`ole	Inventory survey wt Subsurface Testing	Identified 4 sites all believed to be historic; two military and 2 ranching
1992	Sinoto & Pantaleo	Coastal Pulehunui	Inventory Survey	No archaeological findings other than a bridge foundation (site -3131)
1992	R. Spear	Coastal Kēōkea	Inventory Survey	No archaeological findings
1993	D. Fredericksen *et al.*	Coastal Waiohuli	Inventory Survey/Data Recovery	A rock shelter excavation yielded lithic artifacts, midden and a date of A.D. 1560 to 1800
1994	D. Frederick-sen *et al.*	Coastal Kama`ole	Inventory Survey	2 sites were identified including a midden scatter & a concrete slaughterhouse foundation
1994a	E. Frederick-sen *et al.*	Kama`ole	Inventory Survey	Radiocarbon date reported as AD 1520 to 1570
1994b	E. Frederick-sen *et al.*	Coastal Kama`ole	Subsurface Testing	Work at Site 50-50-10-2636

1994c	E. Frederick-sen *et al.*	Kaonoulu, *mauka* of Pi`ilani Hwy.	Inventory Survey	21 sites were identified, some military and some pre-contact
1994	W. Frederick-sen *et al.*	Coastal Waiohuli	Inventory Survey	22 backhoe test trenches were excavated but there were no significant archaeological findings
1994	M. Kolb et al.	Upland Waiohuli and Kēōkea	Settlement Survey	Archaeological & historical settlement survey
1995	Burgett & Spear	Upland Kaonoulu (3100' elevation)	Archaeological Inventory Survey	6 post contact sites were identified
1995a	E. Frederick-sen & D. Frederick-sen	Waiohuli	Inventory Survey	one rock shelter site was identified as a pre-contact temporary habitation site
1995b	E. Frederick-sen & D. Frederick-sen	Waiohuli	Data Recovery	Four carbon dates were obtained suggesting late pre-contact use.
1995a	D. Hibbard	Coastal Kēōkea	Environmental Assessment	Determined Phase III South Kihei Road Improvements project would have "no effect"
1995 b	D. Hibbard	Coastal Kēōkea	Historic Preservation Review	Determined Phase II South Kihei Road Improvements project would have "no effect"
1995	Moore and Kennedy	Upland Koheo and Kaonoulu (2600' elevation)	Archaeological Inventory Survey	8 sites were identified (3 historic ranching, 5 possibly pre-contact ag.
1996	E. Frederick-sen et al.	Upland Kaonoulu (3060' to 9700' elevation)	Archaeological Inventory Survey	4 sites were identified including 2 rock shelters and 2 historic sites
1997	Chaffee et al.	Waiohuli (120' elevation)	Archaeological Inventory Survey	3 sites were identified, all interpreted as agricultural
1999 (in press?)	Pepalis, J. & Michael J. Kolb	Waiohuli	Archaeological Excavations	Found evidence of a stream-fed pond near Kalepolepo Church
1999	Erik and Demaris Fredericksen	Kama`ole (170' elevation)	Archaeological Inventory Survey	3 sites were identified including 5 small enclosures and a rock pile

2000	McDermott, Shideler, and Hammatt	Waiohuli, adjacent to the Kalepolepo Church	Additional Archaeological Inventory Survey (Backhoe Testing)	Document Site 50-50-09-4981, former inland pond that contains evidence of early occupation at coastal Kihei--approximately A. D. 600-900. An elaboration of Pepalis and Kolb's (in press) work, described below.
2000	Hammatt and Shideler	Keokea Ahupua`a	Archaeological Inventory Survey	No historic properties located.
2000	Kikiloi, Shideler and Hammatt	Keokea Ahupua`a	Archaeological Inventory Survey	No historic properties located.
In Press	Pepalis and Kolb	Waiohuli Ahupua`a	Sub-Surface Testing	Documented highly stratified cultural deposits of an inland pond.

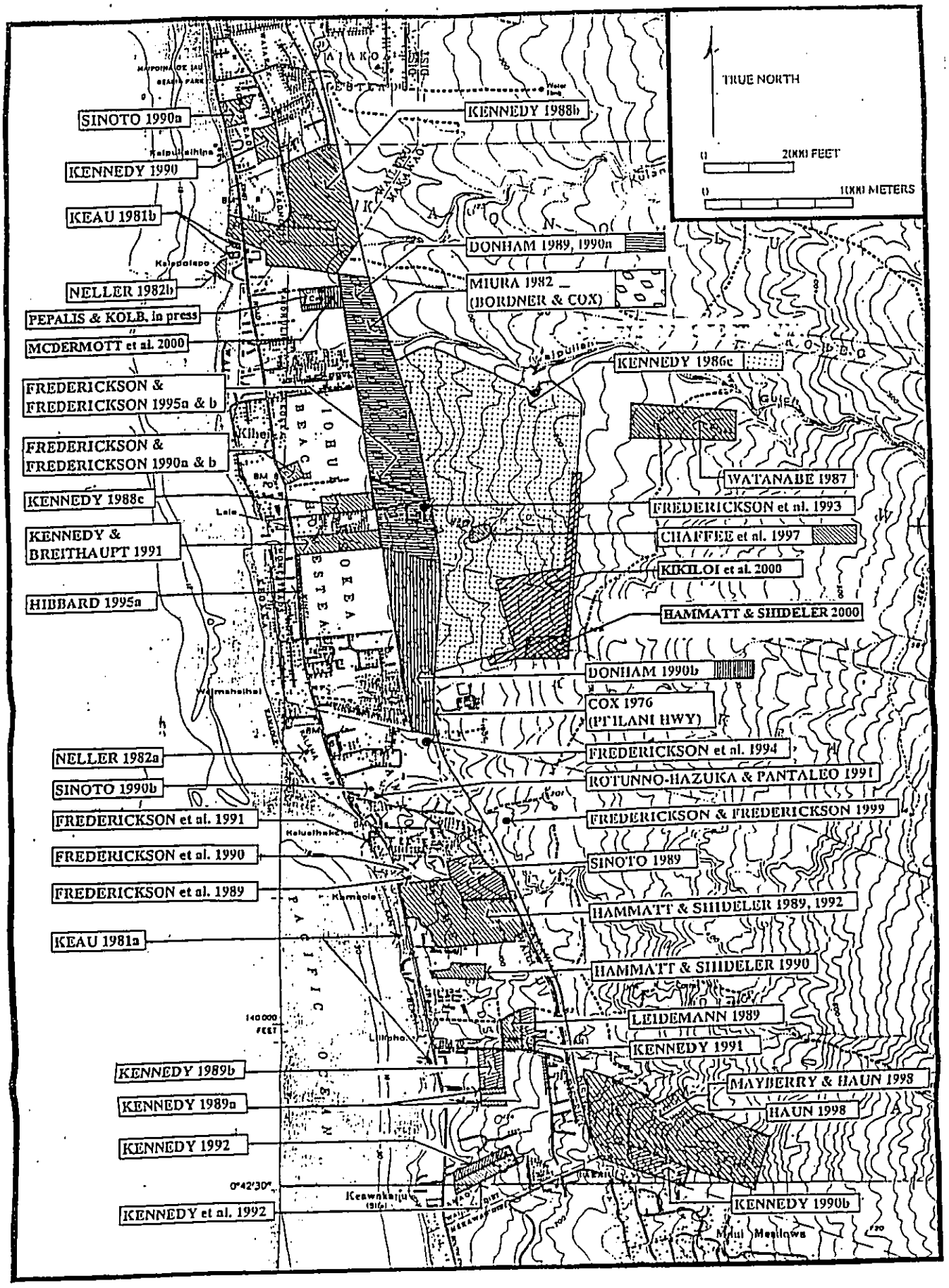

Figure 1 Previous archaeological studies in the Kīhei area

The majority of archaeological surveys in the Kīhei area have produced no significant archaeological data at all. This may be due in large measure to changes on the land associated with ranching, military occupation and resort and housing construction. A number of archaeological studies (Kennedy 1986c, Kennedy 1990b, Watanabe 1987) on the slopes inland from Pi`ilani Highway have identified no archaeological sites at all. Other projects in these lower slopes have, however, identified agricultural features (Chaffee *et al.* 1997) military sites (Mayberry and Haun 1988) and enclosures with a posited pre-contact habitation function (Fredericksen et al. 1994c).

The available radiocarbon dates in the area are consistent in their rather broad, later prehistoric age determinations, most commonly post A.D. 1500 (Fredericksen and Fredericksen 1995b; Fredericksen 1994; Fredericksen *et al.* 1993). This fits with the model that the more intensive use of the Kihei area was a later prehistoric development that corresponded with the expansion of upland permanent habitation, ceremonial constructions, and agricultural clearing after A.D. 1400-1500 (Kolb *et al.* 1997:281-282).

III. Assessment and Discussion

The alternative route has been evaluated based on four categories representing varied potential for yielding subsurface archaeological resources. The four categories are:

LOW Low potential for subsurface deposits. This assessment is based on historic and archaeological data, soil survey data, and the absence of Land Commission Award parcels in the vicinity.

MODERATE Area of known cultural activity but, based on other factors, probability of encountering archaeological resources is only moderate. Other factors include information in the soil survey and the history of ground disturbance in the area.

HIGH Area contains sand and/or Land Commission Awards. Also present are historic properties, based on historic and archaeological data.

VERY HIGH Area contains known burials or cultural layers.

Figure 2 presents the archaeological assessment of the alternate route. The route has been subdivided into two sections — designated A and B — which have been assessed as having low and moderate potentials, respectively. Each section is discussed below.

Section A **Pi`ilani Highway south from the Mokulele Highway intersection to Kanani Road; then onto Kanani Road, Auhana Road and Kanakanui Road, continuing south on Kanakanui Road to the intersection with Keonekai Road; then *makai* onto Keonekai Road to the intersection with Kauhale Street – LOW POTENTIAL**

As noted above, according to the Maui soil survey, the majority of the alternative route – encompassed here in Section A – runs well *mauka* of the coastal sand and sandy soil deposits where cultural materials are more likely to be present. No Land Commission Award *kuleana* parcels are recorded within or immediately adjacent to any portion of the alternative route in Section A. The review of previously conducted archaeological studies in the immediate vicinity of Section A indicated no subsurface cultural deposits within or immediately adjacent to any portion of the section.

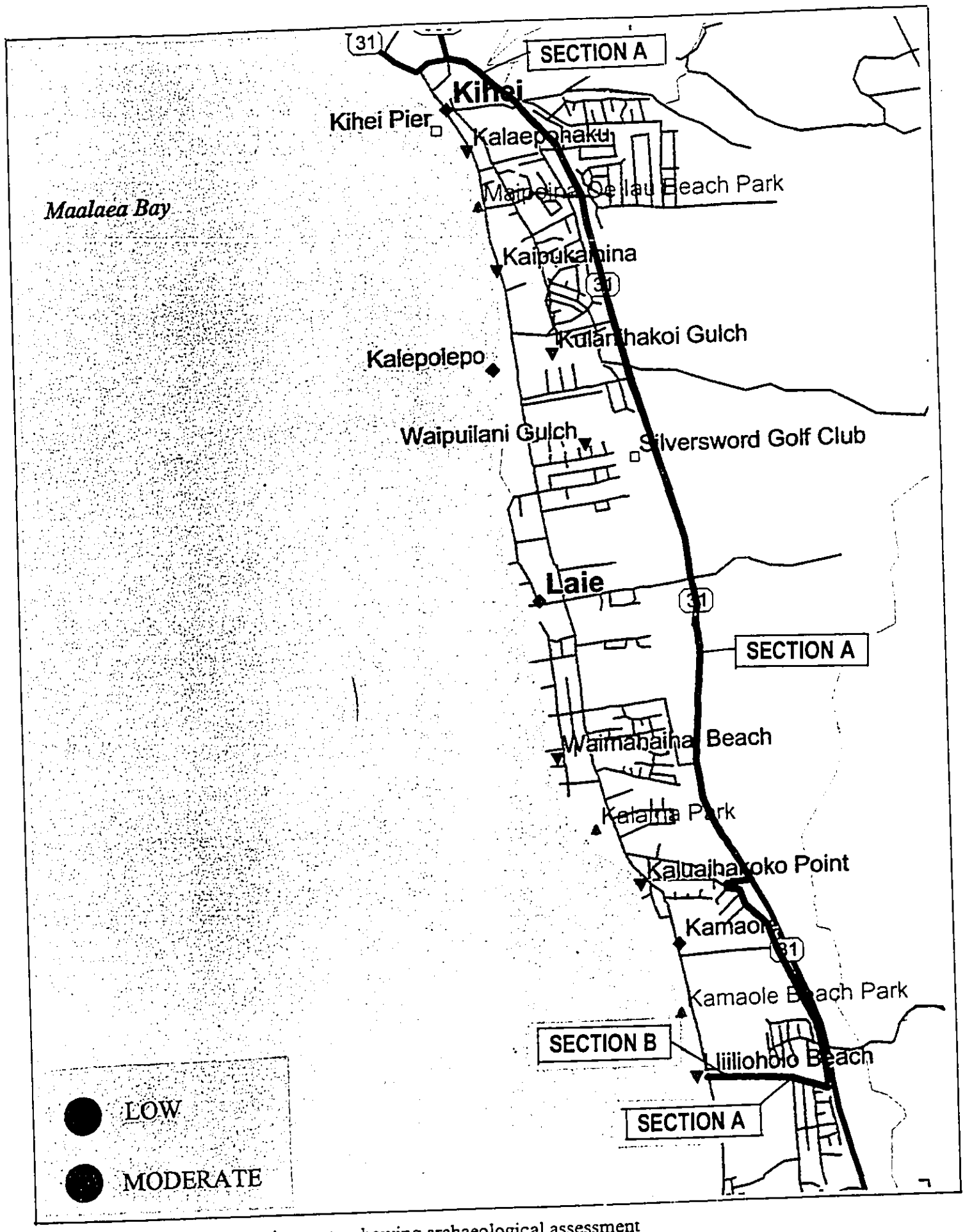

Figure 2 Alternative route, showing archaeological assessment

Additionally, during the field inspection for the Maui island-wide assessment, it was observed that Pi`ilani Highway is a relatively modern construction with wide, well-maintained shoulders. The highway, for the most part, is cut and fill style of construction, with the *mauka* or upslope side being cut into slope, and the *makai* or downslope side being built up to create the roughly level surface of the highway. Also, the highway construction includes major channelized drainages and other smaller culverts.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section A.

Section B **Keonekai Road from the intersection with Kauhale Street to the intersection with South Kīhei Road – MODERATE POTENTIAL**

As noted above, this portion of the alternative route runs over sand deposits. While, based on the archaeological studies in the immediate vicinity of Section B, there do not appear to have been any subsurface cultural material previously encountered in the area, sand and sandy soils have been shown to contain cultural deposits – including burials. Based on this factor, the potential to encounter historic properties is assessed as moderate in Section B.

IV. Recommendations

The following recommendations are made for the two sections comprising the alternative route:

Section A **Pi`ilani Highway south from the Mokulele Highway intersection to Kanani Road; then onto Kanani Road, Auhana Road and Kanakanui Road, continuing south on Kanakanui Road to the intersection with Keonekai Road; then *makai* onto Keonekai Road to the intersection with Kauhale Street – LOW POTENTIAL**

Based on the low potential for subsurface deposits, no further archaeological work is recommended in Section A.

Section B **Keonekai Road from the intersection with Kauhale Street to the intersection with South Kīhei Road – MODERATE POTENTIAL**

Section B is recommended for a monitoring program with on-call monitoring. Spot checking or on-call monitoring with a cultural monitor are other options.

We suggest that consultation with the archaeology and burial staffs of the State Historic Preservation Division and the Maui/Lana`i Islands Burial Council be conducted during the project's design phase when more design details and construction methods are developed. Such consultation efforts would be intended to develop appropriate mitigative measures needed to address potential impacts on historic resources.

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Appendix A-3

Archaeological Assessment of the Proposed Sandwich Isles Communication Fiberoptic Cable Project Within Approximately 37 Miles (59.7 Kilometers) of Road Corridor on the Island of Molokai

ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED SANDWICH ISLES COMMUNICATION FIBEROPTIC CABLE PROJECT WITHIN APPROXIMATELY 37 MILES (59.7 KILOMETERS) OF ROAD CORRIDOR ON THE ISLAND OF MOLOKA`I

by

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Prepared for

SSFM INTERNATIONAL, INC.

CULTURAL SURVEYS HAWAI`I, INC.
January 2001

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I. INTRODUCTION

A. Project Background

Cultural Surveys Hawai`i, Inc. has completed an archaeological assessment of approximately 37 miles (59.7 kilometers) of road corridor on the island of Moloka`i. These road corridors are proposed for the installation of a telecommunications cable system connecting Department of Hawaiian Home Lands (DHHL) properties on Moloka`i (Figure 1). The line is to be installed entirely within state Department of Transportation right-of-way consisting of existing road pavements or shoulders at an average depth of three feet, typically in the *mauka* shoulder.

The objective of this assessment is to identify areas within the corridors that have potential for subsurface historic properties — including human burials and cultural deposits — which may be encountered during installation of the proposed cable system. The assessment is thus presented for preliminary planning purposes only. Final assessment of the levels of archaeological concern within the project area is the purview of the State Historic Preservation Division which determines necessary mitigation measures prior to and during construction activities.

B. Project Area Description

For the purposes of this report, the study route on Moloka`i may be described as comprising a northern section and a southern section. The northern route includes the entire length of Farrington Avenue from Hoolehua east to the avenue's junction with Kalae Highway (470). The route then runs northeast on Kalae Highway and terminates at Palaau State Park above Kalaupapa. The southern route extends off Farrington Avenue south on Puupeelua Avenue to the junction with Maunaloa Highway (460). A branch of the route extends off Puupeelua Avenue on Moomomi Avenue west to the intersection with Nenehanaupo Avenue, then south on Nenehanaupo Avenue to the intersection with Keonelele Avenue, then west on Keonelele Avenue to the intersection with Airport Loop. The main portion of the southern route runs southeast on Maunaloa Highway — across the intersection with Kalae Highway — to Kaunakakai Place, then on Kamehameha V Highway (450) to the end of the route at Ualapue.

C. Methodology

The following resources and activities were employed to identify areas of archaeological concern within the study route:

1) Inspection of soil surveys for presence of soils and sands — under or immediately adjacent to the study route — which, based on past experience, are more likely to contain cultural deposits.

2) Inspection of tax maps and historic maps showing presence of Land Commission Award (LCA) parcels within or adjacent to the study route.

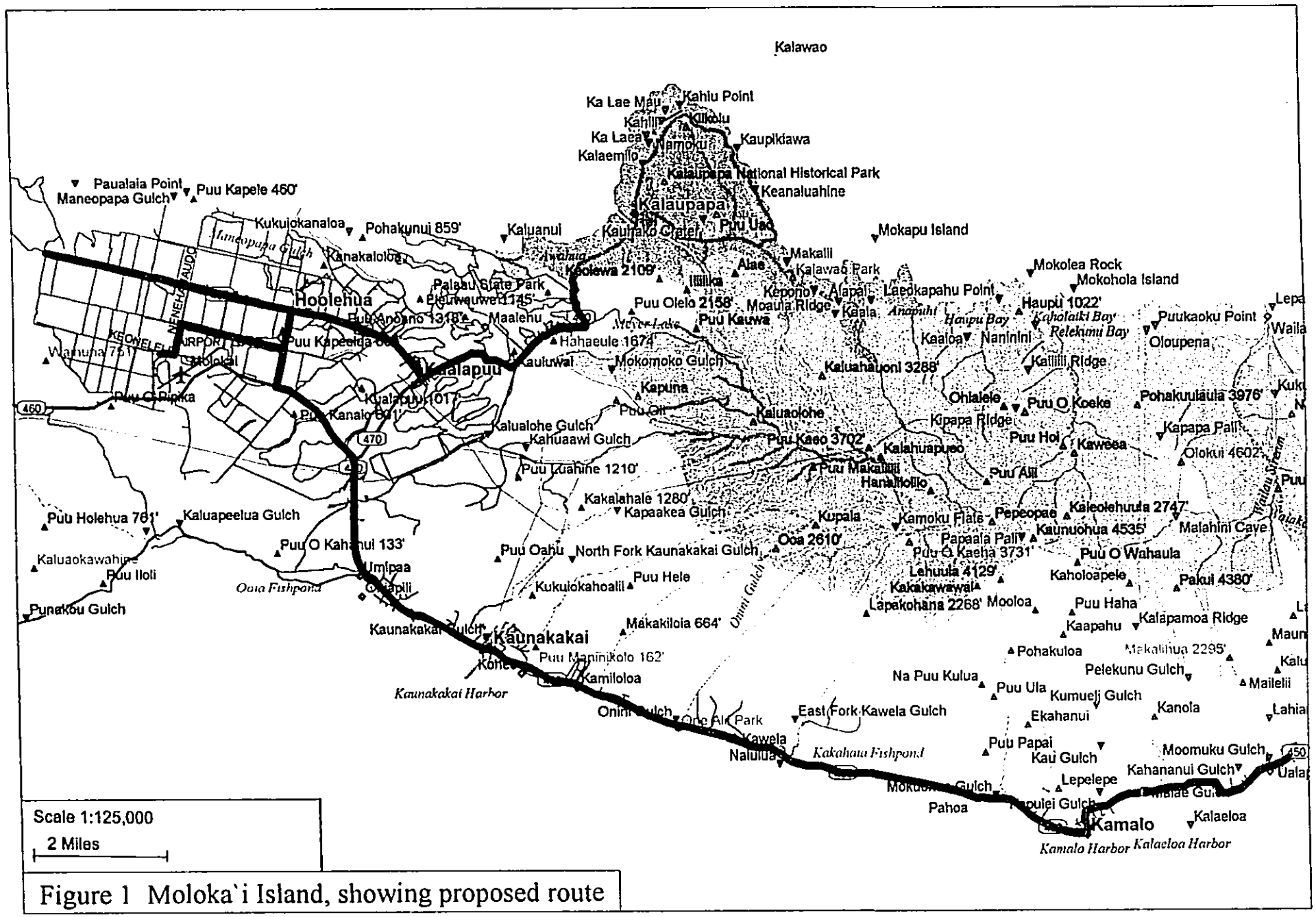


Figure 1 Moloka`i Island, showing proposed route

Toward the mid-19th century, the Organic Acts of 1845 and 1846 initiated the process of the *Māhele* — the division of Hawaiian lands — which introduced private property into Hawaiian society. In 1848 the crown, the Hawaiian government, and the *ali`i* (royalty) received their land titles. *Kuleana* awards for individual parcels within the *ahupua`a* were subsequently granted in 1850. These Land Commission Awards (LCAs) were presented to tenants — native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners — who could prove occupancy on the parcels before 1845.

Maps and other documents associated with these awards may give clues to settlement areas within and nearby the study route in the mid-1850s. These areas may represent, in turn, traditional Hawaiian settlement areas.

3) Review of Geographic Information System (GIS) data and archaeological reports at the State Historic Preservation Division. The GIS data and archaeological reports may give specific information on the location and distribution of previously-recorded surface sites within or near the study route which may be associated with subsurface cultural properties. Additionally, archaeological reports may present results of subsurface testing in proximity to the study route.

4) Field inspection of the entire study route. The primary purpose of the field inspection is to evaluate the relationship of the study route to possible subsurface properties. Areas of anomalous sand deposits are examined to consider their potential for significant subsurface cultural deposits. Also noted are areas of fill and/or road cut in which the alignment has been brought significantly above grade. In many areas of potential archaeological sensitivity, the nature of the road bed — either graded or filled — effectively eliminates archaeological concern, given the shallow penetration of the proposed trenching.

   Areas adjacent to streams and wetlands are examined for possible archaeological potential. These areas, although often undocumented in archaeological literature, are more likely to have been foci of human endeavor. The field inspection also examines urban areas which have the potential for historic deposits over fifty years old.

5) Consultation with staff of the State Historic Preservation Division (SHPD). Resources and expertise of the SHPD will be utilized. However, all evaluations and findings of the assessment report are those of Cultural Surveys Hawai`i, and should not be interpreted as reflecting those of the SHPD.

6) Cultural Surveys Hawai`i staff's past experience of and familiarity with archaeological resources along the study route.

7) Consideration of any known community issues regarding culturally sensitive portions of the study route. Community groups in areas throughout the Hawaiian Islands have voiced concern for cultural resources in specific areas which may have to be addressed during the course of the present project.

This report presents the results of the research conducted by Cultural Surveys Hawai'i, Inc. Section II summarizes findings on soils, Land Commission Awards, and previous archaeological data in the immediate vicinity of the study route. These three research components are the primary basis for determining potential for encountering further subsurface historical properties along the route. Section III presents Cultural Surveys Hawai'i's assessment of archaeological potential for all portions of the route. Finally, based on the background research and the route assessment, Section IV offers recommendations for further archaeological mitigation.

II. SOIL, LAND COMMISSION AWARD AND ARCHAEOLOGICAL DATA

Three research components — soils, Land Commission Awards, and previous archaeological research — are the primary indicators of possible archaeological potential within the study route. Results of the examination of these components are presented below.

Soils

Sand deposits associated with the proposed fiberoptic cable route on Moloka`i consist of isolated pockets strung out along the southern coast. According to soils maps, these sand deposits are limited to Jaucus Sands and soils from the Pulehu Series (Foote *et. al*, 1972).

Heading from west to east along the proposed route, the first sand deposit is a pocket of Jaucus Sands (JaC) located in the vicinity of Kamehameha Coconut Grove. Here, the Jaucus sands extend from the shoreline and across the proposed route. Jaucus Sands (JaC) are described as well drained calcareous soils developed from coral and seashells and found on coastal plains near the ocean (Foote *et. al*, 1972). Further east, isolated Jaucus sand deposits occur at Kaunakakai and Kamiloloa, however neither extend into the proposed route. A long thin Jaucus sand deposit appears again along the Kanoa Fishpond shore and continues along the coast. A portion of this sand deposit extends *mauka* of the proposed route at Kawela. Jaucus sands reappear at Kapukaulua near Kawia Fishpond and extend to Kanukuawa Fishpond, but are limited to areas *makai* of the proposed route. A small pocket of Jaucus sand underlies the proposed route just south of Pahiomu Fishpond.

From Kamalo to the end of the proposed route along Highway 450, the sandy soils in question belong to the Pulehu Series. The Pulehu Series is described as well-drained alluvial soils developed from igneous rock (Foote *et. al*, 1972). These soils include Pulehu sandy loam (PoB) and Pulehu stony sandy loam (PoaB). Just before Kamalo, a large Pulehu sandy loam deposit is present. Only a small portion of it underlies the proposed route. Another small isolated pocket of Pulehu sandy loam underlies the proposed route just past Kamalo. Less than 0.5 kilometer west, just before Malae Heiau, a deposit of Pulehu stony sandy loam underlies the proposed route. Finally, the proposed route intersects a portion of a larger Pulehu stony sandy loam deposit at Kukui Heiau near Ualapue. Figures 2 and 3 show the locations of these areas.

Land Commission Awards

Inspection of tax maps and historic maps indicated the presence of *kuleana* Land Commission Awards (LCAs) along the study route. In north Moloka`i, there are three *kuleana* along the proposed route. Two are situated along Kalae Highway (470) and one along Farrington Avenue (Figure 4).

Land Commission Awards were more heavily concentrated on the portion of the study route paralleling the southern coast of Moloka`i (Figure 5). LCAs were noted near

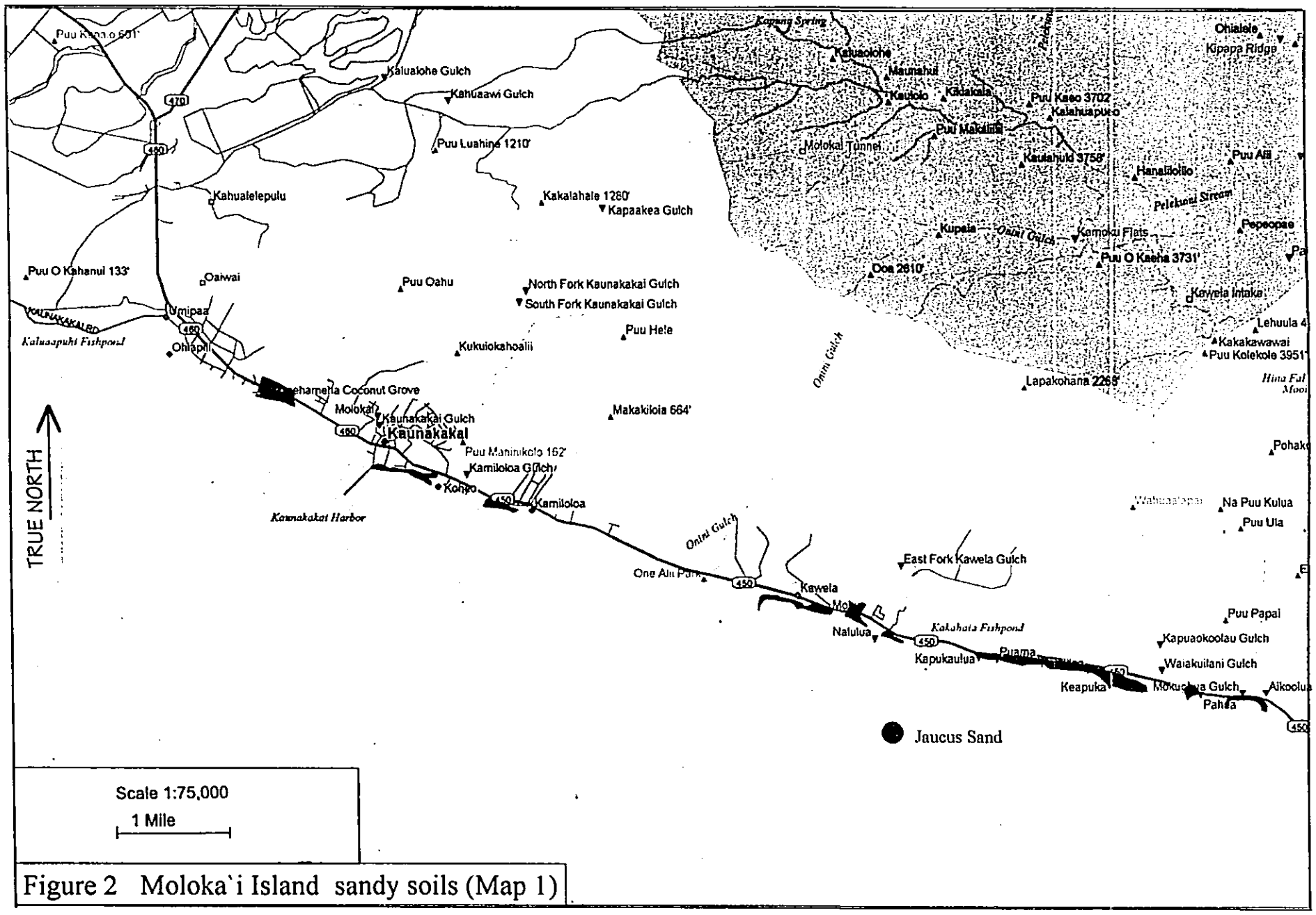


Figure 2 Moloka`i Island sandy soils (Map 1)

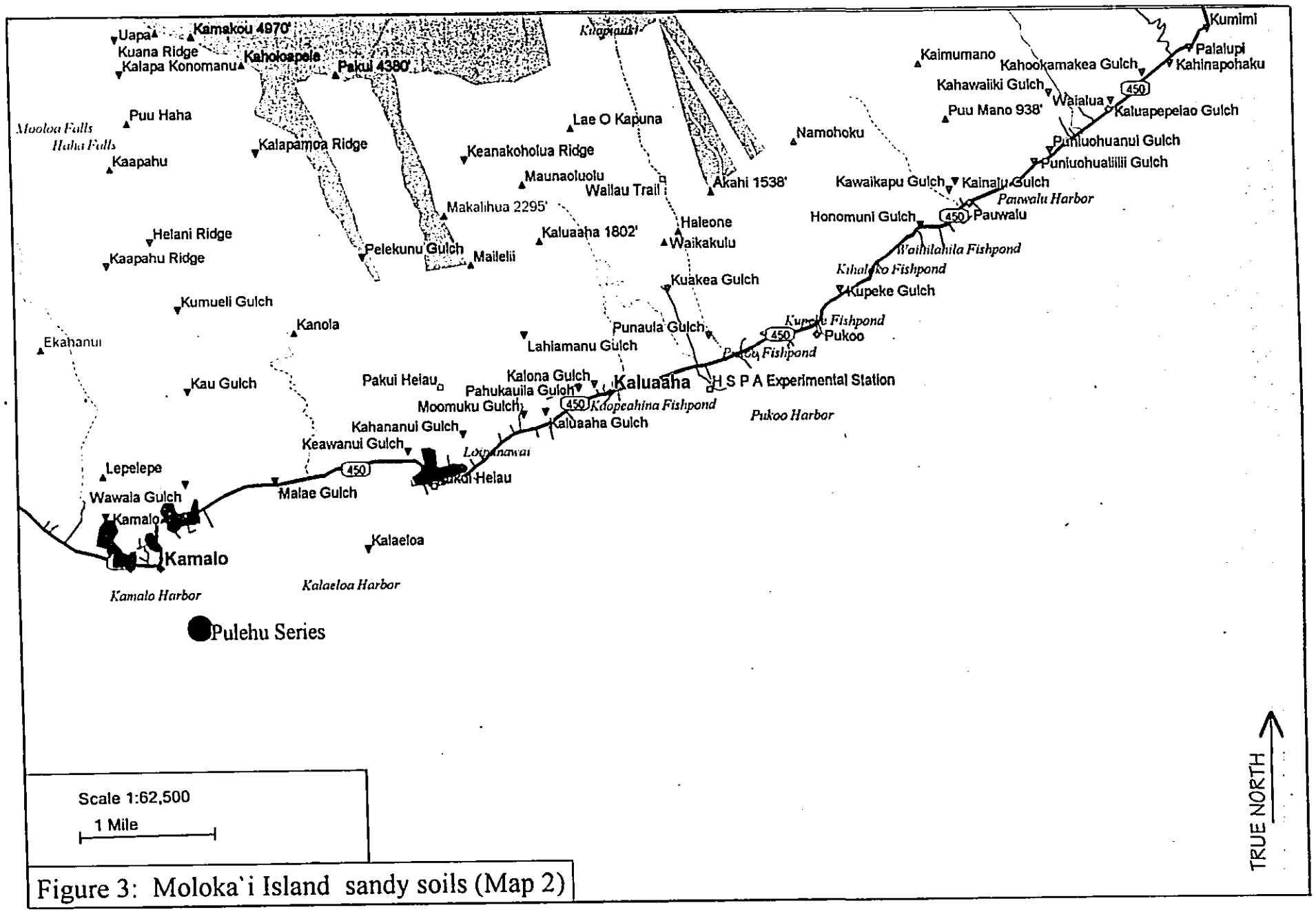
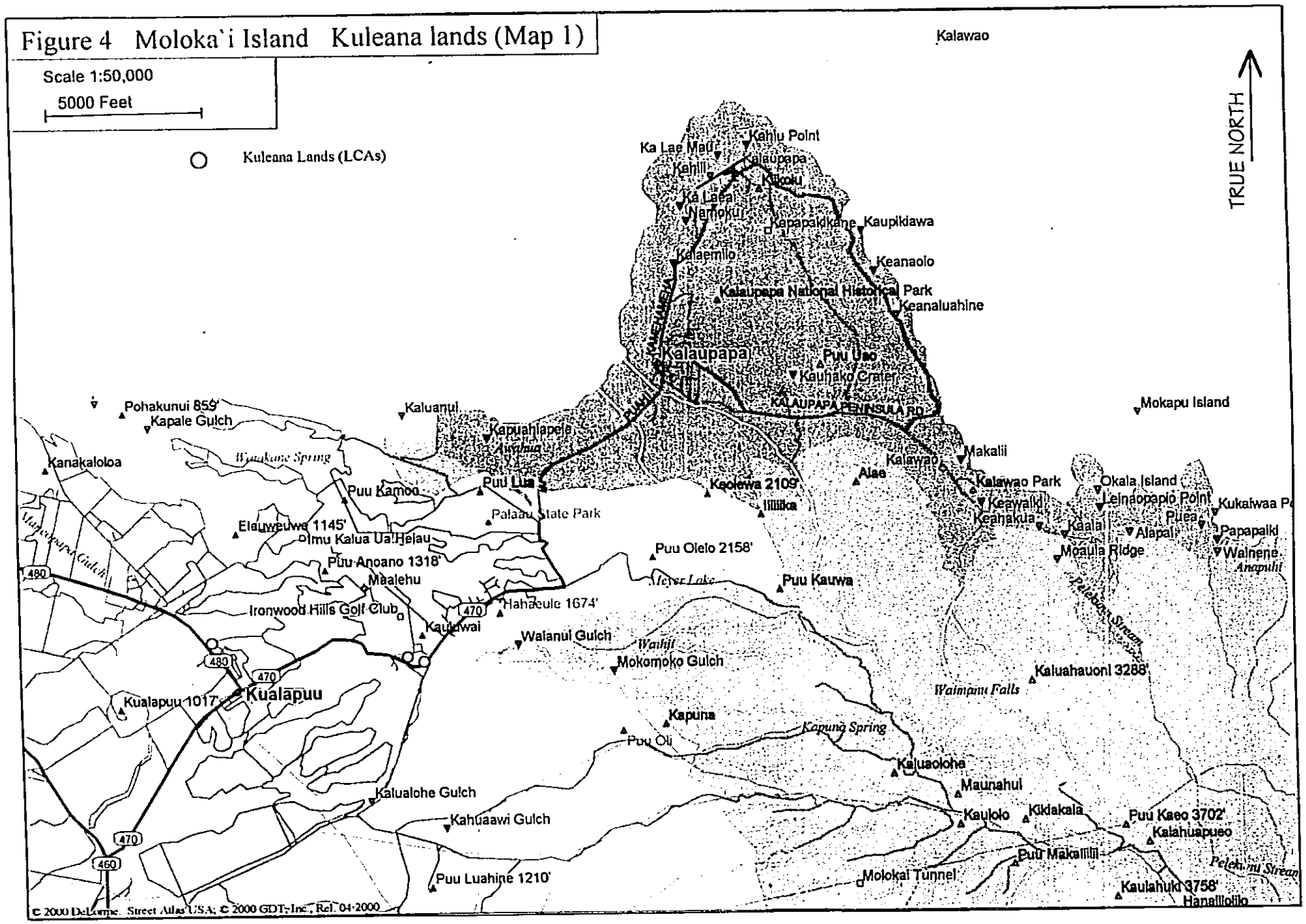


Figure 3: Moloka`i Island sandy soils (Map 2)

Figure 4 Moloka`i Island Kuleana lands (Map 1)



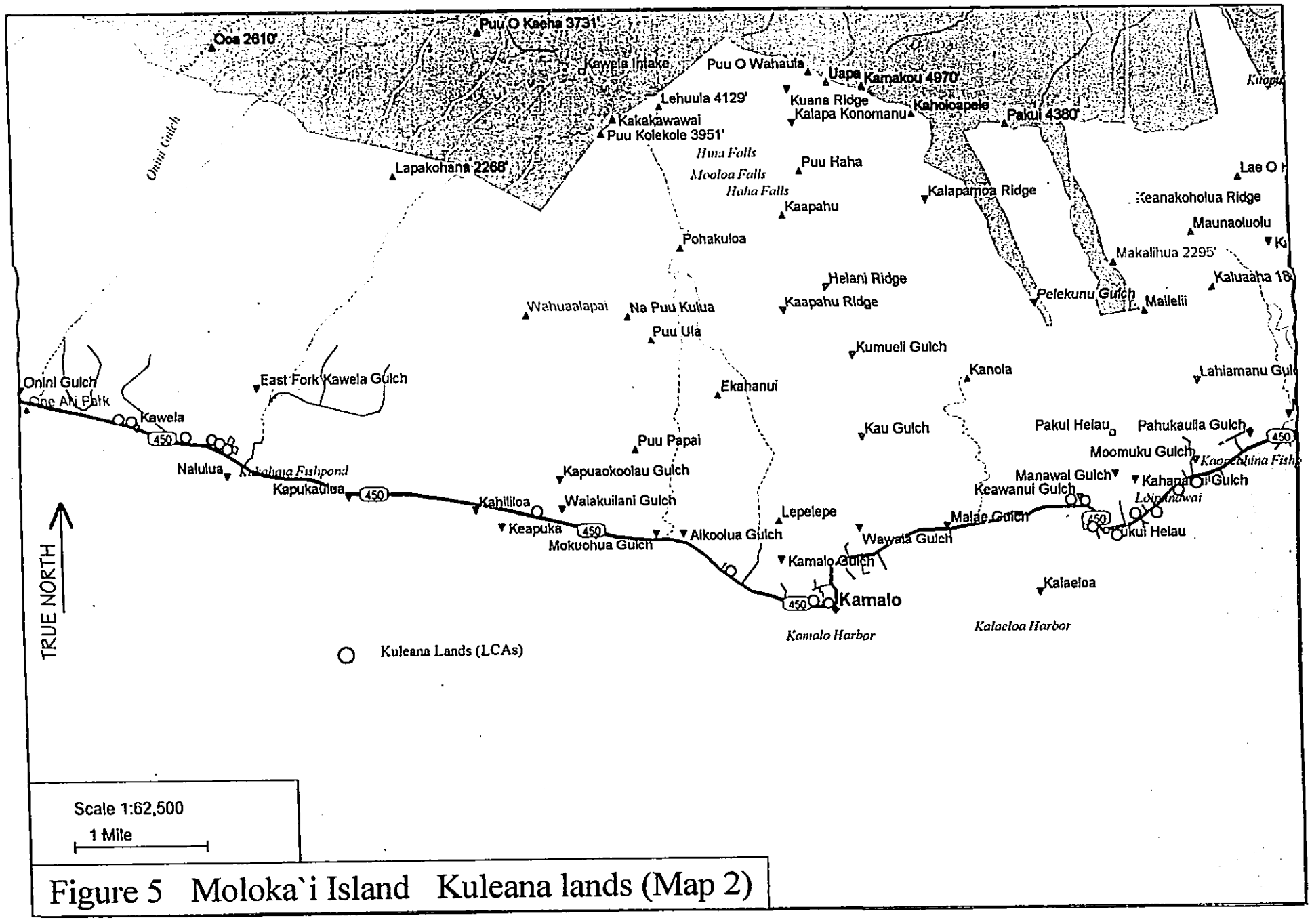


Figure 5 Moloka`i Island Kuleana lands (Map 2)

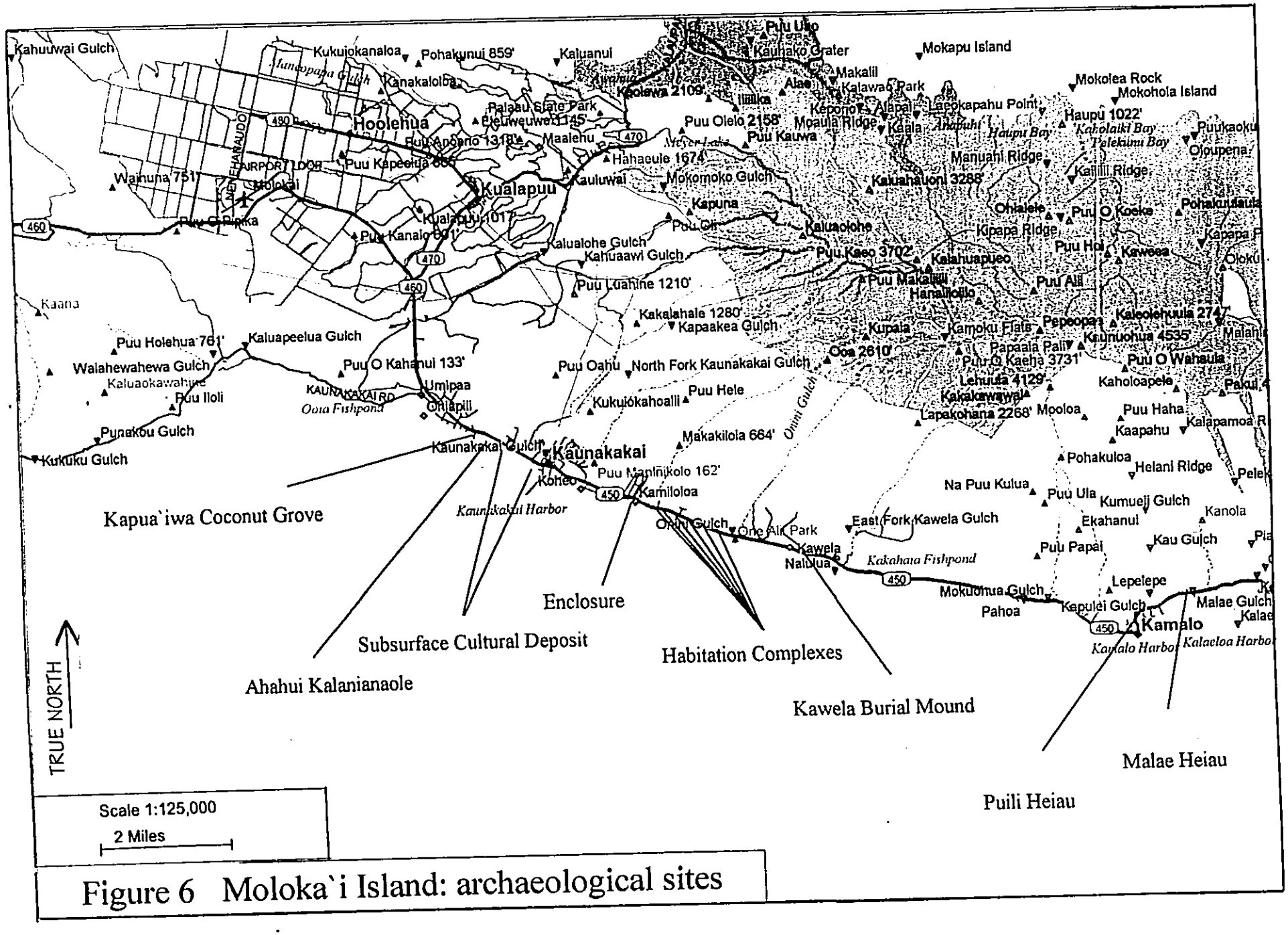


Figure 6 Moloka`i Island: archaeological sites

the route at Kawela and in the vicinity of Kukui Heiau between Kamalo and Kaluaaha. Other isolated *kuleana* are present near Keapuka east of Mokuohua Gulch and east of Kamalo Gulch with multiple LCAs occurring at Kamalo.

Archaeological Sites

According to GIS files at the State Historic Preservation Division, fourteen archaeological sites have been recorded in the vicinity of the proposed route. All of these sites are along Moloka`i's southern shore (see Figure 6 above).

III. ASSESSMENT AND DISCUSSION

Based on the research procedures detailed in sections I and II above, all portions of the study route were evaluated according to a scale representing four levels of potential for yielding subsurface archaeological resources. The four levels are:

LOW	Low potential for subsurface deposits. This assessment is based on historic and archaeological data, soil survey data, and the absence of Land Commission Award parcels in the vicinity.
MODERATE	Area of known cultural activity but, based on other factors, probability of encountering archaeological resources is only moderate. Other factors include information in the soil survey and the history of ground disturbance in the area.
HIGH	Area contains sand and/or Land Commission Awards. Also present are historic properties, based on historic and archaeological data.
VERY HIGH	Area contains known burials or cultural layers.

Figure 7 presents the archaeological assessment of the study route on Moloka`i Island. The route has been subdivided into six sections based on the four categories of archaeological potential. (None of the six sections were designated "very high" potential.) Each section of the route is discussed briefly below:

Section 1 Farrington Avenue from its western end in Hoolehua to the intersection with Moomomi Avenue — LOW POTENTIAL

Section 1 onFarrington Avenue runs through what was originally pineapple fields. No Land Commission Awards (LCAs) were recorded along this section. Additionally, underlying the road are none of the types of soils that are likely to contain historic or prehistoric materials. Farrington Avenue is a relatively new construction that would have obliterated any surface material.

Due to the long-term commercial agricultural disturbance in the area and the lack of LCAs and sandy soils, the potential to impact cultural properties is low for this section.

Section 2 Farrington Avenue between Moomomi Avenue and the intersection with Kalae Highway (470) — MODERATE POTENTIAL

Section 2 on Farrington Avenue runs through the historic town of Kualapuu, probably a 1920s community related to the pineapple industry. There is a possibility that historic-era trash pits or other such subsurface features related to the construction and

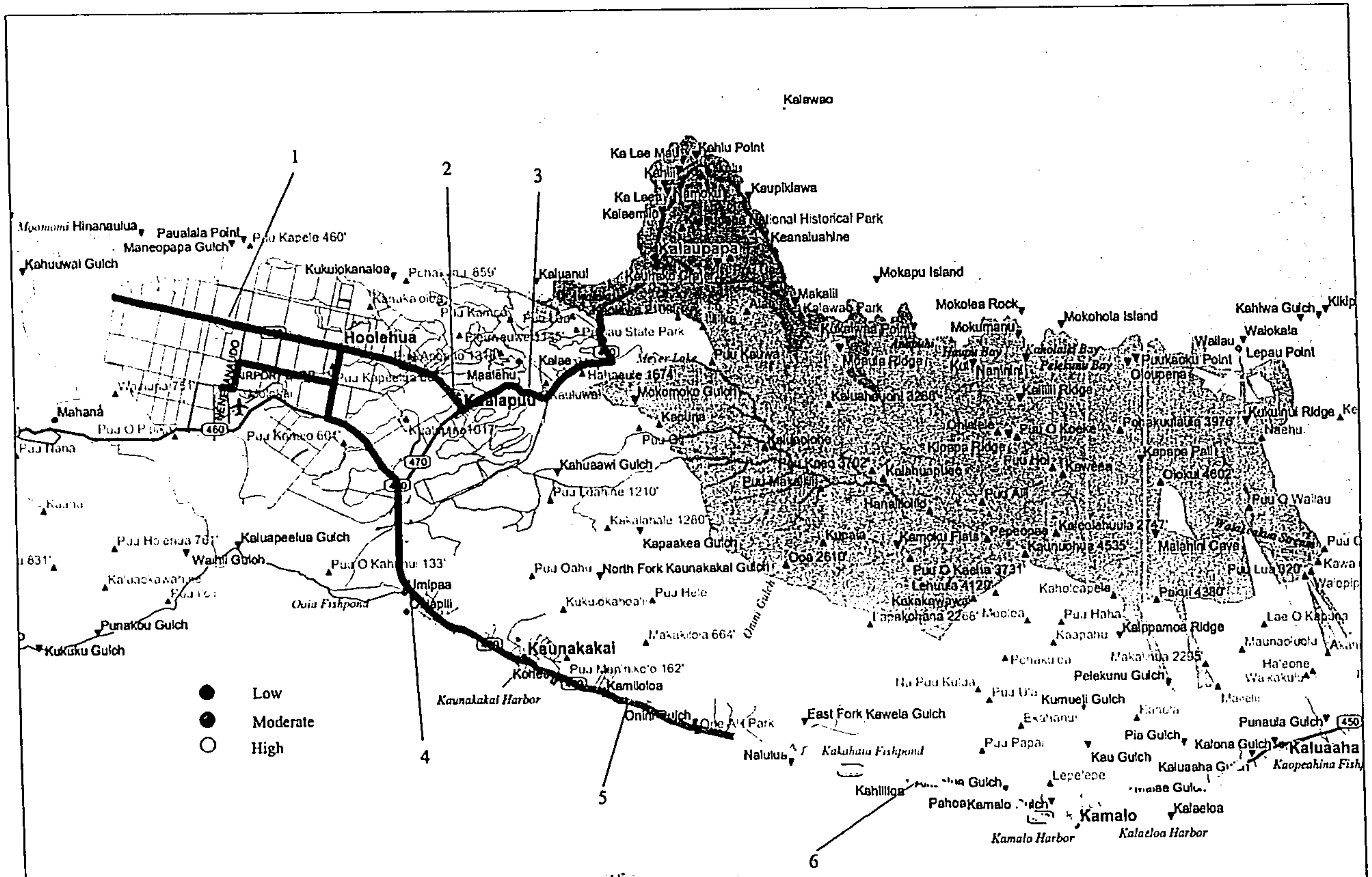


Figure 7 Moloka'i Island showing color-coded sections (*Scale: 1in.=2.4miles*)

settlement of Kualapuu town may be present beneath the road surface. Additionally, one Land Commission Award (LCA) was recorded just northeast of this section.

Due to the possibility of intact historic-era subsurface deposits, the potential to impact cultural properties is assessed as moderate for Section 2.

Section 3 Kalae Highway (470) from the intersection with Farrington Avenue northeast to the corridor terminus at Palaau State Park above Kalaupapa — LOW POTENTIAL

There are two areas along Section 3 on Kalae Highway where Land Commission Awards (LCAs) were recorded. However, the highway itself is a relatively new construction that includes major road cuts in the area of Kauluwai, reducing the possibility that intact cultural layers are present. Towards the Kalae area, the highway runs through land where the first attempt at sugarcane cultivation was made by the Meyer family. This activity would have resulted in major ground disturbance, even before the highway's construction.

Due to the significant mechanical alteration of the ground surface engendered by the construction of Kalae Highway and the past history of commercial agriculture in a portion of route, the potential to impact cultural properties is assessed as low for this section.

Section 4 From Farrington Avenue, south on Puupeelua Avenue to the junction with Maunaloa Highway (460), then southeast on Maunaloa Highway — across the intersection with Kalae Highway — to Kapuaiwa Street. A branch of Section 4 extends off Puupeelua Avenue on Moomomi Avenue west to the intersection with Nenehanaupo Avenue, then south on Nenehanaupo Avenue to the intersection with Keonelele Avenue, then west on Keonelele Avenue to the intersection with Airport Loop — LOW POTENTIAL

No Land Commission Awards (LCAs) were recorded and no sandy soils are present along Section 4 of the study route. Additionally, the portion of Section 4 between Farrington Highway and the intersection with Kalae Highway runs through former pineapple fields that had undergone decades-long disturbance by cultivation activities.

The portion of Section 4 running southeast from the intersection with Kalae Highway runs through gulches traversed by bridges and is a fairly new, major highway. There are significant road cuts and road fill in this portion.

Due to the former long-term commercial agricultural disturbance in northwest portion of Section 4 and the significant mechanical alteration of the ground surface engendered by the construction of Maunaloa Highway in the southeast portion, the potential to impact cultural properties is assessed as low for this section.

Section 5 Maunaloa Highway (460) along the Kamehameha Coconut Grove to Kaunakakai Place, then on Kamehameha V Highway (450) from Kaunakakai Place to the west side of Kanoa Fishpond — MODERATE POTENTIAL

Section 5 runs through areas underlain by sandy soils. Additionally, archaeological sites have been recorded in the vicinity.

In this section, Maunaloa Highway runs along the Kamehameha Coconut Grove, an historic site, which is in a zone with sandy soils. There are also known springs in the vicinity. Burials have been encountered *mauka* of the highway. However, these were not subsurface interments but were interments within stone structures.

In the area of Kaunakakai Town, there are known subsurface deposits, *makai* of the highway, especially in the vicinity of the Kaunakakai Pier. These deposits include both historic and prehistoric cultural layers.

East of Kaunakakai, Section 5 runs through the interface of the *mauka* terrestrial soils and the *makai* sand deposits. Archaeological studies in proximity to Section 5 have recorded habitation complexes past Kamiloloa Gulch.

Much of the route in Section 5 is a low berm. Where there are low spots, the cut and fill has been pushed to make a consistent berm except where ridges have been cut to the road level. Thus, for much of the section, the road is immediately underlain by berm-fill material.

Based on the presence of sandy soils and the previously recorded archaeological sites, and the road construction technique in this section, the potential to impact cultural properties in assessed as moderate for Section 5.

Section 6 Kamehameha V Highway (450) from the west side of Kanoa Fishpond to the terminus of the corridor at Ualapue — HIGH POTENTIAL

Section 6 of the study route runs through areas underlain by sandy soils. Also, multiple Land Commission Awards (LCAs) were recorded in the near vicinity.

An archaeological site, the Kawela Mound, is in close proximity to Section 6. The mound was found to contain material related to Hawaiian habitation and human burials.

There are numerous historic fishponds just *makai* of Section 6, indicating long-term human activity in the area Additionally, Kakahaia fishpond — *mauka* of Kamehameha V — indicates the presence of a berm, natural or man-made, between the pond and the ocean. This berm — over which the highway runs — may contain subsurface cultural material.

Due to the presence of sandy soils, Land Commission Awards (LCAs), fishponds and recorded archaeological sites (including human burials), the potential to impact cultural properties is assessed as high for this section.

IV. RECOMMENDATIONS

As detailed above, the 36-mile study route on Moloka`i Island has been divided into 6 sections. Each section was assigned one of four levels of potential — low, moderate, high, or very high — for presence of subsurface historic properties. (None of the sections was designated "very high".) The following recommendations are suggested for each level:

LOW

Based on the low potential for subsurface deposits, no further archaeological work is recommended in the following sections of the study route:

Section 1 — Farrington Avenue from its western end in Hoolehua to the intersection with Moomomi Avenue

Section 3 — Kalae Highway (470) from the intersection with Farrington Avenue *northeast to the corridor terminus* at Palaau State Park above Kalaupapa

Section 4 — From Farrington Avenue, south on Puupeelua Avenue to the junction with Maunaloa Highway (460), then southeast on Maunaloa Highway — across the intersection with Kalae Highway — to Kapuaiwa Street. A branch of Section 4 extends off Puupeelua Avenue on Moomomi Avenue west to the intersection with Nenehanaupo Avenue, then south on Nenehanaupo Avenue to the intersection with Keonelele Avenue, then west on Keonelele Avenue to the intersection with Airport Loop

MODERATE

Areas deemed of moderate potential for encountering archaeological resources are recommended for a monitoring program with on-call monitoring. Spot checking or on-call monitoring with a cultural monitor are other options. Sections of the route where this recommendation is applicable are:

Section 2 — Farrington Avenue between Moomomi Avenue and the intersection with the Kalae Highway

Section 5 — Maunaloa Highway (460) along the Kamehameha Coconut Grove to Kaunakakai Place, then Kamehameha V Highway (450) from Kaunakakai Place to the west side of Kanoa Fishpond

HIGH

Areas deemed of high potential for encountering archaeological resources — based on presence of sand, Land Commission Awards, or historic properties — are recommended

for a monitoring program with continual on-site monitoring. The section of the route where this recommendation is applicable is:

Section 6	Kamehameha V Highway (450) from the west side of Kanoa Fishpond to the terminus of the corridor at Ualapue

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Appendix A-4

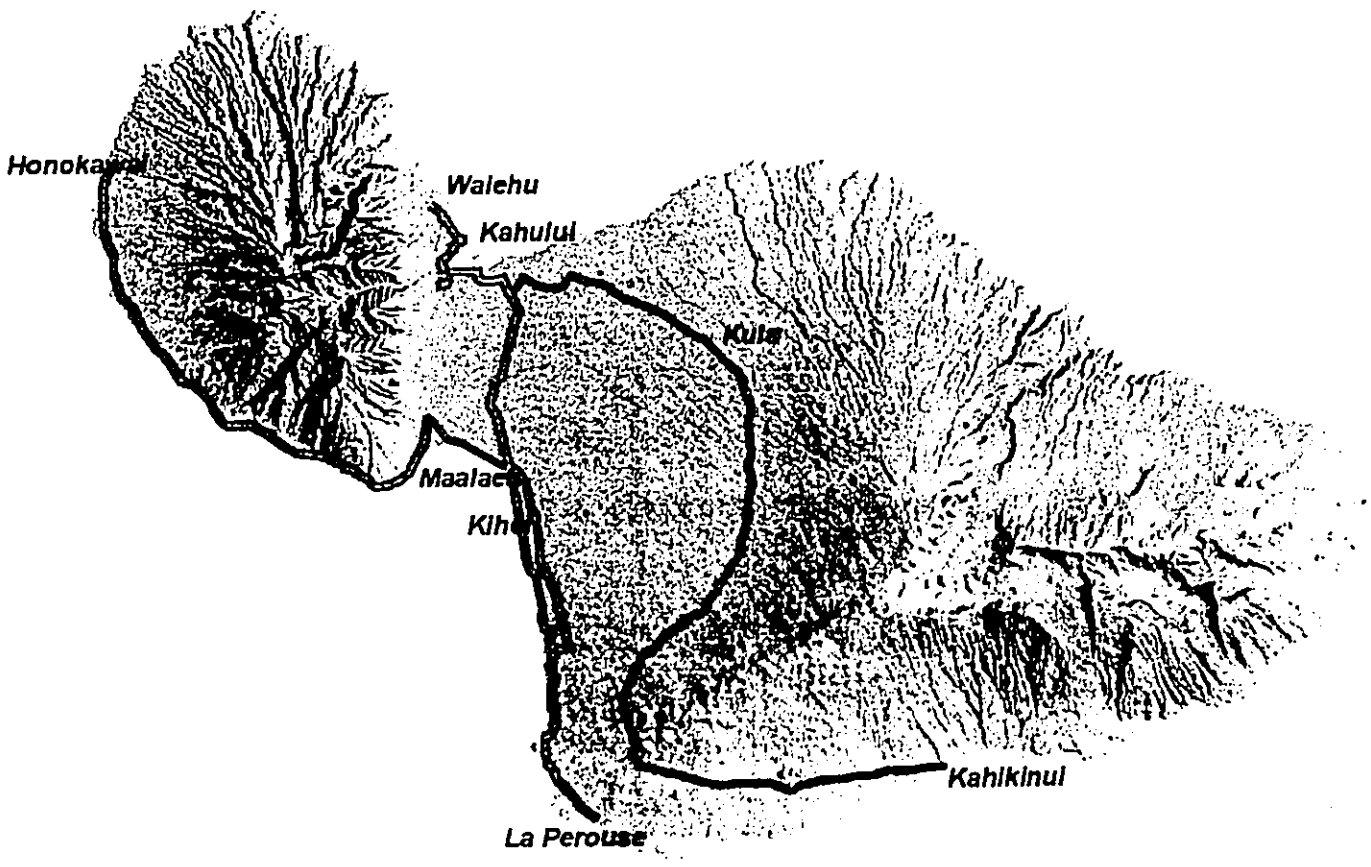
Addendum Archaeological Work

Appendix A-4-a

Addendum Archaeological Assessment

Addendum Archaeological Assessment:
Summary of Sensitivity and Monitoring Plan
Sandwich Isles Communication System Project
Maui Island Component

July 2001



Aki Sinoto Consulting
&
Archaeological Services of Hawaii

ASC017-1

ADDENDUM ARCHAEOLOGICAL ASSESSMENT: SUMMARY OF SENSITIVITY AND MONITORING PLAN SANDWICH ISLES COMMUNICATION SYSTEM PROJECT MAUI ISLAND COMPONENT

by

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ABSTRACT

At the request of SSFM International of Honolulu, representing the developer, Sandwich Isles Communications, Inc.; Archaeological Services Hawaii, LLC of Wailuku and Aki Sinoto Consulting of Honolulu undertook amendment archaeological assessment procedures in conjunction with the Rural Fiber Optics Cable Project being proposed on Maui Island by SIC. This project will link Department of Hawaiian Home Lands properties in Waiehu, Wailuku, Kula, Kahikinui, Puunene, Kihei, Cape Kinau (La Perouse Bay), Maalaea, and Honokowai through the installation of approximately 96-miles of underground fiber-optic duct-lines.

An archaeological assessment was completed earlier this year by Cultural Surveys Hawaii, Inc. (Hammatt 2001). The current amendment assessment seeks to supplement this initial effort primarily through the compilation, syntheses, and applied interpretation of further updated archaeological sites data and other pertinent background information. The three-fold objective of the current phase of work encompassed; 1) enhancing the predictability of subsurface remains within the project corridor, 2) identifying the significance levels of specific segments of the cable route, and 3) formulating appropriate monitoring strategies for specified segments along the route to minimize potential impact on significant subsurface cultural properties.

These objectives were successfully addressed with the completion of various data compilation, assessment, and interpretation procedures that culminated in the establishment of further refined sensitivity ratings for specific segments within each of the six phases of the project corridor. A monitoring plan which includes specific scope items to be implemented during monitoring of areas with each of the three sensitivity ratings.

A separate appendix was prepared, which includes detailed maps of portions of each route in which contains previously recorded archaeological sites.

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INTRODUCTION

At the request of SSFM International of Honolulu, representing the developer, Sandwich Isles Communications, Inc. (SIC); Archaeological Services Hawaii, LLC (ASH) of Wailuku and Aki Sinoto Consulting (ASC) of Honolulu undertook amendment archaeological assessment procedures in conjunction with the proposed SIC Rural Fiber Optics Cable Project for Maui Island. This project will provide telecommunication services through the installation of approximately 96 miles of underground fiber-optic duct-lines within existing State and County right-of-ways on the island of Maui. The proposed route; subdivided into six phases; links DHHL lands in Waiehu, Wailuku, Kula, Kahikinui, Puunene, Kihei, La Perouse Bay, Maalaea, and Honokowai.

Amendment assessment procedures have commenced for two alternate route segments along Market Street in Wailuku and the Piilani Highway in Kihei. The alternate routes were suggested by the Maui County Department of Public Works and Waste Management as well as by members of the Maui/Lana'i Island Burial Council in order to avoid increased traffic congestion and to minimize potential adverse impacts on human burial remains. The assessment procedures for these alternate route segments have not been completed.

PROJECT AREA

The proposed route of the fiber-optic cable, which traverses major portions of Maui Island across multiple districts and *ahupua`a*, is subdivided into the following six phases:

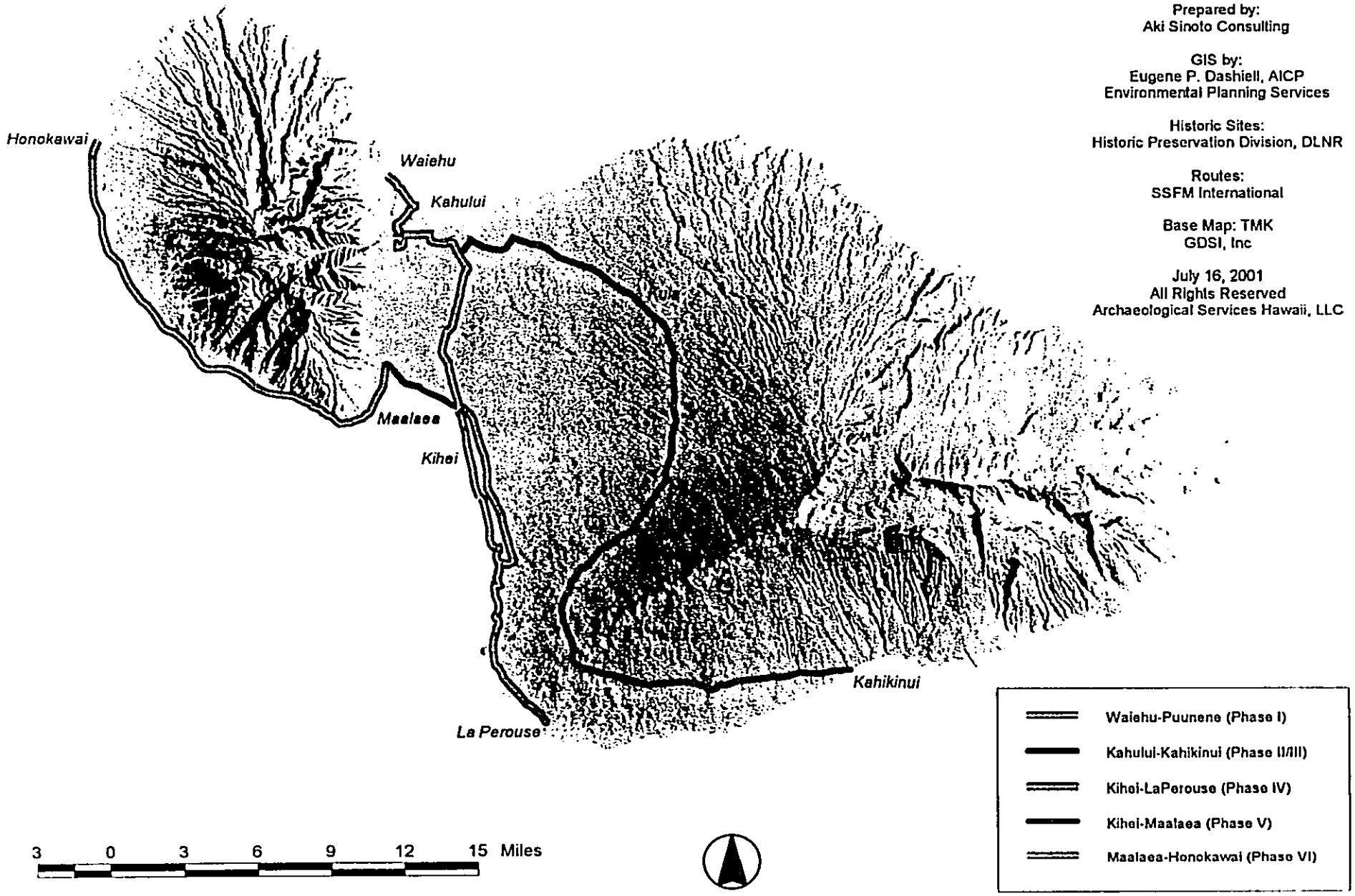
1. Phase I: Waiehu to Puunene,
2. Phase II/III: Kahului to Kahikinui,
3. Phase IV: Kihei to Cape Kinau (La Perouse Bay),
4. Phase V: Kihei to Maalaea, and
5. Phase VI: Maalaea to Honokowai.

Detailed descriptions regarding roadway segments in each phase are presented in a following section of this report as well as in the main Environmental Assessment (EA) document. **Map 1** depicts the alignment of each phase.

OBJECTIVES OF THE CURRENT AMENDMENT ASSESSMENT

An archaeological assessment (Hammatt 2001) was completed earlier this year by Cultural Surveys Hawaii, Inc. (CSH). The current amendment assessment seeks to supplement this initial effort primarily through the compilation of further updated archaeological site and other pertinent background information with a three-fold objective of; 1) enhancing the predictability of

Figure 1. **Location of Project Corridors**



Proposed
Sandwich Isles Communication
Fiber Optic Cable Project

Prepared by:
Aki Sinoto Consulting

GIS by:
Eugene P. Dashiell, AICP
Environmental Planning Services

Historic Sites:
Historic Preservation Division, DLNR

Routes:
SSFM International

Base Map: TMK
GDSI, Inc

July 16, 2001

Archaeological Services Hawaii, LLC

subsurface remains, 2) identifying the significance levels for specific segments of the cable route, and 3) formulating appropriate monitoring strategies for specified segments along the route.

A large body of compiled data was filtered through the imposition of a 400-foot buffer (200 feet on either side of the centerline) along the selected roadways, and the resulting core of data was examined and used to establish archaeological sensitivity ratings for specific segments within each phase of the route. Sensitivity ratings of high, moderate, and low were established and appropriate monitoring scopes and methods were formulated for each rating.

The following supplemental goals were addressed to augment the CSH report:

1. Add to archaeological site database – new data not yet included in to the State Historic Preservation Division (SHPD) database,
2. Improve the historic land tenure data,
3. Improve the locational data and visual presentation for *currently* available archaeological sites in the project corridor,
4. Refine the corridor site location maps,
5. Refine the criteria for developing the sensitivity assessment ratings, and
6. Filter the large body of compiled data into only those pertinent to the current project.

METHODS

Background research for archaeological literature was conducted at the SHPD Libraries in the Wailuku and Kapolei Offices. Historic land-use maps and documents were researched at the Survey Office of the State Department of Accounting and General Services and the Bureau of Conveyances of the State Department of Land and Natural Resources, both in Honolulu. GIS archaeological database files developed by the SHPD were electronically acquired. A digital Tax Map program for Maui County on CD-ROM was obtained from Geographic Decision Systems International, Inc. (GDSI). A surface assessment of the total cable route was undertaken and digital photographic recording of selected localities was performed.

The following tasks were undertaken to address the goals and objectives presented above:

1. Acquisition of SHPD database and augmentation with point data for archaeological sites in the project corridor compiled from recent reports not yet entered into the State database,

2. Retrieval of pertinent historic land-use data utilizing Land Commission Award records,

3. Application of ARCVIEW GIS program to produce accurately scaled project corridor and site location maps,

4. Production of large format (11" X 17") maps in color for final presentation,

5. Consideration of the nature and extent of known archaeological data supplemented by other pertinent data, such as soils and modern land-use information, to refine the criteria used for the determination of archaeological sensitivity assessments for specified segments along each phase of the cable route,

6. Establishment of a 400 ft. buffer corridor (200 ft. on either side of the roadway centerline) to filter the previously recorded sites to be used for the creation of enhanced site predictability models for each segment and phase of the cable route, and

7. Determination of appropriate scopes and methods of archaeological monitoring during cable duct-line installation for each of the sensitivity ratings.

This amendment report is presented in two parts; the main report which includes a summary of pertinent background information, sensitivity assessments, and the monitoring plan; and an appendix of detailed maps and tables showing the locations of currently available archaeological sites within each segment. The appendix will only be disseminated to selected readership, due to the sensitive nature of locational data for particular site types. The report follows the convention of numbering the segments within each phase in order from west to east or north to south.

HISTORIC LAND TENURE

Land Commission Award numbers were initially retrieved for parcels awarded within the 400-foot buffer of the project corridor through a review of tax maps for the project route. These numbers were then used to retrieve pertinent, native testimony, royal patent, and deed documents at the Bureau of Conveyances. Those LCA's that did not produce land-use information were noted, but not included in the final presentation, since they contributed no useful data towards site predictability. **Tables 1-5** present the LCA data for each phase in geographical order from west to east or north to south.

Phase I: Waiehu to Puunene

A total of 25 LCA's with known land-use were retrieved from Segment 1 of this phase. These consist of 6 from Waihee, 3 from Waiehu, and 16 from various *'ili* in Wailuku. A total of 5 *ali'i* lands are present, 1 each in Waihee and Waiehu and 3 in Wailuku. Three *po'alima*, or lands worked for the chief, 1 each in Waiehu, Waihee, and Wailuku are present. A total of 7 *lo'i* are indicated in Wailuku. Eight *kula* lands are indicated and other uses consist of 1 house, 1 wall, and 11 tracts of land smaller than *'ili*.

Table 1. Land Commission Awards within the Phase I Corridor

LOCALITY	LCA NO.	TMK	AWARDEE	LAND-USE
Waihee	3960	3-2-08:13	Napahoa	po`alima
Waihee	3481:1-3	3-2-08:13	Kihe	kula
Waihee	4405	3-2-08:13	Kahuana	kula
Waihee	780	3-2-08:13	Edmonds, W.	wall
Waihee	7713:24	3-2-08:13	Kamamalu, V.	ali`i lands
Waihee	5327:2	3-2-12:1,2	Pakaku	kula
Waiehu	3437	3-3-02:1	Kailiula	po`alima
Waiehu	8559-B20	3-3-02:1	Lunalilo, W.	ali`i lands
Waiehu	3441:2	3-3-01:1	Kapaula	kula
Wailuku	3464:1	3-4-44:18	Kamakaoolea	lo`i
Wailuku	7742:4	3-3-01:1	Kahale	po`alima
Pohakuuili	3222:1	-	Auimakalani	kula
"	3891	-	Paia	15 lo`i, kula
Auhaka	3500	3-4-30:	Kaina	22 lo`i
"	4386:1	"	Kaiole	13 lo`i, kula
"	4378	"	Kawaha	11 lo`i
Lamali`i	5334:1	-	Pupuka	3 pauku
Kalua	3498:2	3-4-20:	Kaupe	taro
"	2532:1	-	Kamakahanohano	13 lo`i, dry
"	3233:1	-	Hoaai	3 mo`o, 2 lo`i
"	7713:2,3	-	V. Kamamalu	ali`i lands
"	3235	-	Haleola	5 mo`o, kula
"	3214	-	Ehu	kalo
"	5228:1	-	Kuihelani	ali`i lands
Owa	420	-	"	house, ali`i lands

Phase II/III: Kahului to Kahikinui

A total of 24 LCA's with known land-use were retrieved from various segments of this phase. These consist of 4 from Wailuku, 19 from Kula, and 1 from Auwahi. In Wailuku, 2 *kula*, 1 grass, 1 houselot, 2 potato, and 1 sweet potato lands are represented. In Kula, 8 sweet and Irish potato, 3 *kula*, 5 pasture, 3 *kalo*, 2 grass, 2 winter plantings, 3 houselot, and 1 bog lands are listed. The one from Auwahi is a large tract of *ali`i* land.

Table 2. Land Commission Awards within the Phase II/III Corridor

LOCALITY	LCA NO.	TMK	AWARDEE	LAND-USE
Wailuku	4120:B	2-2-3:	Kapohaku	kula
"	6417:1	"	Kaio	kula, swt. potato
"	6540	"	Helekahi	hselot, potato, kalo
"	5279:2	"	Kapelekai	moku mau`u, potato
Kealahou	8654:3	2-2-9:	Kapaole	pasture
Pulehu	8816:1	2-2-16:	Kalalaula	ho`oila, pasture
"	9672:2	2-3-60:	Napoko	hselot, winter plantings
Pulehuiki	9670	2-2-19:	Kaaala	Irish potato, pasture
"	9019	-	Helehua	5 cultivations
Kalihi/Waiakoa	8655:2	2-2-14:	Kahoopaki	pasture
"	10482:1	2-2-21:	Naha	kalo
Waiakoa	2383:1	2-2-9:	Z. Kauuwai	Irish potato
"	8654	2-2-14:	Kapaole	14 sections
Kula	9670	2-3-1:	Kaaala	Irish potato, bog
Waiohuli	6592	2-2-2:	Puana	sweet potato
"	5332:1	"	Paele	Irish potato
"	6738	"	Luheluhe	kula, swt./Iri. potato
"	6592:1	2-2-14:	Puana	pasture
Keokea	8452:6	2-2-2:	Keohokalole	sweet potato, kalo
"	6429	2-2-3:	Kaiwialii	kula
"	6479	"	Kalama	hselot, mau`u
"	6720:B	"	Nahelu	kula, taro
"	8452:6,21	2-3-1:	Keohokalole	sweet potato
Auwahi	7716 Ap.3	-	R. Keelikolani	ali`i lands

Phase IV: Kihei to Cape Kinau (La Perouse Bay)

A total of 11 LCA's with known land-use were retrieved from various segments of this phase and consist of 4 from the N. Kihei (1) / Kalepolepo (3) area, 1 from the Wailea area, 5 from the Makena area, and 1 from the Cape Kinau area. In the North Kihei/Kalepolepo area, 1 *lo`i*, 2 sweet and Irish potato, 2 taro, and 1 pasture lands are represented. The one from the Wailea area is Palauea *ahupua`a* which is *ali`i* land. From the Makena area, 3 houselot, 2 grass, 1 taro, 1 *kula*, 1 pasture, and 1 potato lands are listed. From the Cape Kinau area, 1 Irish potato and 1 grass lands are indicated.

Table 3. Land Commission Awards within the Phase IV Corridor

LOCALITY	LCA NO.	TMK	AWARDEE	LAND-USE
North Kihei	5230	3-8-1:	Keaweamahi	lo`i
Kalepolepo	6720	-	Maikawai	swt./Iri. potato, taro
"	5220	-	"	"
"	6720B	3-8-06:	Nahelu	pasture
Palauea	11216:21	-	M. Kekauonohi	ali`i lands
Mo`oiki	5245	2-1-06	Kihuluhulu	hselot, kula
Mohopili	2658	-	Kiniakua	moku ma`a, potato
Mo`oloa	2398 Ap.5	-	Kinoloa	hselot
"	2602	-	Piena	pasture, mo`o mau'u
Papa`anui	4292B	-	Kalama	taro, hselot, pasture
Cape Kinau	2605	-	Paele	Iri. potato, mo`o ma`u

Phase V: Kihei to Maalaea

A total of 7 LCA's with known land-use are present in Segment 2 of this phase and consist of 4 from Kealia and 2 from North Kihei. From the Kealia area, 4 salt, and 2 houselot lands are represented. In the North Kihei area, 1 *lo`i* and 1 sweet and Irish potato lands are present.

Table 4. Land Commission Awards within the Phase V Corridor

LOCALITY	LCA NO.	TMK	AWARDEE	LAND-USE
Maalaea	2959	3-8-5:14	Hika	10 lo`i
Kealia	3397:4	3-8-5:35	Puhi	3 salt mo`o/salt land
"	5285:1-3	"	Kahiewalu	salt mo`o/hselot
"	5277	"	Kanakaloa	"
"	3524	"	Kahele	salt mo`o
North Kihei	5230	3-8-1:	Keaweamahi	lo`i
"	4672:3	3-8-4:	Poonui	swt./Iri. potato

Phase VI: Maalaea to Honokowai

A total of 74 LCA's with known land-use are present in various segments of this phase and consist of 14 from Honokowai, 2 from Kaanapali, 45 from Lahaina, 5 from Olowalu, and 8 from Ukumehame. From Honokowai are 13 *lo`i*, 8 running water, 6 *loaloa*, 3 houselot, 2 *kula*, 1 *wauke*, and 1 *ohia* lands. From Kaanapali are 1 *lo`i*, 1 *loaloa*, and 1 running water lands. In Lahaina, houselot, *lo`i*, and *kula* lands are predominantly represented along with a few pasture and grass lands. In Olowalu, 2 houselot, 3 taro, and 1 *kula* lands are represented. In Ukumehame, 6 *lo`i*, 3 *kula*, 2 houselot, 1 taro, 1 *poalima*, and 1 potato lands are represented.

Table 5. Land Commission Awards within the Phase VI Corridor

LOCALITY	LCA NO.	TMK	AWARDEE	LAND-USE
Honokowai	5002:2,4,5	4-4-1:	Kahanaumaikai	lo`i, wauke, `ohi`a
"	4239:3	-	Kaukau	18 lo`i, 3 mo`o waihae
"	3925H:1	-	Nahuli	lo`i, loaloa
"	3988:3	-	Hilahila	18 lo`i, waihae, loaloa
"	4552:1	-	Aumai	lo`i, hselot, kula
"	4254:1	-	Kaumauma	22 lo`i, loaloa
"	3927:2	-	Nakoholua	lo`i, mo`o waihae
"	3852	4-4-2:	Pokole	lo`i, mo`o waihae, loaloa
"	4249:1	-	Kameeui	10 lo`i, waihae, loaloa
"	5005:1	4-4-6:	John White	houselot
"	6601	"	Piimoku	lo`i, kula, hselot
"	4241:3	4-4-1:	Kaluakini	28 lo`i, waihae, loaloa
"	3688	-	Meeau	lo`i, kula
"	3987:1	-	Holona	lo`i, mo`o waihae
Kaanapali	3689	-	Maui	10 loaloa
"	4242:3	-	Kaaea	lo`i, waihae
LAHAINA				
Honomanu	7793	-	Kamakahi	lo`i
Kamani	3474	-	M. Kaniau	pasture, patches
Wainee	6869	-	Kawaioahu	hselot, kula, lo`i, mo`o
Kuhoulea	281B	-	Ali	hselot
Puako	9795	4-5-7:	Kaaumaiewa	lo`i, mo`i in gourd
Polanui	7590	-	Kainokane	37 lo`i, hala
Paunau	6876	-	Kua	hselot, kula, lo`i, mo`o
Haleu	7229	-	Lono	14 lo`i, 1 dry, mo`o
"	7269	-	Auwaa	kula, lo`i, hselot, hala
Hanakaoo	502	-	Pupuka	hselot, pasture, patches
Wainee	7225	-	Umiumi	hselot, lo`i
Kapunakea	6760B:4	-	Hanalei	lo`i, mo`o, groves, hselot
Kuhua	638:1	-	Imiwale	houselot
Puumoa	486	-	Ku	hselot, 30 taro, pasture
Uhao	4801	-	G. Laanui	houselot
Moalii	6849	4-5-11:	Nahale	4 lo`i, 12 mo`o, kula
Moanui	525:1	-	Kahiamoe	houselot
Lahaina	10532:2	-	Naolulo	5 lo`i, 4 mo`o
"	7750:1	-	Kuukawai	2 mo`o, hselot
"	6853	-	Nuhi	hselot, kula, lo`i, mo`o
"	6862	-	Kaumiumi	"

Table 5. LCAs within the Phase VI Corridor (cont'd)

LOCALITY	LCA NO.	TMK	AWARDEE	LAND-USE
Lahaina	6875	-	Kaulahela	hselot, kula, lo`i, mo`o
"	6878	-	Kauhihape	"
"	6889	-	Kawaihae	"
"	6915	-	Haupu	"
"	6925	-	Pakala	"
"	6926	-	Makaamo	"
"	6625	-	Naholowaa	8 lo`i, mo`o kula
"	4316	-	Keohokaua	taro mo`o, kula, hselot
"	6799	-	Keaka	lo`i, mo`o, hselot
"	5441	-	Ninia	lo`o, ti
"	4878	4-6-4:	Upai	lo`i, kula
"	7749	"	Kanakanui	1 mo`o
"	312:2,4	-	I. Keaweiwi	houselot
"	6760	4-5-8:	Lehulehu	kula, lo`i, grove, hselot
"	5116:2	4-5-9:	S. Kanae	kula
"	355	-	Keopenui	houselot
"	6711	-	L. Puuki	lo`i, houselot
"	303-307	-	Kuakamauna	po`alima, hselots
"	6219	-	Maaweau	hselot, mo`o, pauku land
"	6212	-	Kekua	hselot, pauku land
"	10568	-	Oleloa	lo`i, mo`o
"	5389	-	Holoauhee	hselot, lo`i
"	3974	-	Haui	lo'i, hselot
"	4849	4-4-14:	Lahilau	lo`i
Olowalu Mauka	4376:1	4-8-03:51	Keahi	taro, kula
"	10128:5	4-8-03:78	E. Maui	taro
"	8373:1	4-8-03:54	Kailiula	taro
Olowalu Makai	5952:1	4-8-03:48	Minamina	houselot
"	8817:1	4-8-03:49	Kanakaole	houselot
Ukumehame	5410	4-8-02:8-9,28	D. Malo	lo`i with po`alima
"	3702	"	"	lo`i
"	8191 Ap.1	"	Hilo	5 lo`i, kula
"	5380 Ap.1,4-5	"	Hulu	12 lo`i, houselot
"	6751 Ap. 3	"	Alai	kalo, kula
"	6709	"	Popolo Wahine	kula, houselot
"	5124 Ap.1	"	J. Kalani	potato, lo`i, mo`o
"	6870	-	Pupule	"

ARCHAEOLOGICAL SITES

The database for all available archaeological sites data was initially acquired from SHPD. **Map 1** depicts the locations of all currently available sites in the State database. Using the ARCVIEW GIS program, the data was manipulated to retrieve only those sites located within a 400-foot buffer that was imposed onto the project corridor. A total of 84 archaeological sites; consisting of 78 with permanent numbers, 4 with temporary designations, and two un-numbered; have been recorded within the study corridor for the current SIC fiber-optic cable project. The sites consist of multi-component clusters, feature complexes, portions of districts, or single-feature sites and represent the prehistoric and historic periods. The detailed maps in the Appendix depict the location of these sites within specific alignments of each phase. **Tables 6-9** list the sites in each phase.

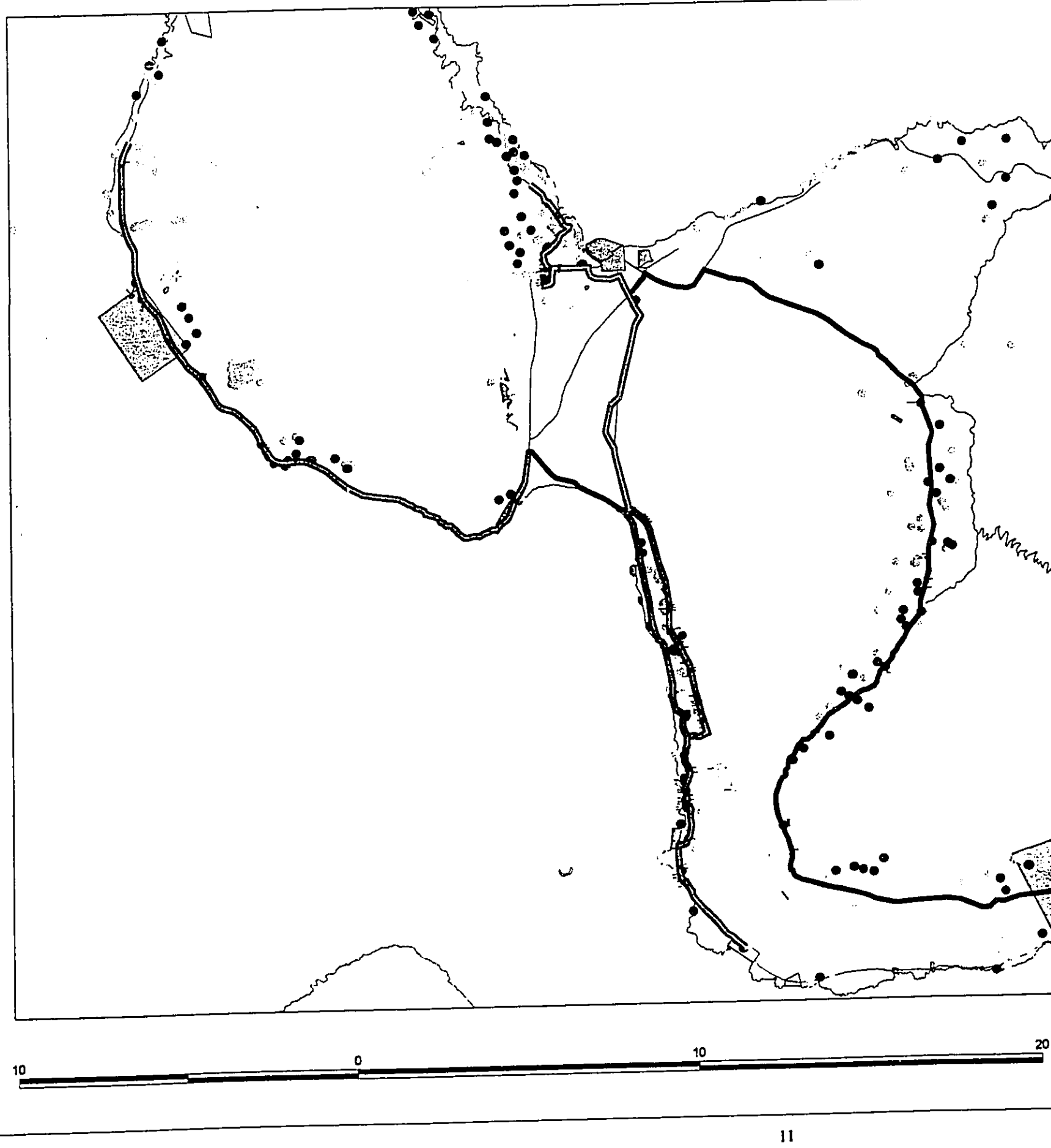
Phase I: Waiehu to Puunene

A total of eleven sites are present within the Phase I assessment corridor (**Table 6**). All of the sites are located within Segment 1 and consist of 8 burial sites, 3 associated with past habitation activities, and 1 heiau. Some of the burial sites represent multiple individuals, indicating the frequency of burials in the Puuone deposits of Waihee and Wailuku. The subsurface depths at which the burials were discovered range from surface scatters to below 2 meters. The depth at which the remains are interred vary greatly and no predictable pattern has been derived from the large numbers of burials investigated to date.

Table 6. Archaeological Sites in the Phase I Corridor

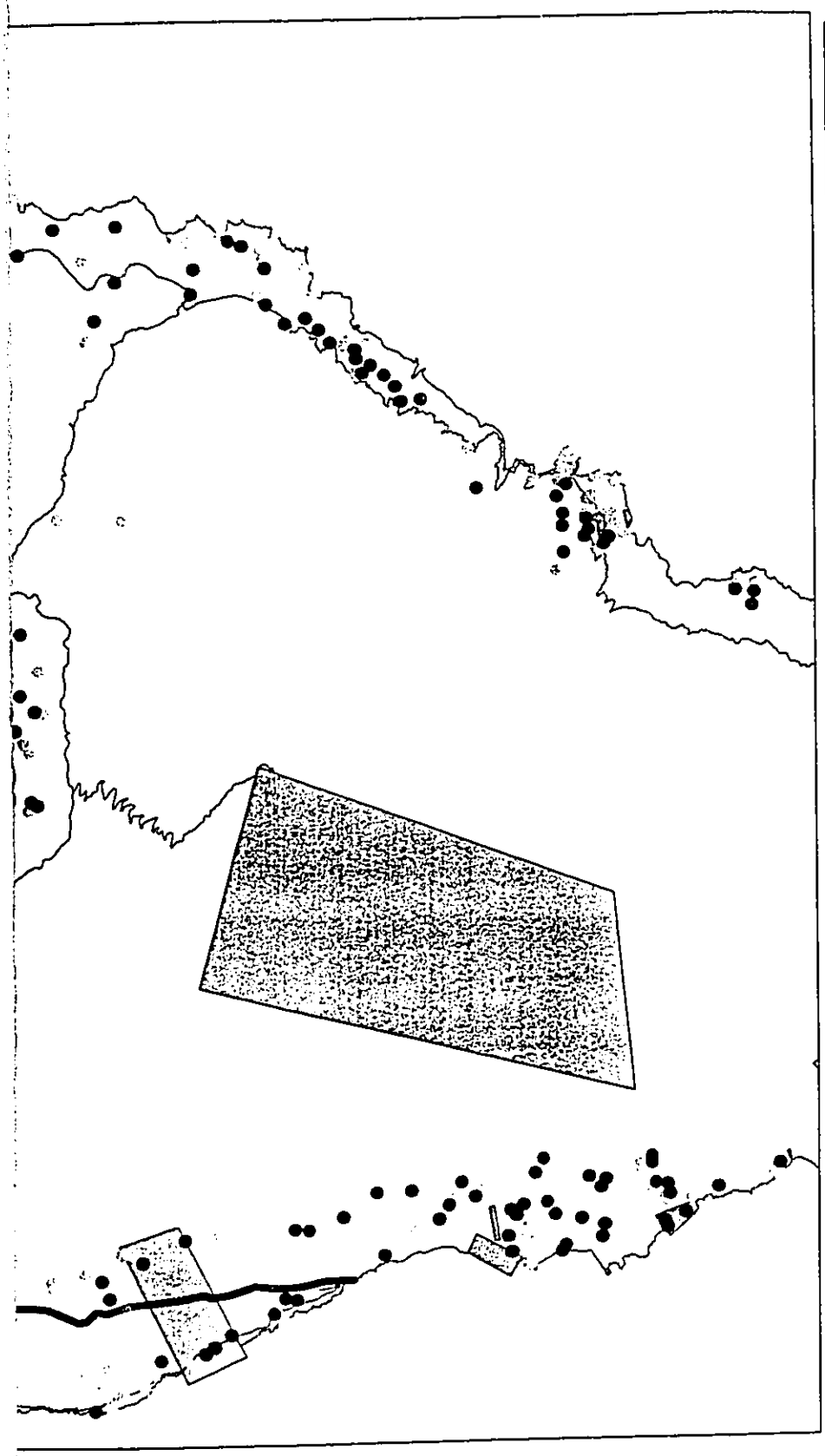
SITE NO.	TYPE/NAME	TMK
55	Malaihakoa heiau	238007040
2836	Waiehu burial (1)	233001001
2977	burials (9)	various
2983	Waiehu burials	233008064
2996	Piihana cave and midden	233001999
3502	burial	234009999
4005	burial	234010004
4067	hearth	234002999
4068	habitation complex, burial	234002999
4126	burial, Lower Main	234018999
4401	burials	238007121

Currently Available Archaeological Site



l Site Locations on Maui Island

MAP-1



20 Miles

Routes & Sites

- Waiehu-Puunene (Phase I)
- Kahului-Kahikinui (Phase II/III)
- Kihei-LaPerouse (Phase IV)
- Kihei-Maalaea (Phase V)
- Maalaea-Honokawai (Phase VI)
- New Sites
- Walker Sites
- Sites, State
- Line Sites, State
- District or Complex

Proposed
Sandwich Isles Communication
Fiber Optic Cable Project

Prepared by:
Aki Sinoto Consulting

GIS by:
Eugene P. Dashiell, AICP
Environmental Planning Services

Historic Sites:
Historic Preservation Division, DLNR

Routes:
SSFM International

Base Map: TMK
GDSI, Inc

July 2001

Phase II/III: Kahului to Kahikinui

A total of 14 sites are present within the Phase II/III assessment corridor (**Table 7**). The sites are located within Segments 2 through 4 and consist of 3 named heiau, portion of 1 large, multiple component archaeological district, 7 isolated structural features and clusters, 1 petroglyph site, a segment of the Hoapili trail, and 1 burial site. In this phase, the transition from the assemblage of sites in the leeward inland zone, reflecting prehistoric permanent settlement and dry-land agriculture to the more arid and harsher environment of the coastal area in Kahikinui is well represented. The historic period development of Ulupalakua and its influence on the region are also evident.

Table 7. Archaeological Sites in the Phase II/III Corridor

SITE NO.	TYPE/NAME	TMK
un-#-ed	burials "Kula Malu"	223032002
200	cattle wall	221009001
201	platform	"
202	wall	"
203	C-shape	"
204	platforms (2)	"
214	(1041) Pauku heiau	222004005
219	(1048) Waiakoa heiau	222006109
572	Hoapili trail	219001003
1021	Po`o Kanaka stone	221009001
1046	Kaonoulu heiau	222019999
1170	Kipapa Archaeological District	219001003
1239	Alae petroglyphs	222013024
2899	historic agric./ranching complex	222014001

Phase IV: Kihei to Cape Kinau (La Perouse Bay)

A total of 46 sites are present within this phase (**Table 8**). The sites appear in all segments and consist of 7 named heiau that are distributed throughout the phase, 7 multiple feature complexes, 5 historic structural remains of bridges and water transport, various clusters and isolated small structural features, the remains of historic ranching activities, and a portion of the La Perouse Archaeological District. The large number of sites represented in this phase is not due to a higher density of sites in this region over the other assessment areas, rather it attests to the volume of development taking place in this part of Maui over the past three decades. With the exception of Walker's island-wide survey early in the 20th century, the advent of development-related archaeology on Maui was in the Wailea/Makena area during the early 1970s. Since then, much of the contract archaeology effort on Maui has been expended in this region.

Table 8. Archaeological Sites in the Phase IV Corridor

SITE NO.	TYPE/NAME	TMK
MAK-1	enclosure	221007095
MAK-2	platform	221007999
T-1	deleted	222024019
T-6	deleted	222024020
un-#-ed	historic graves	221006010
197	Pohakunahaha heiau	221007999
220	(1049) Alae heiau	"
221	(129) Haleokane heiau	"
222	Nininiwai heiau	"
223	(1055) Pulehu heiau	222240999
224	Mo`omoku heiau	222002069
1007	Makena School parcel	221005083
1019	Pa`ako Point ko`a	221006777
1028	Palauea Landing Complex	221023999
1266	Makena complex	221008035
1361	Papa`anui heiau	221008092
1362	Papa`anui platform	221007999
1385	La Perouse Arch. District	various
1701	concret piers	238077999
1716	wall & trail	234018999
1717	wall	222002070
1718	bridge	221008114
1719	bridge	239018001
1720	aquaduct	222002999
1721	Kamaole bridge	239019004
1723	C-shape	222002001
1724	enclosure & mound	222002999
1730	C-shapes & enclosures	221008999
1731	enclosures	221008999
1734	enclosures	221008999
1735	C-shape	221008114
1736	wall	221013999
2475	Waiohuli Agric. Complex	222240023
2512	Keokea complex	222002042
2513	Keokea agric. site	222240999
2515	modified outcrop	222002042
2518	Keokea agric. complex	222240999
2524	habitation complex	222002073
2909	habitation, possible burial	221006103&777
3103	historic cattle wall	221006999
3514	agricultural complex	221007010
4504	historic enclosure	221007071
4505	rock-shelter	221007999
4506	habitation site	221007999
4813	historic ranching wall	221023001
4818	habitation, historic wall	221023999

Phase V: Kihei to Maalaea

No previously recorded sites are present within this phase. Kealia Pond and the associated salt pans appear in the literature. However, no record is readily available that indicated that these features were formally documented and site numbers were assigned.

Phase VI: Maalaea to Honokowai

A total of 13 sites are present within this phase (**Table 9**). The sites appear in Segments 1 and 2 and represent a wide variety of site types and periods of origin, as befits a region with much human activity from the prehistoric period and the relatively early historic development of Lahaina as a port town with the resultant Western influences. Included are 1 named heiau, 2 complexes of small stone structures, several isolated features, 1 area of a surface scatter of human remains, 1 remnant section of the old government road, the Kaanapali power plant, 1 possible fishpond and a marsh or lagoon, and a portion of the Lahaina Historic District.

Table 9. Archaeological Sites within the Phase VI Corridor

SITE NO.	TYPE/NAME	TMK
6	Wailehua heiau	247001002
1286	grinding stone	"
1287	Maalaea complex	"
1440	Maalaea Bay complex	236001002
1441	C-shapes	236001014
1978	Kaanapali power plant	244002040
3001	Lahaina Historical District	various
4695	enclosure	248003006
4696	old Govt. road	"
4820	human remains-surf. scatter	248003010
4822	fishpond?	"
4823	marsh/lagoon?	"
4975	burial	245003013

SENSITIVITY ASSESSMENTS

Based on considerations of various background data pertinent to the study corridor, a sensitivity rating of high, moderate, or low was assigned to specific segments along each phase of the cable route. Although generally, available archaeological data was the primary determinant, in cases that lacked such data, soils, land-use, and other relevant background information were considered. The application of ratings were based on the following considerations:

High Sensitivity

1. Presence of previously recorded surface or subsurface remains within the buffer or in adjoining segments or in the immediate vicinity, including historic districts;
2. Presence of unrecorded surface remains within the buffer; and
3. Segments in which the potential for significant subsurface remains are high based on substrate or environment, such as sand dunes, beach or shoreline areas, and lava tubes;

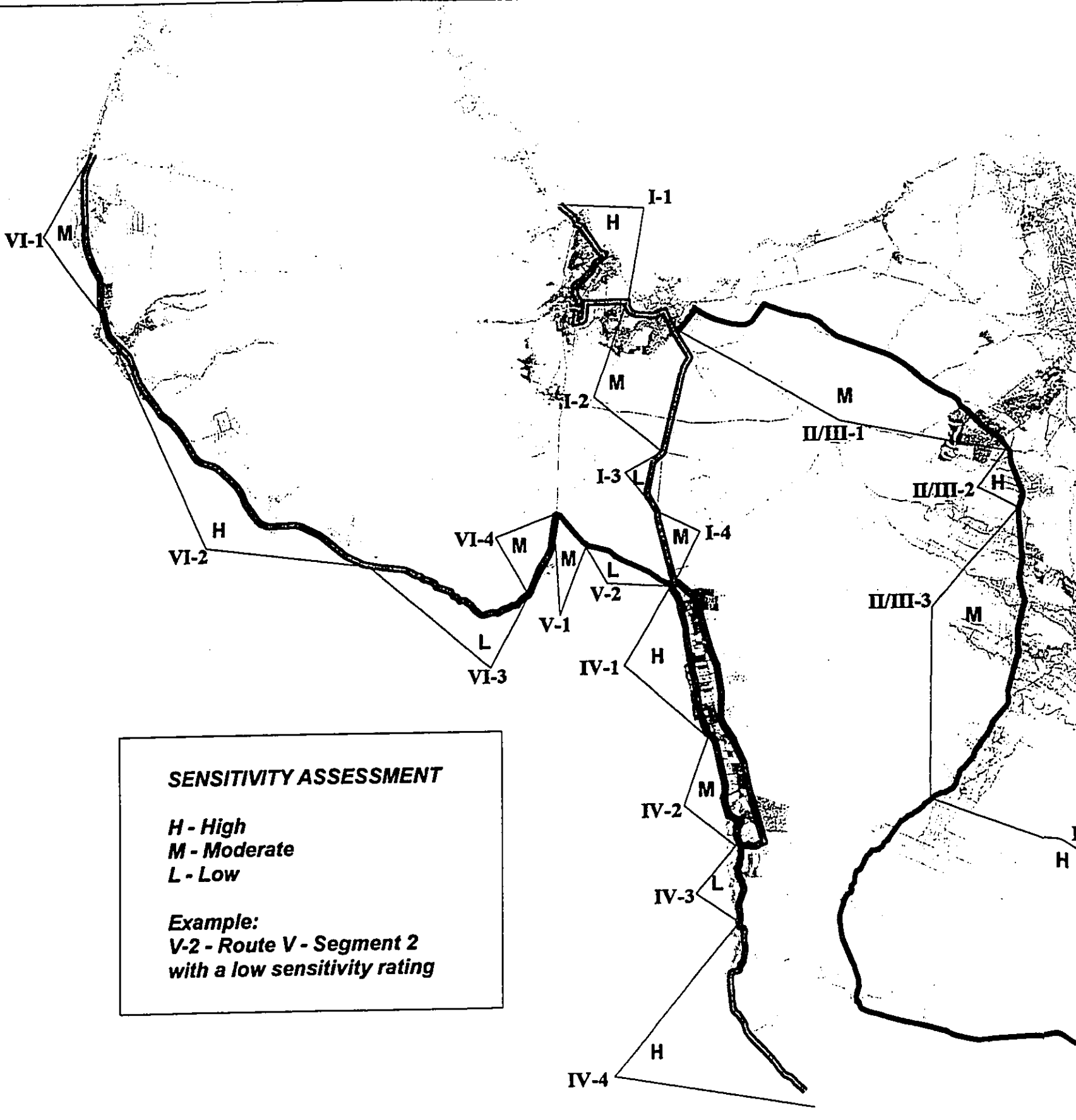
Moderate Sensitivity

1. Segments with no previous archaeological information;
2. Segments with no surface remains, but with soil deposition that presents the potential for subsurface cultural remains; and
3. Large-scale agricultural cultivation areas such as cane and pineapple fields where the possibility for buried cultural remains exists below the till zone;

Low Sensitivity

1. Segments where previous archaeological information indicates minimal probability of subsurface remains;
2. Segments with rocky substrates or exposed solid bedrock; and
3. Segments with previous disturbance or alteration beyond the depth of the cable trench.

A total of 18 segments have been identified along the six phases of the total cable route, with the exception of the two alternate segments mentioned previously. Phase I: Waiehu to Puunene (Kihei) contains 4 segments consisting of 1 high, 2 moderate, and 1 low sensitivity ratings. Phase II/III: Kahului to Kahikinui contains 4 segments consisting of 2 high and 2 moderate ratings. Phase IV: Kihei to La Perouse Bay contains 4 segments consisting of 2 high, 1 moderate, and 1 low ratings. Phase V: Kihei to Maalaea contains 2 segments consisting of 1 moderate and 1 low ratings. Phase VI: Maalaea to Honokowai contains 4 segments consisting of 1 high, 2 moderate, and 1 low ratings. Of the total 18 segments, 6 have been rated as high sensitivity (I-1; II/III-3&5; IV-1&4; VI-2), 8 have been rated as moderate sensitivity (I-2&4; II/III-2&4; IV-2; V-1; VI-1&4), and 4 have been rated as low sensitivity (I-3; IV-3; V-2; VI-3). **Map 2** provides project-wide, phase-specific sensitivity assessments and **Figures 2-4** are photographs showing overviews of typical corridor segments for each sensitivity rating. **Table 10** provides a summary of sensitivity ratings for segments of each phase.


VI-1
M
H
VI-2
L
VI-3
VI-4
M
M
V-1
L
V-2
I-1
H
M
I-2
I-3
L
M
I-4
IV-1
H
M
IV-2
L
IV-3
H
IV-4
M
II/III-1
II/III-2
H
II/III-3
M
H
SENSITIVITY ASSESSMENT
H - High
M - Moderate
L - Low
Example:
V-2 - Route V - Segment 2
with a low sensitivity rating

MAP-2

Archaeological Sensitivity Assessment

Routes & Phases

- Waiehu-Puunene (Phase I)
- Kahului-Kahikinui (Phase II/III)
- Kihei-LaPerouse (Phase IV)
- Kihei-Maalaea (Phase V)
- Maalaea-Honokawai (Phase VI)

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Archaeological Services Hawaii, LLC

2 0 2 4 Miles

The following section describes each segment in detail and provides the justification for the assigned ratings.

PHASE I: Waiehu to Puunene (Kihei)

- **Segment I-1, High Sensitivity (Waiehu, Paukukalo, Wailuku, Kahului)**; the route runs southeastward from the start of this phase in Waiehu along Kahekili Highway, Waiehu Beach Road, past Paukukalo southwestward along Eha Road, Imi Kala Street, Mill Street, Mission, Street, south along Lower Main Street, Waiale Road, a spur turns west along Wells Street, the main route continues east and north along Nakoa Street, east along Kainani Street, along Kaahumanu Avenue, south and southeastward along West Wakea Avenue, another spur turns southeastward along Puunene Avenue, the main route continues southeastward along Hana Highway, and southwestward along Kuihelani Highway to the junction with Puunene Avenue/Mokulele Highway. Major portions of Segment 1 is located in Puuone sand dunes with a high probability of encountering burials (Sinoto and Pantaleo 1995). Portions of this segment are also located in areas of prehistoric through historic period taro cultivation and relatively early historic period urbanization. Twenty-six Land Commission Awards with known land-use (predominantly *lo`i* and *kula* lands) are located in this segment.

- **Segment I-2, Moderate Sensitivity (Kahului, Puunene)**; the route continues southward from the end of Segment 1 along Mokulele Highway with cane fields on either side to the northern terminus of the former Puunene Naval Air Station facility. Although Segment 2 is surrounded by sugarcane cultivated lands, subsurface remains have been discovered below the agricultural till zone in other areas of the island, most notably in Waihe`e (Jones and Sinoto 1995) and Olowalu (Fredericksen 2000). Previous archaeological data is lacking for this segment.

- **Segment I-3, Low Sensitivity (Puunene)**; the route continues southward from the end of Segment 2 along Mokulele Highway surrounded by lands modified for the former Puunene Naval Air Station which was occupied during WWII. Segment 3 continues southward for roughly a mile to the southern terminus of this former air station facility. Segment 3 underwent extensive ground disturbance during the construction of the air station. Large areas were graded for runways and taxiways and excavated for fuel tanks and underground bomb shelters (Drolet and Sinoto 1999). Previous subsurface testing produced no evidence of subsurface cultural remains. Even WWII period remains were not encountered during areal excavations conducted to recover WWII airplanes (Maui War Museum 1998).

- **Segment I-4, Moderate Sensitivity (Puunene, North Kihei)**; the route continues southward from the end of Segment 3 along Mokulele Highway to the junction with Piilani Highway and North/South Kihei Road. This segment is also surrounded by cultivated lands. However, no previous archaeological investigations have been undertaken in this segment. An inventory survey conducted in lands adjacent to the junction encountered evidence of extensive previous disturbance and no cultural remains with the exception of a historic bridge footing (Sinoto and Pantaleo 1994).

PHASE II/III: Kahului to Kahikinui

- **Segment II/III-1, Moderate Sensitivity (Kahului to Pukalani)**; this phase commences at the Puunene Avenue junction and continues northeastward along Kaahumanu Avenue,

southeastward and northeastward along Hana Highway, southeastward along Haleakala Highway to the junction known as "five trees" in Pukalani and continues southward on the Kula Highway to the Kaluapulani Gulch crossing. Major portions of this segment consist of agricultural lands. Other than studies undertaken in conjunction with road improvements and bypass road construction (Hammatt 1990), archaeological data is lacking for this area of the island. Potential for encountering buried cultural remains is higher around Pukalani where previous work has encountered some remains (Donham 1990). In addition, remains of historical period plantation camps may be encountered (Sinoto and Pantaleo 2001). Four LCA's with known land-use (potato land) are present in this segment.

- **Segment II/III-2, High Sensitivity (Kula)**; this segment continues from the end of Segment 1 southward along Kula Highway to the Wai'ale Gulch crossing. Several human burials, interred in silty clay loam matrix, have been encountered recently during the construction of the Kula Malu residential subdivision (Rotunno-Hazuka et al. pending) just beyond the 200-foot, *makai* buffer of this segment. This segment traverses across deposits of the same silty clay loam matrix.

- **Segment II/III-3, Moderate Sensitivity (Kula, Keokea)**; continuing from the end of Segment 2, this segment runs south and southwestward along Kula Highway in residential, agricultural, and pasture lands to Waiohuli *ahupua`a*. Due to the paucity of recent archaeological work in the area, nature of subsurface remains is virtually unknown. Based on elevation and rainfall, this region lies within the so-called "inland," dryland agricultural zone associated with many of the leeward coastal settlements described archaeologically in Kihei and Makena. Eleven LCA's with known land-use (potato and pasture lands) are present in this segment.

- **Segment II/III-4, High Sensitivity (Keokea, Ulupalakua, Kanaio, Kahikinui)**; from the end of Segment 3, this segment continues along Kula Highway to southwestward and southward passing Ulupalakua, turning southeastward passing Kanaio, and turning eastward through Kahikinui to its terminus at Manawainui Gulch. Extensive complexes of prehistoric and early historic archaeological sites associated with the settlement of this inland zone have been identified in Waiohuli *ahupua`a* and continuing southward along this segment. Similar complexes have been recorded in Keokea (Riford 1989, Haun 1993, & Kolb 1995). Historic period settlement flourished in Ulupalakua in association with commercial agricultural and ranching pursuits. Similar, but outlying, patterns of prehistoric and historic period settlements are seen in Kanaio *ahupua`a* (Eble 2000). A large complex of prehistoric and early historic sites have been documented in Kahikinui *ahupua`a* (Kirch & Chapman 1978; Dixon & Conte 2000; & Eble 1999). Eight LCA's with known land-use (sweet and Irish potato and *kula* lands) are present in this segment.

PHASE IV: Kihei to Cape Kinau (La Perouse Bay)

- **Segment IV-1, High Sensitivity (North Kihei, Kalepolepo, Kalama Park)**; commencing at the end of Phase I Segment 4 at the Mokulele Highway and Kihei Road Junction, this segment continues southward along South Kihei Road, passing Kalepolepo and continuing to the southern extent of Kalama Park. A number of archaeological surveys have been completed in this area over the past two decades resulting in the identification of buried cultural remains, including the remains of activities related to prehistoric and historic period habitation as well as human burials. Extant surface structural remains are rare with the exception of various historic wall segments, old road and bridge segments, and a fishpond

(Kalepolepo Fishpond, Site 50-50-09-1288). Multiple human burials were encountered during the installation of an irrigation system at Kalama Park (Hammatt 1978). Four LCA's with known land-use (sweet and Irish potato, *lo`i*, and pasture lands) are present in this segment.

- **Segment IV-2, Moderate Sensitivity (Kamaole, Keawakapu);** from the end of Segment 1, this segment continues southward along South Kihei Road, past Kamaole Beach Park, to Keawakapu at the entrance to the Wailea Resort development. Relatively few previous archaeological studies have been undertaken in this segment and the nature and extent of subsurface cultural remains are virtually unknown. The presence of beach and dune sand matrices presents the possibility of buried remains. Extant surface structural remains were recorded during a surface survey for the Keawakapu Small Boat Harbor (Han and Sinoto 1985). Due to existing resort, residential, and commercial developments in the area, the potential for other surface remains is minimal and buried remains, in the proximity of the road, have most likely been impacted by compounded construction activities.

- **Segment IV-3, Low Sensitivity (Wailea, Makena);** from the end of Segment 2, this segment turns east along Kilohana Street and continues southward along Wailea Alanui through the Wailea Resort area to the Kaukahi Street intersection and continues southward along Makena Alanui to the southern extent of the Maui Prince Hotel Property. Compounded development activities since the early 1970s in the Wailea area and since the mid-1970s in the Makena area have impacted the area paralleling Wailea and Makena Alanui, the main thoroughfare in this area. Recent monitoring projects for the Shops at Wailea (Rotunno-Hazuka, Sinoto, and Pantaleo 2001) and infrastructural improvements at the Makena Prince Hotel and Golf Course area (Rotunno-Hazuka, Sinoto, Pantaleo pending) have shown extensive development-related disturbances, imported fill, culturally sterile substratum, as well as the presence of solid bedrock. Thus, the potential for archaeologically significant buried remains in this segment is considered to be minimal. One LCA with known land-use (*ali`i* lands – Palauea *ahupua`a*) occurs in this segment.

- **Segment IV-4, High Sensitivity (Makena, Pu`u Olai, Kanahena, Keoneoio);** from the end of Segment 3, this segment continues southward along the short remaining span of Makena Alanui to where it merges with Makena-Keoneoio Road which continues southward past Pu`u Olai and Makena State Park, after which the roadway narrows and continues southward past Ahihi Bay and the Ahihi-Kinau State Natural Reserve area, southward past Kanahena where the paved road stops and a cinder road continues on to Cape Kinau and La Perouse Bay. Past the South Course of the Maui Prince Golf Course to southward, development stops until the area beyond Pu`u Olai and Big Beach, where more recent residential development occupies both sides of the narrow road corridor to the Ahihi Bay and Kanahena area. In this segment, extant surface remnants occur along Makena Alanui and also along the Makena-Keoneoio Road. Human burials have been found interred in the cinder along the base of Pu`u Olai (Griffin 1995 & Carpenter et al. 2000). Structural remains in the form of isolated features or complexes occur on both sides of the roadway corridor in undeveloped areas between the residential developments. Six LCA's with known land-use (houselot and potato lands) are present in this segment.

PHASE V: Kihei to Maalaea

- **Segment V-1, Moderate Sensitivity (Maalaea, Palalau);** commencing at the junction of Honoapi`ilani Highway and North Kihei Road, this segment continues southeastward along

North Kihei Road to a locality known as Palalau on the coast. No archaeological data is available for this area due to the lack of previous investigations. The closest known sites are located in Pohakea Gulch roughly ¾ mile to the west (Eble 1996). Portions of this area were previously cultivated in sugar cane and the potential for subsurface cultural remains being present below the till zone still exists. Only one LCA with known land-use (*lo`i*) is present in this segment.

- **Segment V-2, Low Sensitivity (Kealia Pond, North Kihei);** from the end of Segment 1, this segment continues southeastward along North Kihei Road past Kealia Pond, a National Wildlife Refuge, and terminates in North Kihei at the junction of Kihei Road with Mokulele and Piilani Highways. Recently completed paleo-environmental studies have shown that this area has been inter-tidal and frequently submerged in the past (Athens et al. 1996). Although the substrate is beach sand, minimal expectation of any significant cultural remains, other than possible earthen salt pans, was indicated by this study due to the ephemeral nature of dry ground in the area. Six LCA's with known land-use (salt making, *lo`i*, and sweet and Irish potato land) are present in this segment. The potato land is near the southeastern terminus of this segment on dry land in North Kihei.

PHASE VI: Maalaea to Honokowai

- **Segment VI-1, Moderate Sensitivity (Honokowai, Kaanapali);** commencing at the intersection with Ala Hoku Road, this segment continues southward along Honoapi`ilani Highway past the Kaanapali Resort and Golf Course to the intersection with Kapunakea Street on the northern extent of Lahaina Town. This segment traverses areas of existing development and pineapple cultivation lands. In the immediate vicinity of the highway corridor, there is a paucity of previous archaeological data, since the majority of the available information derives from work on the coastal or more inland gulch areas. The fairly deep deposit of silty clay loam in this segment and the proximity to the shoreline in the southern half suggest the possibility of buried cultural remains. Burials purportedly have been encountered in areas adjacent to the highway during construction of some of the Kaanapali Resort components, however, such inadvertent discoveries have not been documented. Sixteen LCA's with known land-use (*lo`i* most predominant) are present in this segment.

- **Segment VI-2, High Sensitivity (Lahaina, Launiupoko, Olowalu, Ukumehame);** from the end of Segment 1, this segment continues southeastward along Honoapi`ilani Highway through the Lahaina Historic District (50-50-03-3001), passing Launiupoko, Olowalu, and Ukumehame on the coast to Papalaua Gulch. This segment includes urbanized and sugar cane cultivation areas. Buried remains are known to have been preserved below the till zone in Lahaina (Donham 1990). The District includes historic period sites as well as prehistoric and early historic native Hawaiian remains. Historically the Lahaina area was urbanized relatively early as a port town and subjected to Euro-American influences. Recent archaeological studies undertaken in Launiupoko (Graves et al. 1998), Olowalu (Fredericksen 1999), and Ukumehame (Devereau et al. 1999) have recorded significant complexes of a variety of features with prehistoric and historic origins. In Launiupoko and Ukumehame, the recorded remains occur well inland of the Phase VI corridor. In Olowalu, however, human burials were located below the cane till zone and several occur within this segment. Fifty-nine LCA's with known land-use (predominantly *lo`i* and houselots) are located in this segment.

- **Segment VI-3, Low Sensitivity (Papalaua Gulch, Papawai Point, McGregor Point);** from the end of Segment 2, this segment continues along Honoapi`ilani Highway southeastward to Papawai Point and turns northeastward to McGregor Point. Portions of this segment consist of roadway cut into solid rock, one tunnel, and areas of extremely rocky substrate. No buried cultural remains are anticipated in this segment. The likelihood of encountering surface remains is also minimal, other than the abandoned segments of the former roadway. No LCA was present in this segment.

- **Segment VI-4, Moderate Sensitivity (McGregor Point, Keanapa`akai, Maalaea);** from the end of Segment 3, this segment continues northeastward along Honoapi`ilani Highway past Keanapa`akai to Maalaea, and northward past the Maui Ocean Center to the junction with North Kihei Road. Very little is known archaeologically regarding the area along this segment. The presence of more soil and the transition from the rocky shoreline of the preceding segment, accord more potential for the presence of cultural remains in this segment. No LCA was present in this segment.

Table 10. Summary of Sensitivity Ratings for Segments of Each Phase

Phase-Segment	High	Moderate	Low
I-1	X		
I-2		X	
I-3			X
I-4		X	
II/III-1		X	
II/III-2	X		
II/III-3		X	
II/III-4	X		
IV-1	X		
IV-2		X	
IV-3			X
IV-4	X		
V-1		X	
V-2			X
VI-1		X	
VI-2	X		
VI-3			X
VI-4		X	

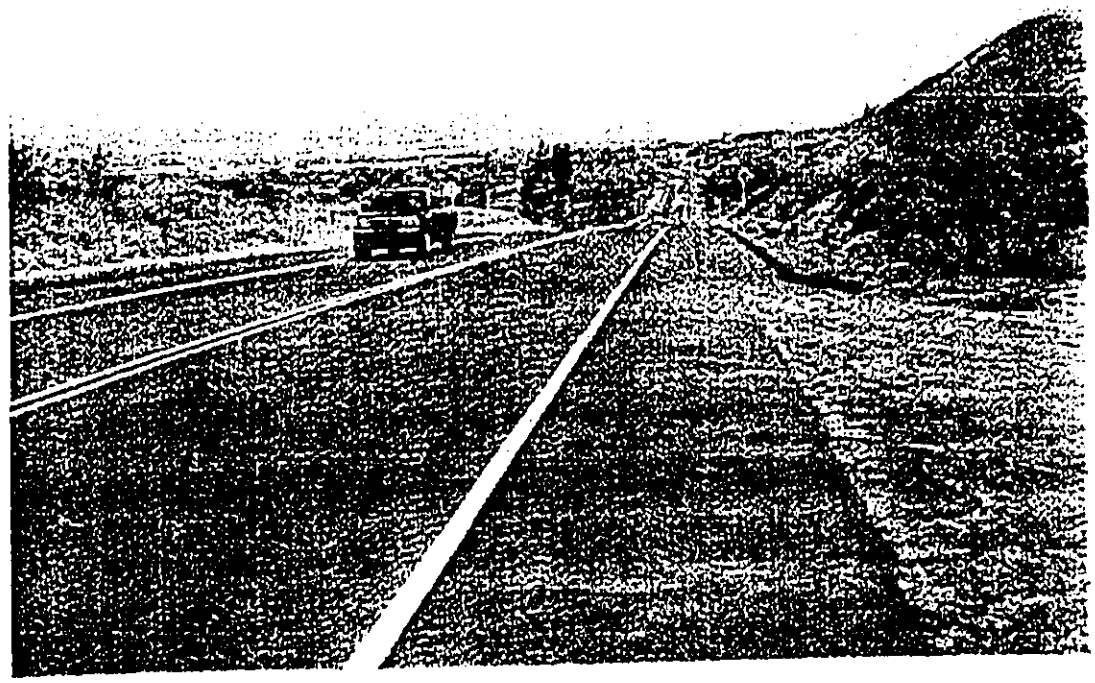


Figure 2. (Top) Typical high sensitivity segment (sand dunes), Phase I-1 to SE.
(Bottom) High sensitivity due to proximity of historic site (bridge), Phase I-1 to S.

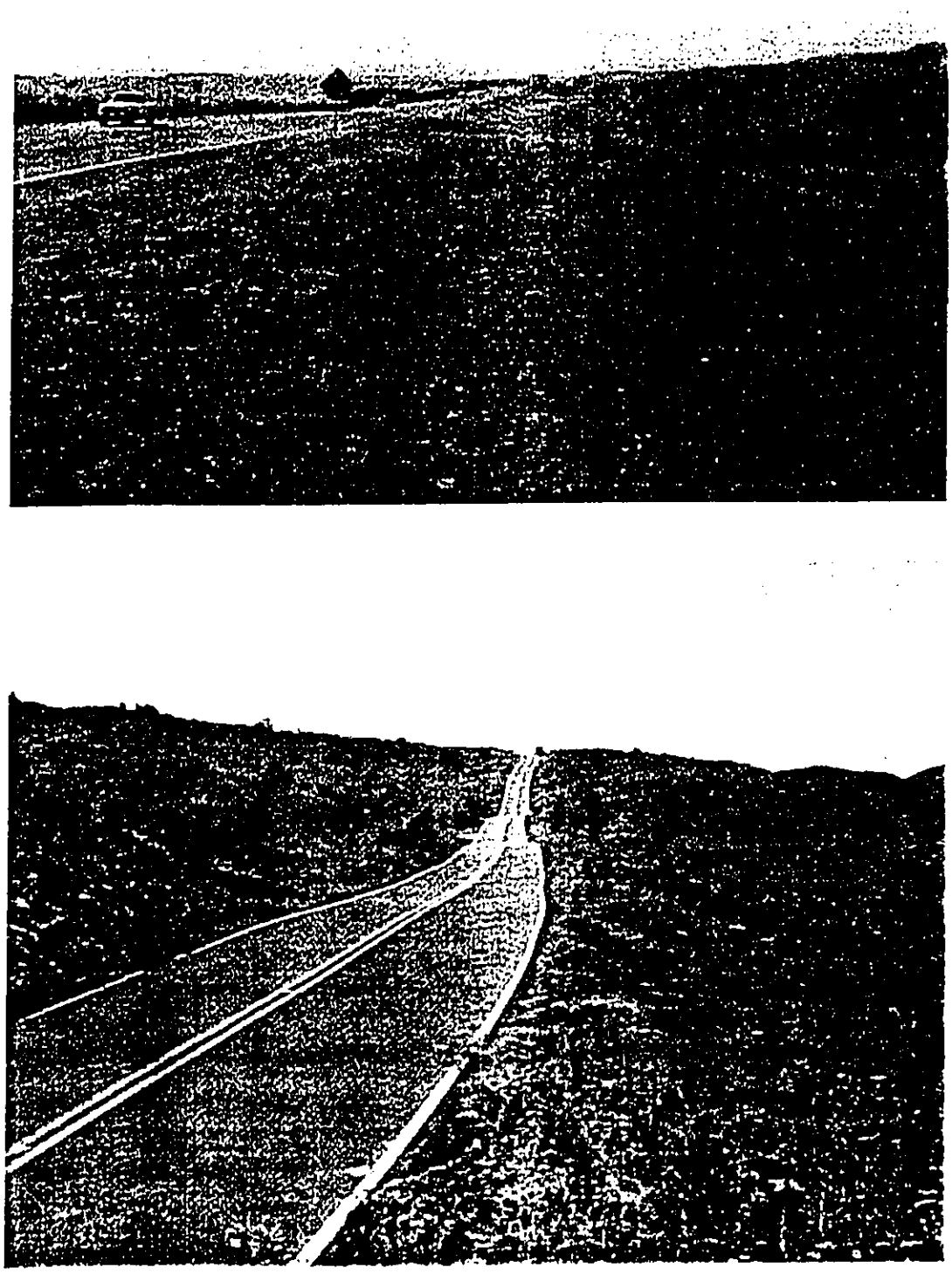
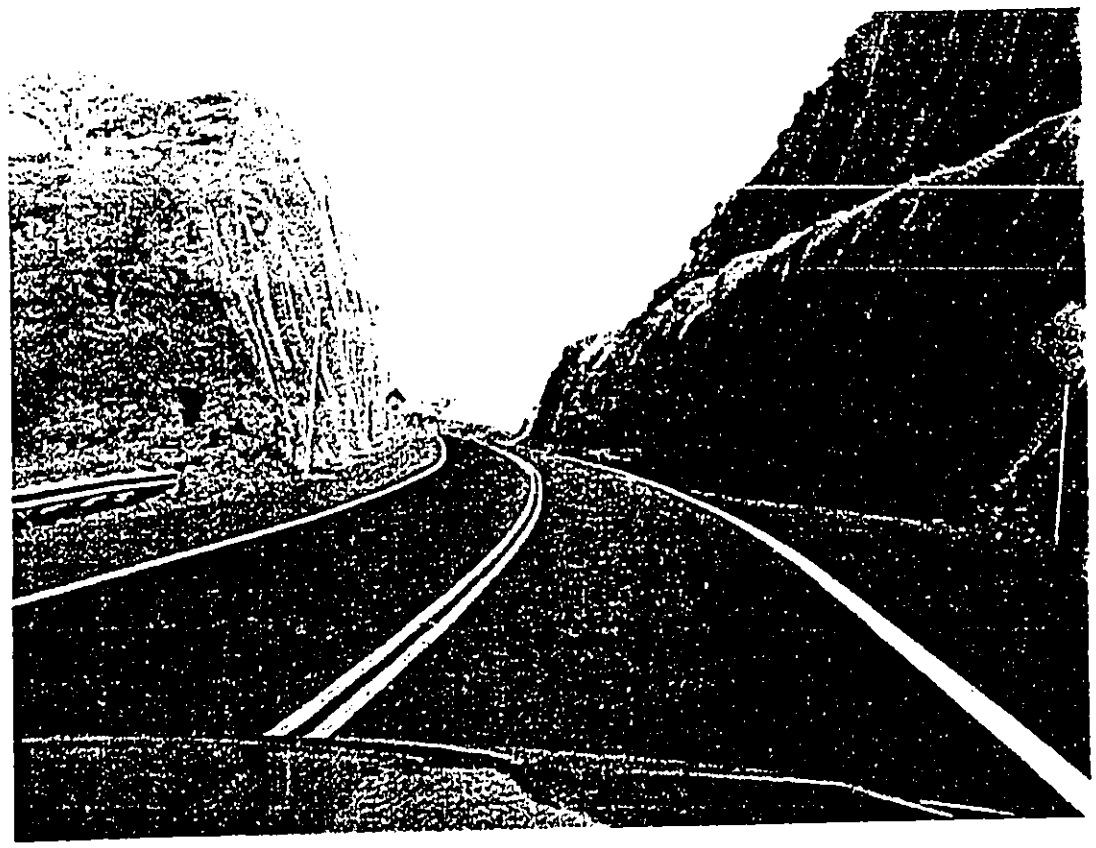


Figure 3. (Top) Typical moderate sensitivity segment (sugar cane cultivation), Phase II/III-1 to SE.
(Bottom) Moderate sensitivity in pasture lands with historic rock walls, Phase II/III-3 to S.



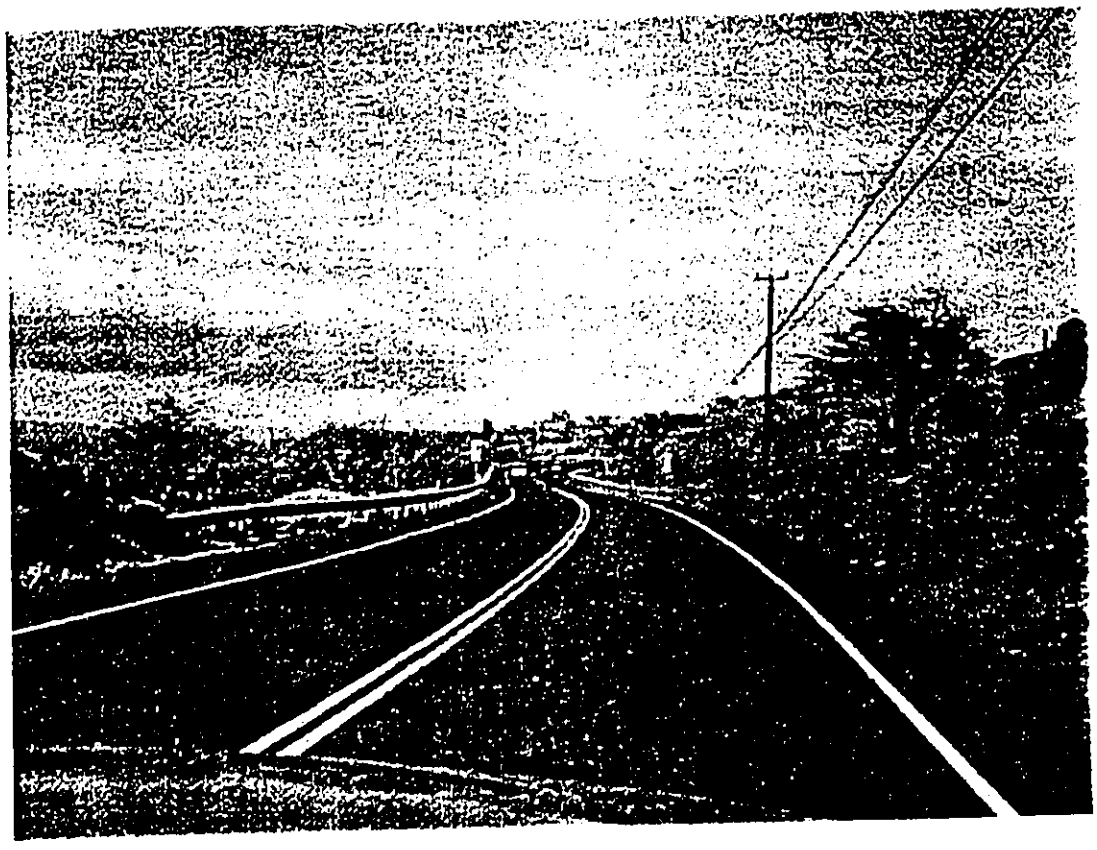


Figure 4. (Top) Typical low sensitivity segment with solid bedrock substrate, Phase VI-3 to W. (Bottom) Low sensitivity due to exposed rocky substratum, Phase VI-1 to SW.

MONITORING PLAN

The proposed duct-line installation calls for mechanical trenching and burying the fiber-optic conduit throughout the whole route. In general, the trench is slated to be 18 inches in width and should not exceed 3 to 4 feet in depth. Directional drilling may be employed when necessary along certain segments of the route.

The Federal mandate for this undertaking is Section 106 of the National Historic Preservation Act. All construction-related excavation will undergo archaeological monitoring in accordance to State Historic Preservation Guidelines and Regulations contained in Chapter 6E of the Hawaii Revised Statutes and H.A.R. Chapter 13.300. The purpose of this section is to clearly establish the scope of the monitoring procedures given the expansive area of coverage as well as the usual variables and unknowns of such projects.

GENERAL CONDITIONS

Prior to commencement of construction and monitoring activities, a coordination meeting shall be held with representatives of all pertinent parties, including the State Historic Preservation Division (SHPD) staff archaeologist and members of the Maui/Lana`i Island Burial Council (MLIBC). Items to be discussed at this meeting include; 1) procedures to be followed for monitoring, 2) authority of the archaeological monitor to halt work in the immediate vicinity of a discovery, and 3) the kinds of features the archaeologist is interested in. The contractor shall familiarize the archaeologist with construction methods and safety considerations. Whenever possible, a Maui resident archaeologist will be assigned to this project to ensure timely response and overall efficiency.

All construction-related excavation work, for all segments of each phase of the project, shall be initially monitored by one full-time monitor per piece of excavating equipment, until the nature and extent of subsurface cultural sensitivity and the contingent appropriate scoping can be determined. Following this initial period, the appropriate scope of monitoring; whether full-time, part-time, or spot-check shall be determined and implemented by the archaeologist in coordination with the developer and contractor with concurrent notice to SHPD and MLIBC. If grubbed material is planned to be taken off-site, to the extent feasible, all inspections shall be completed within the project area prior to transporting.

If any significant cultural remains are inadvertently discovered during the course of monitoring, all construction activities in the immediate area of the discovery shall be temporarily halted until the archaeologist can record and mitigate the remains or determine if additional procedures are needed. However, construction-related work, beyond the immediate area may continue in consultation with the archaeologist. All archaeological methods, standards, and techniques for recording and collection of data shall be followed.

Representative stratigraphic profiles shall be regularly recorded and any depositional anomalies shall also be documented. Photographic record of monitoring activities shall be maintained. No additional data recovery procedures shall be implemented without prior approval by the State Historic Preservation Division and consent of the developer.

Should any human remains be inadvertently discovered during the course of this undertaking, all construction activities shall be halted in the immediate vicinity. The developer shall be consulted to assess the possibility of avoiding the findings. Whenever possible, avoidance shall be implemented. If possible, without further disturbance to the remains, the determination of temporal and ethnic origins of the burial shall be attempted. If following these procedures, the remains are determined or suspected to be Native Hawaiian, measures shall be taken to ensure temporary *in situ* protection of the remains. The State Historic Preservation Division of the Department of Land and Natural Resources shall be contacted and a decision shall be made in coordination with the Maui/Lana'i Island Burial Council regarding *in situ* preservation or removal and reinterment. A burial treatment plan shall be prepared for approval by the SHPD and MLIBC.

An interim archaeological monitoring report shall be submitted by the archaeologist to SHPD for review and approval, no later than 90 days following the completion of each phase of the proposed 6 phase project. Following the field phase of this project, all necessary laboratory procedures shall be undertaken. This may include; processing, cataloging, and analysis of artifacts , with the exception of any grave goods, which shall remain with the burials with which they are associated; analyses of any collected samples as warranted; and outside consultant analysis of radiocarbon samples. The collected data shall be synthesized and compiled into a final report. No photographs of human remains, including any associated funerary objects, shall be included in the final report.

All records, notes, photographs, and maps shall be archived at the facilities of Archaeological Services Hawaii, LLC in Wailuku. The final disposition of artifactual and sample materials shall be determined in coordination with the landowners.

SPECIFIC CONDITIONS

The purpose of this section is to establish the scope and methods to be applied during archaeological monitoring for each of the three sensitivity ratings.

Monitoring Scope A (High Sensitivity Segments)

1. Full-time monitoring will remain in effect as warranted,
2. In segments where human remains are anticipated, mechanical trenching will proceed in increments or lifts not to exceed 3-4 inches to minimize potential displacement and disturbance of human remains,
3. In segments where cultural deposit is anticipated, but with low potential for human remains, the trenching will proceed in increments or lifts not exceeding 6-8 inches to minimize disturbance of *in situ* materials,

Monitoring Scope B (Moderate Sensitivity Segments)

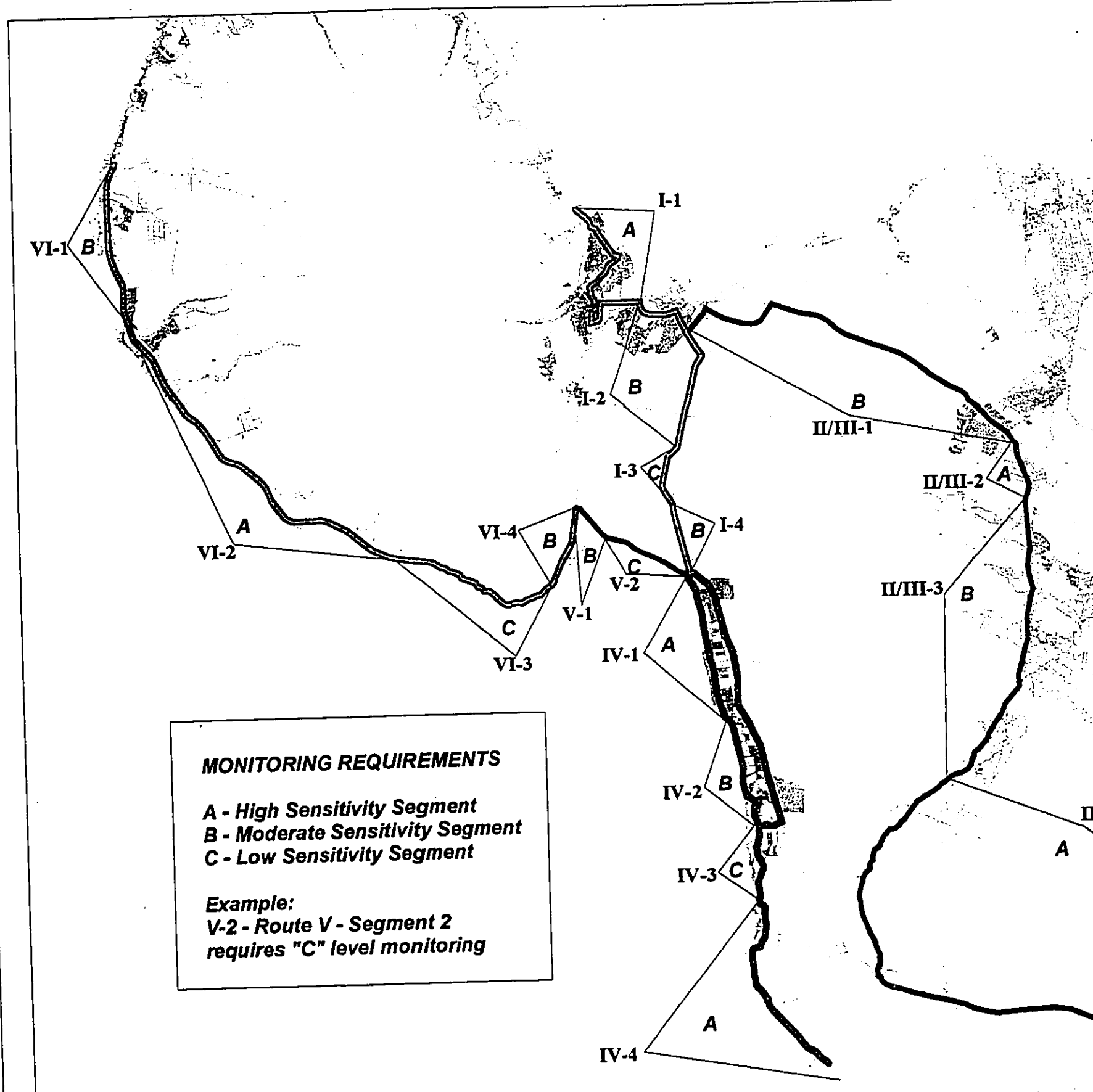
1. Full-time and/or part-time monitoring will remain effect as warranted,
2. Initial mechanical trenching to proceed in increments or lifts not to exceed 12 inches,
3. When the subsurface conditions are adequately assessed, spot-monitoring (twice daily) may be instituted at the discretion of the supervisory monitor,

Monitoring Scope C (Low Sensitivity Segments)

1. Initial full-time monitoring as warranted,
2. No restrictions to mechanical procedures,
3. Spot-monitoring (once to twice daily) to be instituted at discretion of supervisory monitor.

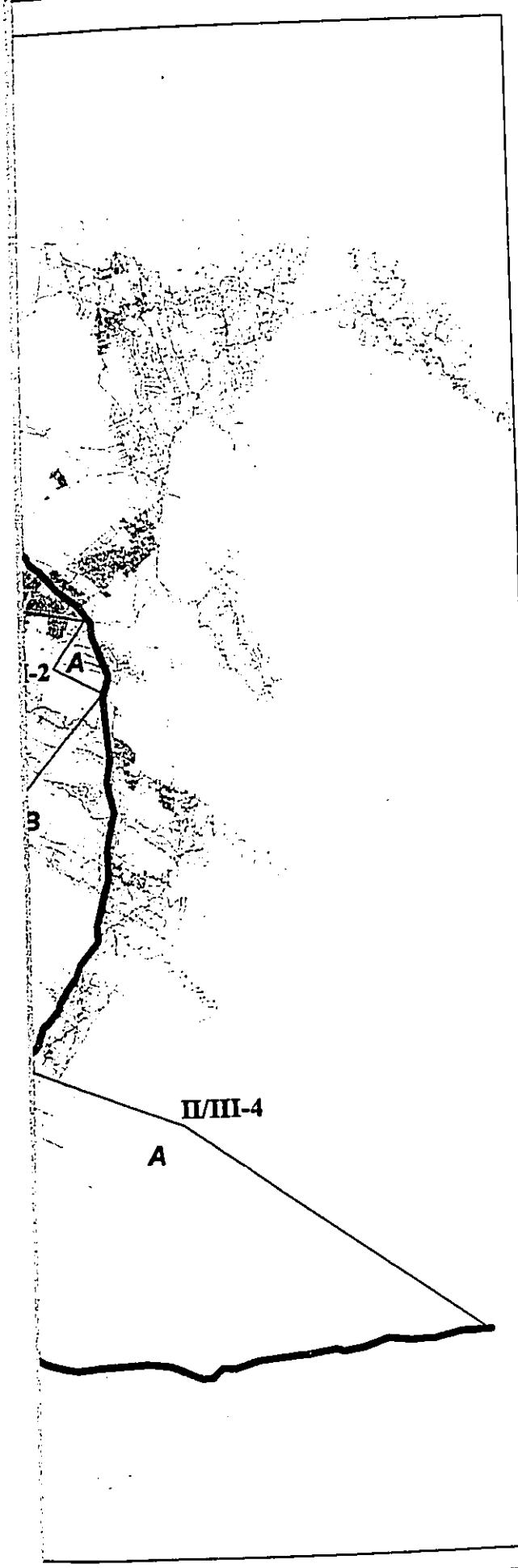
All construction-related excavation work, for all segments of each phase of the project, shall initially be monitored by one full-time monitor per piece of excavating equipment, until the nature and extent of subsurface cultural sensitivity and the contingent appropriate scoping can be determined. The monitoring scopes for any given segment, especially for those with low or moderate sensitivity ratings, may be appropriately modified, contingent upon pertinent new data acquired during the initial stages of monitoring.

For the outlying areas of the Phase II/III route, from Ulupalakua to Kanaio, full-time or part-time monitoring shall be implemented since spot monitoring will not be feasible due to the distance and travel time. **Map 3** presents the recommended monitoring scopes (A-C) for each of the 18 segments along the cable route.


VI-1
B
A
VI-2
C
VI-3
VI-4
B
B
V-1
C
V-2
I-1
A
I-2
B
I-3
C
B
I-4
IV-1
A
IV-2
B
IV-3
C
IV-4
A
B
II/III-1
II/III-2
A
II/III-3
B
II
A
MONITORING REQUIREMENTS
A - High Sensitivity Segment
B - Moderate Sensitivity Segment
C - Low Sensitivity Segment
Example:
V-2 - Route V - Segment 2
requires "C" level monitoring

MAP-3

Archaeological Monitoring Requirements



Routes & Phases

- Waiehu-Puunene (Phase I)
- Kahului-Kahikinui (Phase II/III)
- Kihei-LaPerouse (Phase IV)
- Kihei-Maalaea (Phase V)
- Maalaea-Honokawai (Phase VI)

Proposed
Sandwich Isles Communication
Fiber Optic Cable Project

Prepared by:
Aki Sinoto Consulting

GIS by:
Eugene P. Dashiell, AICP
Environmental Planning Services

Historic Sites:
Historic Preservation Division, DLNR

Routes:
SSFM International

Base Map: TMK
GDSI, Inc

July 2001

Archaeological Services Hawaii, LLC

2 0 2 4 Miles

DISCUSSION

Many interesting points come to light with a broad perspective of compiled data. For instance, the depiction of the locations of a large number of sites, as exemplified by **Map 1,** effectively illustrates the concept of sampling bias and indirectly the outside forces that influence the recovery of archaeological data. That Walker's pioneering survey concentrated along existing roadways is not unknown, but to have it graphically represented on a map, serves as an effective reminder of the meaning as well as the limitations of available data. Another example is the high number of sites represented in the Phase IV-Kihei to Cape Kinau route. That is not an indication of site density in the region when compared to the other areas, rather it attests to the volume of archaeological data recovery continuing over the past three decades in this region.

The broad-based overview is something that is markedly lacking in contract or development-related archaeology. The nature of such projects, by necessity, imposes arbitrary restrictions, at least from the reseacher's perspective, on the study boundaries and often on the scope as well. The responsibility then, falls on the researchers to devise strategies or approaches that can overcome these limitations and most effectively address the research problems of the particular locality within a regional or island-wide context.

The current assessment project provided an opportunity to compile a variety of data sources and to apply relatively new technologies to manage a large amount of information pertaining to wide-ranging areas of Maui Island. The use of previously generated archaeological data for planning purposes is not new. Unfortunately, perhaps due to the absence of easily accessible comprehensive data compilations and the ubiquitous time constraints posed by development-driven archaeology, it is a technique seldom practiced. The value of maintaining such data-bases with broad accessibility can easily be appreciated. The development of such tools should be directed, not just for academic or administrative purposes, but also for interactive planning and educational applications. As an example, similar predictability models will not only be an aid to the development sector, but will allow archaeologist to more effectively design mitigation strategies and procedures that address pertinent regional research problems.

In this regard then, the upcoming fiber-optic duct-line installation project will be a rare opportunity to sample a 96-mile long transect through major portions of the island of Maui.

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Appendix A-4-b

Supplement: Assessment of Two Alternate Routes Market Street and Piilani Highway

ASC017-1a

ADDENDUM ARCHAEOLOGICAL ASSESSMENT
SANDWICH ISLES COMMUNICATION SYSTEM PROJECT
MAUI ISLAND COMPONENT

SUPPLEMENT:
ASSESSMENT OF TWO ALTERNATE ROUTES
MARKET STREET AND PI'ILANI HIGHWAY

by

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INTRODUCTION

Amendment assessment procedures have been completed for two alternate route segments for the Sandwich Isles Fiber-optic Cable Project. This report is a supplement to the amendment survey report submitted earlier and only includes pertinent data regarding the two alternate route segments. These alternate routes were suggested by the Maui County Department of Public Works and Waste Management in order to avoid increased traffic congestion and by the Maui/Lana`i Islands Burial Council to minimize potential adverse impacts on human burial remains.

PROJECT AREA

The alternate routes consist of a segment of Phase I in Wailuku Town and a segment of Phase IV in Kihei. Detailed descriptions regarding each segment are presented in a following section. **Map 4** depicts the alignment of the Market Street Alternative and the alignment of the Pi`ilani Highway Alternative has previously been included on Detailed Maps IV-1 through IV-3 in the Appendix to the original assessment report.

HISTORIC LAND TENURE

The alternate route corridors cross or encroach upon a total of fourteen Land Commission Awards; 11 for the Market Street alternate in Wailuku and 3 for the Pi`ilani Highway alternate in Kihei. Out of the eleven however, 8 have been listed in the Phase I and IV LCA inventories in the amendment survey report. Summaries are presented below and **Table 11** presents the LCA data for both alternate routes.

Phase I: Market Street Alternate

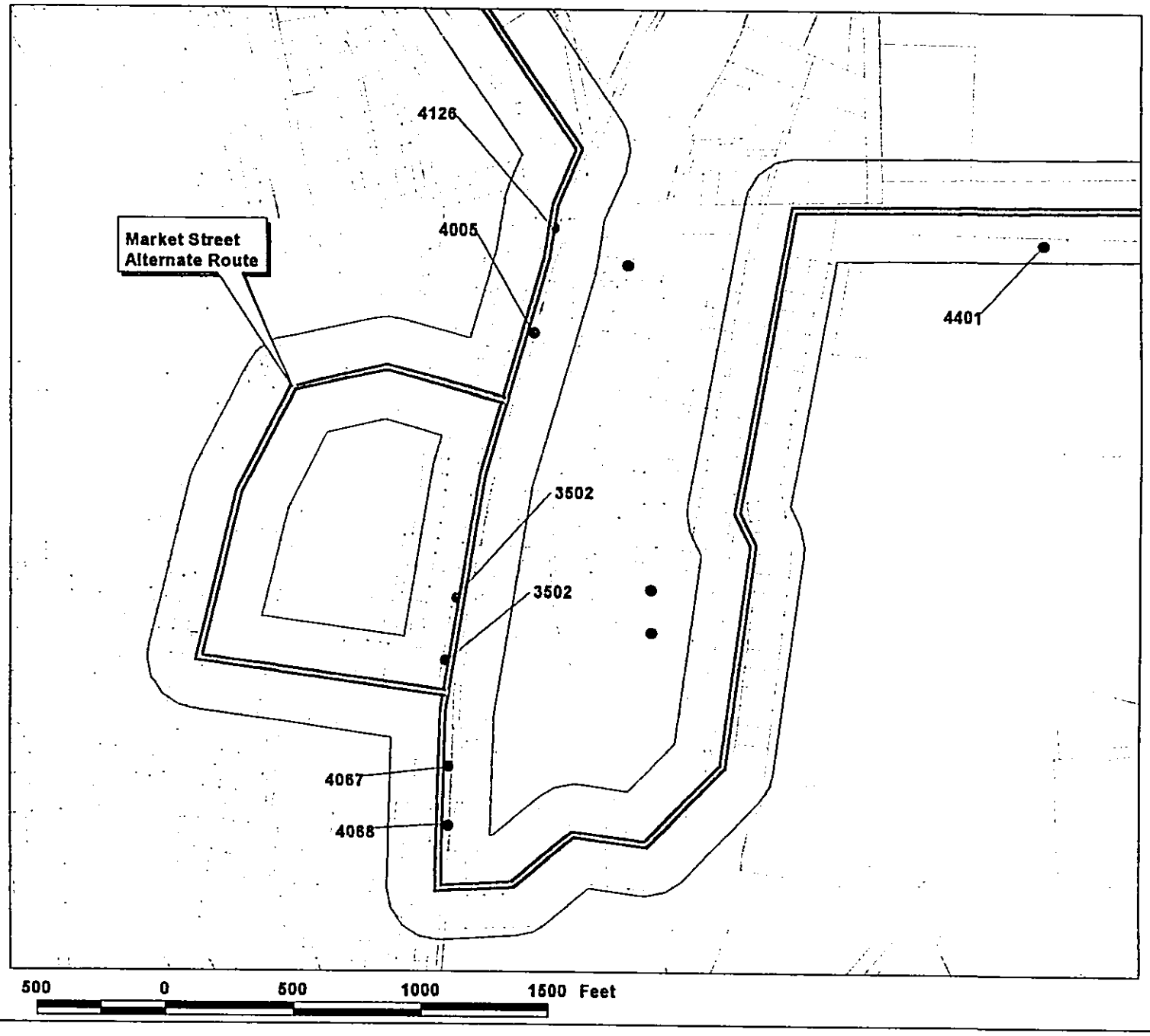
A total of 11 LCA's with known land-use were retrieved from the Market Street Alternate route segment in Wailuku. Seven of these were previously listed, meaning that some of the LCA's encompass both the alternate and original routes. The land-use consists of 3 *ali`i* lands, 1 *po`alima*, 2 with multiple *lo`i*, 2 taro lands, grassland, and 2 with multiple mo`o.

Phase IV: Pi`ilani Highway Alternate

A total of three LCA's with known land-use were retrieved from the Pi`ilani Highway Alternate route segment in Kihei. One of these was previously listed. The land-use consists of 2 *ali`i* lands and 1 *lo`i*.

Phase I - Market Street Alternate Route

MAP- 4



Proposed
Sandwich Isles Communication
Fiber Optic Cable Project

Prepared by:
Aki Sinoto Consulting

GIS by:
Eugene P. Dashiell, AICP
Environmental Planning Services

Historic Sites:
Historic Preservation Division, DLNR

Routes:
SSFM International

Base Map: TMK
GDSI, Inc

July 2001

Table 11. Land Commission Awards within the Two Alternate Segments

LOCALITY	LCA NO.	TMK	AWARDEE	LAND-USE
Wailuku	8465	3-4-20:	Kamakanahoa	taro land
Kalua	5373:2&3	"	Eli	po`alima
"	3512:1&2	"	Haumanalau	grassland
"	3339:2	-	Napue	kalo
"	2532:1*	-	Kamakahanohano	13 lo`i, dry
"	3233:1*	-	Hoaai	3 mo`o, 2 lo`i
"	7713:2,3*	-	V. Kamamalu	ali`i lands
"	3235*	-	Haleola	5 mo`o, kula
"	3214*	-	Ehu	kalo
"	5228:1*	-	Kuihelani	ali`i lands
Owa	420*	-	"	house, ali`i lands
PI`ILANI HWY				
Kaonoulu	3237:part 2	3-8-	H. Hewahewa	ali`i lands
Kula	8452:19	"	Keahokalole	ali"i lands
North Kihei	5230*	3-8-1:	Keaweamahi	lo`i
*previously listed				

SENSITIVITY ASSESSMENTS

This section describes each alternate segment in detail and provides the justification for the assigned ratings.

PHASE I: Market Street Alternate, Moderate Sensitivity

This alternate adjoins the portion of Segment I-1 which traverses southward along Waiale Road. It is a U-shaped detour off of Waiale Road to the west which starts at the Wells Street intersection, continues westward along Wells Street to Market Street. At Market Street the alternate route continues southward to the Kaohu Street intersection where the segment turns eastward along Kaohu Street and continues to the intersection with Waiale Road, where the route rejoins the original Phase I Segment 1 route. Although located close to the Puuone sand dune area, this alternate route contains minimal deposit of sand. No previously located archaeological sites occur within the corridor of the alternate route. Portions of 11 LCA's occur within the corridor.

PHASE IV: Pi`ilani Highway Alternate, Moderate Sensitivity

This alternate comprises the currently existing length of the Pi`ilani Highway which, located roughly 1 to 1.5 miles inland and paralleling Phase IV Segments I and II along South Kihei Road. From the Mokulele Highway and Kihei Road junction, the alternate route proceeds southward and continues until the end of the current terminus of the highway at Okolani Drive. Only 3 LCA's are present within the corridor. Twenty-nine, previously recorded archaeological sites occur within the corridor. These consist primarily of traditional Hawaiian sites ranging from, named *heiau*, agricultural and habitation complexes to small, isolated, structural features. Many of the Walker site locations are questionable and have not been ground truthed. Some of the sites were destroyed during the construction of Pi`ilani Highway while the subsurface components of these and many of the other sites may still exist below the ground. A site summary is presented on **Table 12.**

RECOMMENDED SCOPE OF MONITORING

Monitoring Scope B is recommended for both alternate routes. Although no previously recorded sites were present, the Market Street Alternate, at least during the early stages of construction, requires close scrutiny based, in part, to its proximity to areas with many burials and other historic remains.

With twenty-nine previously recorded sites within the corridor area, the Pi`ilani Highway alignment warrants full-time monitoring, at least during the initial stages of excavations.

Monitoring Scope B (Moderate Sensitivity Segments)

1. Full-time and/or part-time monitoring will remain effect as warranted,
2. Initial mechanical trenching to proceed in increments or lifts not to exceed 12 inches,
3. When the subsurface conditions are adequately assessed, spot-monitoring (twice daily) may be instituted at the discretion of the supervisory monitor,

Table 12. Archaeological Sites in the Pi`ilani Highway Alternate Route

SITE NO.	TYPE/NAME	TMK
1701	concret piers	238077999
220	(1049) Alae heiau	"
221	(129) Haleokane heiau	"
222	Nininiwai heiau	"
T-1	deleted	222024019
T-6	deleted	222024020
2475	Waiohuli Agric. Complex	222240023
2518	Keokea agric. complex	222240999
2513	Keokea agric. site	222240999
223	(1055) Pulehu heiau	222240999
2515	modified outcrop	222002042
2512	Keokea complex	222002042
2524	habitation complex	222002073
224	Mo`omoku heiau	222002069
1716	wall & trail	234018999
1717	wall	222002070
1719	bridge	239018001
1720	aquaduct	222002999
1721	Kamaole bridge	239019004
1723	C-shape	222002001
1724	enclosure & mound	222002999
1718	bridge	221008114
1730	C-shapes & enclosures	221008999
1731	enclosures	221008999
1734	enclosures	221008999
1735	C-shape	221008114
1736	wall	221013999

Appendix A-4-c

Archaeological Monitoring Plan

ASC017-1c

ARCHAEOLOGICAL MONITORING PLAN: SANDWICH ISLES COMMUNICATION SYSTEM PROJECT MAUI ISLAND COMPONENT

for

SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96813

July 2001

Aki Sinoto Consulting
2333 Kapiolani Blvd. #2704
Honolulu, Hawaii 96826

in association with

Archaeological Services Hawaii, LLC
16 South Market Street, Suite G
Wailuku, Hawaii 96793

MAP-1 . Location of Project Corridors

Proposed
Sandwich Isles Communication
Fiber Optic Cable Project

Prepared by:
Aki Sinoto Consulting

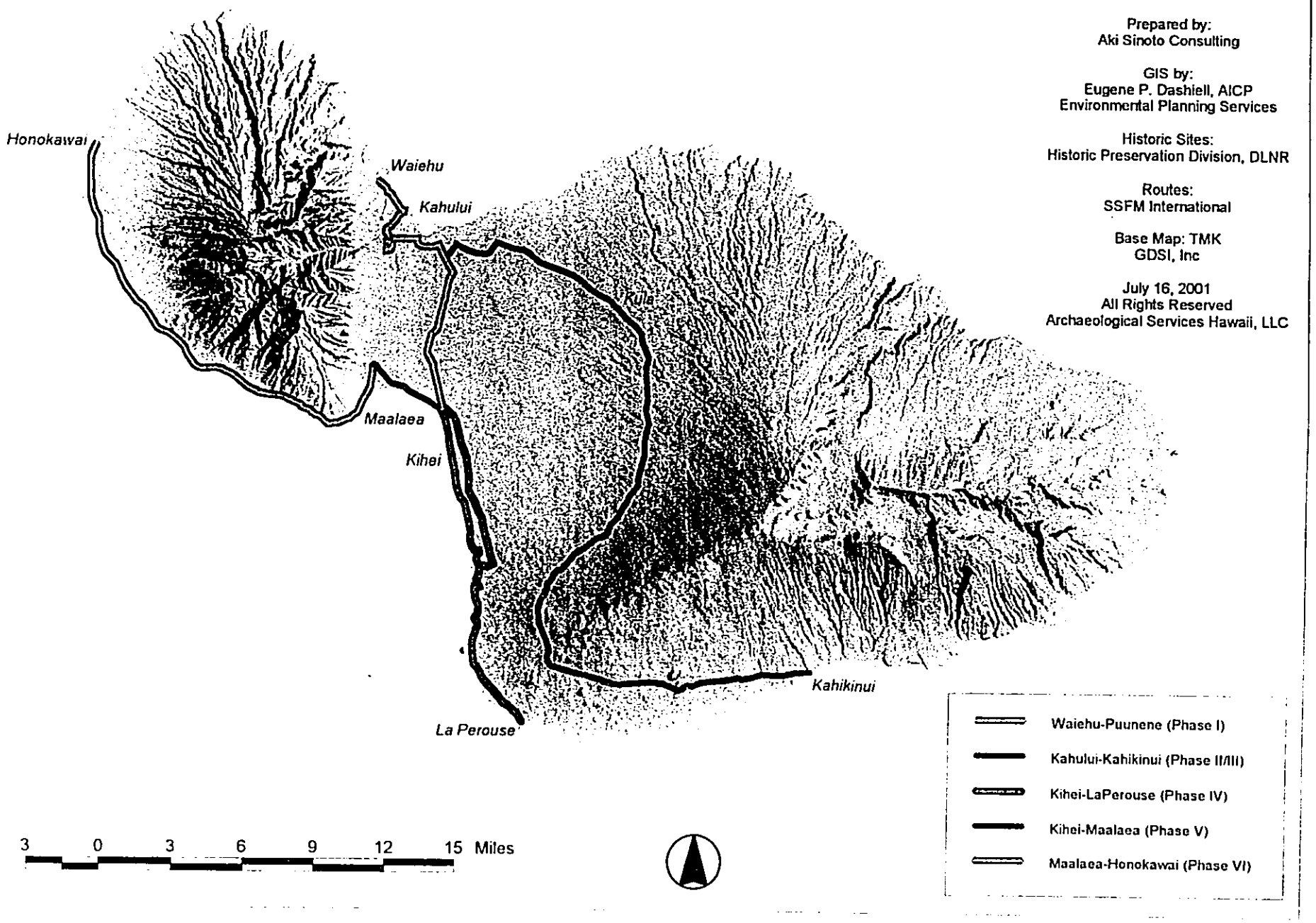
GIS by:
Eugene P. Dashiell, AICP
Environmental Planning Services

Historic Sites:
Historic Preservation Division, DLNR

Routes:
SSFM International

Base Map: TMK
GDSI, Inc

July 16, 2001



2. Presence of unrecorded surface remains within the buffer; and
3. Segments in which the potential for significant subsurface remains are high based on substrate or environment, such as sand dunes, beach or shoreline areas, and lava tubes;

Moderate Sensitivity

1. Segments with no previous archaeological information;
2. Segments with no surface remains, but with soil deposition that presents the potential for subsurface cultural remains; and
3. Large-scale agricultural cultivation areas such as cane and pineapple fields where the possibility for buried cultural remains exists below the till zone;

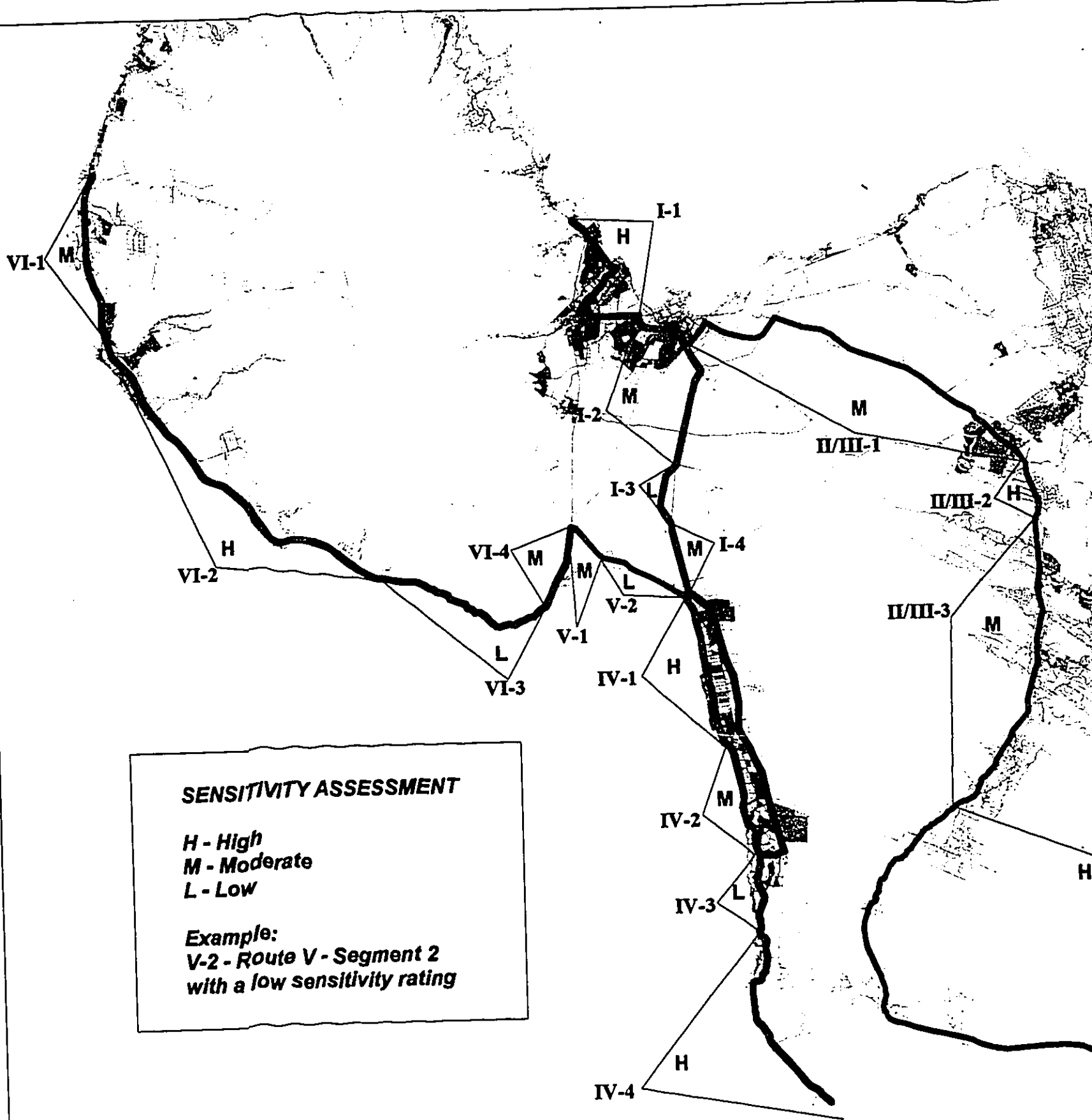
Low Sensitivity

1. Segments where previous archaeological information indicates minimal probability of subsurface remains;
2. Segments with rocky substrates or exposed solid bedrock; and
3. Segments with previous disturbance or alteration beyond the depth of the cable trench.

A total of 18 segments have been identified along the six phases of the total cable route. Phase I: Waiehu to Puunene (Kihei) contains 4 segments consisting of 1 high, 2 moderate, and 1 low sensitivity ratings. Phase II/III: Kahului to Kahikinui contains 4 segments consisting of 2 high and 2 moderate ratings. Phase IV: Kihei to La Perouse Bay contains 4 segments consisting of 2 high, 1 moderate, and 1 low ratings. Phase V: Kihei to Maalaea contains 2 segments consisting of 1 moderate and 1 low ratings. Phase VI: Maalaea to Honokowai contains 4 segments consisting of 1 high, 2 moderate, and 1 low ratings. Of the total 18 segments, 6 have been rated as high sensitivity (I-1; II/III-3&5; IV-1&4; VI-2), 8 have been rated as moderate sensitivity (I-2&4; II/III-2&4; IV-2; V-1; VI-1&4), and 4 have been rated as low sensitivity (I-3; IV-3; V-2; VI-3). **Map 2** provides project-wide, phase-specific sensitivity assessments and **Table 1** provides a summary of sensitivity ratings for segments of each phase.

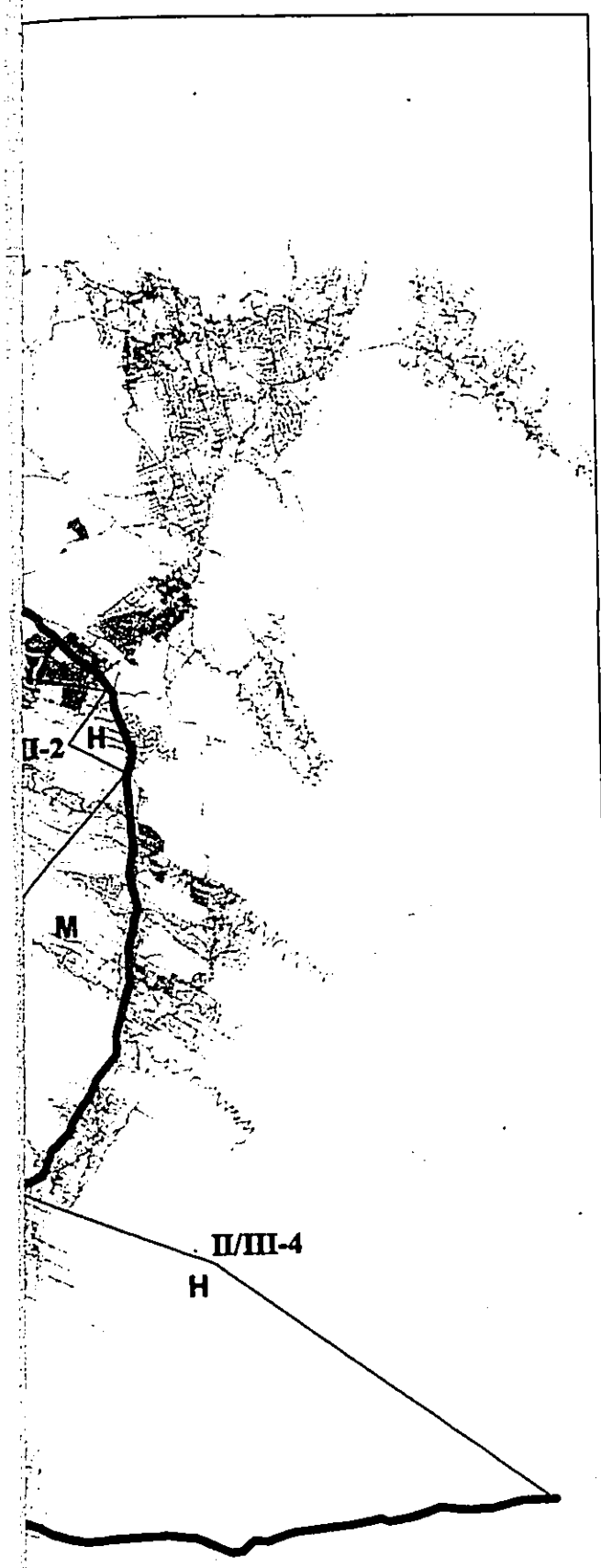
Table 1. Summary of Sensitivity Ratings for Segments of Each Phase

Phase-Segment	High	Moderate	Low
I-1	X		
I-2		X	
I-3			X
I-4		X	
II/III-1		X	
II/III-2	X		
II/III-3		X	
II/III-4	X		
IV-1	X		
IV-2		X	
IV-3			X
IV-4	X		
V-1		X	
V-2			X
VI-1		X	
VI-2	X		
VI-3			X
VI-4		X	


VI-1
M
H
VI-2
L
VI-3
VI-4
M
M
V-1
L
V-2
I-1
H
M
I-2
I-3
L
M
I-4
IV-1
H
M
IV-2
L
IV-3
H
IV-4
M
II/III-1
H
II/III-2
M
II/III-3
H
SENSITIVITY ASSESSMENT
H - High
M - Moderate
L - Low
Example:
V-2 - Route V - Segment 2
with a low sensitivity rating

MAP-2

Archaeological Sensitivity Assessment



Routes & Phases

- Waiehu-Puunene (Phase I)
- Kahului-Kahikinui (Phase II/III)
- Kihei-LaPerouse (Phase IV)
- Kihei-Maalaea (Phase V)
- Maalaea-Honokawai (Phase VI)

Proposed
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Historic Preservation Division, DLNR

Routes:
SSFM International

Base Map: TMK
GDSI, Inc

July 2001

Archaeological Services Hawaii, LLC

2 0 2 4 Miles

MONITORING PLAN

The proposed duct-line installation calls for mechanical trenching and burying the fiber-optic conduit throughout the whole route. In general, the trench is slated to be 18 inches in width and should not exceed 3 to 4 feet in depth. Directional drilling may be employed when necessary along certain segments of the route.

The Federal mandate for this undertaking is Section 106 of the National Historic Preservation Act. All construction-related excavation will undergo archaeological monitoring in accordance to State Historic Preservation Guidelines and Regulations contained in Chapter 6E of the Hawaii Revised Statutes and H.A.R. Chapter 13.300. The purpose of this section is to clearly establish the scope of the monitoring procedures given the expansive area of coverage as well as the usual variables and unknowns of such projects.

GENERAL CONDITIONS

Prior to commencement of construction and monitoring activities, a coordination meeting shall be held with representatives of all pertinent parties, including the State Historic Preservation Division (SHPD) staff archaeologist and members of the Maui/Lana`i Island Burial Council (MLIBC). Items to be discussed at this meeting include; 1) procedures to be followed for monitoring, 2) authority of the archaeological monitor to halt work in the immediate vicinity of a discovery, and 3) the kinds of features the archaeologist is interested in. The contractor shall familiarize the archaeologist with construction methods and safety considerations. Whenever possible, a Maui resident archaeologist will be assigned to this project to ensure timely response and overall efficiency.

All construction-related excavation work, for all segments of each phase of the project, shall be initially monitored by one full-time monitor per piece of excavating equipment, until the nature and extent of subsurface cultural sensitivity and the contingent appropriate scoping can be determined. Following this initial period, the appropriate scope of monitoring; whether full-time, part-time, or spot-check shall be determined and implemented by the archaeologist in coordination with the developer and contractor with concurrent notice to SHPD and MLIBC. If grubbed material is planned to be taken off-site, to the extent feasible, all inspections shall be completed within the project area prior to transporting.

If any significant cultural remains are inadvertently discovered during the course of monitoring, all construction activities in the immediate area of the discovery shall be temporarily halted until the archaeologist can record and mitigate the remains or determine if additional procedures are needed. However, construction-related work, beyond the immediate area may continue in consultation with the archaeologist. All archaeological methods, standards, and techniques for recording and collection of data shall be followed.

Representative stratigraphic profiles shall be regularly recorded and any depositional anomalies shall also be documented. Photographic record of monitoring activities shall be maintained. No additional data recovery procedures shall be implemented without prior approval by the State Historic Preservation Division and consent of the developer.

Should any human remains be inadvertently discovered during the course of this undertaking, all construction activities shall be halted in the immediate vicinity. The developer shall be consulted to assess the possibility of avoiding the findings. Whenever possible, avoidance shall be implemented. If possible, without further disturbance to the remains, the determination of temporal and ethnic origins of the burial shall be attempted. If following these procedures, the remains are determined or suspected to be Native Hawaiian, measures shall be taken to ensure temporary *in situ* protection of the remains. The State Historic Preservation Division of the Department of Land and Natural Resources shall be contacted and a decision shall be made in coordination with the Maui/Lana`i Island Burial Council regarding *in situ* preservation or removal and reinterment. A burial treatment plan shall be prepared for approval by the SHPD and MLIBC.

An interim archaeological monitoring report shall be submitted by the archaeologist to SHPD for review and approval, no later than 90 days following the completion of each phase of the proposed 6 phase project. Following the field phase of this project, all necessary laboratory procedures shall be undertaken. This may include; processing, cataloging, and analysis of artifacts , with the exception of any grave goods, which shall remain with the burials with which they are associated; analyses of any collected samples as warranted; and outside consultant analysis of radiocarbon samples. The collected data shall be synthesized and compiled into a final report. No photographs of human remains, including any associated funerary objects, shall be included in the final report.

All records, notes, photographs, and maps shall be archived at the facilities of Archaeological Services Hawaii, LLC in Wailuku. The final disposition of artifactual and sample materials shall be determined in coordination with the landowners.

SPECIFIC CONDITIONS

The purpose of this section is to establish the scope and methods to be applied during archaeological monitoring for each of the three sensitivity ratings.

Monitoring Scope A (High Sensitivity Segments)

1. Full-time monitoring will remain in effect as warranted,
2. In segments where human remains are anticipated, mechanical trenching will proceed in increments or lifts not to exceed 3-4 inches to minimize potential displacement and disturbance of human remains,
3. In segments where cultural deposit is anticipated, but with low potential for human remains, the trenching will proceed in increments or lifts not exceeding 6-8 inches to minimize disturbance of *in situ* materials,

Monitoring Scope B (Moderate Sensitivity Segments)

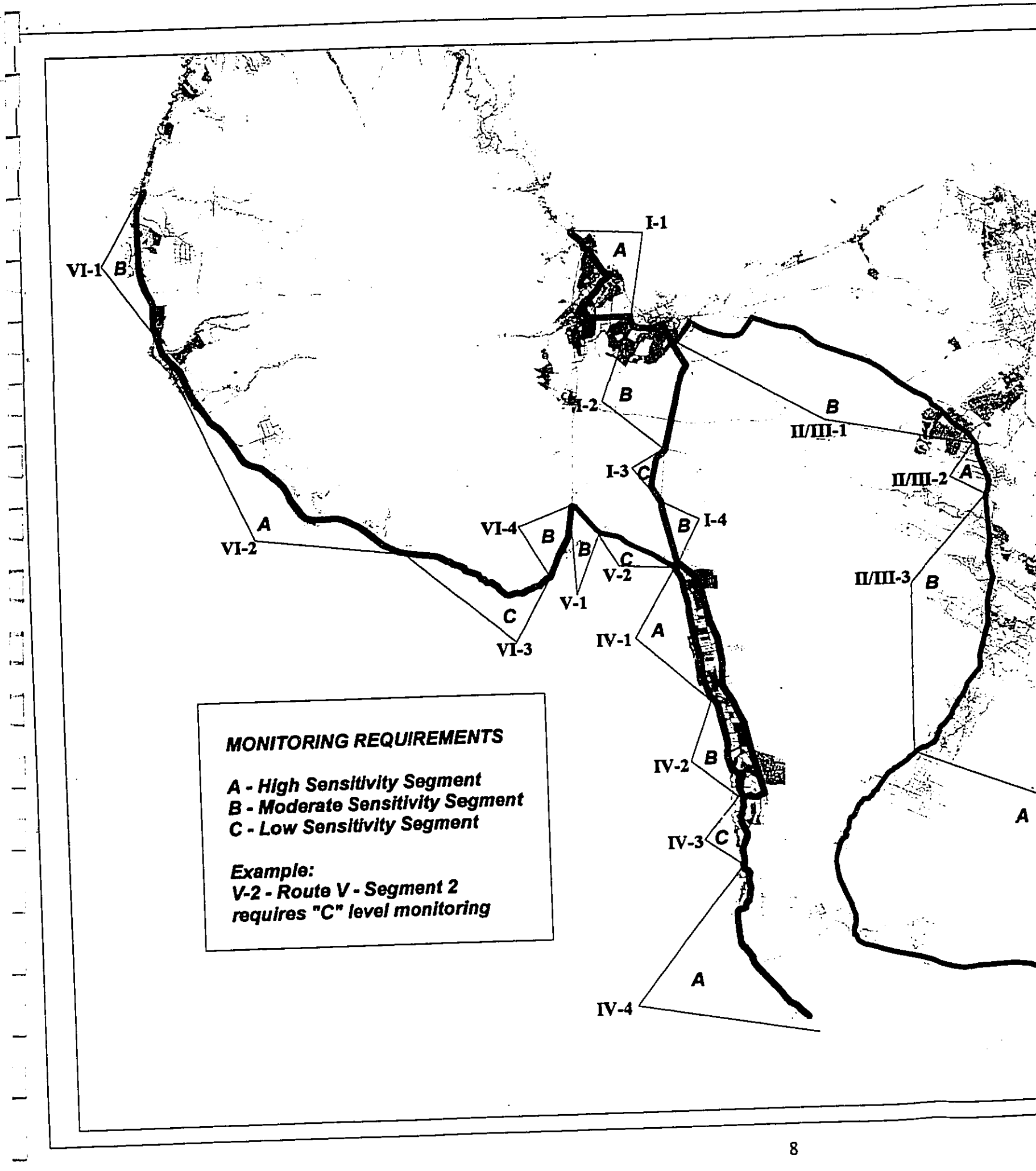
1. Full-time and/or part-time monitoring will remain effect as warranted,
2. Initial mechanical trenching to proceed in increments or lifts not to exceed 12 inches,
3. When the subsurface conditions are adequately assessed, spot-monitoring (twice daily) may be instituted at the discretion of the supervisory monitor,

Monitoring Scope C (Low Sensitivity Segments)

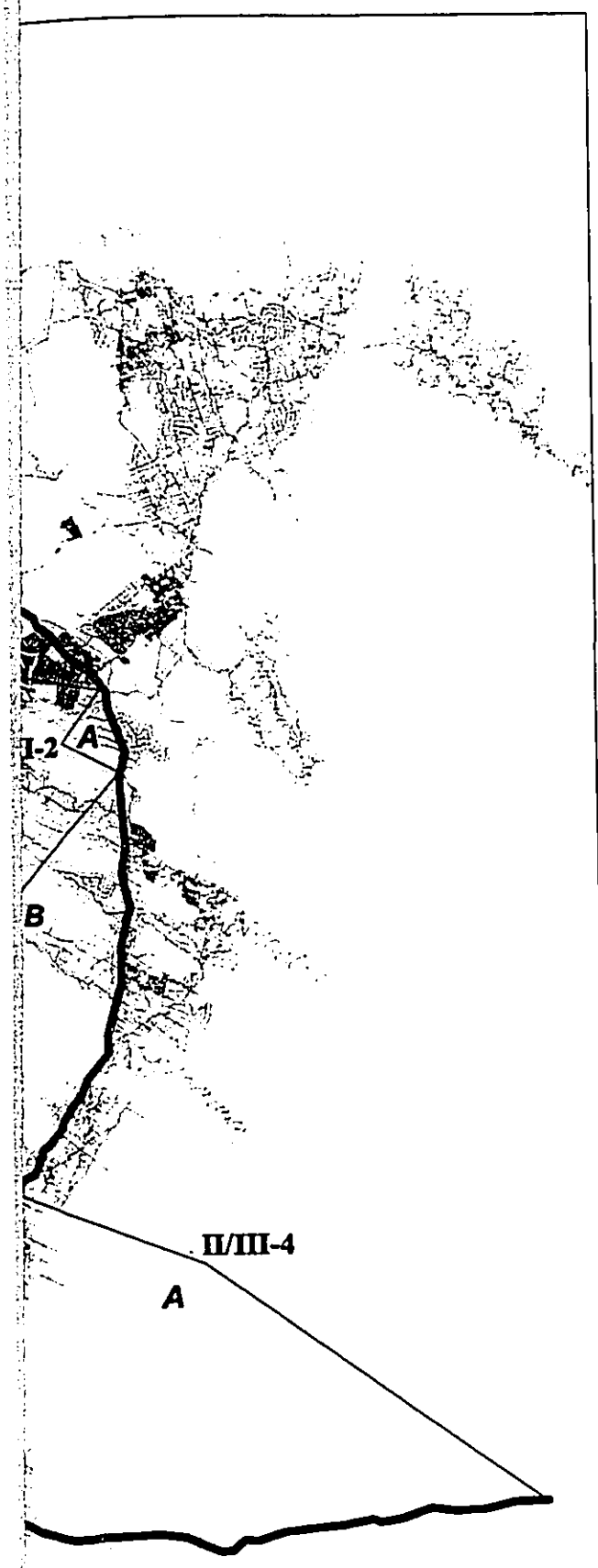
1. Initial full-time monitoring as warranted,
2. No restrictions to mechanical procedures,
3. Spot-monitoring (once to twice daily) to be instituted at discretion of supervisory monitor.

All construction-related excavation work, for all segments of each phase of the project, shall initially be monitored by one full-time monitor per piece of excavating equipment, until the nature and extent of subsurface cultural sensitivity and the contingent appropriate scoping can be determined. The monitoring scopes for any given segment, especially for those with low or moderate sensitivity ratings, may be appropriately modified, contingent upon pertinent new data acquired during the initial stages of monitoring.

For the outlying areas of the Phase II/III route, from Ulupalakua to Kanaio, full-time or part-time monitoring shall be implemented since spot monitoring will not be feasible due to the distance and travel time. **Map 3** presents the recommended monitoring scopes (A-C) for each of the 18 segments along the cable route.


VI-1
B
A
VI-2
C
VI-3
VI-4
B
B
V-1
C
V-2
I-1
A
I-2
B
I-3
C
B
I-4
IV-1
A
IV-2
B
IV-3
C
IV-4
A
B
II/III-1
II/III-2
A
II/III-3
B
A
MONITORING REQUIREMENTS
A - High Sensitivity Segment
B - Moderate Sensitivity Segment
C - Low Sensitivity Segment
Example:
V-2 - Route V - Segment 2
requires "C" level monitoring

MAP-3
Archaeological Monitoring Requirements



Routes & Phases

- Waiehu-Puunene (Phase I)
- Kahului-Kahikinui (Phase II/III)
- Kihei-LaPerouse (Phase IV)
- Kihei-Maalaea (Phase V)
- Maalaea-Honokawai (Phase VI)

Proposed
Sandwich Isles Communication
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Prepared by:
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Environmental Planning Services

Historic Sites:
Historic Preservation Division, DLNR

Routes:
SSFM International

Base Map: TMK
GDSI, Inc

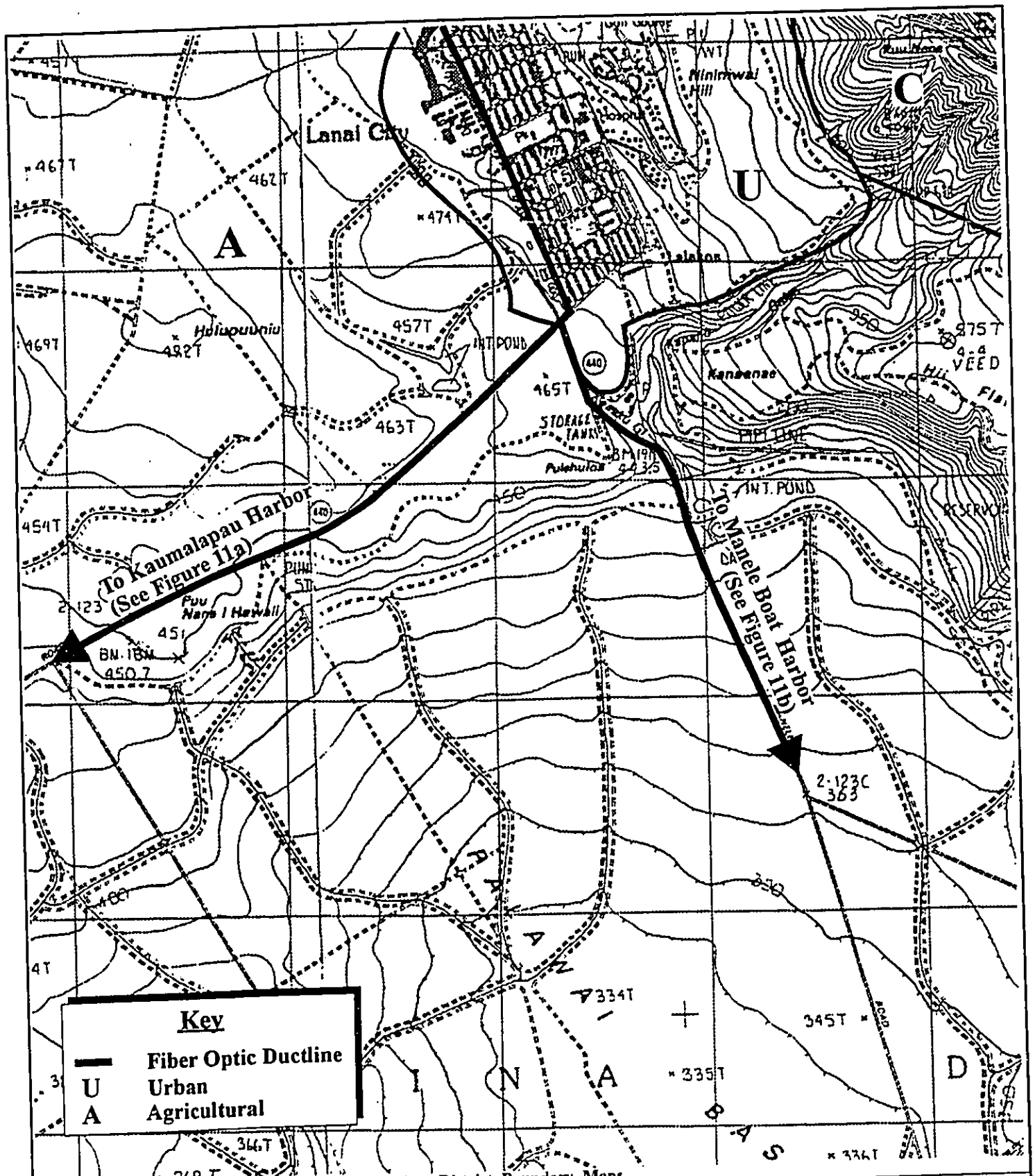
July 2001

Archaeological Services Hawaii, LLC

2 0 2 4 Miles

Appendix B

State Land Use Commission District Boundary Maps



Information Source: State Land Use Commission, District Boundary Maps

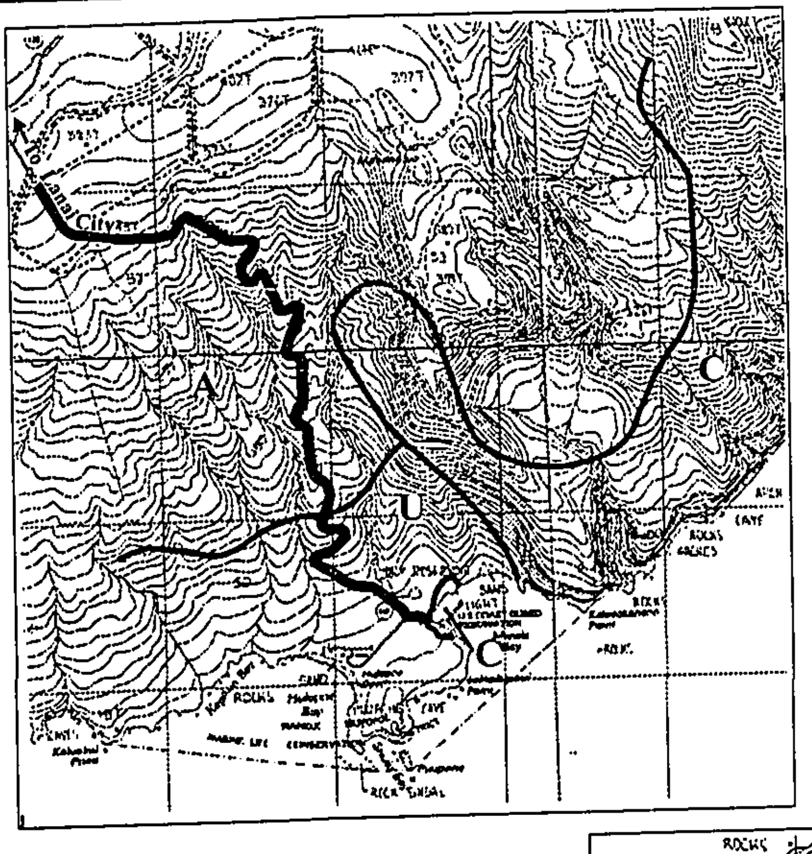
Exhibit B-1

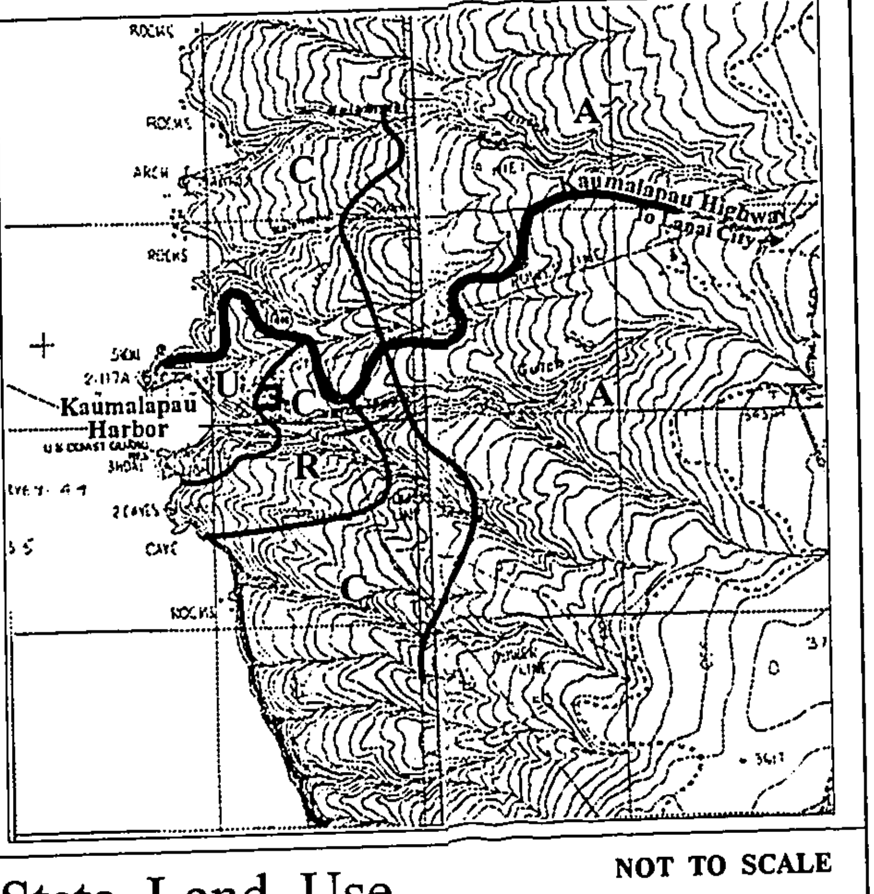
State Land Use District Boundaries
Lanai Route Segments

0 0.2 0.4 0.8 Mile

MUNEKIYO & HIRAGA, INC.

Prepared for: Sandwich Isle Communications, Inc.





Key

- Fiber Optic Ductline Route
- **U** Urban
- **A** Agricultural
- **R** Rural
- **C** Conservation

Source: State Land Use Commission, District Boundary Maps

NOT TO SCALE

Exhibit B-2

State Land Use District Boundaries

Lanai Route Segments

MUNEKIYO & HIRAGA, INC.

Prepared for: Sandwich Isle Communications, Inc.

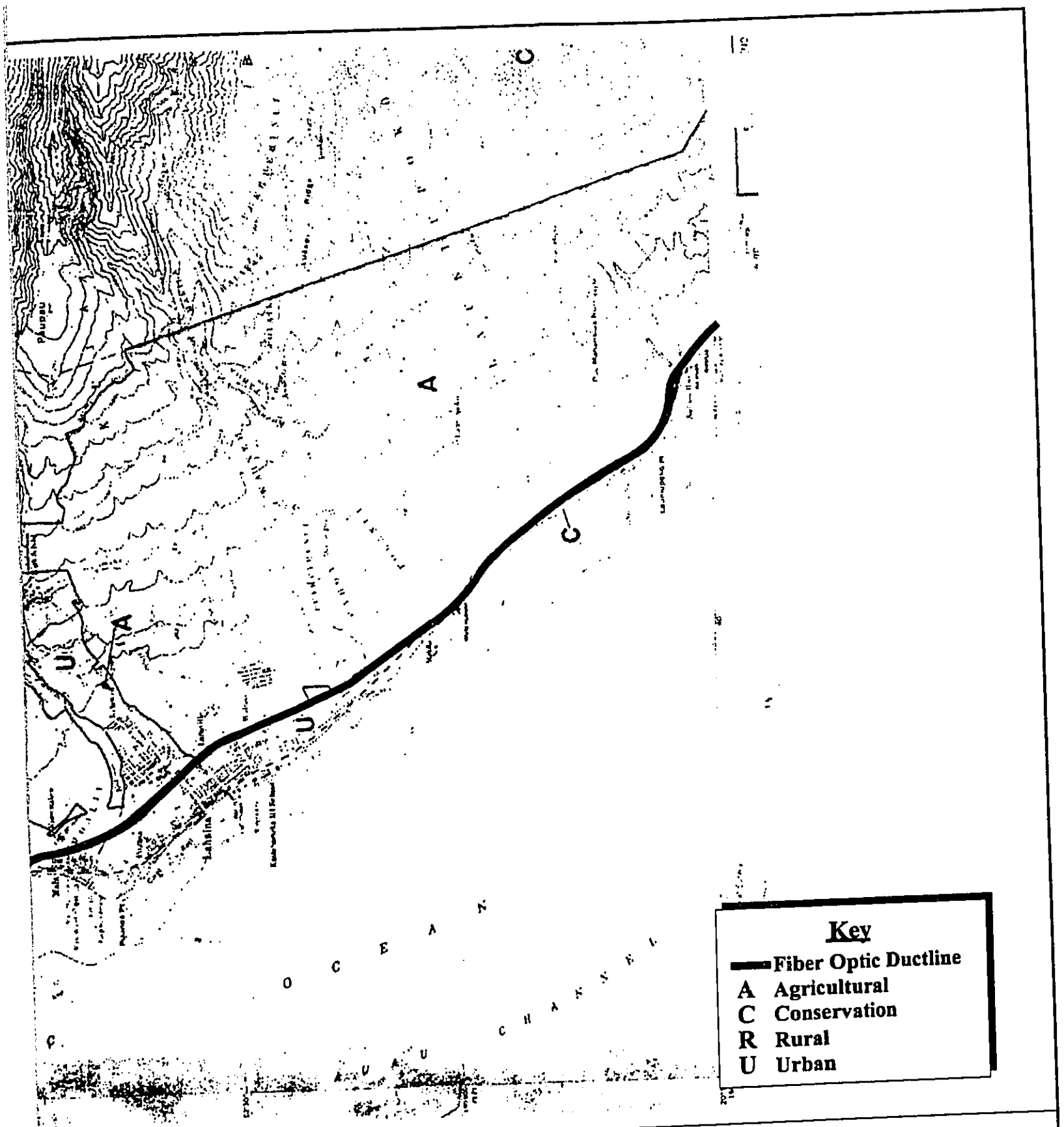
Source: State Land Use Commission, District Boundary Maps

Exhibit B-3

State Land Use District B

State Land Use Commission

Prepared for: Sandwich Isle Communications, Inc.

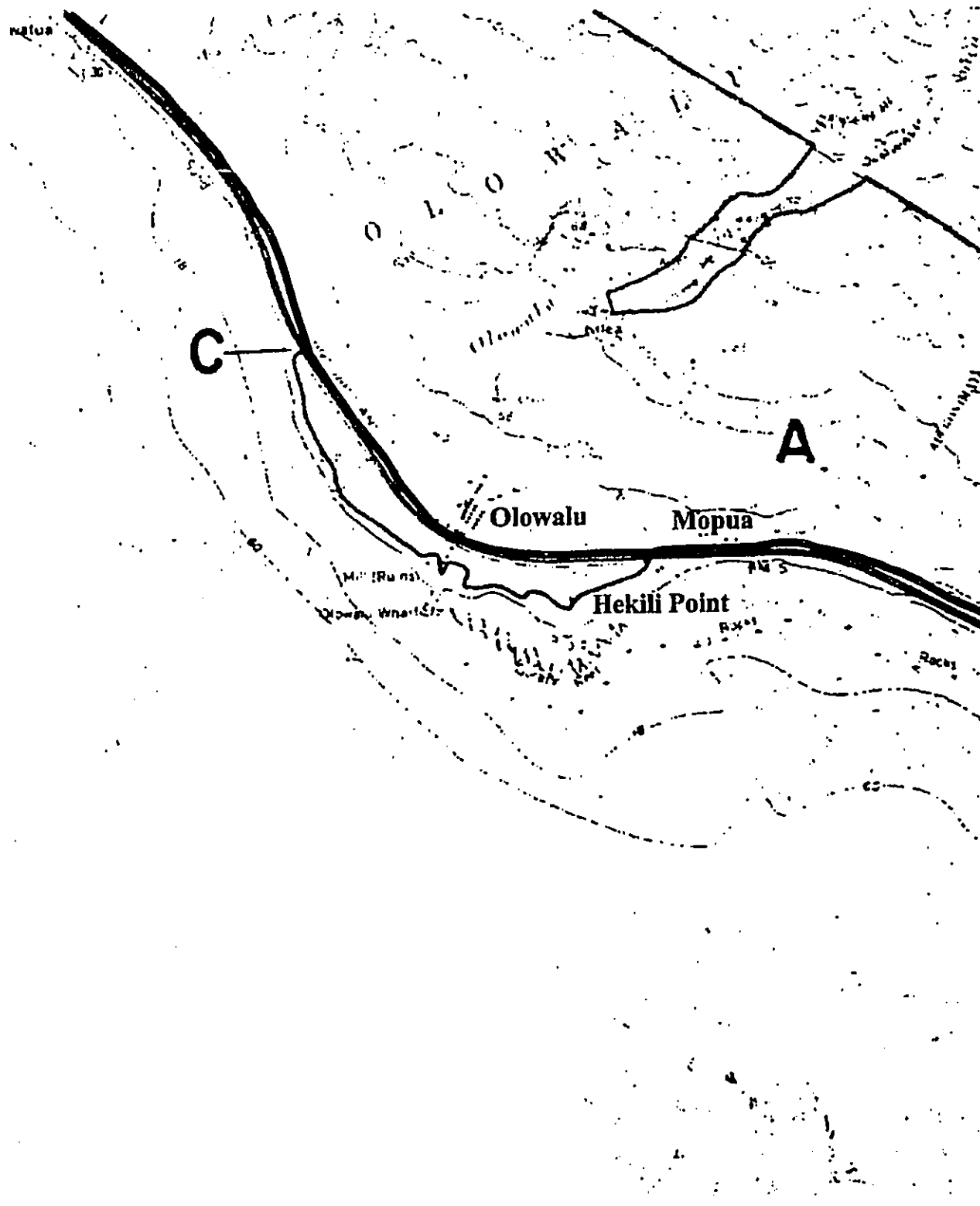


District Boundaries

mmission Map M-2

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.



Key

- Fiber Optic Ductline
- A Agricultural
- C Conservation

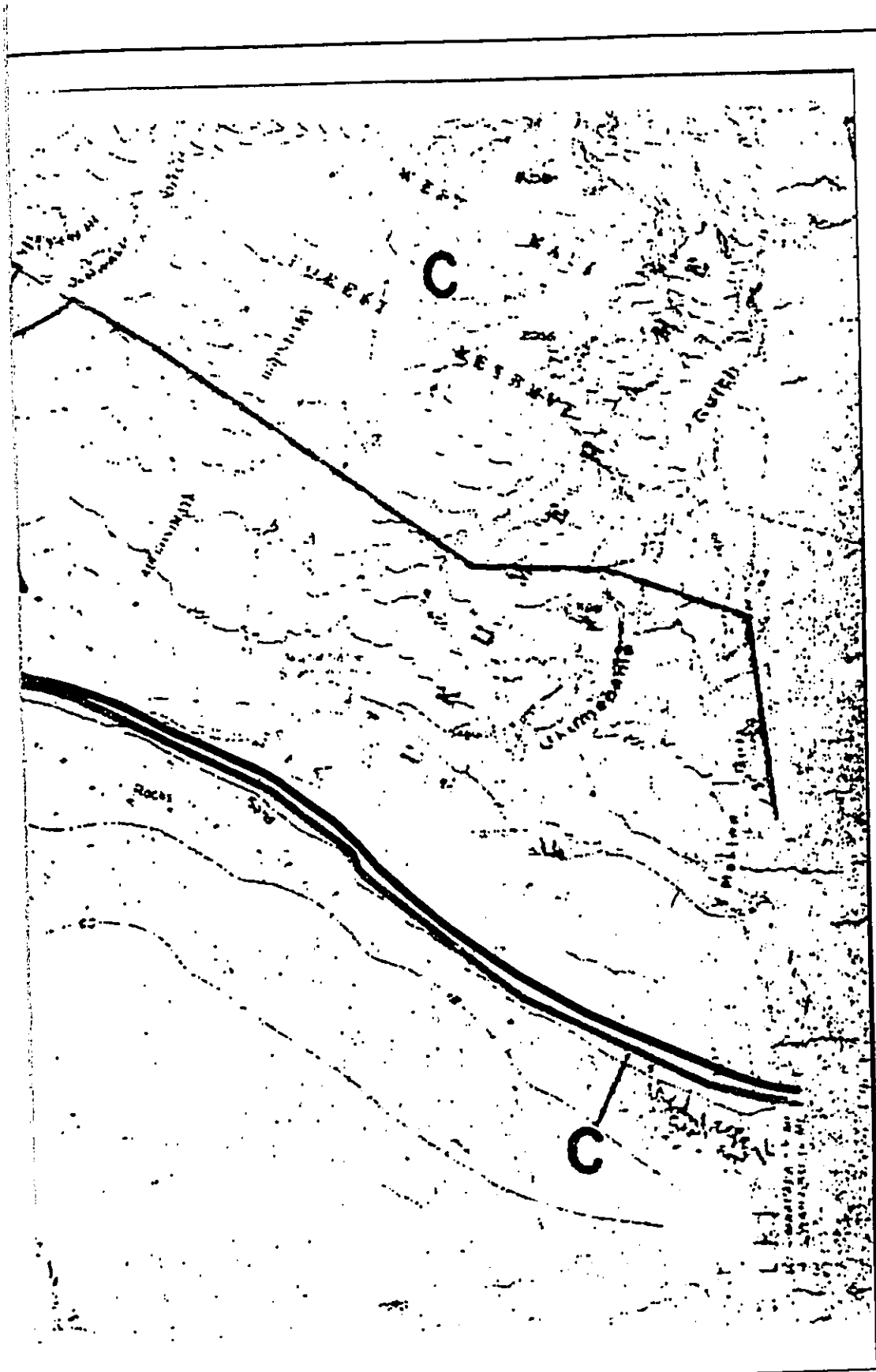
Source: State Land Use Commission, District Boundary Maps

Exhibit B-4

State Land Use District B

State Land Use Commission

Prepared for: Sandwich Isle Communications, Inc.



)istrict Boundaries
mmission Map M-3

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

Source: State Land Use Commission, District Boundary Maps

Exhibit B-5

State Land Use District B

State Land Use Commission

Prepared for: Sandwich Isle Communications, Inc.

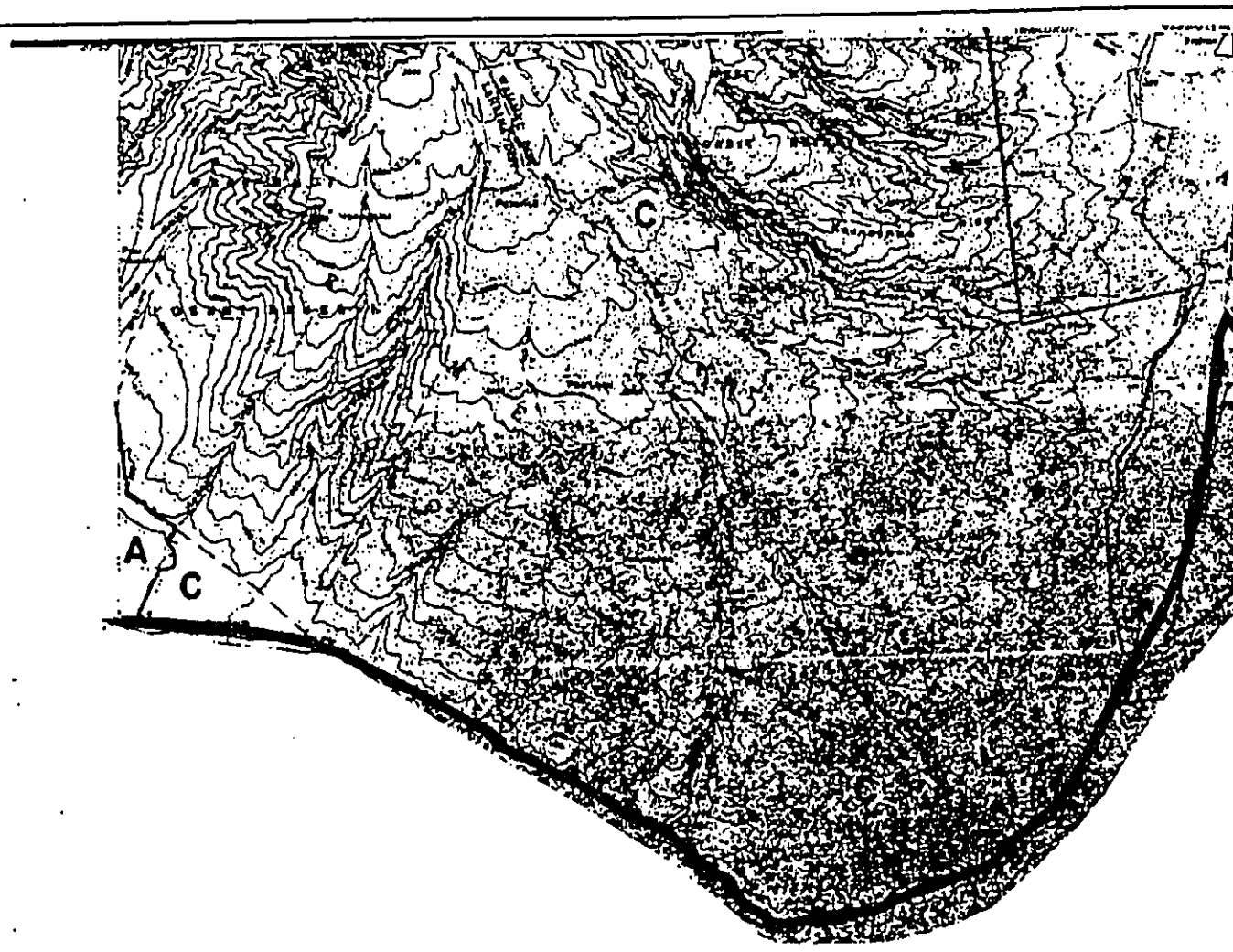
Key

- Fiber Optic Ductline
- **A** Agricultural
- **C** Conservation
- **R** Rural
- **U** Urban

District Boundaries
mmission Map M-5

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.



Pacific

Key

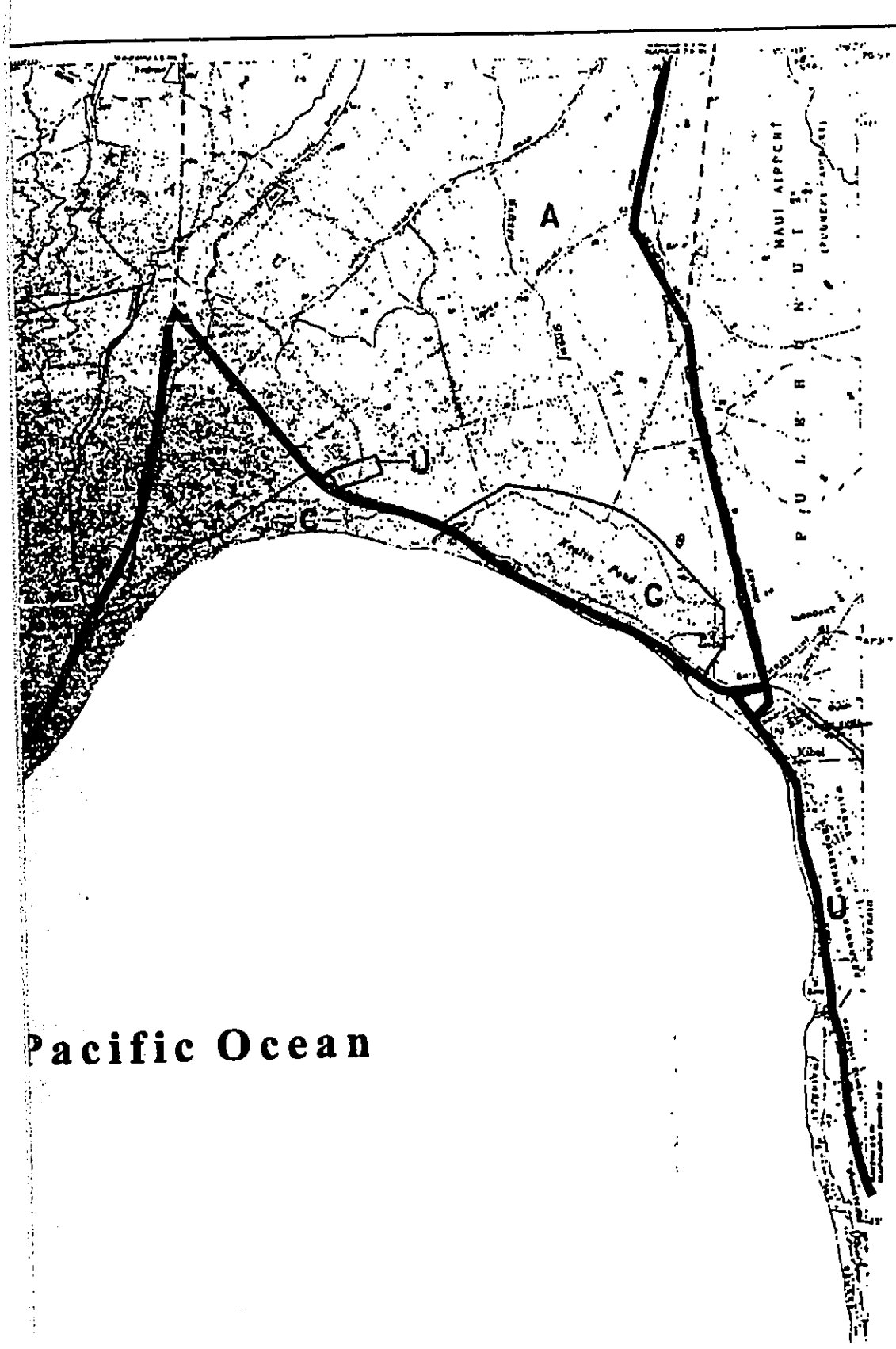
- Fiber Optic Ductline
- A Agricultural
- C Conservation
- R Rural
- U Urban

Source: State Land Use Commission, District Boundary Maps

Exhibit B-6

State Land Use District
State Land Use Commission

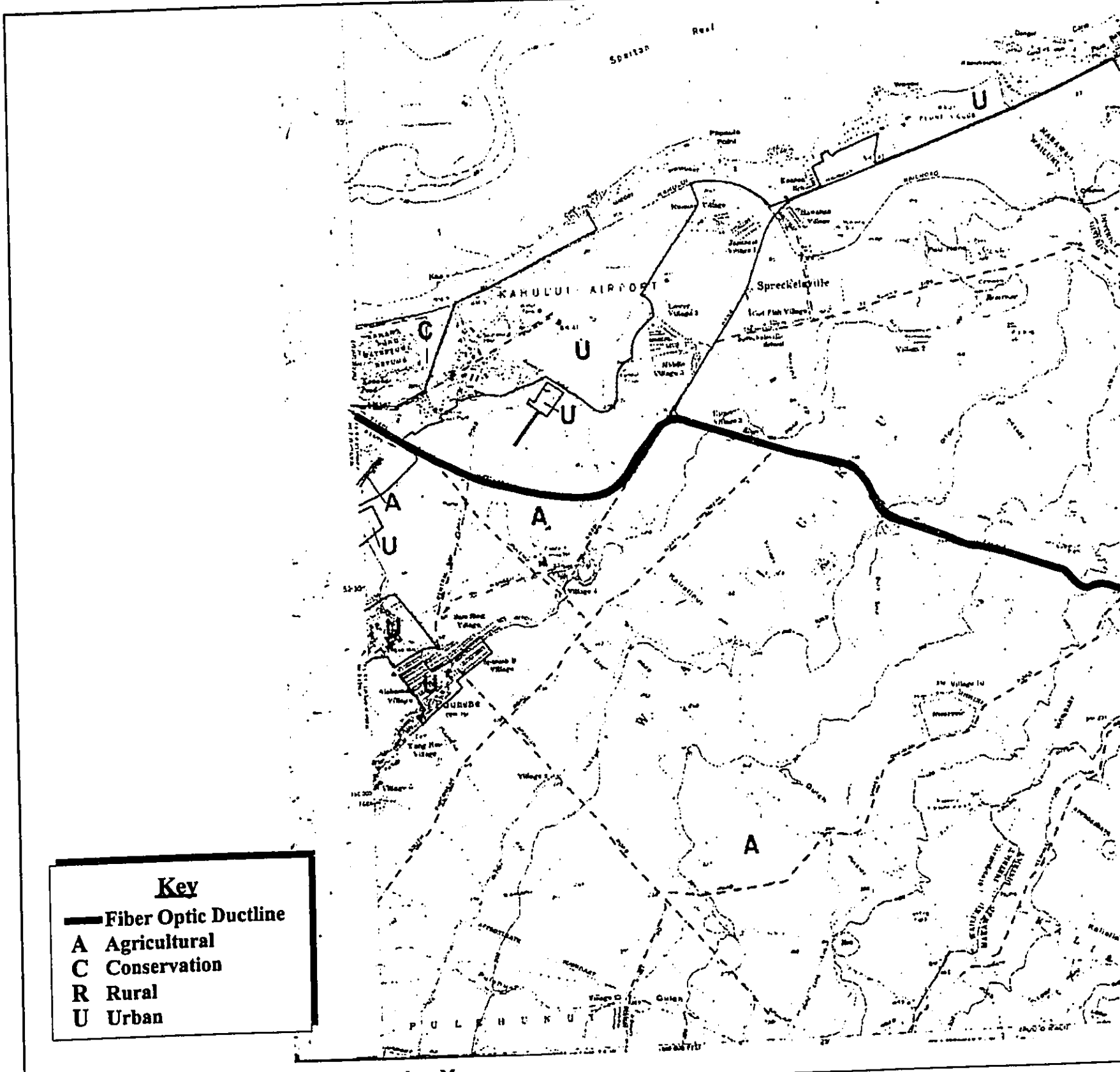
Prepared for: Sandwich Isle Communications, Inc.



District Boundaries
mmission Map M-6

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.



Key

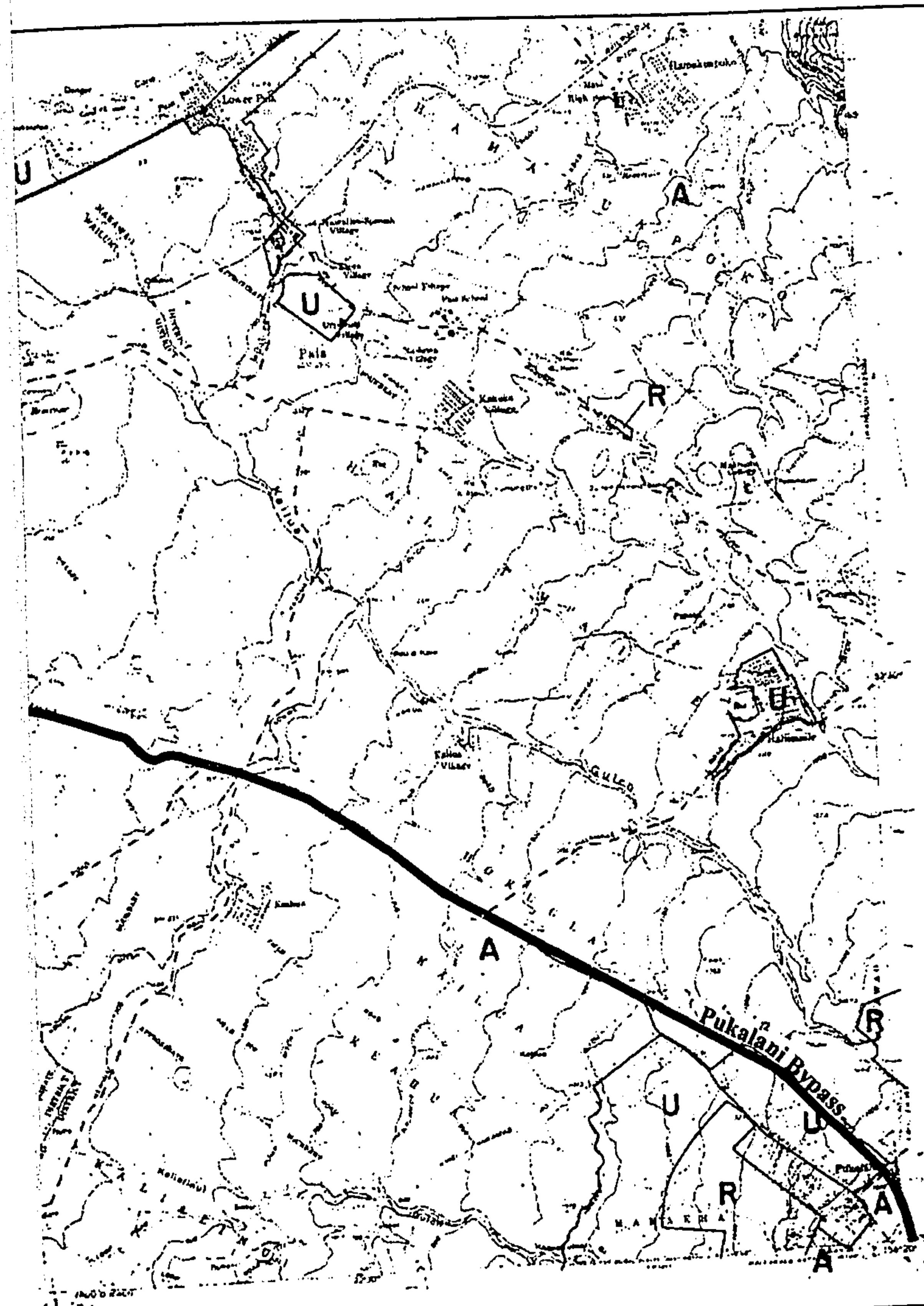
- Fiber Optic Ductline
- A Agricultural
- C Conservation
- R Rural
- U Urban

Source: State Land Use Commission, District Boundary Maps

Exhibit B-7

State Land Use District
State Land Use Commission

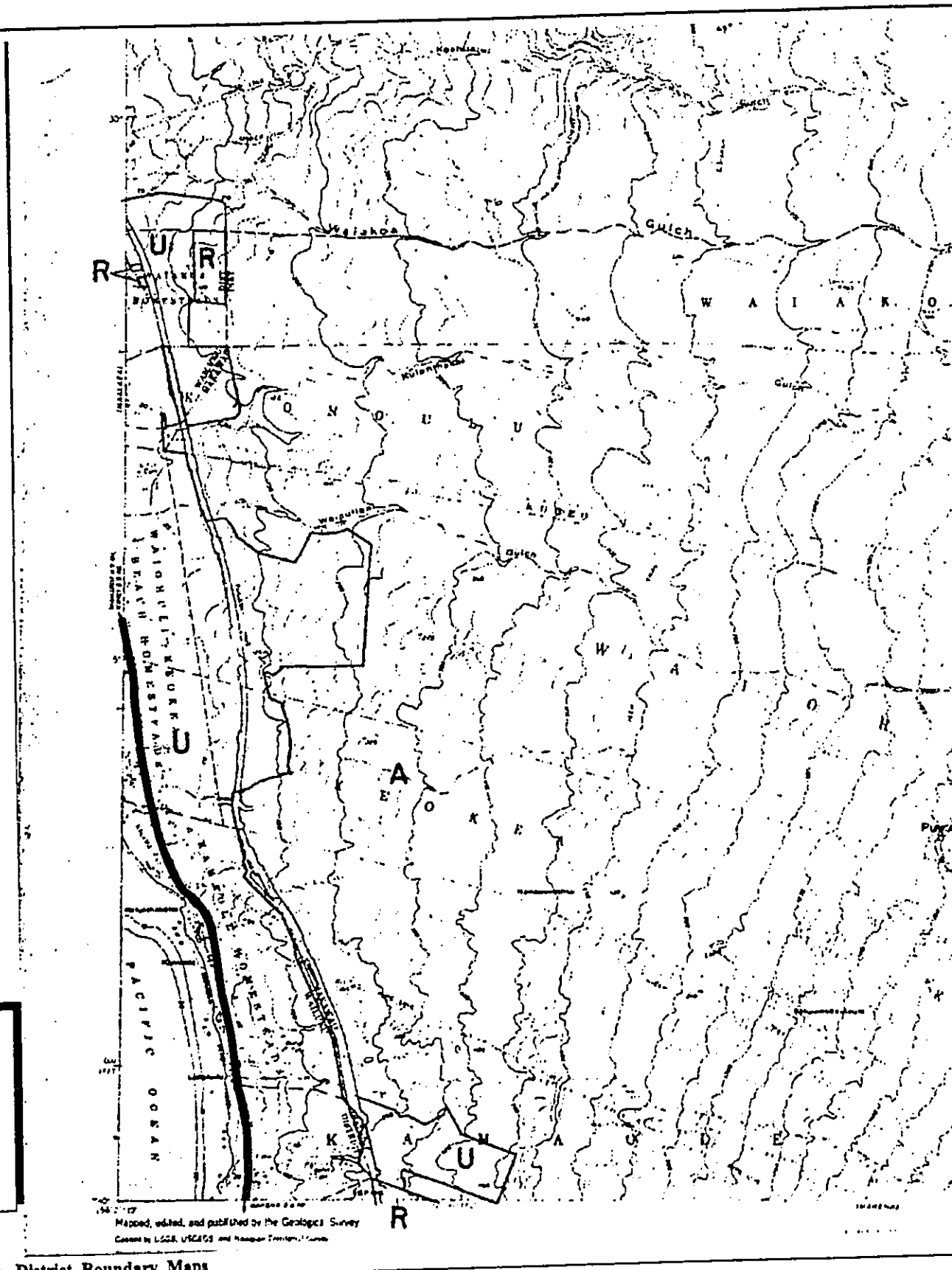
Prepared for: Sandwich Isle Communications, Inc.



)istrict Boundaries
mmission Map M-7

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

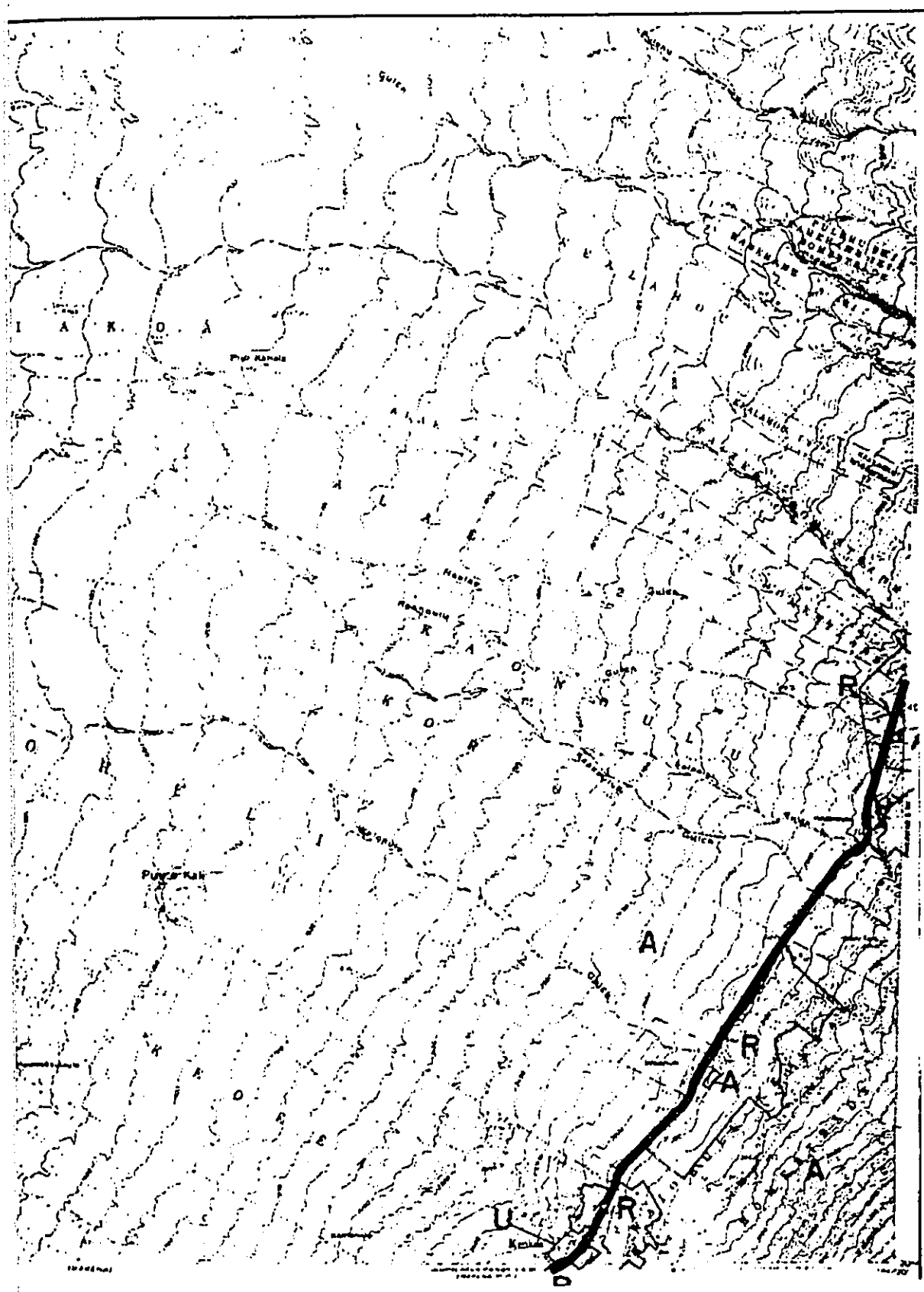


Source: State Land Use Commission, District Boundary Maps

Exhibit B-8

State Land Use District
State Land Use Commission

Prepared for: Sandwich Isle Communications, Inc.

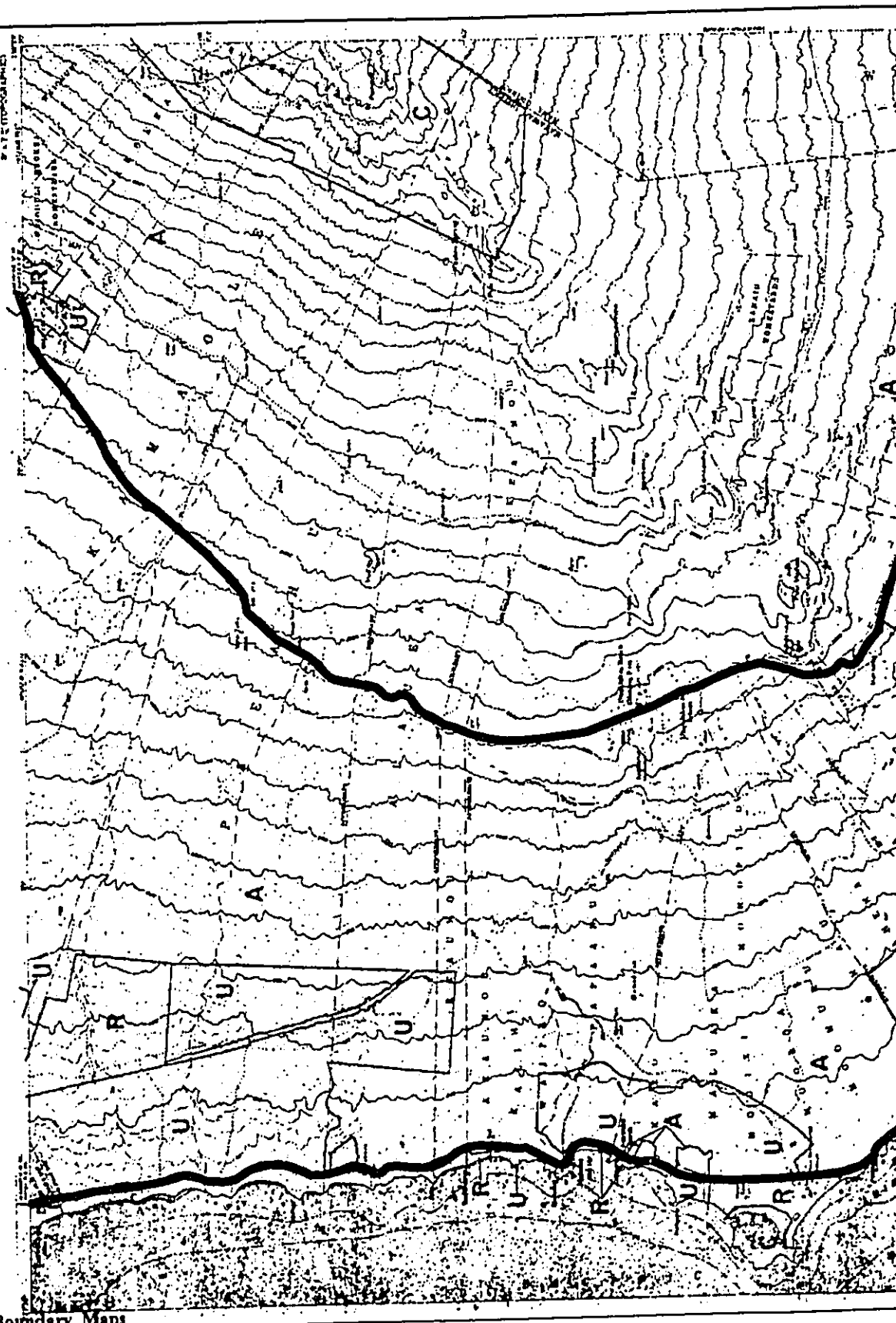


District Boundaries

mmission Map M-8

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.



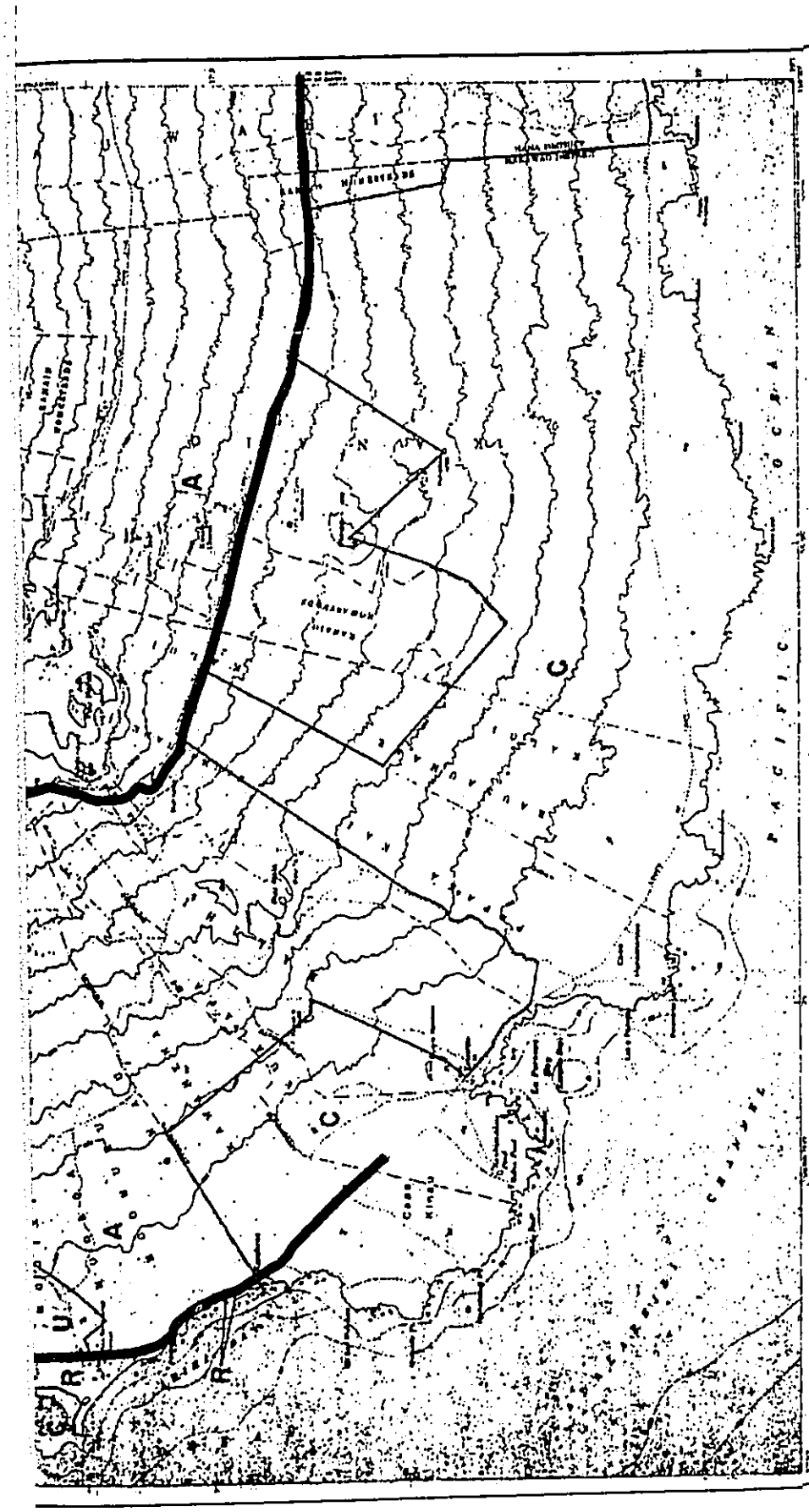
Source: State Land Use Commission, District Boundary Maps

Exhibit B-9

State Land Use District

State Land Use Commission

Prepared for: Sandwich Isle Communications, Inc.



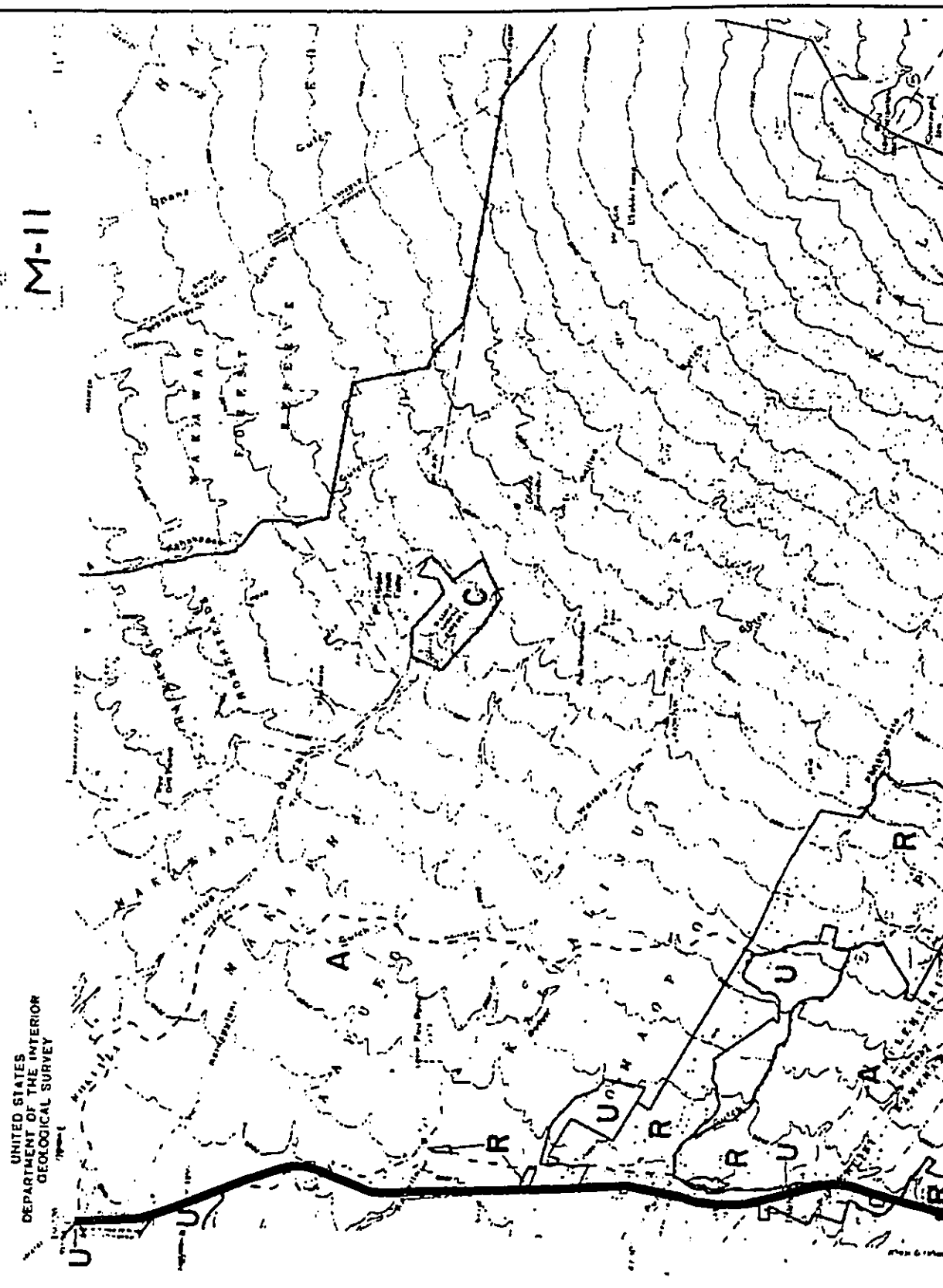
Key

- Fiber Optic Ductline
- A Agricultural
- C Conservation
- R Rural
- U Urban

NOT TO SCALE

District Boundaries
ommission Map M-9

MUNEKIYO & HIRAGA, INC.



Key

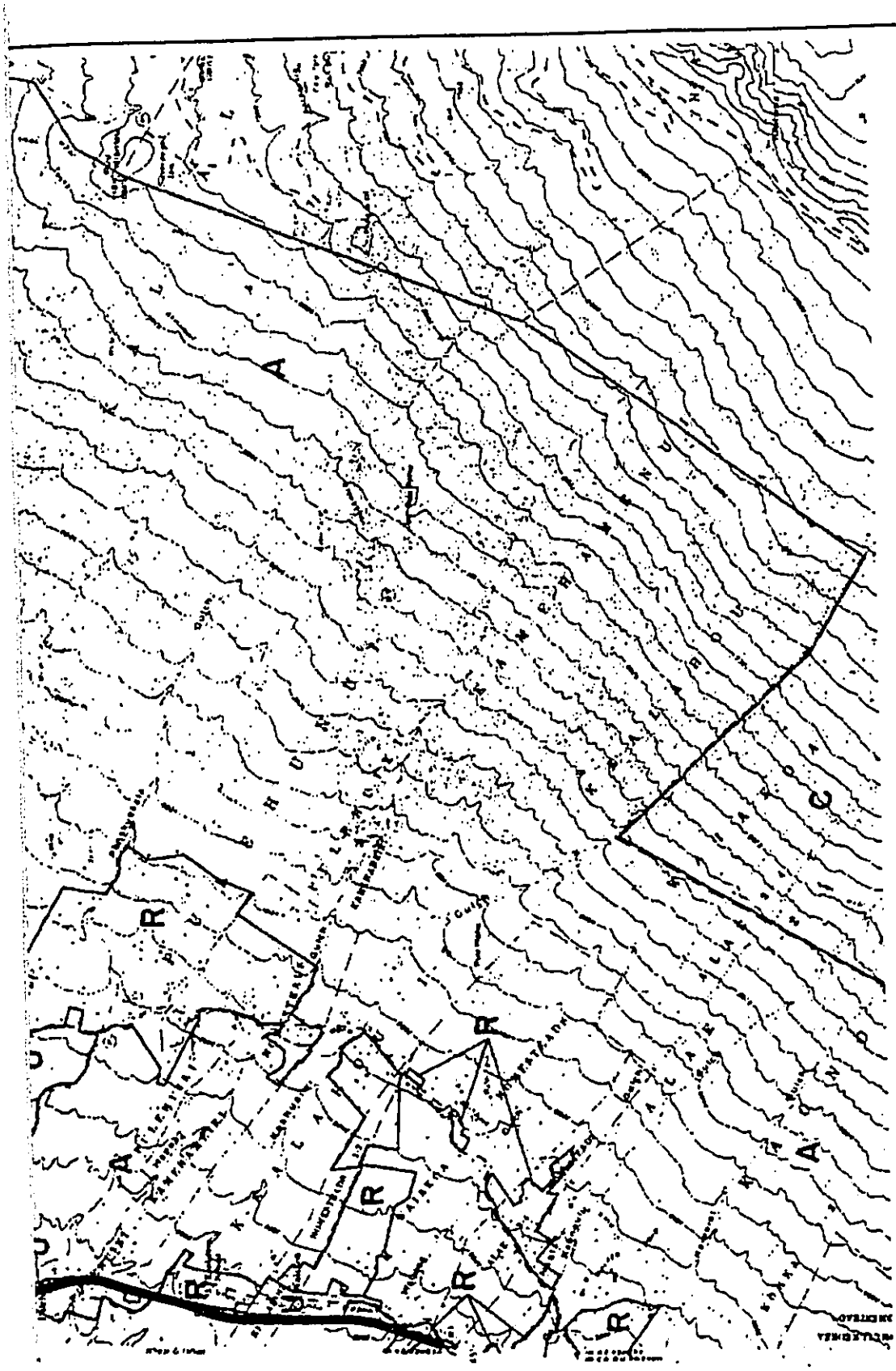
- Fiber Optic Ductline
- A Agricultural
- C Conservation
- R Rural
- U Urban

Source: State Land Use Commission, District Boundary Maps

Exhibit B-10

State Land Use District M
State Land Use Commission

Prepared for: Sandwich Isle Communications, Inc.



District Boundaries

mmission Map M-11

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

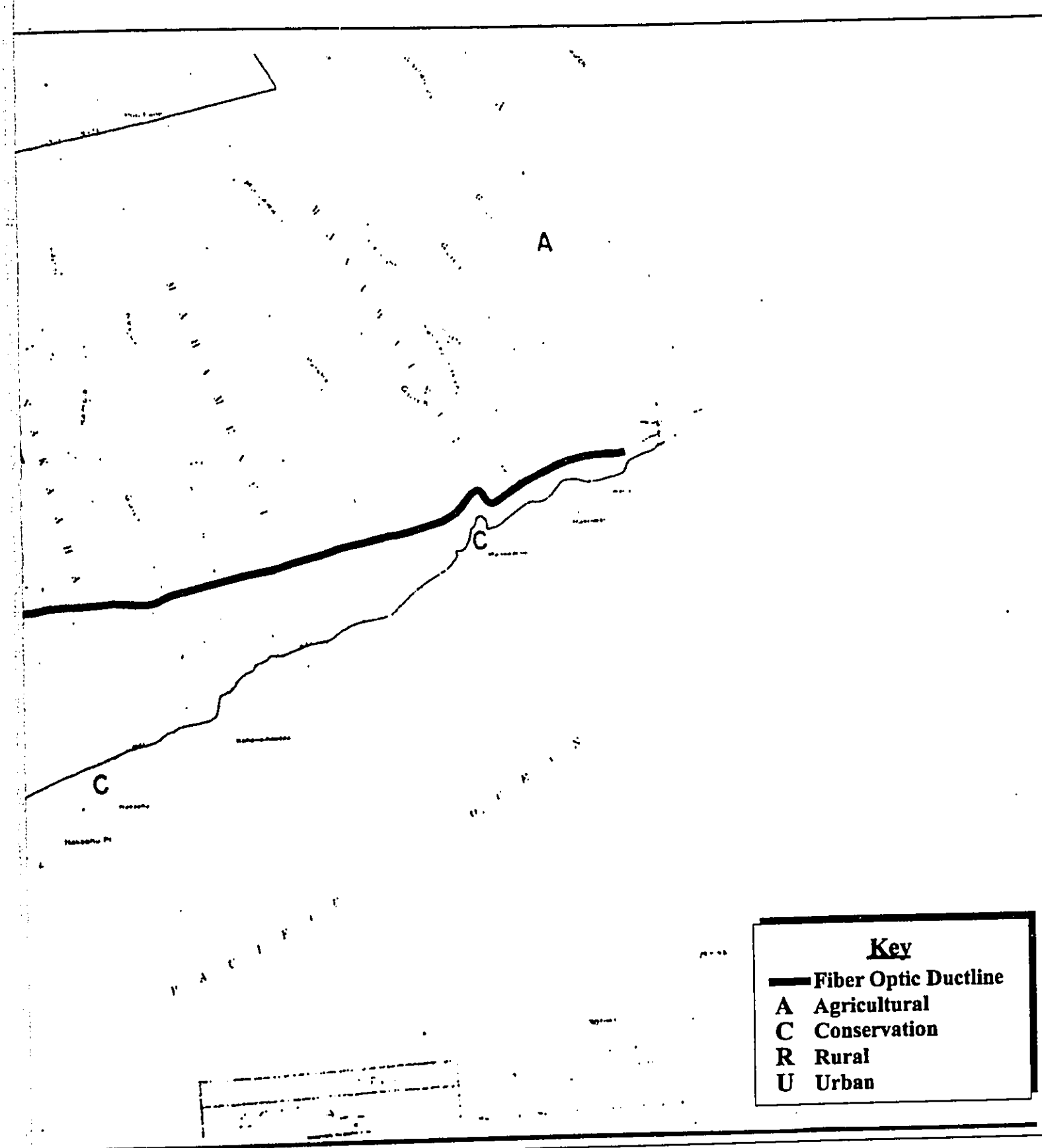
Source: State Land Use Commission, District Boundary Maps

Exhibit B-11

State Land Use District B

State Land Use Commission

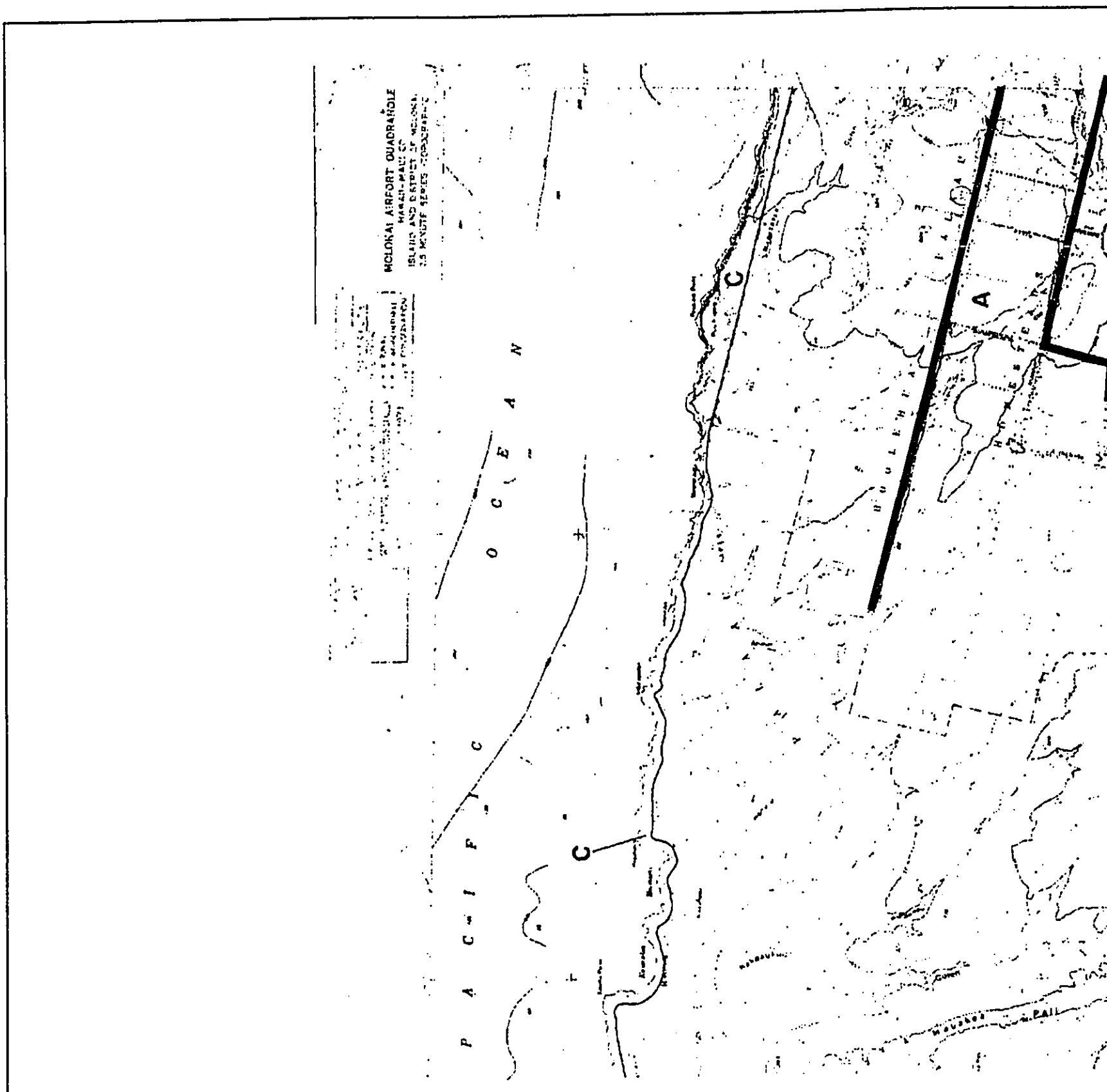
Prepared for: Sandwich Isle Communications, Inc.



District Boundaries
mmission Map M-12

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

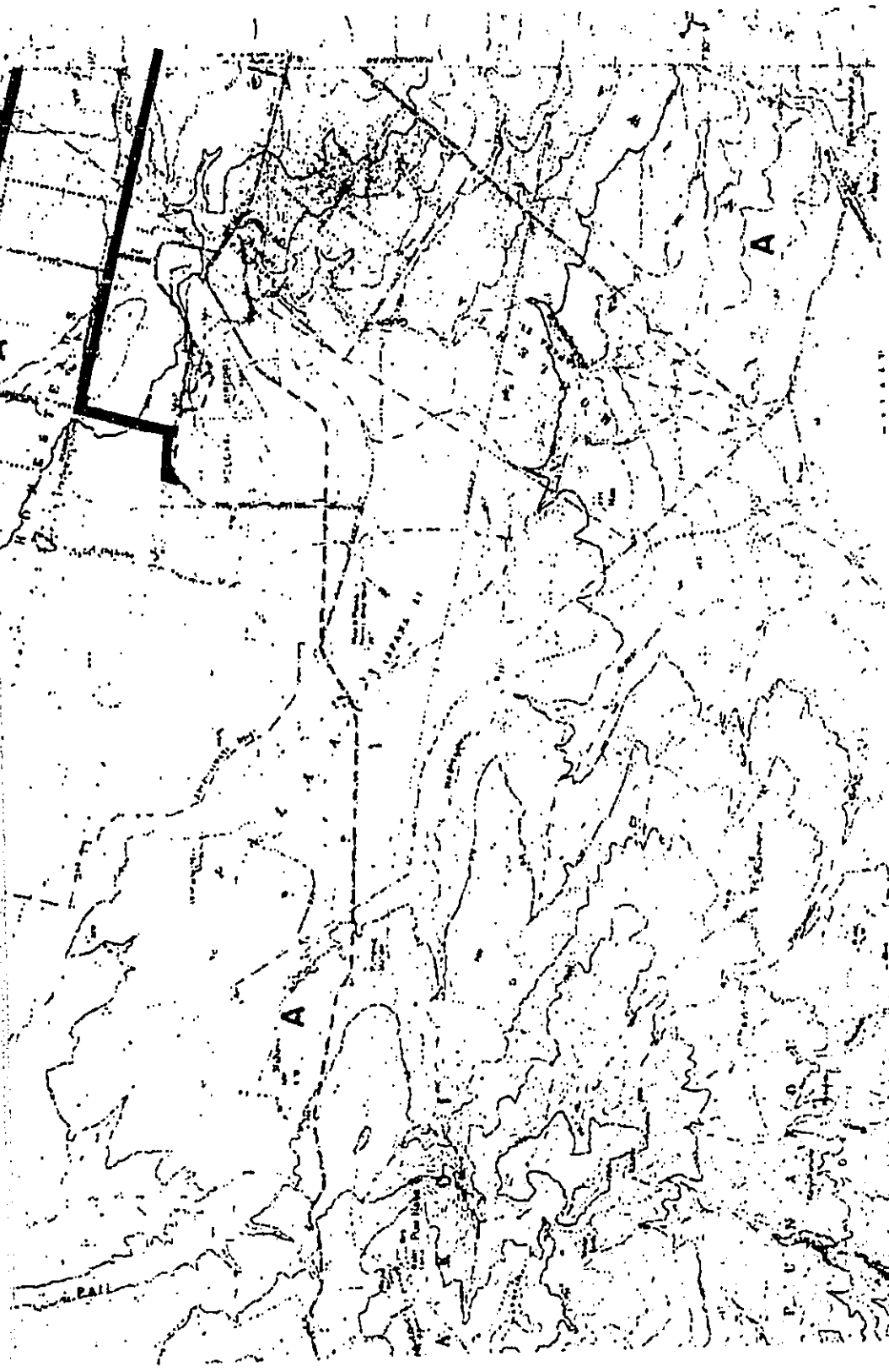


Source: State Land Use Commission, District Boundary Maps

Exhibit B-12

State Land Use District
State Land Use Commission

Prepared for: Sandwich Isle Communications, Inc.



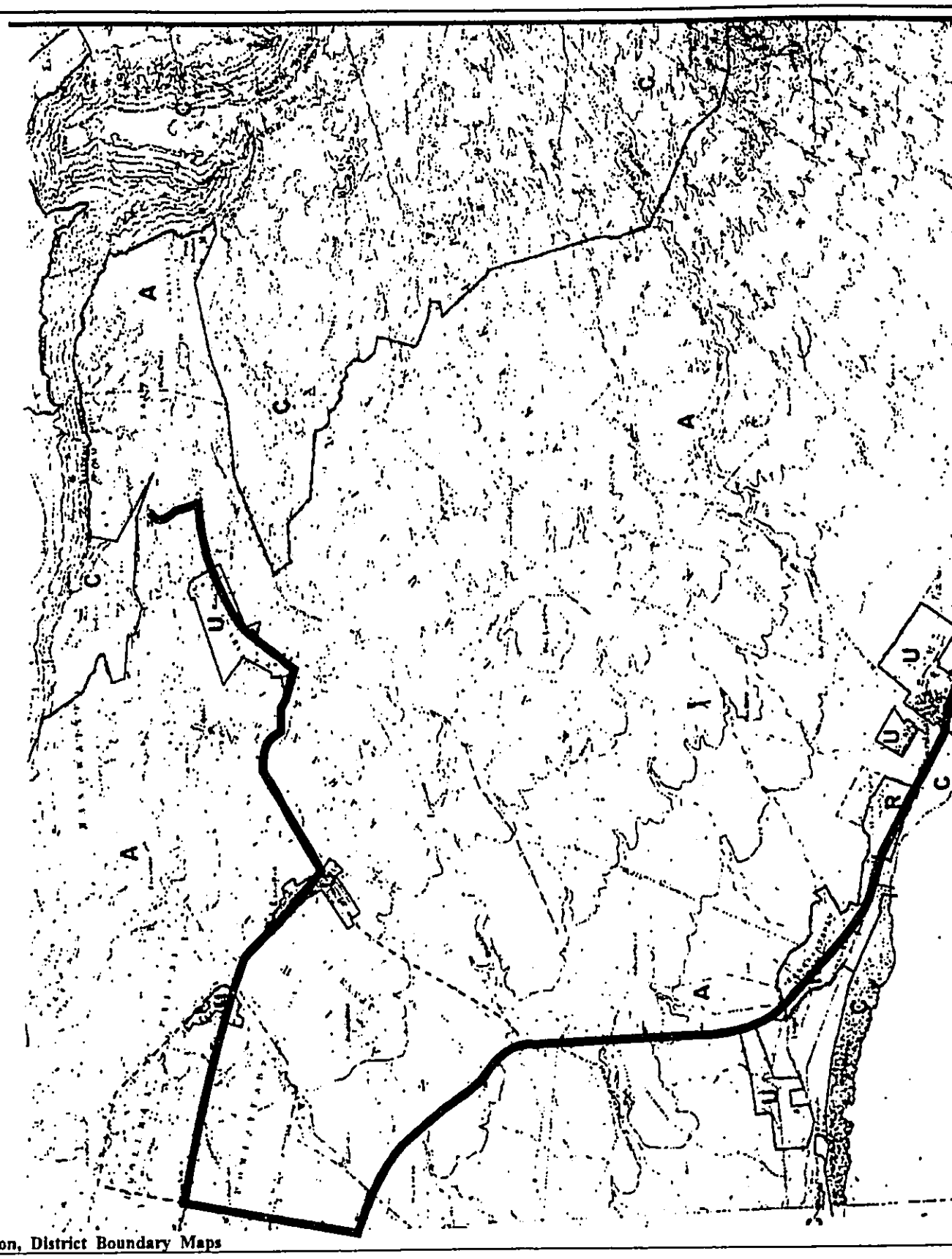
Key

- Fiber Optic Ductline
- A Agricultural
- C Conservation
- R Rural
- U Urban

District Boundaries
nmission Map MO-2

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

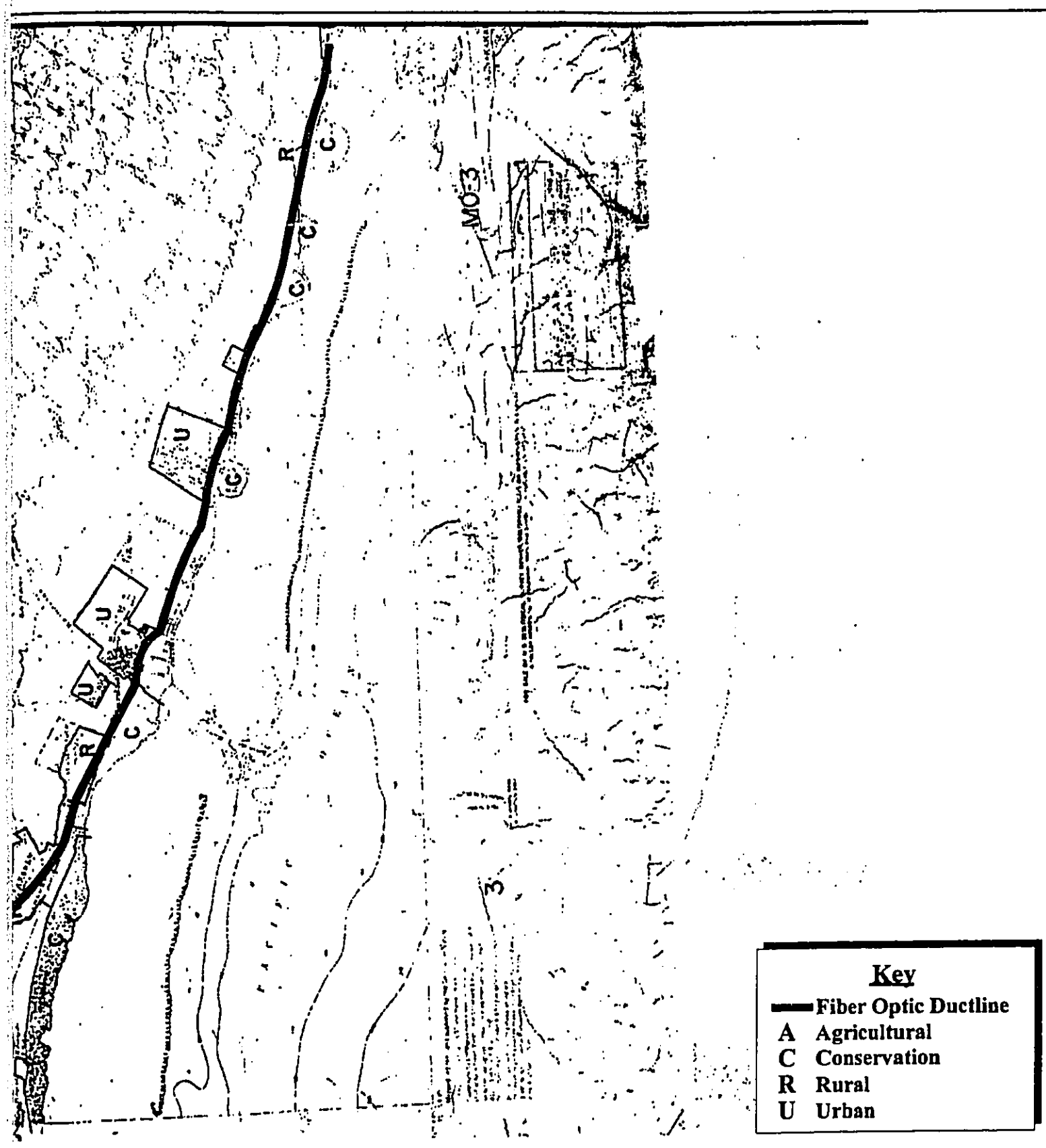


Source: State Land Use Commission, District Boundary Maps

Exhibit B-13

State Land Use District
State Land Use Commission

Prepared for: Sandwich Isle Communications, Inc.



)istrict Boundaries
nmission Map MO-3

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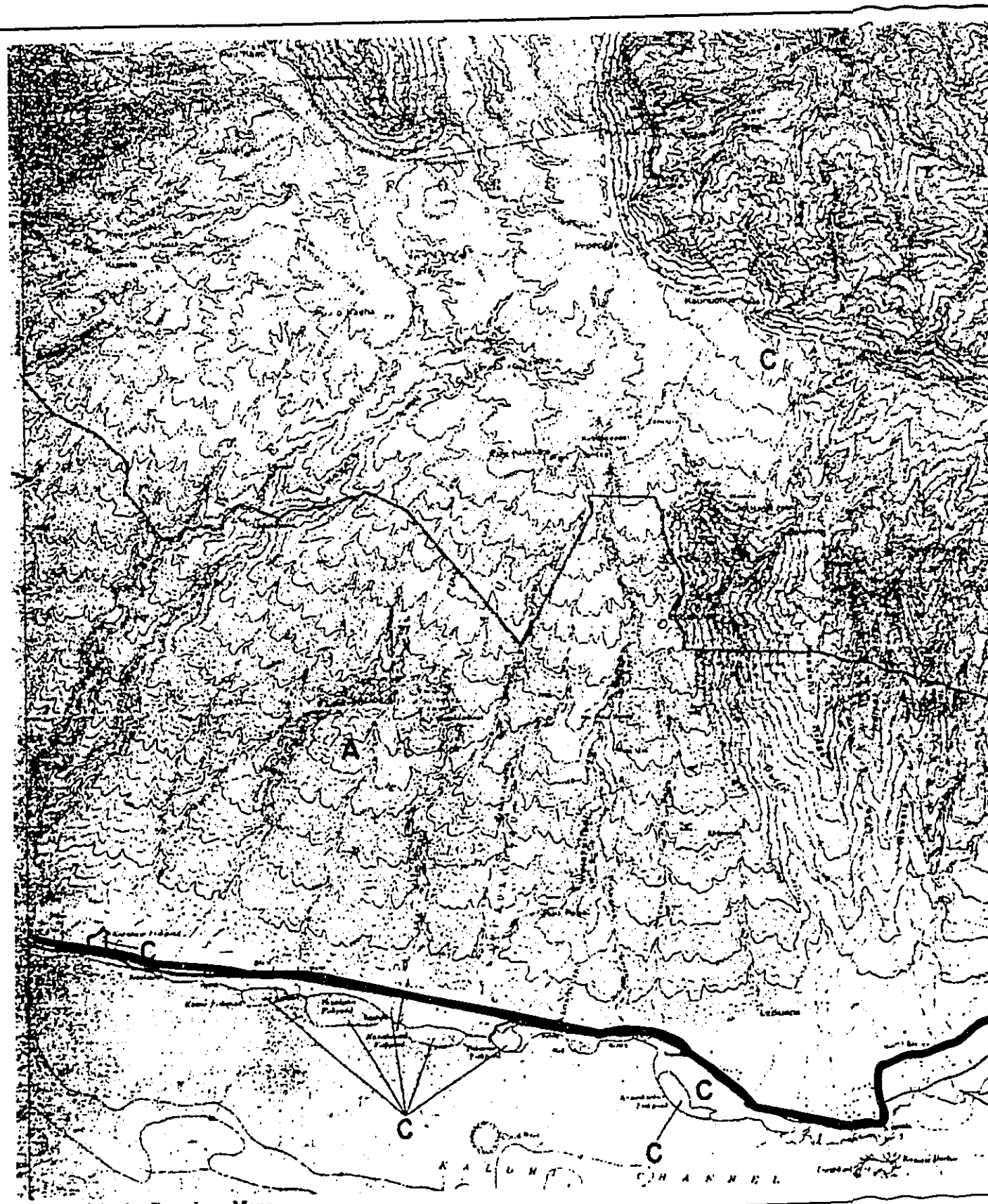

Source: State Land Use Commission, District Boundary Maps

Exhibit B-14

State Land Use District

State Land Use Commission

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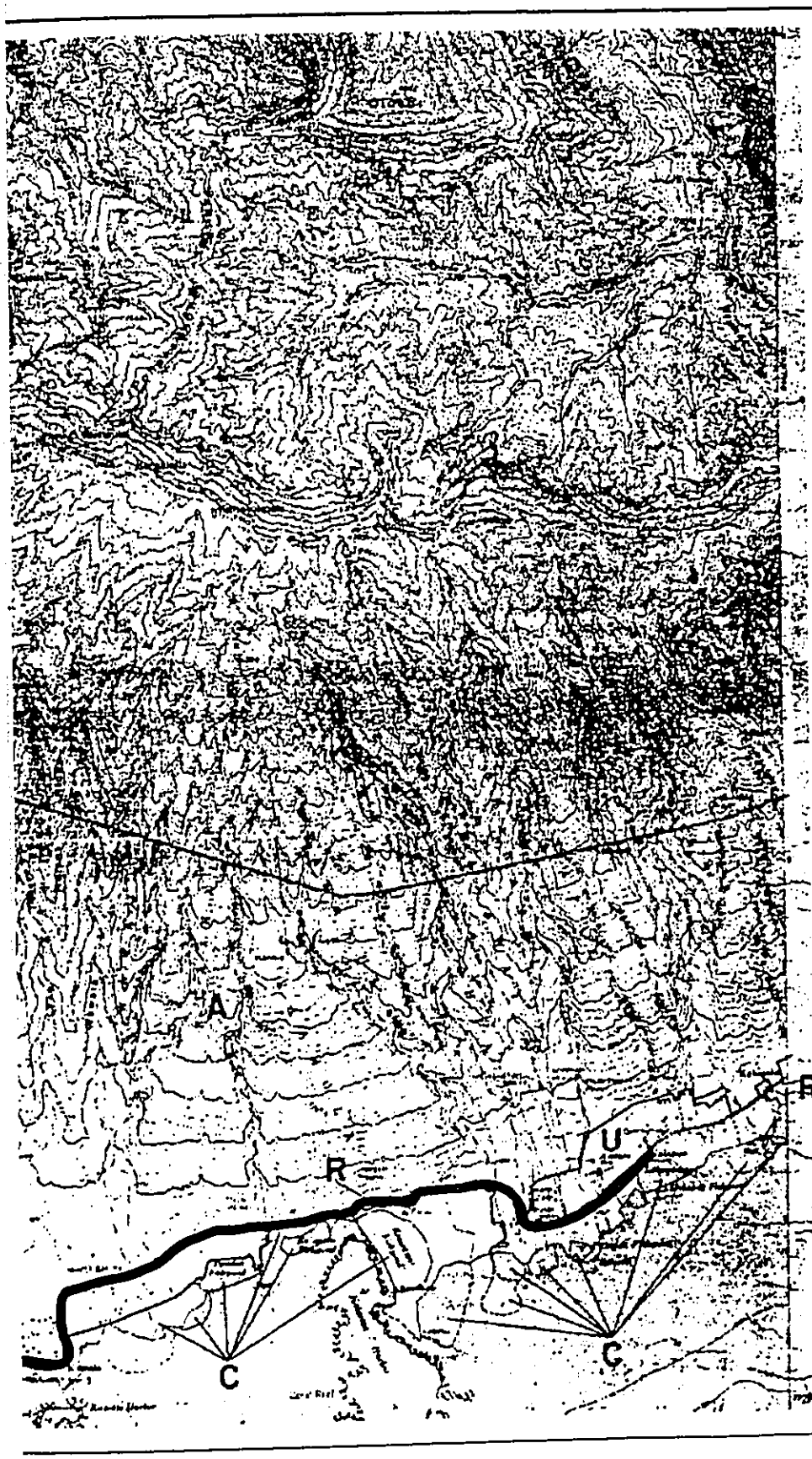

Key

- Fiber Optic Ductline
- A Agricultural
- C Conservation
- R Rural
- U Urban

)istrict Boundaries

nmission Map MO-4

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Appendix C

Maui County Council
Resolution 00-124

Resolution

No. 00-124

SUPPORTING THE STATE DEPARTMENT OF
HAWAIIAN HOME LANDS TELECOMMUNICATIONS
INFRASTRUCTURE AND SERVICE PROJECT

WHEREAS, the State Department of Hawaiian Home Lands ("DHHL") is undertaking a statewide project to provide a broadband, high speed, telecommunications system to Hawaiian Home Lands ("HHL"); and

WHEREAS, Sandwich Isles Communications, Inc. ("SIC"), a native Hawaiian-owned and operated company, has obtained a Public Utilities Commission ("PUC") Certificate of Authority to service HHL as a defined geographic service area, and has been designated by the Federal Communications Commission as a rural telephone company and granted a license by DHHL to undertake this project; and

WHEREAS, a minimum of $500 million will be expended over the next three to five years to build, connect, and service all HHL parcels with a modern high-speed fiber optic cable infrastructure at no cost to DHHL; and

WHEREAS, the project will (1) provide HHL with an independent, new and modernized telecommunications infrastructure with access to advanced services; (2) create immediate and future construction and high-tech jobs; (3) create or attract new high-tech and other businesses to HHL, the State, and all counties; and (4) connect six major islands with undersea cables and underground infrastructure on land; and

WHEREAS, the project will receive funding from the Federal Rural Utilities Service ("RUS") through a low-cost loan program, and together with private funding, will cover the capital investment for the infrastructure; and

WHEREAS, this project will provide inexpensive telecommunications for families on HHL throughout the State which will enable them to have access to information over a broad network, which is a necessary building block in Hawaiians achieving self-sufficiency; now, therefore,

BE IT RESOLVED by the Council of the County of Maui:

1. That it hereby supports the State Department of Hawaiian Home Lands Telecommunications Infrastructure and Service Project;

2. That it encourages the County of Maui to provide expedient and consistent access to public rights of way that is needed to connect Hawaiian Home Lands parcels to the project infrastructure; and

3. That certified copies of this resolution be transmitted to the Honorable James "Kimo" Apana, Mayor of the County of Maui; Mr. Albert Hee, President of Sandwich Isles Communications, Inc.; and Mr. Raynard Soon, Chairman, Department of Hawaiian Home Lands, State of Hawaii.

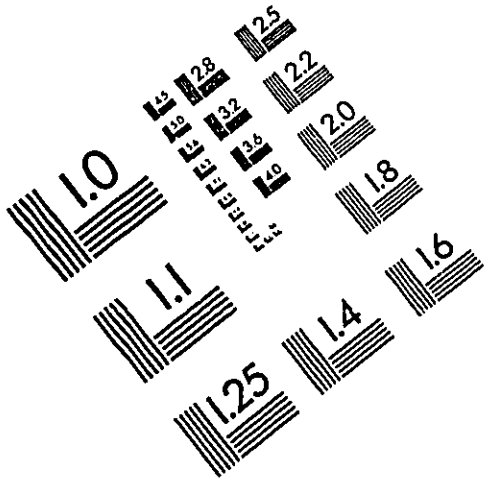
CERTIFICATION

I HEREBY CERTIFY THAT THE MICROPHOTOGRAPH APPEARING IN THIS REEL OF FILM ARE TRUE COPIES OF THE ORIGINAL DOCUMENTS.

2004
DATE

SIGNATURE OF OPERATOR

DENSITY TARGET



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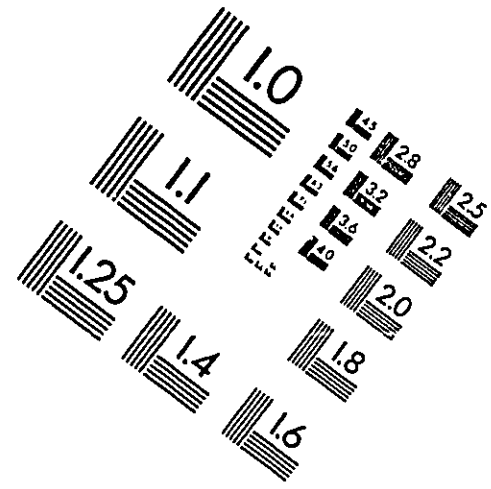

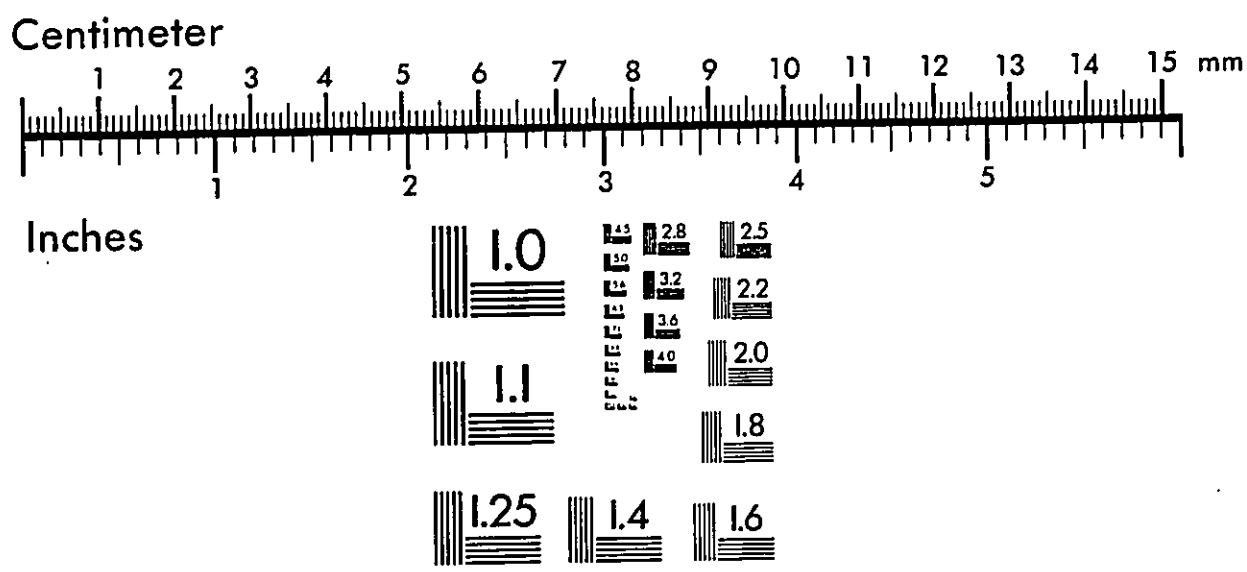

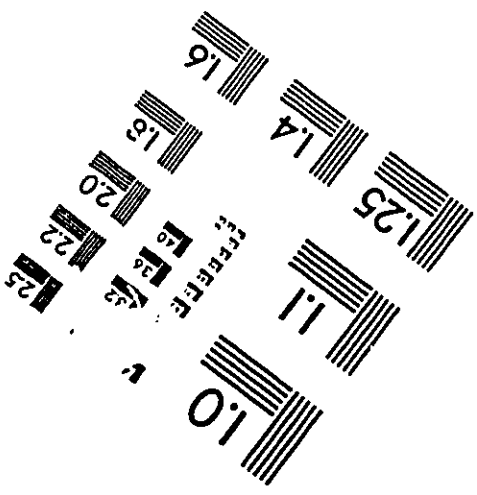

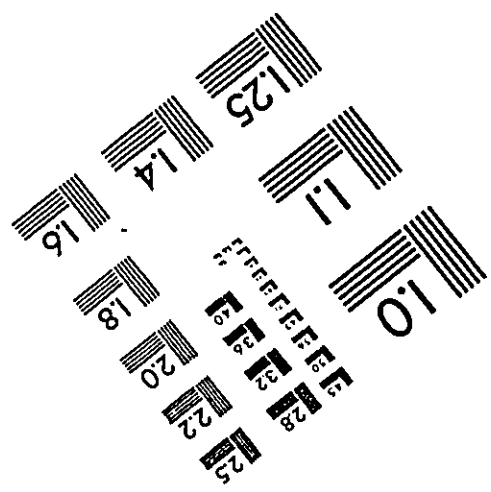

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Final Environmental Assessment

(RURAL FIBER OPTICS COMMUNICATION LINES) FOR LANAI, MAUI AND MOLOKAI

Prepared for:

Sandwich Isles Communications, Inc.

July 2001

MUNEKIYO & HIRAGA, INC.

Final
Environmental Assessment

RURAL FIBER OPTICS COMMUNICATION LINES FOR LANAI, MAUI AND MOLOKAI

Prepared for:

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July 2001

MUNEKIYO & HIRAGA, INC.

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Executive Summary

Background

Sandwich Isles Communications, Inc. (SIC), a native Hawaiian-owned and operated public utility company, proposes the installation of a broadband, high-speed fiber optic cable telecommunications system to connect and service all State Department of Hawaiian Home Lands (DHHL) properties in Maui County. The DHHL has granted a license to SIC to construct the system infrastructure to serve its beneficiaries.

The proposed action would provide beneficiaries and lessees of DHHL with emergency, basic and advanced telecommunication services. It would also provide opportunity for developing state-of-the-art telecommunication innovations, such as educational programming, internet services, video teleconferencing and other fiber-optic based services in the future.

The fiber optic network for the system is proposed to be installed within State and County rights-of-way. Route alignments along State and County roadways have therefore been identified to connect DHHL parcels on each of the Maui County islands of Lanai, Maui and Molokai.

Funding for the project will be through a long-term, low-interest federal loan program sponsored by the U.S. Department of Agriculture Rural Utilities Service. Although federal funding will be utilized, the Rural Utilities Service has determined the action to be categorically excluded under the National Environmental Policy Act. However, inasmuch as State and County rights-of-way will be used for the proposed action, an environmental assessment (EA) has been prepared in accordance with Chapter 343, Hawaii Revised Statutes (HRS). Although both State and County rights-of-way will be involved in the project, agreement has been reached among the affected agencies, that the State Department of Transportation (DOT) will be the accepting agency for purposes of compliance with Chapter 343, HRS requirements.

Proposed Action

The proposed action involves the construction of an underground duct system that will be used for the installation of fiber optic cabling and/or copper cabling. The proposed methods of installation will include either open trench or trenchless technology. Open trench construction will be the primary means of installation, while trenchless technology would be used in areas where open trenching is less practical. The open trench construction method will require the excavation of a trench approximately 1 foot wide and approximately 3½ feet deep. To the extent practicable, the 3½-foot trench depth will not be exceeded, except in instances where potential utility conflicts require a deeper trench. All appurtenant pull boxes will be constructed below grade. While a small number of

telephone cabinets will be installed at grade, these cabinets will not be located within rights-of-way.

Within Maui County, there are a number of DHHL properties which are proposed to be connected via the fiber optic cable system. Ultimately, the cable lines will span interisland waters to provide a Statewide system connection. However, the implementation of the land-based system is deemed essential before planning for the Statewide linkage is pursued.

On the island of Lanai, approximately 14 miles of cable lines are proposed, while approximately 97 miles are proposed on the island of Maui and 37 on the island of Molokai. As noted, installation of the cable system will be confined to roadway rights-of-way, with most of the work limited to shoulder areas to minimize disruption to traffic operations.

The proposed project will be completed in phases. Specific Phase I routes on the islands of Maui and Molokai have been identified. Phase I routes for these islands are summarized in Table E-1.

Table E-1

PHASE I ROUTE SEGMENT SUMMARY			
Island/ Route No.	***Route Segment***	***Route Alignment***	***Approximate Route Miles***
Maui/1	Waiehu to Puunene	Kahekili Highway (s); Waiehu Beach Road (s); Kuhio Place (c); Kalakaua Street (c); Eha Street (c); Imi Kala Street (c); Mill Street (c); Mission Street (c); Lower Main Street (c); Waiale Road (c); Wells Street (c); Nakoa Drive (c); Kainani Street (c); Kaahumanu Avenue (s); Wakea Avenue (c); Puunene Avenue (s)	10
Molokai/1	Kalamaula to Hoolehua	Maunaloa Highway (s); Kalae Highway (s); Airport Loop (dhhl); Mokulele Street (dhhl); Moomomi Street (dhhl); Nenehanaupo Avenue (dhhl); Farrington Avenue (from Kolea St. to Hauakea St.) (dhhl)	10
s= State Right-of-Way; c= County Right-of-Way; dhhl= Controlled by DHHL and maintained by County of Maui			

Consultation

The consultation process involved both extensive early consultation with agencies and organizations, as well as wide distribution of the Draft EA to agencies and organizations, including the Maui County Cultural Resources Commission (CRC) and Maui/Lanai Islands

Burial Council. Presentations were made to the Burial Council at its April 26, 2001, and May 31, 2001 meetings and to the CRC at its May 3, 2001 meeting.

Project Impact Assessment

The proposed action was assessed with regard to environmental, infrastructure and public service parameters. In general, the proposed action is not anticipated to adversely impact known habitats of rare, endangered, or threatened species of flora, fauna and avifauna. In addition, with the exception of localized lowlying coastal areas adjoining the shoreline and low areas along portions of Mokulele Highway, the vast majority of lands underlying the project alignment are situated beyond flooding and tsunami inundation limits. There are no known geologically hazardous lands affected by the proposed action.

Archaeological assessments have been conducted for all route segments. Each segment has been evaluated and categorized on the basis of potential for yielding subsurface archaeological resources. In general, these levels consider a range of potential to yield archaeological resources, from lower potential areas to higher potential areas (i.e., areas which contain known burials or has potential to encounter cultural layers). Recommendations for appropriate mitigation measures for each assessment level have been provided and will be implemented in coordination with the State Historic Preservation Division. In addition to archaeological resources, historic bridges which may be affected by cable crossings have been identified. Review of proposed crossings of historic bridges will be coordinated with the Maui County Cultural Resources Commission. The proposed underground ductline is not anticipated to affect cultural practices and beliefs, including gathering rights and access considerations. Issues relating to burials will be addressed through the preparation of a monitoring plan and execution of a Memorandum of Agreement, as defined through the National Historic Preservation Act's Section 106 process.

Impacts associated with the proposed action are primarily limited to construction. Appropriate best management practices will be implemented to address noise and air quality nuisances which may arise during cable installation. In addition, appropriate traffic control measures will be employed to ensure the smooth and safe passage of vehicles at route segments undergoing construction.

There are no population changes anticipated as a result of the proposed project. Similarly, no impacts to public infrastructure systems and public services (e.g., recreation, education, fire and police protection services) are anticipated.

As a telecommunications utility network, the proposed project is consistent with the Maui County General Plan, the various Maui County Community Plans and underlying County zoning designations.

Alternatives

In addition to the "no action" and "deferred action" alternatives, alternative cable alignments and segments were examined to ensure that all feasible options were not overlooked. The alignment/segment identification process involved an analysis of cost, construction efficiency, operational objectives, maintenance accessibility, governmental agency consultation and land use/routing relationships. It is noted that privately owned lands were considered during the project planning but were deleted due to higher cost and implementation factors.

Determination

Based on the assessment of impacts associated with the proposed cable installation within existing State and County rights-of-way, the project has been processed as a Finding of No Significant Impact.

Chapter I

Project Overview

I. PROJECT OVERVIEW

A. PROPOSING AGENCY

Sandwich Isles Communications, Inc. (SIC) proposes the installation of a broadband, high-speed fiber optic cable telecommunications system to connect and service all State Department of Hawaiian Home Lands (DHHL) homestead properties in Maui County. Towards implementing this system, the DHHL has granted a license to SIC to construct the system infrastructure. Established in 1995, SIC is a native Hawaiian-owned and operated public utility company certified by the State Public Utility Commission and Federal Communications Commission as a rural telephone company.

The mission of SIC is to provide state-of-the-art, broad band telecommunications services to Maui County DHHL homestead properties. See Figure 1, Figure 2, Figure 3, and Table 1. This would provide beneficiaries and lessees of DHHL with access to cost-competitive telephone service. It would also allow for providing state-of-the-art telecommunication innovations, such as educational programming, internet services, video teleconferencing and other fiber optic-based services in the future. Consequently, SIC needs expedient, consistent, and business reliable access to public roadway rights-of-way to connect telecommunication lines between homestead properties in order to complete the proposed project.

Inasmuch as State and County rights-of-way will be used for the proposed action, this environmental assessment has been prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS). The proposed project would require easements and permits for placing lines within both State and County rights-of-way, involving both the State Department of Transportation (DOT) and the County Department of Public Works and Waste Management

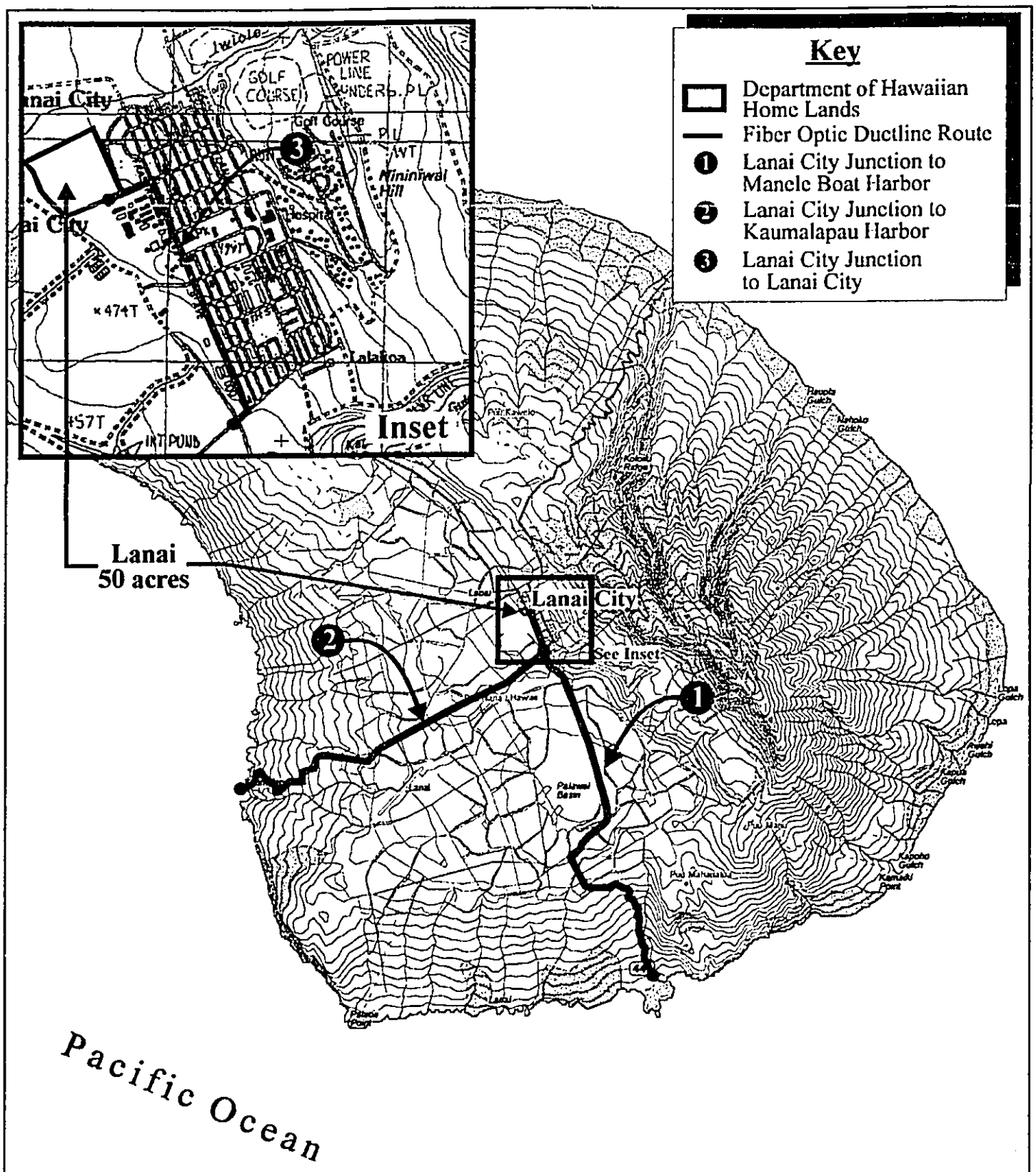

Figure 1

Sandwich Isles Communications Fiber Optic Ductline

Overview of Lanai Route Segments and Affected DHHL Properties

0 1.0 Miles
0.5 2.0

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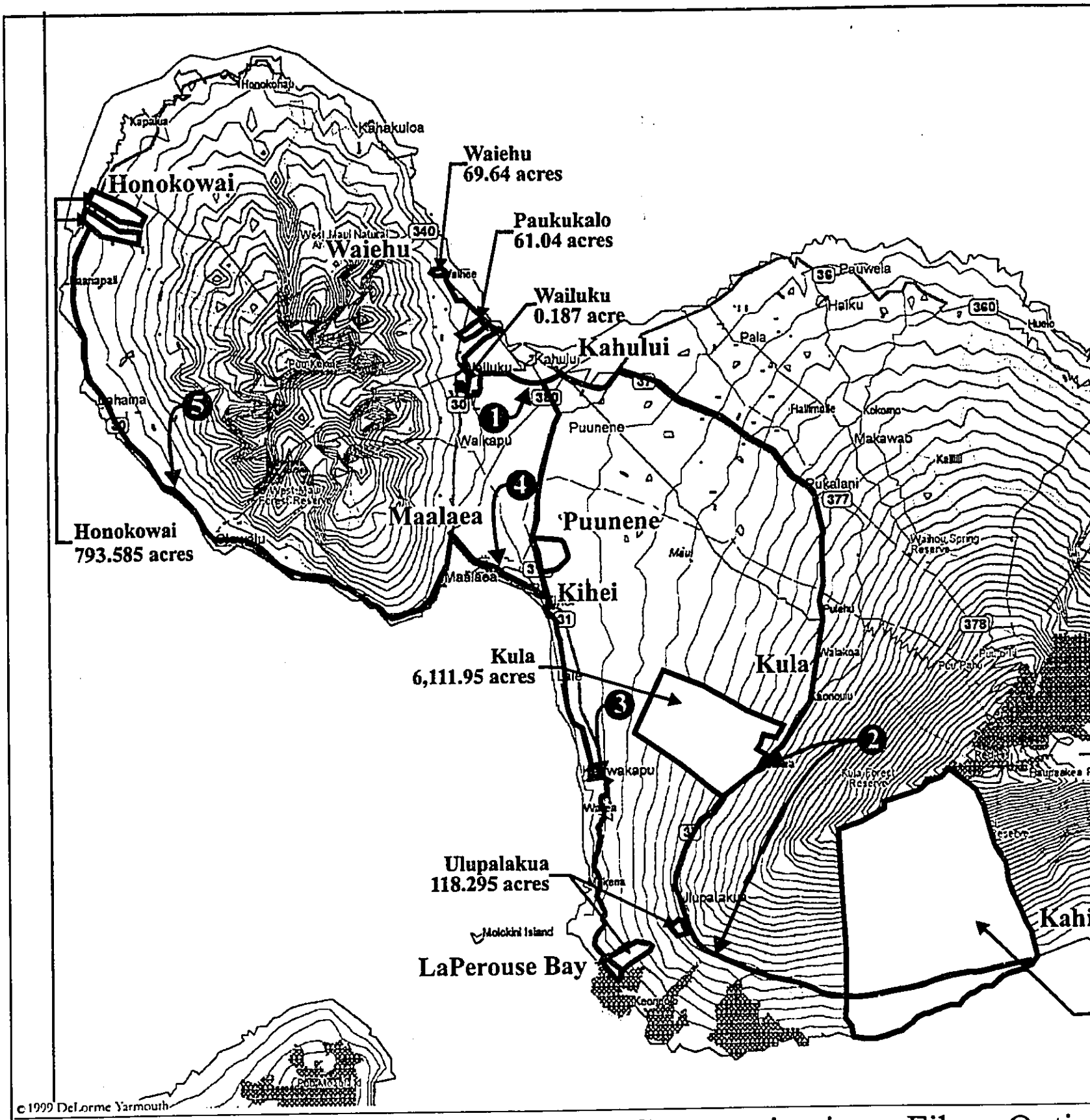
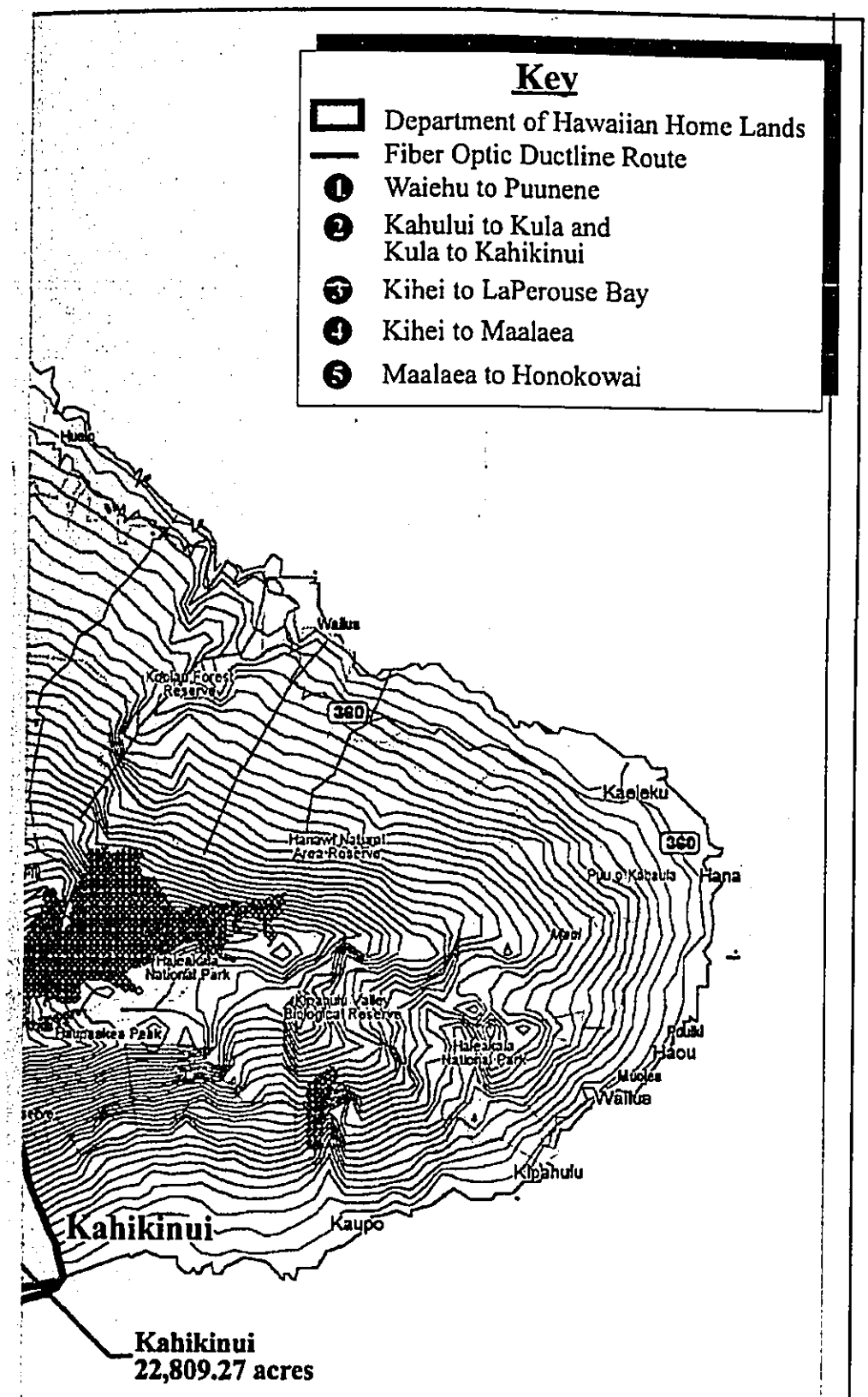


Figure 2

Sandwich Isles Communications Fiber Optic

Overview of Maui Segments and Affected DHHL

Prepared for: Sandwich Isles Communications



Optic Ductline

HHL Properties

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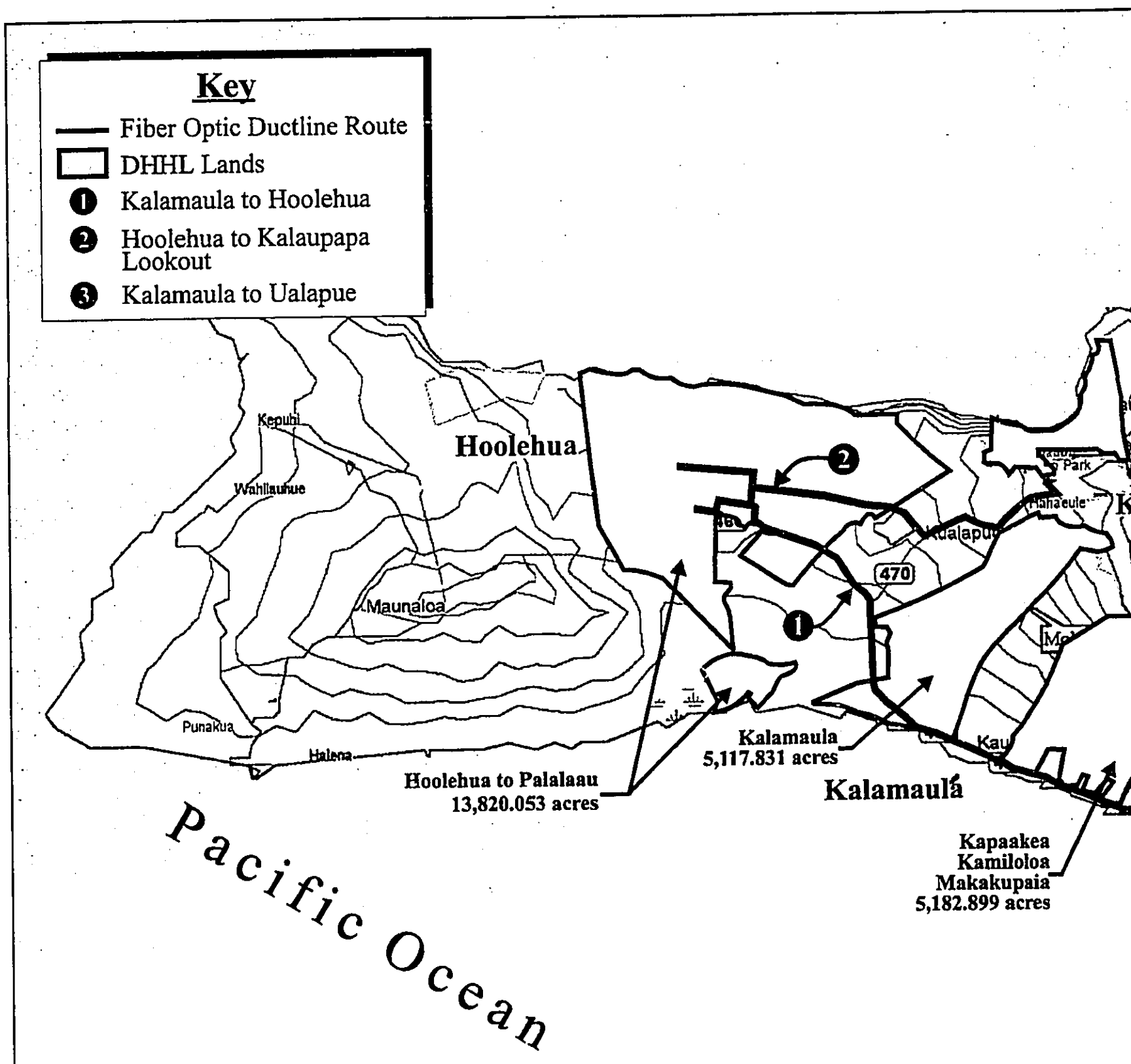
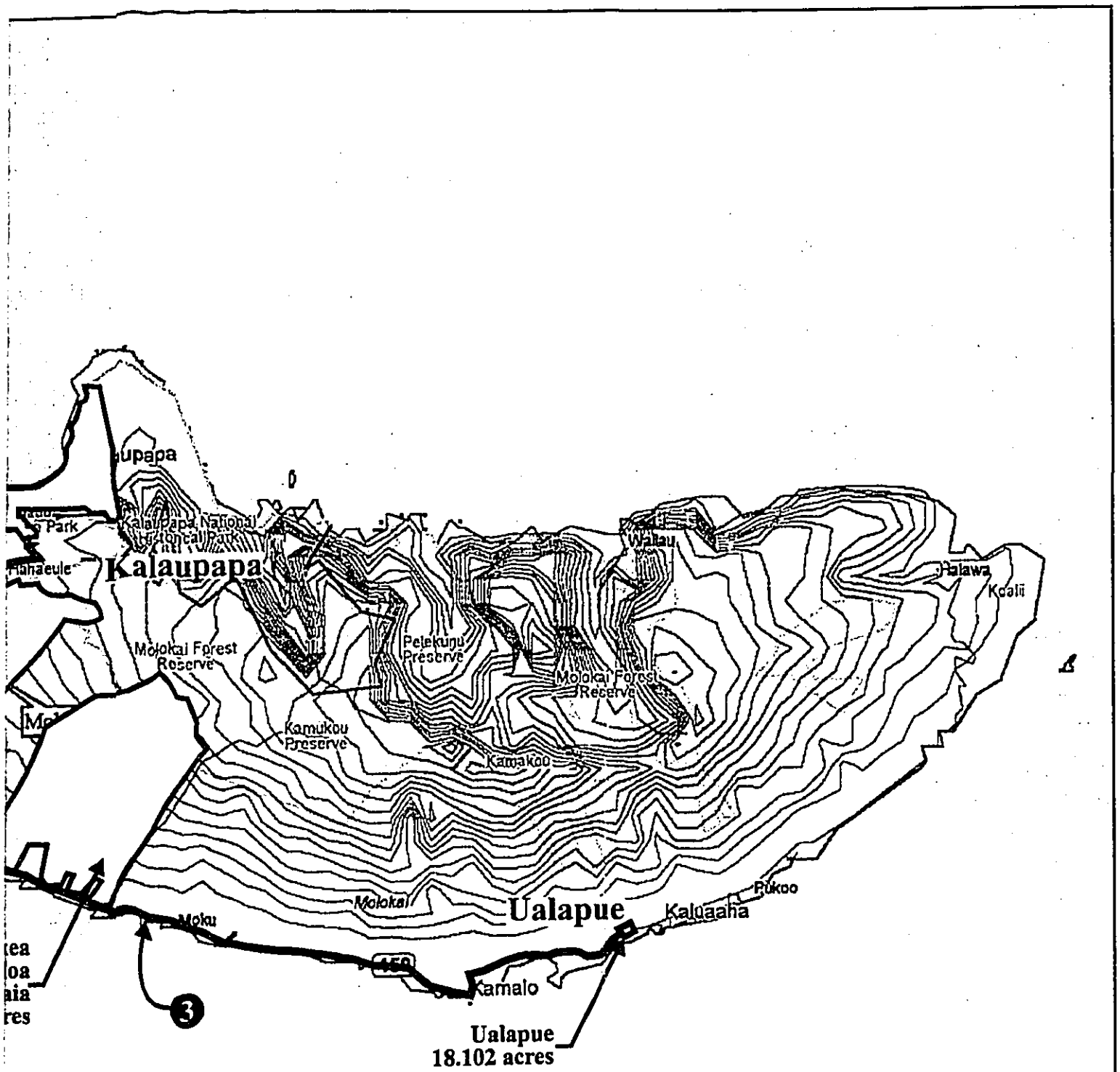


Figure 3

Sandwich Isles Communications F
Overview of Molokai Segments and Aff

Prepared for: Sandwich Isles Communications, Inc.



tions Fiber Optic Ductline
and Affected DHHL Properties

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

Table 1

DEPARTMENT OF HAWAIIAN HOMELANDS PROPERTIES TO BE SERVICED BY THE PROPOSED SANDWICH ISLES COMMUNICATIONS FIBER OPTIC DUCTLINE							
ISLAND	PARCEL LOCATION	TAX MAP KEY				STATE LAND USE DISTRICT	COUNTY ZONING
		Zone	Section	Plat	Parcel(s)		
Lanai	Lanai City	4	9	14	1	Agricultural/ Urban	Agricultural/ Interim
		4	9	2	57		
Maui	Waiehu	3	2	13,21,22, 23	various	Agricultural	Agricultural
Maui	Paukukalo	3	3	5&6	various	Urban	R-2, Residential
Maui	Wailuku	3	4	11	32	Urban	R-2, Residential
Maui	Kula	2	2	2	14,55,56, 71 various	Agricultural	Agricultural
Maui	Ulupalakua (includes LaPerouse)	2	1	4	15,94,12 1, 122	Agricultural	Agricultural
		2	1	8	50		
Maui	Kahikinui	1	9	1	3, 7,8,11	Agricultural/ Conservation	Agricultural/ Conservation
Maui	Puunene/ North Kihei	3	8	8	1 (por)	Agricultural	Agricultural
		3	8	8	8		
Maui	Honokowai	4	4	1	15	Agricultural	Agricultural
		4	4	2	3,8,9,15, 18		

Table 1 - Continued

ISLAND	PARCEL LOCATION	TAX MAP KEY				STATE LAND USE DISTRICT	COUNTY ZONING
		Zone	Section	Plat	Parcel(s)		
Molokai	Kalamaula	5	2	8,9,10	various	Agricultural/ Conservation/ Rural	Agricultural/ Conservation
Molokai	Hoolehua/ Palaau	5	1	1	various	Agricultural/ Conservation/ Rural	Agricultural/ Conservation
		5	2	1,2,3,4,5, 6,7,8,9,10, 11,13,15, 17,21,22, 23,24,25, 26,27,30			
Molokai	Kalaupapa	5	2	13	3,6	Agricultural/ Conservation	Agricultural/ Conservation
Molokai	Kapaakea/ Kamiloloa/ Makakupaia	5	4	3678	various	Agricultural/ Conservation/ Urban	Agricultural/ R-3, Residential/ Interim/ Conservation
Molokai	Ualapue	5	6	2	26,27,36, various	Urban	Interim

*Information obtained from the County of Maui Real Property Tax Office and the Department of Hawaiian Homelands

(DPWWM). In determining the appropriate accepting authority for the proposed action, consultation was conducted with the Office of Environmental Quality Control (OEQC), DOT and DPWWM. Following this coordination phase, the DOT was determined to be the most appropriate accepting agency for SIC's application. The State DOT is the agency with the greatest responsibility for approving the action as a whole and would

have the most participation in the action since the majority of roads affected are under their jurisdiction.

Funding for the project will be through a low interest federal loan program sponsored by the U.S. Department of Agriculture Rural Utilities Service. Although federal funding will be utilized, the Rural Utilities Service has determined that the action qualifies as a categorical exclusion under the National Environmental Policy Act.

Additionally, since the proposed action is subject to federal loan monies for project development, Section 106 compliance pursuant to the National Historic Preservation Act is required. Since the Rural Utilities Service has determined that the proposed action is a categorical exclusion, the Section 106 process is being implemented in accordance with 36 CFR Part 800, Sub-Part B, The Section 106 Process. In this regard, a separate Section 106 document will be prepared for review by and discussion with applicable consulting parties.

B. ***PROPOSED ACTION***

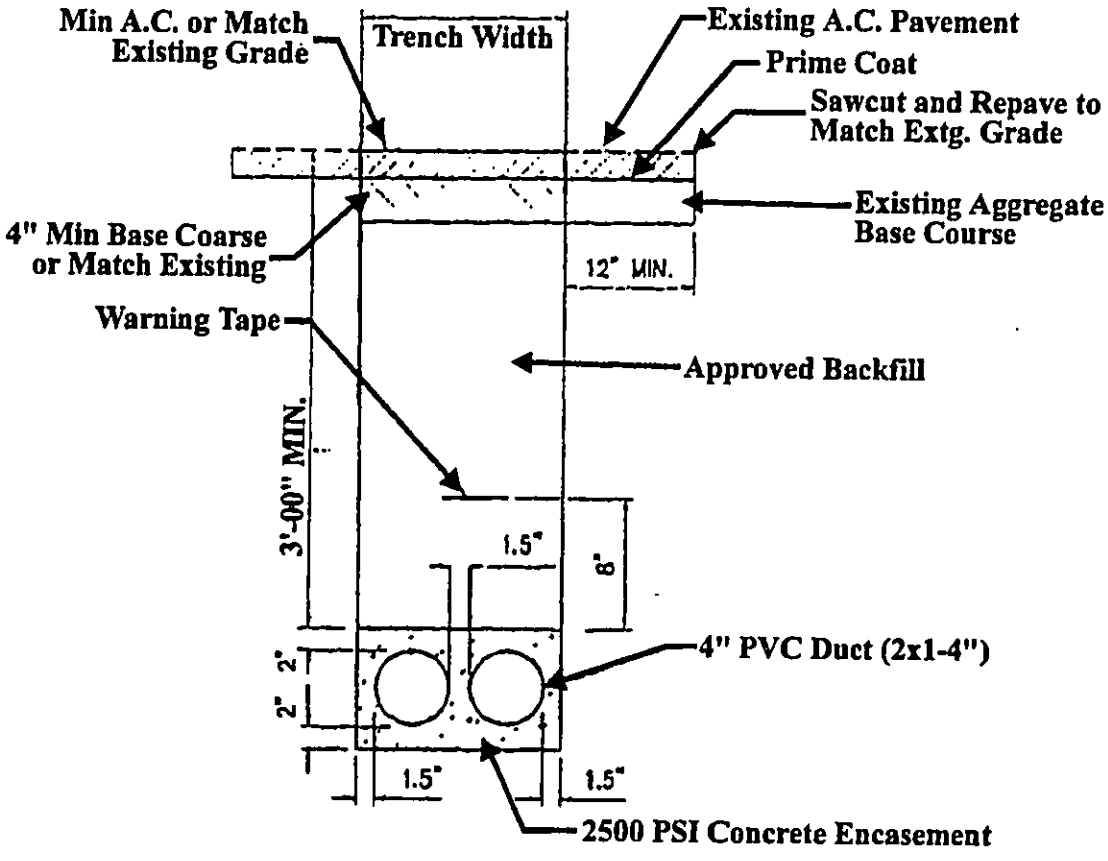
The proposed action involves the construction of an underground duct system that will be used for the installation of fiber optic cabling and/or copper cabling. The proposed duct system will be installed within existing State and County roadway rights-of-way.

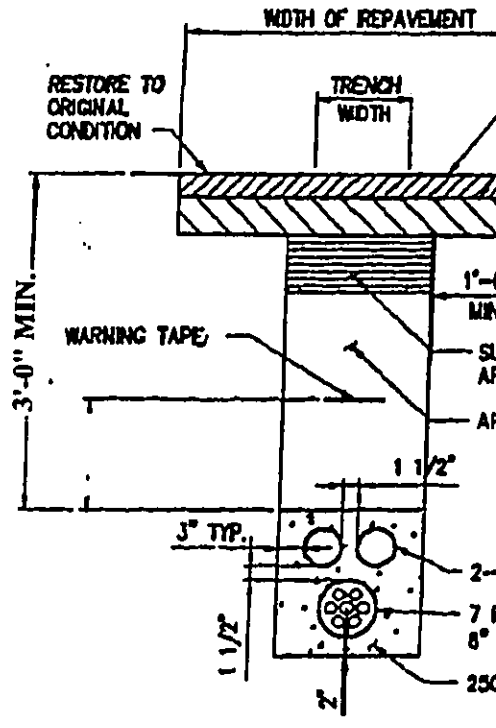
The proposed methods of installation will include either open trench or trenchless technology. The open trench construction method would be the primary means of installation. Trenchless technology would be given consideration in areas where open trenching is not feasible and at intersections to minimize disruptions to vehicular operations, as well as

bridge crossings. All improvements including appurtenant pull boxes will be constructed below grade, except for a small number of small telephone cabinets installed at grade level. In the event above-ground appurtenances are necessary, such structures will be located outside the roadway right-of-way.

At bridge crossings encountered along the planned route, the design for cable crossings would be determined on a case-by-case basis since there are differences in the design requirements and materials associated with each bridge. Design crossings would consider either bridge attachments or directional drilling under streams or gulches if practicable. Should bridge attachments be necessary, their design will be hidden under the bridge or blend into the existing bridge substructures, respecting the existing aesthetic resources that are present in each unique bridge. Further, should attachments be necessary for any historic bridges, the design and construction will be completed through coordination with SHPD and the Maui County Cultural Resources Commission. It is intended that all cables would be designed to avoid affecting streams or other sensitive environmental resources.

Installation of the duct system via the open trench method would require excavation of a trench approximately one (1) foot wide and approximately 3½ feet deep. It is noted that trench depth is governed by design standards which require a minimum three (3) feet of cover. The conduit system would consist of two (2) 4-inch diameter ducts and/or a single 6-inch diameter bundle of seven (7) 1.25-inch inner ducts placed in the trench and back-filled with approved material or concrete. In addition to the ducts, three (3) feet by five (5) feet manholes would be installed approximately every 2,000 to 3,000 lineal feet. Figure 4 illustrates the typical trench sections for three (3) possible duct configurations. It is noted that variation in the typical section





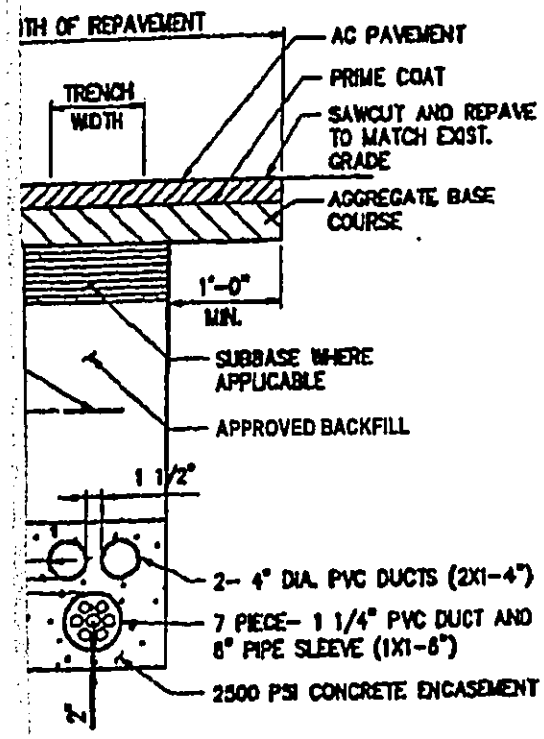
Source: Sandwich Isle Communications, Inc.

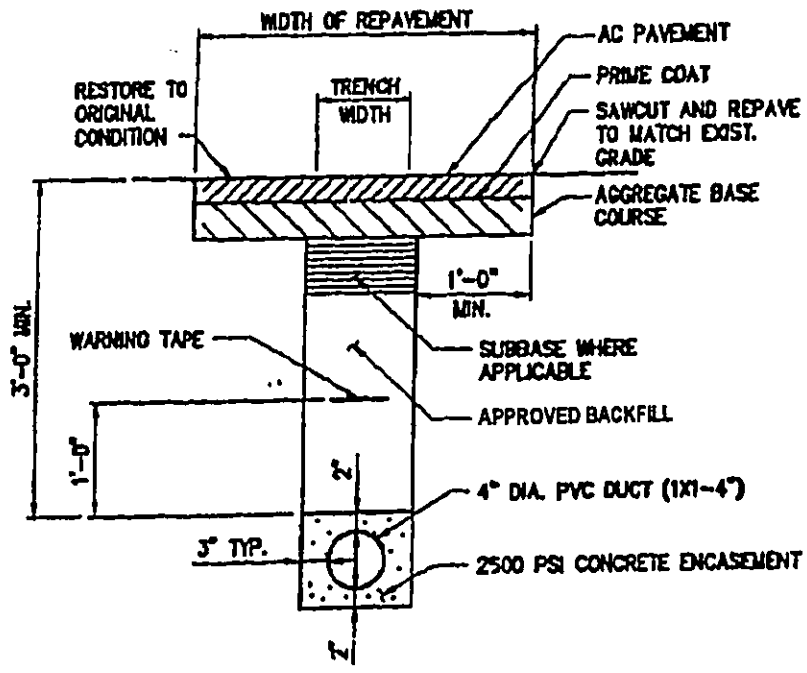
Figure 4

Sandwich Isles Communications Fib

Typical Trench Section

Prepared for: Sandwich Isles Communications, Inc.





ıtions Fiber Optic Ductline
ıch Sections

NOT TO SCALE

MUNEKIYO & HIRAGA, INC.

will occur to the extent that ductline type may vary due to network design requirements (i.e., single 4-inch line, two 4-inch lines with a single bundle of seven 1.25-inch lines, two 4-inch lines, a single 6-inch line or a combination thereof). However, from a construction standpoint, the typical section does reflect the general extent of physical work to be performed. It should be noted that SIC standards for conduit trench designs would meet or may exceed the applicable minimum design standards administered by the State and County authorities.

Installation of the fiber optic line will be by mechanical earth moving equipment with a plow, trench excavator or backhoe, depending on local field conditions. The equipment will be fitted with the appropriate mechanical attachments to allow for the most efficient progression of work which allows for the excavation of a 1-ft. x 3 ½-ft. trench.

Trenchless technology will be utilized in areas which warrant minimal surface disruption such as roadway intersections. Horizontal directional drilling is proposed for trenchless technology installation. Directional drilling involves subsurface tunneling with drilling/boring devices which would preclude the need to excavate open trenches.

C. ***PROJECT NEED AND OBJECTIVES***

The DHHL oversees 69 non-contiguous homestead properties situated on six (6) different islands. Individual parcels are separated from one another by local geographical barriers, as well as the ocean channels between each island. The challenge for DHHL is to provide its beneficiaries with an infrastructure system capable of linking all homestead properties, regardless of the physical barriers that separate them, in a cost effective manner.

The proposed underground fiber optic cable system will eventually provide DHHL with a statewide, high-speed telecommunications system linking all homestead lands. When completed, the proposed project will provide fair, cost competitive service to customers on DHHL parcels. Cost of developing the state of the art infrastructure system will be borne by SIC, thereby allowing DHHL to utilize its funds to develop housing opportunities for its beneficiaries. Additional benefits to be gained from the project include the $30 million injected to the local economy over the next 3-5 years, local job opportunities and the potential for Native Hawaiians to further enhance education and job skills.

D. *FUTURE DEVELOPMENT PLANS*

In addition to the underground ductlines proposed within existing roadway right-of-ways, landing sites along shoreline areas are planned in the future to accommodate submerged cables connecting to the land based system. There are no plans or project details available at this time to address these landing sites.

Planning work has not been conducted at this time to determine the feasibility or practicability of pursuing specific landing sites for the islands of Maui County. In addition, the implementation of these landing sites is first based upon the successful implementation of the underground duct system within roadways connecting DHHL homestead properties. Without implementation of this land based system, the landing sites for submerged cables would not be feasible. After consultation with the OEQC, it was determined that a discussion associated with these landing sites is not appropriate at this time since there are no project details or information available to conduct an adequate assessment. A separate environmental

assessment document would be prepared for these landing sites at the appropriate time when project details are developed.

E. *GEOGRAPHIC SCOPE OF PROJECT*

This report addresses actions proposed for Maui County only. In this regard, the proposed action described herein is limited to the islands of Lanai, Maui and Molokai. To facilitate project impact analysis, the proposed action is categorized by island and by corridor segment. For the Island of Lanai, three (3) route segments totaling about 14 miles in length have been identified. See Table 2 and Figure 5. For the Island of Maui, six (6) route segments totaling about 97 miles in length have been defined. See Table 3 and Figure 6, Figure 6A, Figure 7, Figure 8, Figure 9 and Figure 10.

Table 2

ISLAND OF LANAI
ROUTE SEGMENT SUMMARY

Route No.	*Route Segment*	*Route Alignment*	*Approximate Route Miles*	*Report Figure No. Reference*
1	Lanai City Junction to Manele Boat Harbor	Manele Road (s)	7	See Figure 5
2	Lanai City Junction to Kaumalapau Harbor	Kaumalapau Highway (s)	6	See Figure 5
3	Lanai City Junction to Lanai City	Kaumalapau Highway (s); Fraser Avenue (c); and Fifth Street (c)	1	See Figure 5
		Total Miles	***14***	

s = State Right-of-Way
c = County Right-of-way

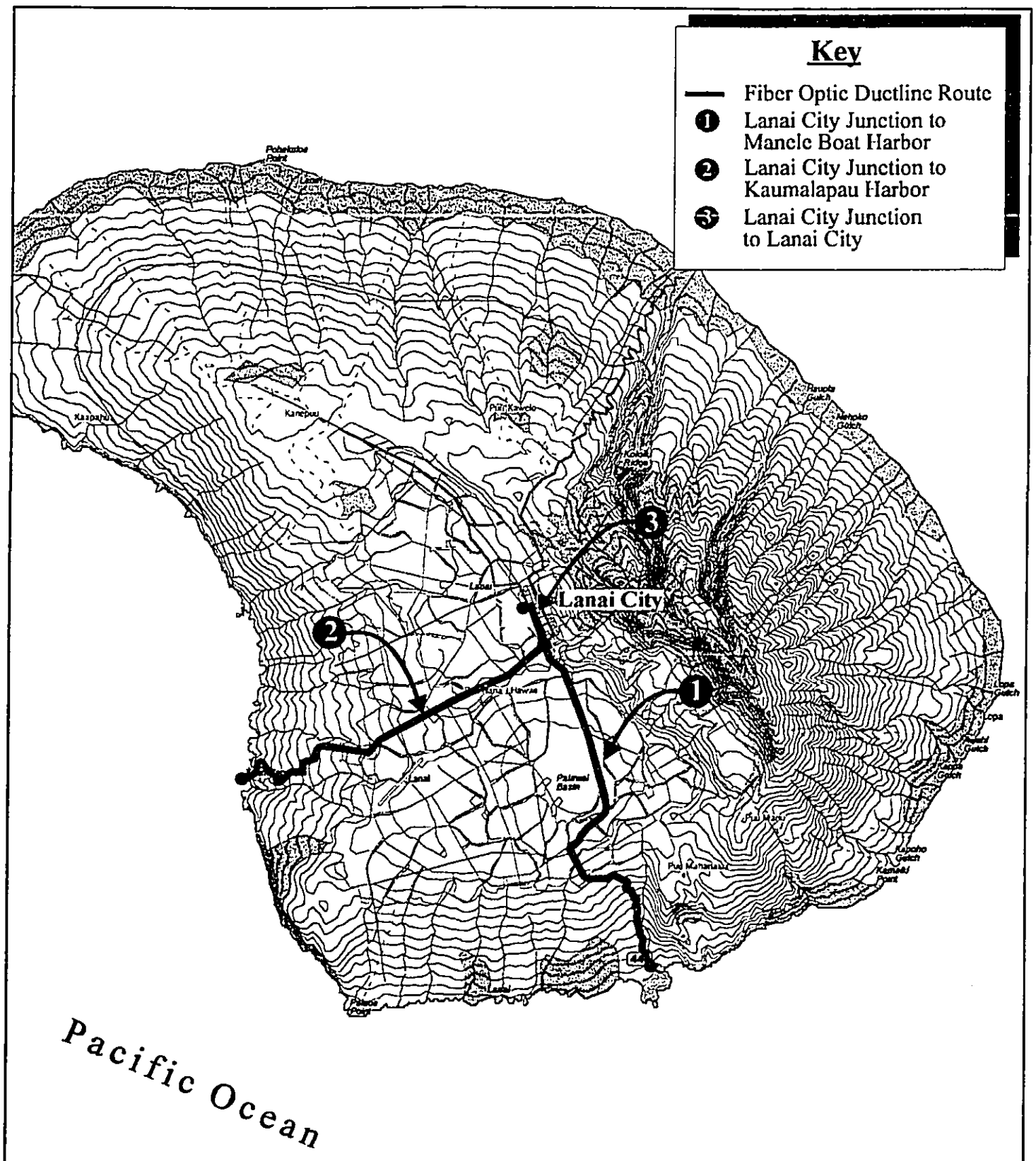


Figure 5

Sandwich Isles Communications
Fiber Optic Ductline
Lanai Route Segments

0 1.0 Miles
0.5 2.0

Prepared for: Sandwich Isles Communications, Inc.

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Table 3

ISLAND OF MAUI ROUTE SEGMENT SUMMARY				
Route No.	***Route Segment***	***Route Alignment***	***Approximate Route Miles***	***Report Figure No. Reference***
1	Waiehu to Puunene (see note "a")	Kahekili Highway (s); Waiehu Beach Road (s); Kuhio Place (c); Kalakaua Street (c); Eha Street (c); Imi Kala Street (c); Mill Street (c); Mission Street (c); Lower Main Street (c); Waiale Road (c); Wells Street (c); Nakoa Drive (c); Kainani Street (c); Kaahumanu Avenue (s); Wakea Avenue (c); Puunene Avenue (s)	10	See Figure 6
2	Kahului to Kula	Hana Highway (s); Haleakala Highway (s); Kula Highway (s)	22	See Figure 7
3	Kula to Kahikinui	Kula Highway (s); Piilani Highway (c)	18	See Figure 7
4	Kihei to LaPerouse Bay (see note "a")	Mokulele Highway (s), South Kihei Road (c); Kilohana Drive (c); Wailea Alanui (c); Makena Alanui (c); Makena-Keoneoio Road (c)	22	See Figure 8
5	Kihei to Maalaea	North Kihei Road (s); Piilani Highway (c)	4	See Figure 9
6	Maalaea to Honokowai	Honoapiilani Highway (s)	21	See Figure 10
		Total Miles	***97***	

s = State Right-of-Way
c = County Right-of-way
note "a" - For the Waiehu to Puunene and the Kihei to LaPerouse Bay route segments, alternate alignments within these route segments have been identified to provide design and implementation flexibility. These route alternatives are described in detail in Chapter VI.

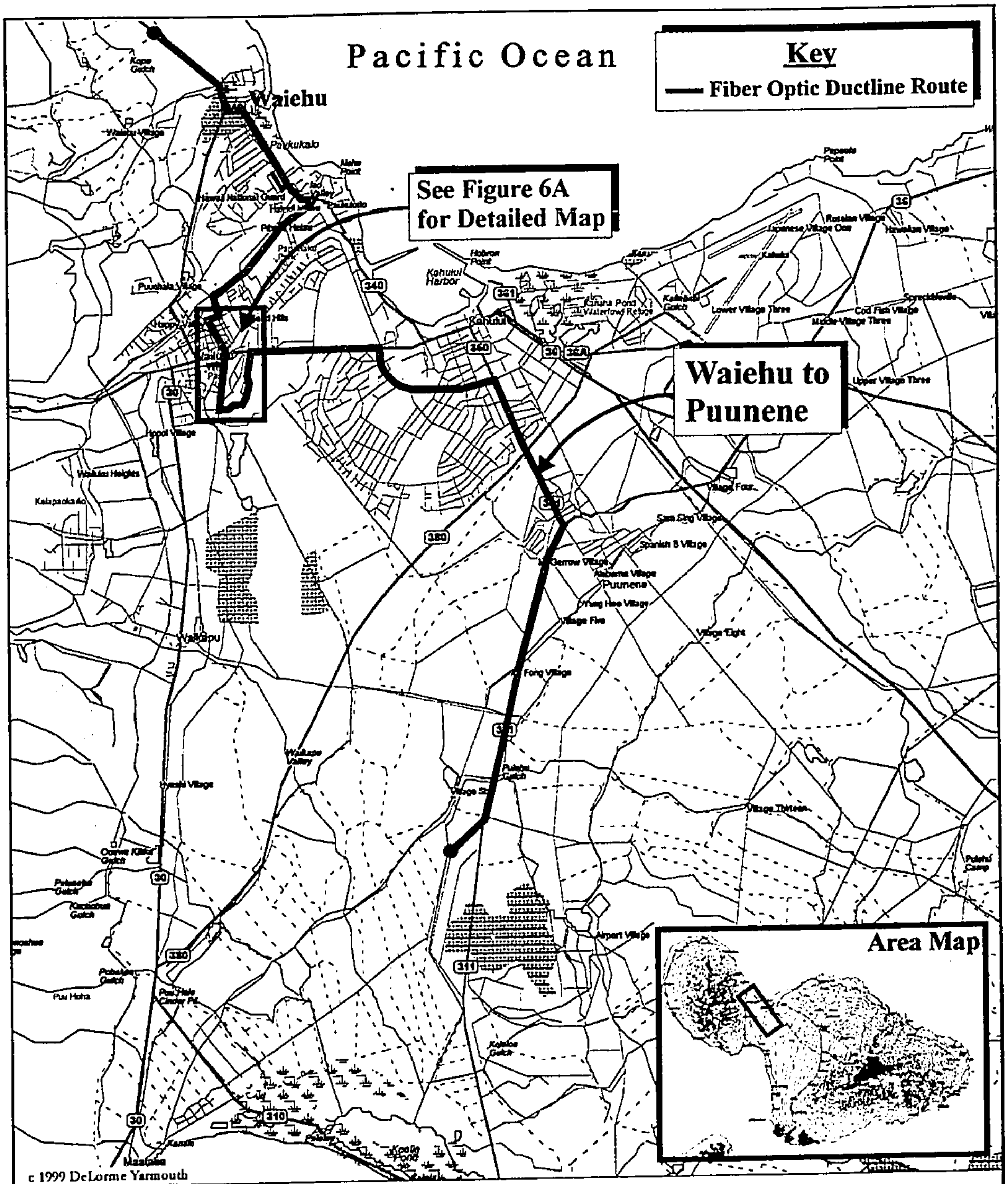

Figure 6

Sandwich Isles Communications Fiber Optic Ductline

Waiehu to Puunene

0 1250 2500 5000 Feet

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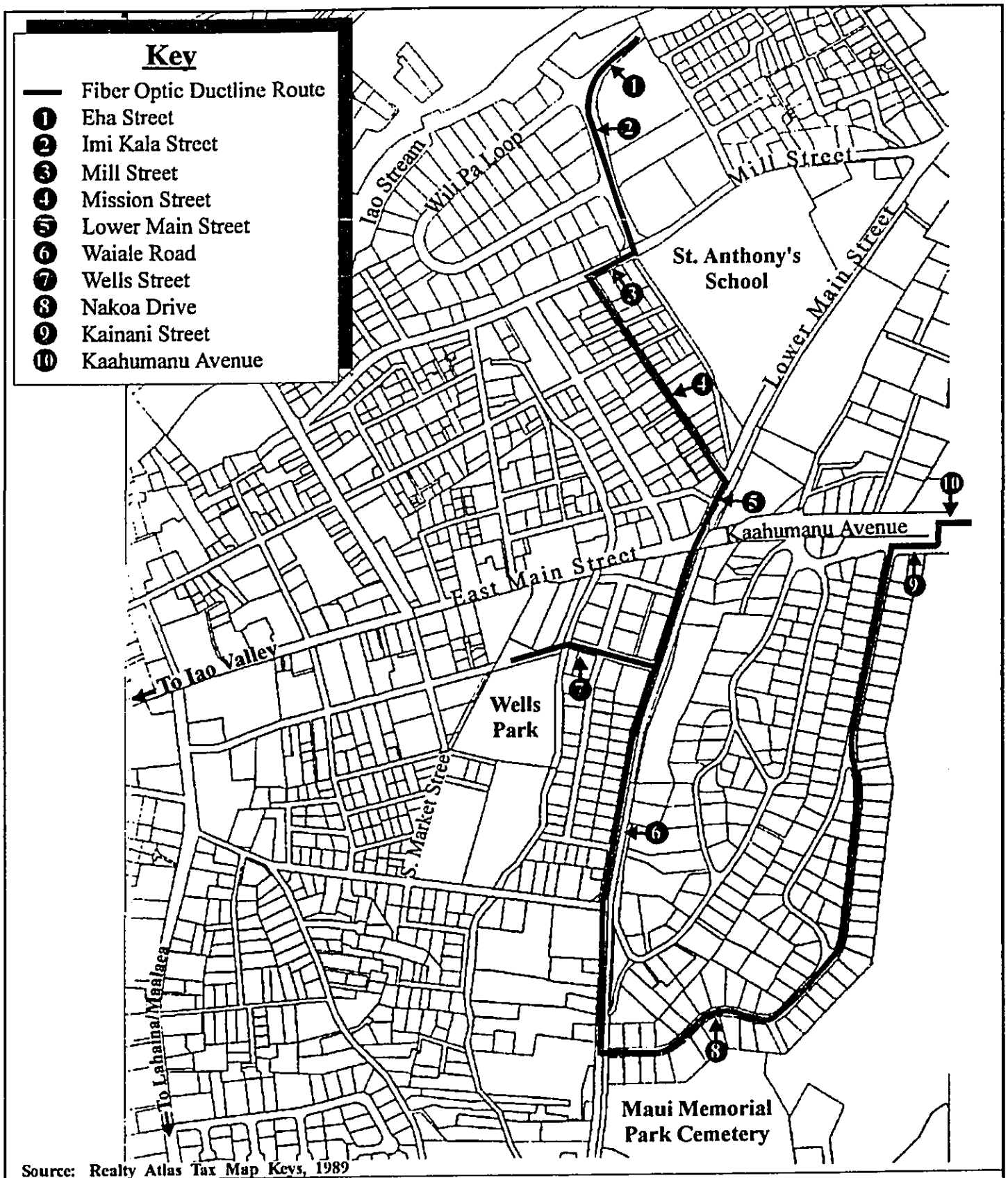
Prepared for: Sandwich Isles Communications, Inc.



Source: Realty Atlas Tax Map Keys, 1989

NOT TO SCALE

Figure 6A Sandwich Isles Communications Fiber Optic Ductline

Waiehu to Puunene Detail Map

Prepared for: Sandwich Isles Communications, Inc.

MUNEKIYO & HIRAGA, INC.

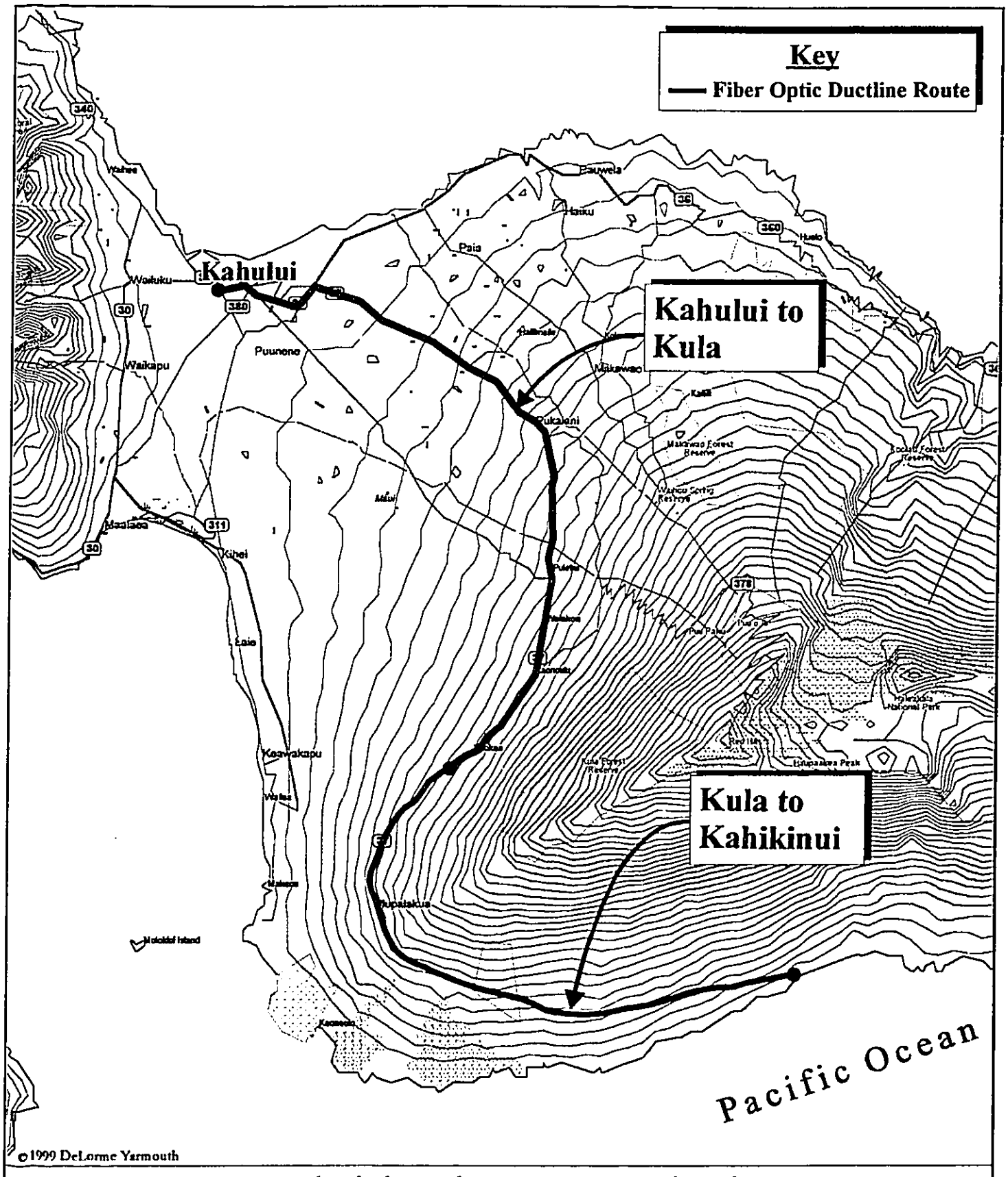


Figure 7

Sandwich Isles Communications
Fiber Optic Ductline
Kahului to Kula and
Kula to Kahikinui

0 2.0 Miles
1.0 4.0

MUNEKIYO & HIRAGA, INC.

Prepared for: Sandwich Isles Communications, Inc.

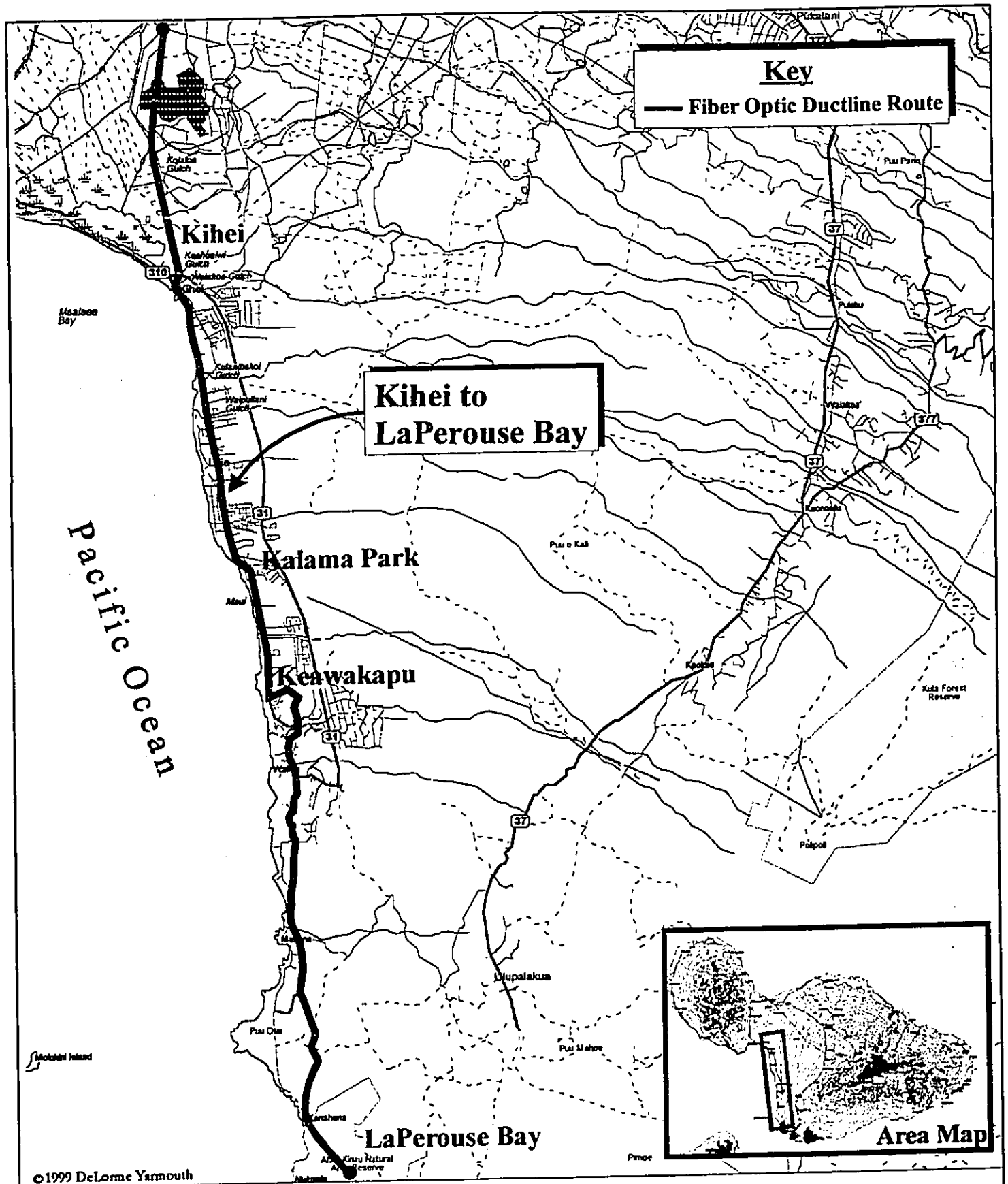


Figure 8

Sandwich Isles Communications
Fiber Optic Ductline
Kihei to LaPerouse Bay

0 2250 4500 9000 Feet

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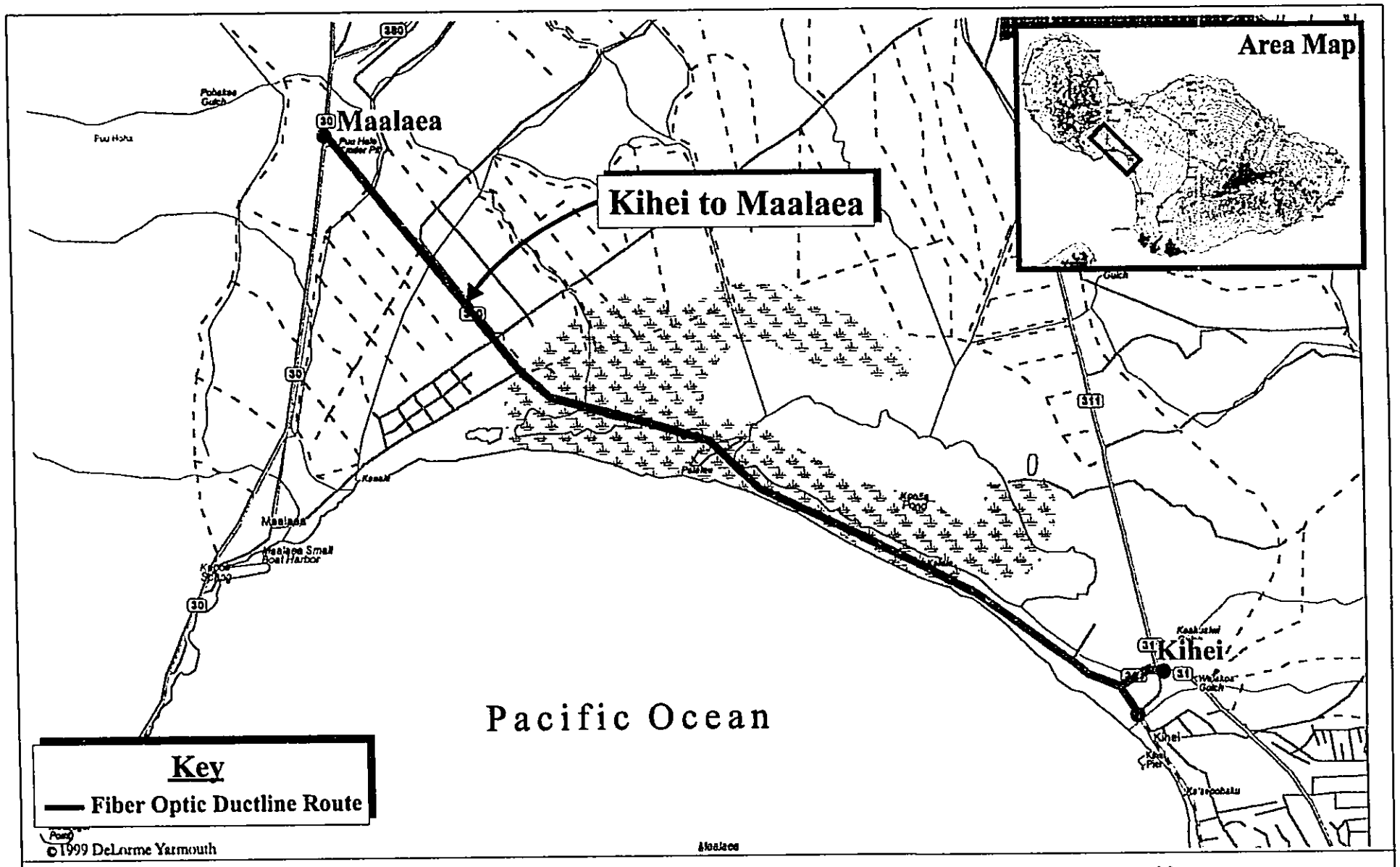

Figure 9 Sandwich Isles Communications Fiber Optic Ductline

Kihei to Maalaea

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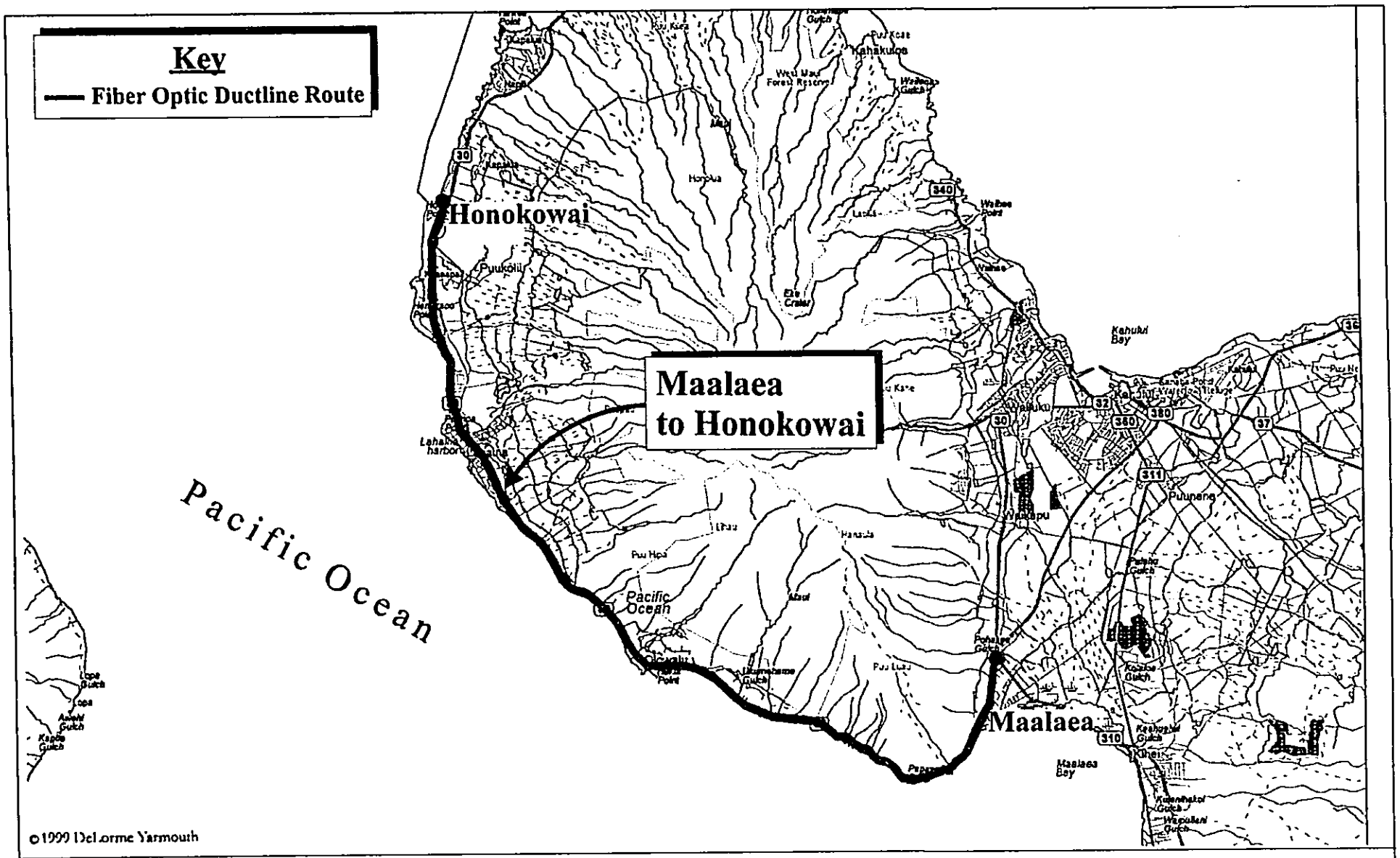

Figure 10 Sandwich Isles Communications Fiber Optic Ductline

Maalaea to Honokowai

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Prepared for: Sandwich Isles Communications, Inc.

There are three (3) route segments for the Island of Molokai, totaling about 37 miles. See Table 4 and Figure 11, Figure 12 and Figure 13.

Table 4

ISLAND OF MOLOKAI ROUTE SEGMENT SUMMARY				
Route No.	***Route Segment***	***Route Alignment***	***Approximate Route Miles***	***Report Figure No. Reference***
1	Kalamaula to Hoolehua	Maunaloa Highway (s); Kalae Highway (s); Airport Loop (dhhl); Mokulele Street (dhhl); Moomomi Street (dhhl); Nenehanaupo Avenue (dhhl); Farrington Avenue (from Kolea St. to Hauakea St.) (dhhl)	10	See Figure 11
2	Hoolehua to Kalaupapa Lookout	Farrington Avenue to Pu'upe'elua Avenue (Highway 480) intersection (dhhl); Farrington Avenue, from Pu'upe'elua Avenue (Highway 480) intersection to Kalae Highway (s); Kalae Highway (s)	12	See Figure 12
3	Kalamaula to Ualapue	Maunaloa Highway (s); Kamehameha V Highway (s)	15	See Figure 13
		Total Miles	***37***	

s = State Right-of-Way
c = County Right-of-way
dhhl = Controlled by Department of Hawaiian Home Lands and maintained by County of Maui

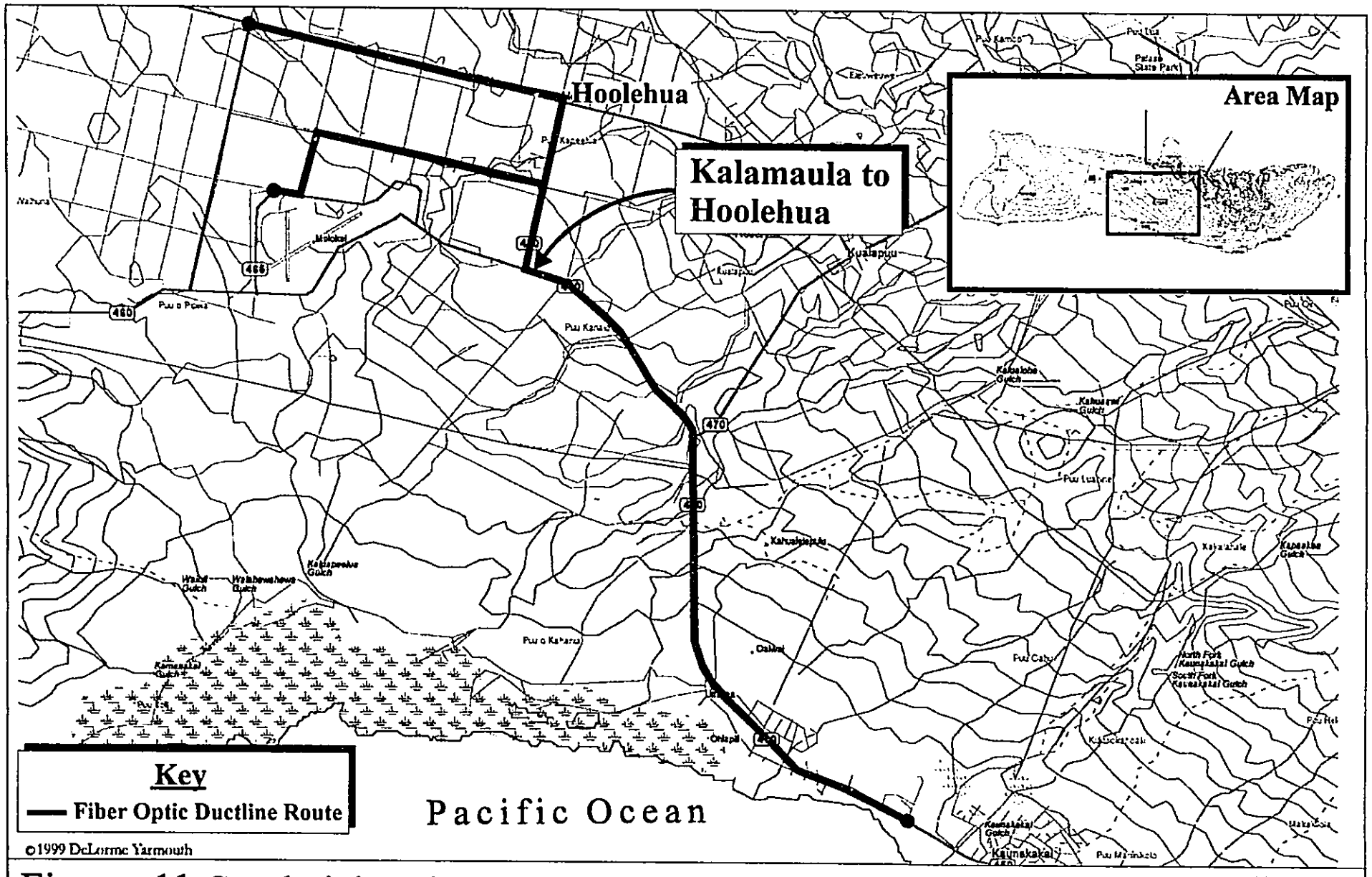

Figure 11 Sandwich Isles Communications Fiber Optic Ductline

Kalamaula to Hoolehua

Prepared for: Sandwich Isles Communications, Inc.

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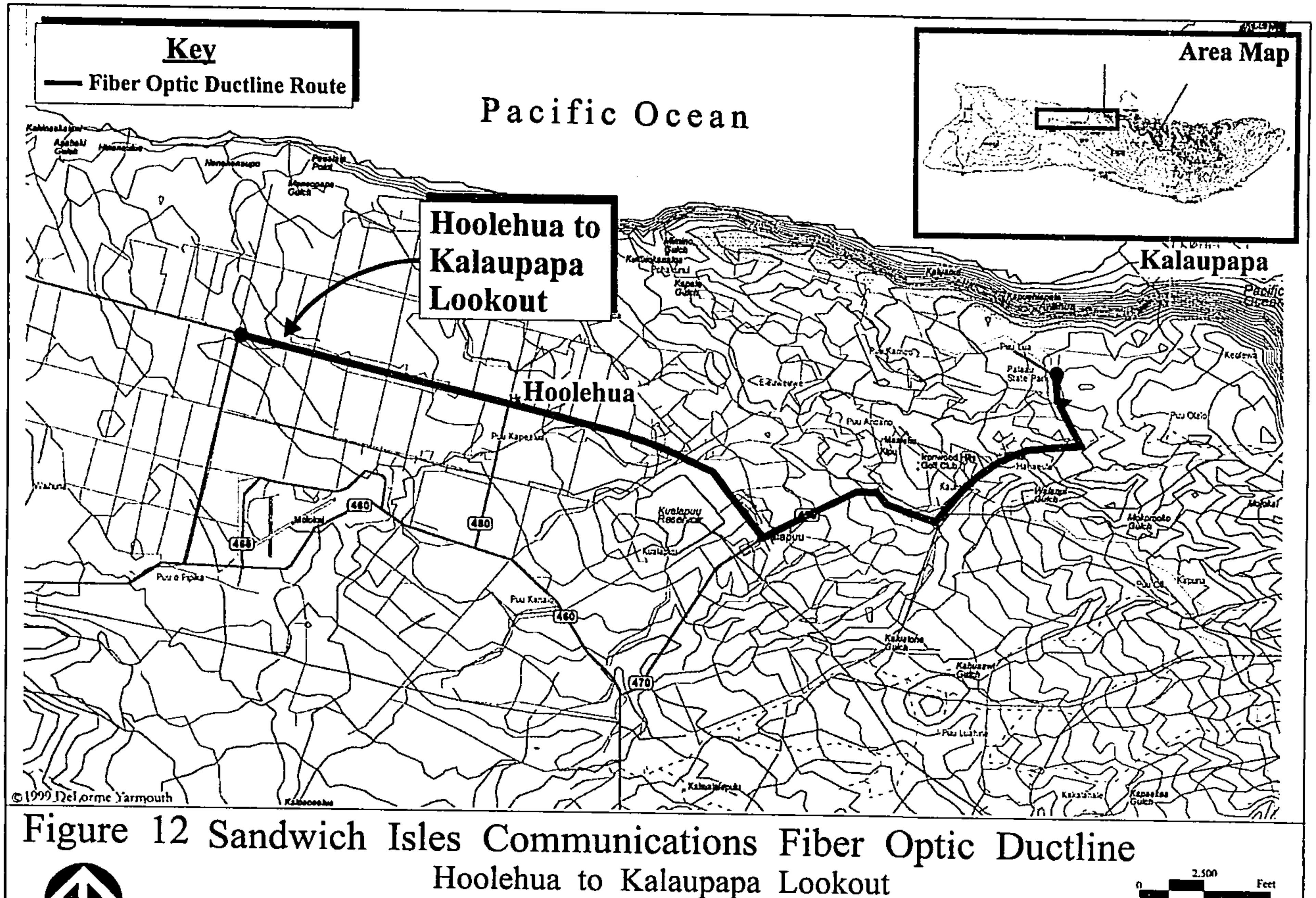

Figure 12 Sandwich Isles Communications Fiber Optic Ductline

Hoolehua to Kalaupapa Lookout

Prepared for: Sandwich Isles Communications, Inc.

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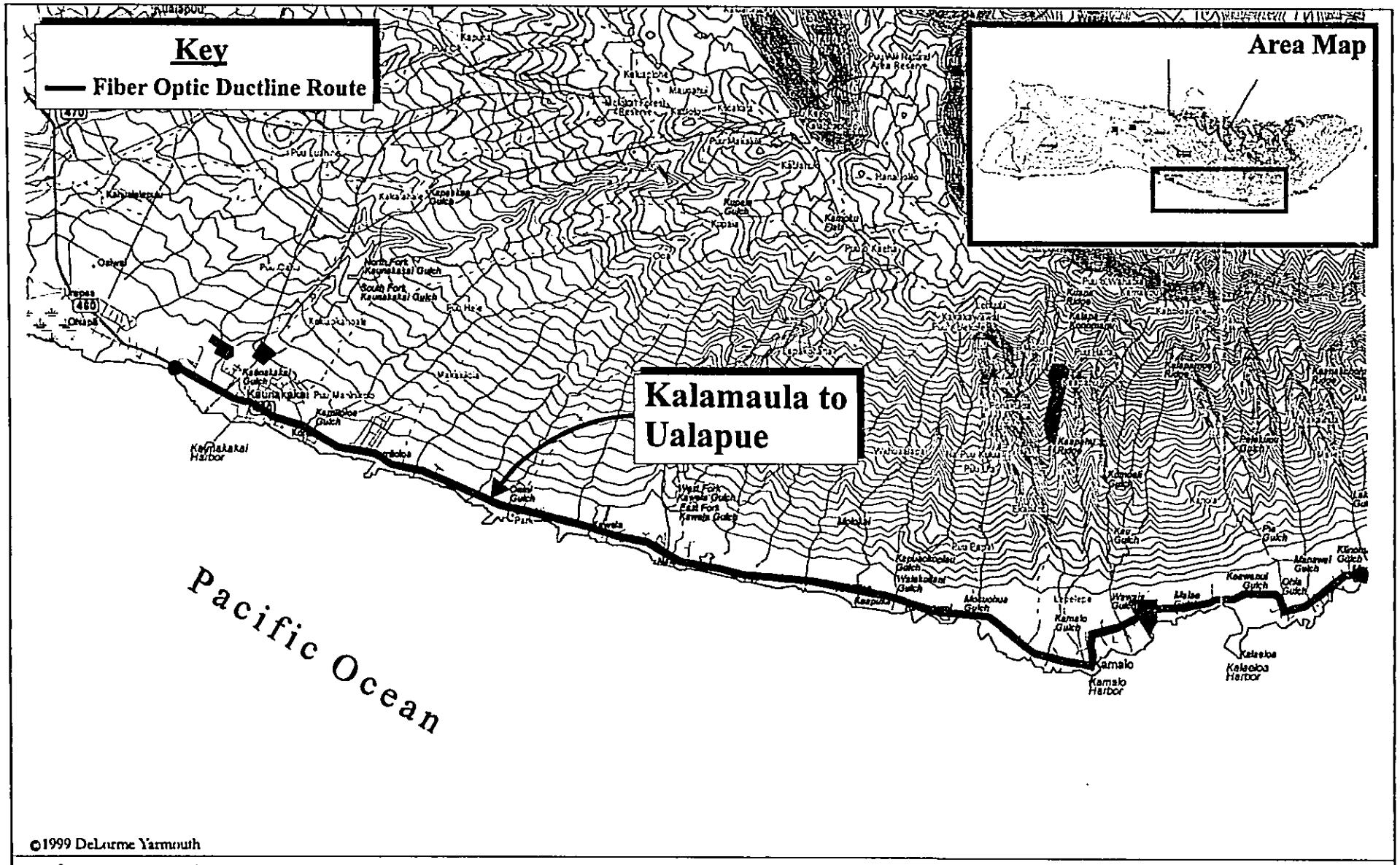

Figure 13 Sandwich Isles Communications Fiber Optic Ductline

Kalamaula to Ualapue

Prepared for: Sandwich Isles Communications, Inc.

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F. PROJECT IMPLEMENTATION

The proposed project will be completed in phases. For the County of Maui, the initial phase of installation will involve the island of Maui's route No. 1, Waiehu to Puunene, and Molokai's route No. 1, Kalamaula to Hoolehua. Phase I construction is anticipated to begin in 2001 upon securing of required easements from the State of Hawaii Department of Transportation and the County of Maui. Additional phases for Maui County will continue to be implemented incrementally. Later phases are not contingent upon DHHL homestead development. The future phases may be implemented and ready to serve the homesteads prior to the completion of planned subdivisions. The cost of the entire Maui County project is estimated at $30 million.

G. PROJECT PERMITTING

The proposed action will require easements from the County of Maui and the State of Hawaii. In addition, right of entry for construction permits will be required from the DOT and DPWWM. Since cables and small structures proposed for utility uses are permitted in the various County of Maui zoning districts, discretionary approval from the respective Planning Commissions is not required. Further, SIC has received confirmation from the Department of Land and Natural Resources (DLNR) that Conservation District Use Approvals (CDUA) for the proposed project will not be required. However, depending on the location, design and construction methods to be used, a Department of the Army Permit, Stream Channel Alteration Permit (from the State Commission on Water Resource Management), and a Special Management Area Assessment (from the Maui Department of Planning) may be required. Design coordination will be undertaken with the appropriate agencies to ensure that applicable regulatory requirements are addressed prior to construction.

Chapter II

Description of Existing Environment, Impacts and Mitigation Measures

II. DESCRIPTION OF EXISTING ENVIRONMENT, IMPACTS AND MITIGATION MEASURES

A. LAND USE

1. Island of Lanai

a. Existing Conditions

(1) City Junction to Manele Boat Harbor

The proposed alignment between Lanai City Junction and Manele Boat Harbor follows Manele Road, a two-lane, two-way County Road. Approximately three (3) miles of the total six (6)-mile project segment traverses the Palawai Basin, an area formerly used for pineapple cultivation. With the termination of pineapple operations on the island, this area is currently fallow.

Beyond Palawai Basin, descending to Manele Bay, lands are vacant and undeveloped. Manele Road provides access to the Manele Project District resort area and the Manele Boat Harbor. The Manele Project District includes hotel, golf course, and single- and multi-family resort residential properties.

Lands adjoining Manele Road from Lanai City Junction to the vicinity of Manele Boat Harbor are owned by the Lanai Company, Inc. Lands comprising the Manele Boat Harbor are owned by the State of Hawaii.

(2) Lanai City Junction to Kaumalapau

This segment of the alignment follows the Kaumalapau Road to Kaumalapau Harbor. An approximately three

(3) mile segment of Kaumalapau Highway, from the Lanai City Junction towards Kaumalapau Harbor traverses lands formerly cultivated in pineapple. Portions of the former pineapple lands are now being used for cattle grazing. The balance of the route, to Kaumalapau Harbor is, for the most part, vacant and undeveloped. There are a few scattered single-family dwellings on the slopes above Kaumalapau Harbor. The Kaumalapau Harbor is Lanai's only commercial port and serves as the terminus point for this segment of the fiber optic line.

(3) Lanai City Junction to Lanai City

This segment of the fiber optic system follows Fraser Avenue and Fifth Street. Land uses along Fraser Avenue and Fifth Street are primarily comprised of single-family dwellings and public/quasi-public uses. In addition to residences, the alignment is bordered by the Lanai Fire Station, Lanai Company, Inc.'s headquarters, Lanai High and Elementary School, a few churches and the commercial center of Lanai City, including Dole Park.

b. Impacts and Mitigation Measures

The proposed ductline project is not anticipated to have adverse impacts to surrounding land uses. The action is designed to improve communications technology for DHHL landholdings and homesteaders and does not alter land use patterns and does not affect market demands for specific land

uses. In addition, as an underground infrastructure component, the proposed ductline will not create any long-term physical impacts to surrounding uses.

2. *Island of Maui*

a. *Existing Conditions*

(1) *Waiehu to Puunene*

The terminus of this segment occurs at the Waiehu Kou Subdivision. This DHHL subdivision is being developed in three (3) phases. Phase I encompasses 40 single-family homestead lots which were developed in 1993. The 110 lot Phase II project is currently under construction while an additional 80 lots are contemplated for a future Phase III. The proposed alignment traverses the heart of the Wailuku-Kahului Urban area. Land uses along the corridor include single-family residences (Waiehu Terrace, Waiehu Heights, Sand Hills), light industrial, commercial and public/quasi-public uses. Along Kaahumanu Avenue for example, adjacent uses include the H.P. Baldwin High School, War Memorial Gymnasium/Sakamoto Pool Complex, Keopuolani Park, Maui Police Department and Maui Community College.

Wakea Avenue to Puunene Avenue is bordered by commercial and industrial uses, as well as single-family residential uses. Puunene Avenue, within the Kahului Town area includes churches and single-family

dwellings. Heading south, beyond Dairy Road are sugar cane fields and the HC&S sugar mill. Further south, towards the Old Puunene Airport, lands along Mokulele Highway are occupied by sugar cane.

(2) ***Kahului to Kula***

The Kahului to Kula connection traverses the urbanized Kahului area, Kula agricultural/residential areas and intervening agricultural areas occupied by sugar cane and pineapple. Heading mauka towards Kula, the route bypasses Pukalani. The Kahului area, along Hana Highway, is characterized by light industrial and business/commercial uses (Big K-Mart, Triangle Square, Kahului Business Park). Continuing east along Hana Highway, the corridor is bordered by sugar cane fields managed by HC&S. Sugar cane use continues along Haleakala Highway until Pukalani Town. In this vicinity, sugar cane fields transition to pineapple fields. The urbanized Pukalani area which borders Kula Highway includes single-family and public/quasi-public uses (e.g., King Kekaulike High School). Continuing towards Keokea, land uses become increasingly rural and agricultural in nature. Land uses along the route are interspersed with independent farms and open range land which are used for horse and cattle grazing. Near the Keokea terminus of this fiber optic segment, lands are largely vacant and undeveloped, although interspersed with single-family agricultural residences.

(3) ***Kula to Kahikinui***

Kula Highway through Keokea is surrounded by rural residences and public/quasi-public uses (Keokea Park, churches, Kula Hospital). In addition, a few retail establishments such as the Fong General Store are located in this area. From Keokea to Ulupalakua the highway is bordered primarily by agricultural lands used for cattle grazing. Agricultural dwellings are sparsely located along this section of roadway. Ulupalakua village encompasses the headquarters for Ulupalakua Ranch, and the Ulupalakua Ranch Store. The Tedeschi Vineyards, as well as scattered residential dwellings are also found within the village area. Beyond Ulupalakua, to Kanaio and Kahikinui, lands bordering the Piilani Highway are undeveloped.

(4) ***Kihei to LaPerouse***

This route segment follows Mokulele Highway to its intersection with Piilani Highway. The route continues along South Kihei Road to Wailea, then along Wailea Alanui, Makena Alanui and Makena-Keoneoio Road to LaPerouse Bay. Uses along Mokulele Highway include sugar cane, while South Kihei Road reflects the region's diverse mix of recreational, single and multi-family residential, public/quasi-public, business, commercial and resort related uses. For example, South Kihei Road is bordered by the Kalama Park and Kamaole Parks I, II and III, which provide shoreline recreational

opportunities for visitors and residents. Business/commercial complexes include the Azeka Place I and II shopping centers, the Long's shopping complex, Kihei Kalama Village and Kukui Mall. Hotel and condominium uses also front South Kihei Road, reflecting the area's visitor oriented land use base. These complexes include the Maui Banyan, Maui Coast Hotel, Luana Kai Resort and the Worldmark, The Club timeshare project currently under construction.

Beyond South Kihei Road to the south, the route traverses the Wailea Resort and Makena Resort areas. These resorts provide world class golf and tennis facilities as well as high quality hotels and residential and commercial complexes. Examples of uses bordering Wailea Alanui and Makena Alanui include the Shops at Wailea shopping complex, the Grand Wailea Resort and Spa, Four Seasons Resort, Maui Prince Hotel, and Makena Surf condominium. Undeveloped lands (e.g., properties within Project District No. 8) within these resort areas also border the route.

Areas to the south of the resorts reflect a rural and natural landscape which encompass single-family dwellings, and as well as resource protection areas designated by the Ahihi-Kina`u Natural Area Reserve.

(5) ***Kihei to Maalaea***

The Kihei to Maalaea route involves the North Kihei Road right-of-way between Mokulele Highway and Honoapiilani Highway. This segment of roadway is primarily bounded by the open space and wetlands defined by the Kealia National Wildlife Refuge. In the vicinity of the Mokulele Highway-North Kihei Road junction, multi-family condominium complexes along with retail/commercial businesses can be found (e.g., Kealia Beach Plaza, Sugar Beach Resort, and Kealia Resort). To the west or Honoapiilani Highway extent of this segment are sugar cane lands cultivated by HC&S. The Maui Electric Company's Maalaea Power Plant is located in the vicinity of North Kihei Road, approximately 1.1 miles from North Kihei Road-Honoapiilani Highway Intersection.

(6) ***Maalaea to Honokowai***

The Maalaea to Honokowai segment follows Honoapiilani Highway for a distance of approximately 21 miles. This segment of Honoapiilani Highway traverses varying land use environments, including the winding cliff-side portion from Maalaea to Ukumehame. From Ukumehame to Lahaina Town, adjacent land uses include coastal areas and parks (Ukumehame Park, Launiupoko Wayside Park and Puamana Park), and former sugar cane fields previously cultivated by Pioneer Mill Company, Ltd. The village of Olowalu is

located approximately midpoint between Maalaea and Lahaina. This former plantation village is characterized by a few single family residences, Camp Pecusa, Olowalu General Store and Chez Paul Restaurant.

Through Lahaina Town, Honoapiilani Highway serves as the primary north-south arterial for west side traffic. The highway is bordered by commercial and industrial lands (e.g., Pioneer Mill, Lahaina Cannery Mall), with residential and public/quasi-public uses (e.g., Lahaina Aquatic Center, Lahaina Recreation Center) comprising other nearby uses. Beyond Lahaina Town, to the north, Honoapiilani Highway provides access to resort uses associated with the Kaanapali area, which includes golf courses, hotels and resort commercial and residential areas. Beyond Kaanapali, the highway is bordered by agricultural lands (pineapple and former sugar cane fields) on the mauka side and residential uses on the makai side.

b. ***<u>Impacts and Mitigation Measures</u>***

The proposed ductline project is not anticipated to have adverse impacts to surrounding land uses. The action is designed to improve communications technology for DHHL landholdings and homesteaders and does not alter land use patterns and does not affect market demands for specific land uses along the project corridor. In addition, as an underground infrastructure component, the proposed ductline will not create

any long-term physical impacts to surrounding uses. It is noted that the proposed action will be confined to the existing roadway right-of-way and will not affect flora, fauna and wetland features of the Kealia National Wildlife Refuge.

3. *Island of Molokai*

a. *Existing Conditions*

(1) *Kalamaula to Hoolehua*

The Kalamaula to Hoolehua section of Molokai can be characterized as generally agricultural in nature. Active cultivation of crops occur along sections of Maunaloa Highway to Hoolehua. The route passes near the vicinity of Molokai Airport, the primary commercial airport serving the residents of Molokai. Residences which are found in this locale are generally associated with the surrounding agricultural lands. Specific uses along this segment include single-family dwellings (at Kalamaula), corn cultivation, lei flower production, and fruit and fresh herbs cultivation. The Kulana 'O Iwi complex which houses organizations such as the Office of Hawaiian Affairs, DHHL, Alu Like, Kamehameha Schools and Queen Liliuokalani Trust are located at Kalamaula.

(2) *Hoolehua to Kalaupapa Lookout*

This section of the route traverses agricultural lands and the town of Kualapuu, a plantation town which originally supported the pineapple industry on Molokai.

This country town includes a small commercial area, as well as a plantation village area which encompasses single-family residential use. Farrington Avenue is bordered by Kualapuu Elementary School, Molokai High and Intermediate School, Hoolehua Fire Station, truck farms and Coffees of Hawaii's coffee fields. Uses along Kalae Highway include single-family residences and pasture lands.

(3) ***Kalamaula to Ualapue***

The Kalamaula to Ualapue segment of the fiber optic ductline runs along Maunaloa Highway (to Kaunakakai Town) and Kamehameha V Highway. This route segment passes through the rural residential area to the west of Kaunakakai Town, through Kaunakakai Town and east through rural communities which dot the coastline to Ualapue. Kaunakakai Town is the commercial center of Molokai providing retail, commercial, as well as public/quasi-public services. For example, Kamehameha V Highway through Kaunakakai runs near the entry to Kaunakakai Harbor, near the Mitchell Pauole Center (government center) and near the Molokai Education Center, a branch of the University of Hawaii. Proceeding east to Ualapue, sparsely populated residential areas line portions of the highway while undeveloped lands provide the balance of this rural landscape. Kamehameha V Highway along this routing segment is a two-lane, two-way roadway.

b. ***Impacts and Mitigation Measures***

As with Lanai and Molokai, the proposed ductline project is not anticipated to have adverse impacts to surrounding land uses. The action is designed to improve communications technology for DHHL landholdings and homesteaders and does not alter land use patterns and does not affect market demands for specific land uses along the project corridor. In addition, as an underground infrastructure component, the proposed ductline will not create any long-term physical impacts to surrounding uses.

B. *TOPOGRAPHY AND SOILS*

1. *Island of Lanai*

a. *Lanai City Junction to Manele Boat Harbor*

(1) *Existing Conditions*

Situated at the foot of the island's mountainous region, this segment of the project begins at the southwestern outskirts of Lanai City at an elevation of about 1,520 feet above mean sea level (amsl). The proposed alignment gradually descends to approximately 1,100 feet amsl as it traverses the Palawai Basin, a vast expanse of nearly level to gently sloping lands that were formerly planted in pineapple. Exiting this area, the alignment steadily rises to about 1,240 feet amsl and then traverses the island's rocky and moderately steep southern flank while enroute to its terminus near sea level in the vicinity of the coastal lowlands at the Manele Boat Harbor.

The soil associations identified with this segment of the project include the Molokai-Lahaina and the Very stony land-Rock land associations. The Molokai-Lahaina association ranges in elevation from 500 to 1,750 feet amsl and consists of well-drained, fine textured and moderately fine textured soils on the Central Plateau of Lanai. Formed in material weathered from basic igneous rocks, the soils occur in broad, nearly level areas and moderately steep slopes.

The Very stony land-Rock land association ranges in elevation from near sea level to 3,000 feet amsl and is comprised of gently sloping to very steep, stony and rocky land on uplands and in gulches and valleys.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline will not adversely impact this component of the existing environment. The proposed ductline will not be visible as it will be installed underground within the roadway right-of-way.

Construction will be limited to trenching or other trenchless methods. Ground disturbances are minimized by both techniques, as there is no grading required or resulting changes in topography or elevations.

b. ***Lanai City Junction to Kaumalapau***

(1) Existing Conditions

The proposed alignment for this segment of the project begins outside Lanai City at an elevation of approximately 1,520 feet amsl and gradually descends to about 1,150 amsl in the vicinity of the Lanai Airport. From this point, the alignment crosses the moderately sloping, rocky terrain of the island's western flank as it proceeds to its terminus near sea level along the moderately steep shoreline in the vicinity of the Kaumalapau Harbor.

The Molokai-Lahaina and the Very stony land-Rock land soil associations also underlie this segment of the project. Refer to the Lanai City Junction to Manele Boat Harbor segment for the descriptions of these soil associations.

(2) Impacts and Mitigation Measures

No negative effects to this element of the natural environment are expected as a result of the proposed fiber optic ductline.

c. ***Lanai City Junction to Lanai City***

(1) Existing Conditions

This segment of the project begins on the southwestern outskirts of Lanai City at an elevation of approximately 1,520 feet amsl. From this point, the proposed

alignment rises slightly until it reaches the southern extent of Fraser Avenue in Lanai City. The alignment then traverses the level to slightly undulating lands along Fraser Avenue before terminating at the northwestern limits of the town.

The soil association underlying this segment of the project is the Very stony land-Rock land association. Refer to the Lanai City Junction to Manele Boat Harbor segment for the description of this soil association.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline will not affect this component of the physical environment. The proposed ductline will not affect topographic features and soil conditions as it will be placed underground within the roadway right-of-way.

2. ***Island of Maui***

a. ***Waiehu to Puunene***

(1) ***Existing Conditions***

Located at about 100 feet amsl, this segment of the project begins near the relatively level to gently sloping coastal lowlands at the base of the West Maui Mountains. From this point, the proposed alignment passes through the nearly flat and mildly sloping lands of the Wailuku-Kahului urban area and then continues through the broad, flat plain of the Central Maui isthmus

before concluding in the Puunene area, at an elevation of approximately 20 feet amsl.

The Pulehu-Ewa-Jaucas soil association underlies this segment of the project. The soils of this association range in elevation from near sea level to 600 feet amsl and is made up of well-drained and excessively drained, medium textured, moderately fine textured, and coarse textured soils on alluvial fans and in basins. These soils, which are nearly level to moderately sloping, developed in alluvium weathered from basic igneous rock, coral, and seashells.

(2) Impacts and Mitigation Measures

The proposed fiber optic ductline will not adversely impact this component of the existing environment.

Construction will be limited to trenching or other trenchless methods. Ground disturbances are minimized by both techniques, as there is no grading required or resulting changes in topography or elevations.

b. Kahului to Kula

(1) Existing Conditions

Situated near sea level, this segment of the project begins in the relatively flat coastal lands within the urban area of Kahului. Exiting Kahului, the proposed

alignment rises from about 20 feet amsl to approximately 1,500 feet amsl at Pukalani as it climbs the nearly level to gently sloping lands of Haleakala's northwestern flank. From the southern outskirts of Pukalani to its terminus, the alignment ranges from about 1,800 to 3,000 feet amsl as it gradually ascends and negotiates the steep highlands of Haleakala's western flank.

The Pulehu-Ewa-Jaucas association, Waiakoa-Keahua-Molokai association, and the Puu Pa-Kula-Pane association represent the soil associations underlying this segment of the project. Refer to the Waiehu to Puunene segment for the description of the Pulehu-Ewa-Jaucas soil association. Descriptions of the other previously undescribed soil associations follows below.

The Waiakoa-Keahua-Molokai association ranges in elevation from near sea level to 1,500 feet amsl and is characterized by well-drained, moderately fine textured soils on low uplands on Central Maui. The soils are nearly level to moderately steep and were formed in material weathered from basic igneous rocks.

The Puu Pa-Kula-Pane association ranges in elevation from 1,000 to 6,000 feet amsl and includes well-drained, medium textured soils on intermediate and high uplands on East Maui. These soils lie on gently

sloping to steep lands and were developed in material weathered from volcanic ash.

(2) ***Impacts and Mitigation Measures***

No negative effects to this element of the natural environment are expected as a result of the proposed fiber optic ductline. The proposed ductline will be installed within the roadway right-of-way and will not be visible.

c. ***Kula to Kahikinui***

(1) ***Existing Conditions***

This segment of the project begins at an elevation of about 3,000 feet amsl on the steep highlands along the southwestern flank of Haleakala. From this point, the alignment passes through steep, rocky terrain as it rounds the southern flank of Haleakala in the vicinity of Kanaio. From Kanaio, which is located at approximately 1,800 feet amsl, the alignment continues to cross steep, rocky lands while gradually descending to its terminus at Kahikinui at an elevation of about 200 feet amsl.

The soil associations underlying this segment of the project are the Waiakoa-Keahua-Molokai association, the Rock land-Rough mountainous land association, and the Puu Pa-Kula-Pane association. Refer to the Kahului to Kula segment for the descriptions of the

Waiakoa-Keahua-Molokai and Puu Pa-Kula-Pane soil associations. The Rock land-Rough mountainous land association ranges in elevation from sea level to 10,000 feet amsl and consists of very shallow soils on intermediate and high uplands on East and West Maui. These soils are steep and very steep.

(2) ***Impacts and Mitigation Measures***

No negative effects to this element of the natural environment are expected as a result of the proposed fiber optic ductline. The proposed ductline will be installed within the roadway right-of-way and will not alter local topographic conditions.

d. ***Kihei to LaPerouse***

(1) ***Existing Conditions***

This segment of the project begins in the south Puunene area near the Kihei coast on relatively level lands that are located at an elevation of about 20 feet amsl. From this point, the proposed alignment proceeds along Mokulele Highway in a westerly direction as it gradually descends to an elevation near sea level at the intersection of Mokulele Highway and Piilani Highway. Ranging in elevations from near sea level to approximately 20 feet amsl, the alignment continues south along South Kihei Road as it traverses the developed, nearly level, coastal lowlands of Kihei. At Kilohana Drive in the South Kihei area, the alignment

turns east for about 1,600 feet until it reaches the intersection of Kilohana Drive and Wailea Alanui. From this point, the alignment heads south across gently sloping lands ranging in elevation from approximately 40 feet to 120 feet amsl as it traverses the developed lands of the Wailea Resort and Makena Resort. Between Puu Olai to Ahihi Bay, the alignment crosses mostly undeveloped lands with gently sloping to nearly level terrain as it drops in elevation from about 60 feet amsl to near sea level. From Ahihi Bay to its southern terminus, the alignment traverses a lava flow with gently sloping topography as it rises in elevation from near sea level to approximately 60 feet amsl.

The Pulehu-Ewa-Jaucas association, Keawekapu-Makena association, and Rock land-Rough mountainous land association comprise the soil associations underlying this segment of the project. Refer to the Waiehu to Puunene segment for the description of the Pulehu-Ewa-Jaucas soil association and to the Maalaea to Honokowai segment for the description of the Rock land-Rough mountainous land soil association. A description of the other previously undescribed soil association follows below.

The Keawekapu-Makena soil association consists of well-drained, medium-textured soils on the low uplands of East Maui. The soils of this association, which

generally range in elevation from 100 feet to 800 feet amsl, are gently sloping to moderately steep and were developed in material weathered from volcanic ash.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline will not adversely impact this component of the existing environment.

e. ***Kihei to Maalaea***

(1) ***Existing Conditions***

This segment of the project begins on the relatively level lands near the Kihei coast at an elevation ranging from approximately 20 feet amsl to 160 feet amsl. From this point, the proposed alignment proceeds near sea level along the coastal flatlands of Maalaea Bay and then veers to the northwest as it crosses mildly sloping topography enroute to its terminus at Honoapiilani Highway, near the base of the West Maui Mountains at approximately 160 feet amsl.

The soil association underlying this segment of the project is the Pulehu-Ewa-Jaucas association. Refer to the Waiehu to Puunene segment for the description of this soil association.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline will not adversely affect this component of the physical environment.

f. ***Maalaea to Honokowai***

(1) ***Existing Conditions***

This segment of the project begins at the base of the West Maui Mountains on gently sloping terrain situated at about 160 feet amsl. The proposed alignment then crosses mildly sloping lands as it gradually descends towards the Maalaea Triangle commercial complex. From this point, the alignment rises to approximately 80 feet amsl as it negotiates the rocky coastal cliffs along the West Maui Mountains' southern flank before returning to near sea level upon its descent at Ukumehame. The alignment then proceeds northward along nearly flat coastal lowlands enroute to its terminus at Honokowai.

The Pulehu-Ewa-Jaucas association, Waiakoa-Keahua-Molokai association, and the Rock land-Rough mountainous land association are the soil associations comprising this segment of the project. Refer to the Waiehu to Puunene segment for the description of the Pulehu-Ewa-Jaucas soil association; the Kahului to Kula segment for the description of the Waiakoa-Keahua-Molokai soil association; and the Kula to Kahikinui segment for a description of the Rock land-Rough mountainous land association.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline will not adversely

impact this component of the existing environment. The proposed ductline will not be visible as it will be installed underground within the roadway right-of-way.

3. Island of Molokai

a. Kalamaula to Hoolehua

(1) Existing Conditions

This segment of the project begins near sea level along the coastal lowlands at Kalamaula. As it proceeds toward the junction of Kalae Highway and Maunaloa Highway, which is situated at an elevation of about 460 feet amsl, the proposed alignment traverses rocky and gently sloping terrain. From this point to Hoolehua, which is located at approximately 590 feet amsl, the alignment crosses the island's central plan which is characterized by relatively level to mildly sloping topography.

The Jaucas-Mala-Pulehu association, Molokai-Lahaina association, and the Very stony land-Rock land association comprise the soil associations within this segment of the project. The Jaucas-Mala-Pulehu association ranges in elevation from sea level to 250 feet amsl and occurs as a narrow band along the coastal plains of the island. It consists of soils that formed in alluvium and coral sand and vary widely in texture and drainage. The soils, which are found on alluvial fans and in drainageways, are nearly level and

gently sloping.

The Molokai-Lahaina association ranges in elevation from 100 to 1,300 feet amsl and is made up of well-drained, fine textured and moderately fine textured soils on Central and West Molokai. The soils occur as broad, nearly level areas and moderately steep slopes and were formed in material weathered from basic igneous rocks.

The Very stony land-Rock land association ranges in elevation from near sea level to 3,000 feet amsl and includes gently sloping to very steep, stony and rocky land on uplands and in gulches and valleys.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline will not affect topographic features or soil conditions along this segment.

Construction will be limited to trenching or other trenchless methods. Ground disturbances are minimized by both techniques, as there is no grading required or resulting changes in topography or elevations.

b. ***Hoolehua to Kalaupapa Lookout***

(1) ***Existing Conditions***

The proposed alignment for this segment of the project begins at Hoolehua and traverses gently sloping terrain along Farrington Avenue as it proceeds to Kualapuu, which is located at about 850 feet amsl. As it departs the island's central plain near the intersection of Kalae Highway and Farrington Avenue, the alignment gently ascends to steeper lands until it reaches the uplands of Kalae, which is situated at approximately 1,440 feet

of the steep coastal cliffs overlooking the Kalaupapa Peninsula.

The Molokai-Lahaina association, Very stony land-Rock land association, Kahanui-Kalae-Kanepuu association, and the Rough broken land-Oli association characterize the soil associations underlying this segment of the project. Refer to the Kalamaula to Hoolehua segment for the descriptions of the Molokai-Lahaina and the Very stony land Rock-land soil associations. Descriptions of the other previously undescribed soil associations follows below.

The Kahanui-Kalae-Kanepuu association ranges in elevation from 500 to 3,750 feet amsl and is characterized by well-drained, fine textured and

moderately fine textured soils on uplands. These soils, which are gently sloping to moderately steep, were developed in volcanic ash and in material weathered from basic igneous rock.

The Rough broken land-Oli association ranges in elevation from near sea level to 3,500 feet amsl and is comprised of well-drained, medium-textured soils that occurs on uplands which are dissected by gulches. The soils are gently sloping to very steep and were formed in volcanic ash and in material weathered from basic igneous rock.

(2) Impacts and Mitigation Measures

No negative effects to this element of the natural environment are expected as a result of the proposed fiber optic ductline. The proposed ductline will not be visible as it will be installed underground within the roadway right-of-way.

c. Kalamaula to Ualapue

(1) Existing Conditions

This segment of the project begins near sea level along the coastal lowlands near Kaunakakai. From this point, the proposed alignment traverses the nearly flat, gently sloping lands along the island's south shore until it reaches its terminus near sea level at Ualapue.

The soil association underlying this segment of the project is the Jaucas-Mala-Pulehu association. Refer to the Kalamaula to Hoolehua segment for the description of this soil association.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline will not adversely impact this component of the existing environment.

C. *STREAMS*

The following section addresses the existing streams along the proposed route that will be traversed by the proposed fiber optic ductline. The State Department of Transportation has indicated that SIC will be allowed to attach the ductline to existing bridge structures, thereby minimizing the need for stream bed alteration or directional drilling.

Information presented in this section has been taken from the State of Hawaii Commission on Water Resource Management 1990 publication Hawaii Stream Assessment, a Preliminary Appraisal of Hawaii's Stream Resources (HSA). It is noted that the HSA identifies key streams and assesses each of the streams with respect to aquatic resource, riparian resource, cultural resource and recreational resource parameters. The information presented in this section provides a synopsis of the HSA's assessments and provides an indication of each stream's general resource values. The HSA does not address all streams or drainageways which may fall within regulatory jurisdiction of permitting agencies such as the Department of the Army or the State Commission on Water Resource Management. In some instances, determination of jurisdiction may require field review and assessments.

Where crossings may involve work under the stream channel (i.e., via trenchless technology), agency coordination during the design phase will be conducted as appropriate, to ensure that regulatory issues are fully addressed.

1. ***Island of Lanai***

   There are no streams identified in the HSA which will be crossed by the proposed routes for the island of Lanai.

2. ***Island of Maui***

   a. ***Waiehu to Puunene***

      (1) ***Existing Conditions***

      The Waiehu to Puunene route traverses the Waiehu Stream and Iao Stream. See Table 5. Both streams are classified as continuous, flowing out of the West Maui Mountains year-round.

Table 5

STREAMS TRAVERSED BY THE WAIEHU TO PUUNENE ALIGNMENT[a]				
Stream	***Riparian Resource Value***	***Aquatic Resource Value***	***Cultural Resource Value***	***Recreational Value***
Waiehu	No rare plants identified	Substantial	Moderate	Moderate
Iao	7 Rare Plants Identified	Substantial	No Data available	Outstanding

[a] Source: HSA

The fiber optic route would cross Waiehu Stream at Kahekili Highway, which spans the stream with a major

bridge structure. The proposed utility line would cross the Iao Stream Bridge along Waiehu Beach Road.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductlines are proposed to be attached to the existing bridge structures spanning the subject streams. There are no anticipated adverse impacts associated with the installation of the fiber optic ductlines as Best Management Practices (BMP's) will be systematically employed to ensure no contamination of the stream occurs as a result of ductline installation.

b. ***Kahului to Kula; Kula to Kahikinui; Kihei to LaPerouse; Kihei to Maalaea***

(1) ***Existing Conditions***

There are no significant streams identified in the HSA located along the proposed route segments from Kahului to Kula, Kula to Kahikinui, Kihei to LaPerouse and Kihei to Maalaea.

c. ***Maalaea to Honokowai***

(1) ***Existing Conditions***

The Maalaea to Honokowai route traverses a total of seven (7) streams identified by the HSA. See Table 6. All of the streams have been classified as interrupted, indicating that the affected streams flow intermittently during the year at lower elevations. All of the streams flow out of the West Maui Mountains.

Table 6

STREAMS TRAVERSED BY THE MAALAEA TO HONOKOWAI ALIGNMENT[a]				
Stream	***Aquatic Resources***	***Riparian Resource***	***Cultural Resource***	***Recreational Resource***
Ukumehame	Substantial	No Rare Plants	Very Few Sites	Moderate
Olowalu	Substantial	No Rare Plants	Very Few Sites	Limited
Launiupoko	Not Rated	Not Rated	Not Rated	Moderate
Kauaula	Not Rated	No Rare Plants	Not Rated	Limited
Kahoma	Moderate	4 Rare Plant Species	Scattered Clusters	Substantial
Wahikuli	Not Rated	No Rare Plants	Not Rated	Limited
Honokowai	Outstanding	4 Rare Plant Species	Scattered Clusters	Substantial

[a] Source: HSA

(2) Impacts and Mitigation Measures

There are no anticipated adverse impacts associated with the proposed route traversing the seven (7) affected streams as the ductlines are anticipated to be attached to the existing bridge structures. Best Management Practices (BMP's) will be employed to ensure no contamination of the streams occur as a result of ductline installation.

In the event that use of trenchless technology is required, appropriate regulatory approvals and procedures will be addressed. While the use of

trenchless technology is not anticipated to adversely affect stream channel conditions, the preparation of required best management practices and monitoring plans, as appropriate, will be developed and implemented in coordination with the approving agency.

3. ***Island of Molokai***

a. ***Kalamaula to Hoolehua; Hoolehua to Kalaupapa Lookout***

There are no significant streams identified in the HSA located along the proposed route segments from Kalamaula to Hoolehua and Hoolehua to Kalaupapa.

b. ***Kalamaula to Ualapue***

(1) ***Existing Conditions***

At the time of publication of the Hawaii Stream Assessment in 1990, all of the seven (7) streams identified by the CWRM along the Kalamaula to Ualapue route had not yet been fully rated or researched. See Table 7. All listed streams are considered interrupted, which flow intermittently throughout the year. Additionally, the CWRM has indicated that the intermittent status of the streams may account for the lack of data available. Nevertheless, the CWRM has indicated that nearly all of the streams have a *high* or *moderate* degree of archaeological sensitivity. This indication is based on existing density of archaeological sites and minimal land disturbances to date based on the stream and surrounding valley

environments.

Table 7

STREAMS TRAVERSED BY THE KALAMAULA TO UALAPUE ALIGNMENT[a]				
Stream	***Aquatic Resource***	***Riparian Resources***	***Cultural Resource***	***Recreational Resource***
Kaunakakai	Not Rated	Not Rated	Not Rated	Not Rated
Kawela	Not Rated	4 Rare Plant Species	Continuous Sites	Outstanding
Manawai	Not Rated	No Rare Plant Species	Scattered Clusters	Limited
Ohia	Not Rated	No Rare Plant Species	Scattered Clusters	Limited
Wawaia	Not Rated	No Rare Plant Species	Scattered Clusters	Moderate
Kamalo	Not Rated	No Rare Plant Species	Continuous Sites	Substantial
Kahananui	Not Rated	Not Rated	Scattered Sites	Limited
[a] Source: HSA				

(2) Impacts and Mitigation Measures

There are no anticipated adverse impacts associated with the proposed project on existing stream environments. All of the streams along the Kalamaula to Ualapue route have been designated as interrupted. However, this does not preclude the sensitivity or cultural importance of the stream areas. Ductlines are proposed to be attached to existing bridge structures, and BMP's will be employed to avoid any possible disturbances to the streams and their surrounding

environments.

Should trenchless technology be required for any of the stream crossings, coordination will be undertaken with the appropriate regulatory agency. Appropriate BMP's and monitoring plans will be employed to mitigate impacts to stream environments.

D. FLOOD AND TSUNAMI HAZARDS

1. Island of Lanai

a. Lanai City Junction to Manele Boat Harbor; Lanai City Junction to Kaumalapau; and Lanai City Junction to Lanai City

(1) Existing Conditions

There are no known hazardous flood areas affecting the proposed Lanai routes. The proposed roadways are designed to allow storm runoff to sheet flow off of the travelway to ensure safe operating conditions for motorists during storm events. It is noted that there are no Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for the island. However, County Civil Defense tsunami evacuation maps note that areas along the shoreline at both Kaumalapau Harbor and Manele Boat Harbor are subject to tsunami inundation.

(2) Impacts and Mitigation Measures

The proposed action will provide for an underground telecommunications system within existing road rights-

of-way. Accordingly, there will be no changes in drainage patterns created by the project. The installation of the ductlines at Kaumalapau Harbor and Manele Boat Harbor, within potential tsunami inundation areas, will not alter wave action patterns and will not create adverse impacts to life and property. Additionally, SIC will coordinate with DPWWM during the design phase to ensure compliance with all applicable County regulations.

2. *Island of Maui*

a. *Waiehu to Puunene*

(1) *Existing Conditions*

FEMA FIRM maps for this segment shows that roadways between Waiehu to Puunene Avenue fall within Zone "C", areas of minimal flooding. Mokulele Highway, for the most part, falls within Zone "C". However, as reflected on FIRM Panel 255, an approximately one-half mile segment of Mokulele Highway, in the vicinity of the Old Puunene Airport, is designated Zone "B", an area between the limits of the 100-year flood and the 500-year flood.

(2) *Impacts and Mitigation Measures*

There will be no adverse impacts to drainage and flooding as a result of the proposed action. The State of Hawaii is currently completing the design for the Mokulele Highway widening project (between Puunene

Avenue and Piilani Highway) which will address potential flooding conditions along the flood prone limits of Mokulele Highway. Appropriate coordination will be undertaken with the State DOT to ensure that the ductline installation has no adverse impacts on the planned drainage improvements for the pending Mokulele Highway Road widening project.

b. ***Kahului to Kula and Kula to Kahikinui***

(1) ***Existing Conditions***

FIRM information for these route alignments shows that all roadway areas are within Zone "C", areas of minimal flooding. This route extends through upper elevation areas and is not subject to tsunami hazards.

(2) ***Impacts and Mitigation Measures***

There are no adverse effects to flood and tsunami hazards as a result of the proposed action along this route.

c. ***Kihei to LaPerouse***

(1) ***Existing Conditions***

Mokulele Highway, from Mehameha Loop to Piilani Highway falls within the FIRM's Zones "A", "AO" and "A4". Zone "A" is an area of 100-year flooding (base flood elevation not determined), while Zone "AO" represents an area of 100-year shallow flooding where depths are between one (1) and three (3) feet. Zone

"A4" is an area of 100-year flooding with base flood elevations determined.

An approximately three (3) mile segment of South Kihei Road between Waiakoa Gulch (near the Piilani Highway-Mokulele Highway Intersection) to Auhana Road (near Kalama Park), are subject to shallow flooding (FIRM Zone "AH"). In addition, sections of South Kihei Road at the northerly segment of the route, in the vicinity of Ohukai Road are subject to coastal flooding (Zones "V10" and "V18"). The route segment traversing the Wailea and Makena Resorts are not affected by flooding or coastal wave action conditions. Throughout the South Kihei Road and Wailea Alanui/Makena Alanui areas, culvert or bridge crossings are provided to convey storm runoff flows from the slopes of Haleakala to the ocean.

Along Makena Keoneoio Road, south of the Makena Resort, to LaPerouse Bay, the route is predominantly within Zone "C", areas of minimal flooding. There is however, an approximately 1000-ft. segment of the roadway in the vicinity of Ahihi Bay which falls within the FIRM's "V14" zone. This designation represents an area subject to 100-year coastal flooding with velocity.

(2) ***Impacts and Mitigation Measures***

The proposed action will not alter drainage patterns nor

will it affect storm wave action patterns as improvements will be underground. The improvements will be within existing rights-of-way, and no alteration to surface ground cover is proposed.

d. ***Kihei to Maalaea***

(1) ***Existing Conditions***

A large segment of this route, from Mokulele Highway to the Maui Electric Power Plant entry drive falls within Zones "A4" and "V18". Zone "A4" is an area subject to the 100-year flood (base flood elevations determined), while the "V18" designation reflects the area's susceptibility to coastal flooding from wave action.

The foregoing designation reflects the corridor's location along a low-lying coastal plain, bordered by wetlands of the Kealia National Wildlife Refuge.

(2) ***Impacts and Mitigation Measures***

The proposed action will involve the installation of an underground ductline system. As such, there will be no adverse impacts to drainage or wave action patterns or conditions.

e. ***Maalaea to Honokowai***

(1) ***Existing Conditions***

Honoapiilani Highway, between Maalaea and Ukumehame follows a *pali* or cliff route and is not

affected by adverse flooding conditions. From Ukumehame, through Olowalu and beyond to Launiupoko Point, the highway generally follows a coastal route. As such, portions of the highway fall within the FIRM's "V8", "V11" and "V12" zones. These zones represent areas subject to 100-year coastal flooding with velocity (base flood elevations determined). In addition, through Olowalu Village, the highway traverse Zones "B" and "AO". These designations are associated with flooding potential of Olowalu Stream. Zone "B" is an area between the limits of the 100-year flood and the 500-year flood, while Zone "AO" represents an area of shallow flooding, where depths are between one (1) foot and three (3) feet.

Between Launiupoko and Lahaina Town, the highway continues to follow a coastal alignment. Within this segment, portions of the highway fall within Zone "A4", an area of 100-year flooding.

Beyond Lahaina Town to the north, the route is for the most part, not subject to adverse flooding conditions. However, short segments of the highway in the vicinity of the Lahaina Civic Center and Hahakea Gulch are designated Zone "A" and Zones "A3" and "B", respectively.

(2) ***Impacts and Mitigation Measures***

As with other route sections, the installation of the ductline along this corridor will not affect patterns of runoff and wave action.

3. ***Island of Molokai***

a. ***Kalamaula to Hoolehua***

(1) ***Existing Conditions***

An approximately 0.4 mile section of Maunaloa Highway at Kalamaula traverses areas designated by the FIRM as Zones "A3" and "B". Zone "A3" represents areas subject to 100-year flooding (with base flood elevations determined), while Zone "B" represents areas between the limits of the 100-year and 500-year flood.

All other areas along this corridor are designated Zone "C", or areas of minimal flooding.

(2) ***Impacts and Mitigation Measures***

No adverse impacts to drainage patterns will result from the project. Improvements will be placed underground, within existing roadway rights-of-way.

b. ***Hoolehua to Kalaupapa Lookout***

(1) ***Existing Conditions***

This corridor segment traverses lands designated Zone "C" (areas of minimal flooding) by the FIRM.

(2) ***Impacts and Mitigation Measures***

As with other corridor segments, no adverse impacts to flooding and drainage are expected with the proposed improvements.

c. ***Kalamaula to Ualapue***

(1) ***Existing Conditions***

Kamehameha V Highway through Kaunakakai Town traverses FIRM Zones "A3" and "B" (see Kalamaula to Hoolehua section).

Continuing east along Kamehameha V Highway, sections of the corridor traverse short sections of flood prone areas, primarily at major gulch crossings. These crossings include Kawela Gulch (Zones "A4" and "B"), Kapuaokoolau Gulch (Zone "A"), Aikoolua Gulch (Zone "A"), Ekahanui Gulch (Zone "A"), Kamalo Gulch (Zones "A1" and "B"), Wawaia Gulch (Zone "AO"), Keawanui Gulch (Zones "A2" and "B"), Ohia Gulch (Zones "A7" and "B"), and Kahananui Gulch (Zones "A4" and "B"). The foregoing flood designations represent areas subject to 100-year flooding and shallow flooding, and areas subject to flooding associated with events between the 100-year flood and 500-year flood.

(2) ***Impacts and Mitigation Measures***

No adverse impacts to flooding and drainage are expected with the proposed action. Improvements will

be underground and will not impact drainage patterns.

E. FLORA AND FAUNA

1. Island of Lanai

a. Lanai City Junction to Manele Boat Harbor

(1) Existing Conditions

Natural vegetation in areas near the Lanai City Junction consist of bermuda grass, feather fingergrass, ilima, aloalo, ma'o, kiawe, lantana, oi, and uhaloa. Along the relatively flat upland segments of Manele Road which traverse former pineapple fields, the natural vegetation is Natal redtop, lantana and guineagrass. Along the lower elevations of former pineapple fields, typical vegetation include klu, lantana, feather fingergrass, uhaloa, ilima, and piligrass.

As the roadway slopes lower along very stony lands, dominant vegetation include kiawe, ilima, ma'o, aloalo, piligrass and fingergrass. Vegetation common in areas closer to Manele Boat Harbor include ilima, aloalo, ma'o, hala, wiliwili, pohuehue, naupaka, lantana, kiawe, Natal redtop, and pitted beardgrass.

Animal life which may be found in the vicinity of the project site is typical of rural regions of Lanai. Fauna and avifauna typically found in the vicinity include axis deer, turkey, francolin, house sparrow, barred dove, lace-necked dove, common mynah, Kentucky cardinal,

and the red-crested cardinal.

In order to identify the existence of endangered biological species located in the vicinity of the proposed roadway corridor, data from the Hawaii Natural Heritage Program (HNHP) was obtained. HNHP data incorporates species which may be found within a 0.25 mile band on either each side of the roadway corridor. According to the HNHP data, one (1) identified plant on the endangered species list was identified in the vicinity of the Manele Boat Harbor. See Table 8.

Table 8

LANAI CITY JUNCTION TO MANELE BOAT HARBOR KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
achyranthes splendens var rotundata	Round-leaved Chaff-flower	Manele Harbor

(2) Impacts and Mitigation Measures

The proposed fiber optic ductline is being placed underground within the existing Manele Road right-of-way. There are no anticipated adverse impacts upon flora, fauna or avifauna parameters.

b. Lanai City Junction to Kaumalapau

(1) Existing Conditions

Natural vegetation in areas near the Lanai City Junction along Kaumalapau Highway consist of bermuda grass,

feather fingergrass, ilima, ma'o, aloalo, kiawe, lantana, oi, and uhaloa. Along the relatively flat upland segments of Kaumalapau Highway which traverse former pineapple fields, as well as a portion of lands which slope lower toward the shoreline, the natural vegetation include kiawe, ilima, uhaloa, wiliwili, feather fingergrass, and buffelgrass.

Along most of the roadway segment which slopes lower toward the shoreline, natural vegetation include klu, lantana, feather fingergrass, uhaloa, ilima, and piligrass. Closer to Kaumalapau Harbor, the natural vegetation consist mainly of klu, piligrass, Japanese tea, naupaka, puhuehue and koa haole. Also typical at these lower elevations are lantana, kiawe, Natal redtop, and pitted beardgrass.

Animal life which may be found in the vicinity of the project site is typical of rural regions of Lanai. Fauna and avifauna typically found in the vicinity include axis deer, turkey, francolin, house sparrow, barred dove, lace-necked dove, common mynah, Kentucky cardinal, and the red-crested cardinal.

According to the HNHP, two (2) endangered species may potentially be found in the vicinity of the proposed Lanai City Junction to Kaumalapau Harbor route, near the Kaumalapau Harbor. See Table 9.

Table 9

LANAI CITY JUNCTION TO KAMALAPAU KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
sesbania tomentosa	'Ohai	Kaumalapau Harbor
monachus schauinslandi	Hawaiian Monk Seal	Kaumalapau Harbor

(2) Impacts and Mitigation Measures

The proposed fiber optic ductline is being placed underground within the existing Kaumalapau Highway right-of-way. There are no adverse impacts upon flora, fauna or avifauna parameters as a result of the project.

c. Lanai City Junction to Lanai City

(1) Existing Conditions

The natural vegetation along this segment include bermuda grass, feather fingergrass, ilima, aloalo, ma'o, kiawe, lantana, oi, and uhaloa. Also located along this segment are Natal redtop and guineagrass. Since this route segment is bordered by urban-related uses, ornamentals such as plumeria and hibiscus are also found along the corridor.

Animal life which may be found in the vicinity of the project site is typical of rural regions of Lanai. Fauna and avifauna typically found in the vicinity include axis deer, domestic dogs and cats, turkey, francolin, house sparrow, barred dove, lace-necked dove, common

mynah, Kentucky cardinal, and the red-crested cardinal. No endangered species were identified near the roadway corridor along the proposed route from Lanai City junction to Lanai City.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline is being placed underground within the existing right-of-way extending from the Lanai City Junction along Kaumalapau Highway and Fraser Avenue. There should be no adverse impact upon flora, fauna or avifauna parameters.

2. *Island of Maui*

a. *Waiehu to Puunene*

(1) Existing Conditions

In the Waiehu to Wailuku area, natural vegetation include bermuda grass, ilima, aloalo, ma'o, wiliwili, guineagrass, koa haole, lantana, Natal redtop and feather fingergrass.

For the largely urbanized segment extending from Wailuku Town along Kaahumanu Avenue to Kahului, including inland sections of Puunene Avenue, natural vegetation include bermuda grass, kiawe, and lantana. In addition, ornamentals such as plumeria, hibiscus, palms and manicured grassed areas are found along both residential and commercial areas of the urban

core.

Closer to Puunene and along Mokulele Highway to Kihei, most of the lands adjacent to the right-of-way are in sugar cane cultivation. Typical natural vegetation consist of kiawe, koa haole, bristly foxtail, bermuda grass, fingergrass, and Australian saltbush. Other vegetation include klu, lantana, sandbur, uhaloa, buffelgrass, feather fingergrass, ilima, and zinnia.

According to the HNHP, one (1) endangered species of naupaka was identified in the Waiehu area of the proposed route from Waiehu to Puunene. See Table 10.

Table 10

WAIEHU TO PUUNENE KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
scaevola coriacea	Naupaka	Waiehu

Terrestrial fauna in the region include introduced species, such as domestic dogs and cats, mice, rats and mongoose. Some of the avifauna introduced to the area include the Spotted Dove, Barred Dove, Japanese white-eye, Cardinal, Red-crested Cardinal, House Sparrow, Gray Francolin, House Finch and Common Mynah.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline is being placed underground within existing rights-of-way. There should be no adverse impact upon flora, fauna or avifauna parameters.

b. ***Kahului to Kula***

(1) ***Existing Conditions***

Sections of Kahului along Hana Highway near the harbor area are fill land. Extending mauka along Hana Highway adjacent to Kanaha Pond, the natural vegetation include kiawe, koa haole, bristly foxtail, bermuda grass, fingergrass, and Australian saltbush.

Along Hana Highway, as well as lands extending mauka along Haleakala Highway up to around the Haliimaile Junction, areas adjacent to the right-of-way are largely planted in sugar cane. Natural vegetation along the lower elevations include fingergrass, kiawe, koa haole, klu, and uhaloa. Other typical vegetative species include ilima, buffelgrass, bermuda grass, bristly foxtail, lantana, and sandbur. From the Keahua area to Haliimaile Junction, typical natural vegetation include buffelgrass, feather fingergrass, ilima, kiawe, lantana, pitted beardgrass, and uhaloa.

As Haleakala Highway slopes higher adjacent to Pukalani Town and to Lower Kula, lands adjacent to the

right-of-way are largely in pineapple cultivation. Natural vegetation include guava, indigo, koa, koa haole, lantana, Natal redtop, and yellow foxtail. Other typical vegetation include buffelgrass, feather fingergrass, ilima, kiawe, pitted beardgrass, and uhaloa.

At gulch crossings, typical vegetation includes lantana, guava, Natal redtop, molassesgrass, bermuda grass, and koa haole.

Within the Kula region, there are a number of truck farms, as well as scattered rural and residential homes. Within the Lower Kula area, typical vegetation include guava, indigo, koa haole, lantana, Natal redtop, and yellow foxtail. Other vegetation include bermuda grass, castor bean, false mallow, feather fingergrass, and kiawe.

Near the Pulehu area, natural vegetation also includes burclover, dallisgrass, plantain, rattailgrass, vetch, and white clover. From the Waiakoa area to Waiohuli, natural vegetation transitions to bermuda grass, black wattle, Natal redtop, oi, rattailgrass, and yellow foxtail.

With regard to fauna and avifauna, the areas from Kahului to Kula are characteristic of developed areas. Fauna typically found in this vicinity include mongoose, rats, dogs and cats. Some of the avifauna introduced to

the area include the Spotted Dove, Barred Dove, Japanese white-eye, Cardinal, Red-crested Cardinal, House Sparrow, Gray Francolin, House Finch and Common Mynah.

According to the HNHP, three (3) endangered species were identified along the proposed route from Kahului to Kula. See Table 11.

Table 11

KAHULUI TO KULA *KNOWN ENDANGERED SPECIES IN ROUTE VICINITY*		
Scientific Name	***Common Name***	***Location Observed***
manduca blackburni	Blackburn's Sphinx Moth	Pukalani
branta sandvicensis	Nene, Hawaiian Goose	Pukalani
lasiurus cinereus semotus	'Ope 'Ape 'A, Hawaiian Hoary bat	Keokea

(2) Impacts and Mitigation Measures

The proposed fiber optic ductline is being placed underground within existing rights-of-way extending from Kahului along Hana Highway. The fiber optic ductline then extends along Haleakala Highway and Kula Highway up to the Keokea area. There are no adverse impacts anticipated on flora, fauna or avifauna parameters as a result of the proposed action.

c. *Kula to Kahikinui*

(1) *Existing Conditions*

Typical vegetation in the Keokea vicinity include bermuda grass, black wattle, Natal redtop, oi, rattailgrass, and yellow foxtail. Proceeding from Keokea to Ulupalakua which is largely pasture lands, typical vegetation also include ilima, ma'o, kikuyugrass, lantana, and molassesgrass. In the area around Ulupalakua, natural vegetation also include bermuda grass, buffelgrass, burclover, guineagrass, lantana, and Natal redtop.

Proceeding to Kahikinui, common vegetation transition to lantana, Natal redtop, and pitted beardgrass on very rocky lands. The landscape is also interspersed with geologically recent lava flows. In these areas, vegetation is limited to lichens, a few grasses, herbs, shrubs, and scrubby trees. In the Kahikinui area, natural vegetation also include bermuda grass, indigo, lantana, and Natal redtop.

Domestic mammals, such as dogs, cats, mice, and mongoose are likely to be present in close proximity to the alignment. Goats, axis deer, and wild boar are also likely to be present in the lowland areas. Avifauna typically found adjacent to the corridor include Northern Cardinal, Common Mynah, Japanese white-eye, Zebra Dove, Spotted Dove, Ring-necked pheasant, and Gray

Francolin.

According to the HNHP, seven (7) endangered species were identified in the vicinity of the proposed Kula to Kahikinui route. See Table 12 for a listing of the identified species.

Table 12

KULA TO KAHIKINUI KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
lasiurus cinereus semotus	'Ope 'Ape 'A, Hawaiian Hoary bat	Ulupalakua
manduca blackburni	Blackburn's Sphinx Moth	Ulupalakua
caesalpinia kavaiensis	Uhiuhi	Ulupalakua
haplostachys haplostachya	Popolo Ku Mai	Ulupalakua
solanum incompletum	N/A	Ulupalakua
stenogyne angustifolia	N/A	Ulupalakua
lipochaeta kamolensis	Nehe	Kaupo

(2) Impacts and Mitigation Measures

The proposed fiber optic ductline is being placed underground within the existing Kula Highway and Piilani Highway right-of-way extending from Kula to Kahikinui. There should be no adverse impact upon flora, fauna or avifauna within the region.

d. *Kihei to LaPerouse*

(1) *Existing Conditions*

Vegetation in the vicinity of the Old Puunene Airport include bermuda grass, bristly foxtail, fingergrass, kiawe, klu, lantana, koa haole, and sandbur. Other natural vegetation along portions of the route include feather fingergrass, uhaloa, buffelgrass, ma'o, ilima, aloalo, wiliwili, and zinnia.

Natural vegetation along South Kihei Road, through the urbanized Central Kihei area, include kiawe, koa haole, bristly foxtail, bermuda grass, fingergrass, and Australian saltbush. Ornamental landscape plantings are found on developed parcels along South Kihei Road.

In the Makena and Wailea area, the natural vegetation consist of bristly foxtail, feather fingergrass, ilima, and kiawe. Other vegetation include lantana, kiawe, Natal redtop, and pitted beardgrass. In areas of dune land, vegetation is sparse but ironwood trees, koa haole, tropical almond, kiawe, and mixed grasses have gained a foothold in places. The resort areas are also landscaped with ornamentals and manicured lawns. The maintained landscaping provides for a high quality environs consistent with the area's resort destination character.

In the area near La Perouse Bay which consist of geologically recent lava flows, vegetation is limited to lichens, a few grasses, herbs, shrubs, and scrubby trees. In the more developed Makena and Wailea area, the natural vegetation consist of bristly foxtail, feather fingergrass, ilima, and kiawe. Other vegetation include lantana, kiawe, Natal redtop, and pitted beardgrass. In areas of dune land near Keawekapu and Liilioholo, natural vegetation is typically sparse but ironwood trees, koa haole, tropical almond, kiawe, and mixed grasses have gained a foothold in places.

Cats, mongoose, rats, axis deer, and wild boar are among the feral animals found in this region. Avifauna common to the area include the Common Mynah, Golden Plover, Japanese white-eye, Northern Cardinal, Sparrow, Spotted Dove and Zebra Dove.

According to the HNHP, four (4) endangered species were identified in the vicinity of the proposed Puunene to LaPerouse route. See Table 13 for a listing of the identified species.

Table 13

KIHEI TO LAPEROUSE KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
scaevola coriacea	Naupaka	North Kihei
lasiurus cinereus semotus	'Ope 'Ape 'A, Hawaiian Hoary bat	Norht Kihei& Makena
manduca blackburni	Blackburn's Sphinx Moth	Wailea
monachus schauinslandi	Hawaiian Monk Seal	Makena

(2) Impacts and Mitigation Measures

The proposed fiber optic ductline is being placed underground within the rights-of-way of existing Makena Road, Makena Alanui, Wailea Alanui, Kilohana Road, South Kihei Road, and Mokulele Highway. There should be no adverse impact upon flora, fauna or avifauna within the region.

e. *Kihei to Maalaea*

(1) Existing Conditions

In the North Kihei area and the Maalaea area, typical vegetation include bermuda grass, bristly foxtail, fingergrass, kiawe, klu, lantana, koa haole, and sandbur. In the vicinity of Kealia Pond, however, vegetation consist of salt tolerant plants, such as pickleweed, Australian saltbush, and kiawe. From the entry drive of the Maui Electric power plant to the route

segment's terminus at Honoapiilani Highway, North Kihei Road is bordered by sugar cane.

Kealia Pond is an important nesting and feeding habitat for the Hawaiian black necked stilt (Ae'o) and the Hawaiian coot ('Alae Ke'oke'o). The Ae'o and Hawaiian coot are considered endemic and endangered. The Ae'o has also been sighted occasionally at water features within the region's golf courses. Collectively, open bodies of water such as water hazards at golf courses and irrigation ponds (punawai) on the island are used as a limited loafing and feeding habitat for the Ae'o. HNHP has identified both the Hawaiian black necked stilt and the Hawaiian Coot as being located in the vicinity of the Kealia Pond area. See Table 14.

Table 14

KIHEI TO MAALAEA KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
fulica alai	'Alae Ke'oke'o, Hawaiian Coot	Kealia Pond
himantopus mexicanus knudseni	Ae'o, Hawaiian Stilt	Kealia Pond

The American golden plover (kolea) and the black crowned night heron ('auku'u) also frequent Kealia Pond. The kolea and 'auku'u are considered indigenous but not endangered. Kolea are generally

found on mudflats, lawns, and fields. The 'auku'u frequents water features such as ponds, streams, marshes and lagoons.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline is being placed underground within the existing right-of-way of North Kihei Road. The proposed project will not affect any open bodies of water or wetlands such as Kealia Pond. There should be no adverse impact upon flora, fauna or avifauna within the region.

f. Maalaea to Honokowai

(1) ***Existing Conditions***

Vegetation in the Maalaea area include bermuda grass, bristly foxtail, fingergrass, kiawe, klu, lantana, koa haole, and sandbur. Uhaloa is also found in the Maalaea region.

For the Honoapiilani Highway segment which extends from Maalaea through the Pali area up to Ukumehame Park, natural vegetation include kiawe, klu, ilima, piligrass, lantana and Japanese tea.

In the vicinity of the Ukumehame Park, natural vegetation consist of salt tolerant plants, such as pickleweed, Australian salt-bush and kiawe.

Lands adjacent to the Honoapiilani Highway right-of-way from the vicinity of Ukumehame to Lahaina Town were largely utilized for sugar cane cultivation. Although operations ceased in 1998, remnant sugar cane is still scattered throughout the region.

Natural vegetation for the Honoapiilani Highway segment from Ukumehame Park to Olowalu consist of bermuda grass, bristly foxtail, fingergrass, kiawe, klu, lantana, koa haole, and sandbur. Near Ukumehame Stream and Olowalu Stream, typical vegetation include kiawe, klu, ilima, piligrass, and lantana. There is also a segment between Ukumehame and Olowalu where typical vegetation includes salt tolerant plants such as pickleweed, Australian salt-bush and kiawe.

Just past Olowalu, near Puu Mahanalua Nui, typical vegetation include kiawe, klu, ilima, piligrass, and lantana.

Typical vegetation from Puu Mahanalua Nui to Lahaina Town include fingergrass, kiawe, and uhaloa.

In the largely urbanized areas from Lahaina Town to Honokowai, typical vegetation include fingergrass, kiawe, uhaloa, bermuda grass, bristly foxtail, klu, lantana, koa haole, and sandbur. Ornamental landscape plants and grasses are found throughout the

Kaanapali Resort area. In addition, pineapple cultivation occurs mauka of Honoapiilani Highway in the Honokowai vicinity.

Avifauna and mammals common to this particular segment are typical of already developed areas. Exotic species of birds commonly found along this corridor include the Northern Cardinal, House Finch, Japanese white-eye, Zebra Dove, Spotted Dove, Common Mynah and Gray and Black Francolin. Feral mammals typically found in the area include cats, rats, mice and mongoose. Along the proposed route from Maalaea to Honokowai, one (1) endangered specie was identified by the HNHP. See Table 15.

Table 15

MAALAEA TO HONOKOWAI KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
Iasiurus cinereus semotus	'Ope 'Ape 'A, Hawaiian Hoary bat	Olowalu

(2) Impacts and Mitigation Measures

The proposed fiber optic ductline is being placed underground within the existing Honoapiilani Highway right-of-way extending from Maalaea to Honokowai. There are no anticipated adverse impacts upon flora, fauna or avifauna within the region.

3. *Island of Molokai*

a. *Kalamaula to Hoolehua*

(1) *Existing Conditions*

In portions of the Kalamaula area, natural vegetation consist of salt tolerant plants, such as pickleweed, Australian salt bush and kiawe. Other vegetation include kiawe, koa haole, bristly foxtail, bermuda grass, fingergrass, and ilima.

Around the Holomua area, the natural vegetation include kiawe, uhaloa, ilima, ma'o, piligrass, and feather fingergrass. Proceeding toward Hoolehua, typical vegetation also include buffelgrass, guineagrass, and lantana. Agricultural lands (formerly cultivated in pineapple) along the corridor are now planted with diversified crops such as corn, fruit trees and herbs.

Feral animals, such as dogs, cats, rats and mongoose, are likely to be present in close proximity to the alignment. Avifauna typically found along the corridor include Northern and Red-crested Cardinal, Common Mynah, Japanese white-eye, House Finch and House Sparrow. Data compiled by the HNHP indicated the existence of one (1) endangered specie located in the vicinity of the Kalamaula area. See Table 16.

Table 16

KALAMAULA TO HOOLEHUA KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
himantopus mexicanus knudseni	Ae'o, Hawaiian Stilt	Kalamaula

(2) Impacts and Mitigation Measures

The proposed fiber optic ductline is being placed underground within the existing rights-of-way. There should be no adverse impact upon flora, fauna or avifauna within the region.

b. Hoolehua to Kalaupapa Lookout

(1) Existing Conditions

Natural vegetation in the Hoolehua area include kiawe, ilima, uhaloa, feather fingergrass, and buffelgrass. Other vegetation include lantana, guineagrass, bermuda grass, oi, and uhaloa.

Vegetation around Kualapuu also include guava, lantana, hilograss, yellow foxtail, Natal redtop, and kikuyugrass. Other natural vegetation include aalii and puakeawe.

At higher elevations, the natural vegetation consist of guava, hilograss, kikuyugrass, yellow foxtail, lantana, and brackenfern. Puakeawe, aalii, and sweet vernalgrass are common in gulch areas.

Feral animals, such as dogs, cats, rats and mongoose, are likely to be present in close proximity to the alignment. Avifauna typically found adjacent to the corridor include Northern and Red-crested Cardinal, Common Mynah, Japanese white-eye, House Finch and House Sparrow.

The HNHP identified six (6) endangered species located in the vicinity of the proposed Hoolehua to Kalaupapa Lookout route. See Table 17.

Table 17

HOOLEHUA TO KALAUPAPA LOOKOUT KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
bonamia menziesii	N/A	Kalae
cyanea mannii	'Oha, Haha, 'Oha wai	Kalae
diplazium molokaiense	N/A	Kalae
schiedea lydgatei	N/A	Kalae
stenogyne bifida	N/A	Kalae
paroreomyza flammea	Kakawahie, Molokai Creeper	Kalae

(2) *Impacts and Mitigation Measures*

The proposed fiber optic ductline is being placed underground within the existing rights-of-way of portions of Farrington Avenue and Kalae Highway. There should be no adverse impact upon flora, fauna or

avifauna within the region.

c. ***Kalamaula to Ualapue***

(1) ***Existing Conditions***

Areas extending from Kalamaula to Kaunakakai include salt tolerant vegetation such as pickleweed, Australian salt bush and kiawe. Extending eastward from Kaunakakai, natural vegetation also include kiawe, bristly foxtail, feather fingergrass, ilima, aloalo, ma'o and wiliwili. Near Kamiloloa, dominant vegetation consist of kiawe, ilima, piligrass and fingergrass.

From the area near Kakahaia Fishpond to Ualapue, vegetation include kiawe, koa haole, bristly foxtail, bermuda grass, fingergrass, and Australian saltbush. Other vegetation include klu, lantana, sandbur, piligrass and pickleweed. Marsh areas exist near the Pahiomu Fishpond site. Typical vegetation in this area include grasses and bulrushes or other herbaceous plants.

At Keawanui Fish pond near Ualapue, natural vegetation also include guineagrass and ilima.

Feral animals, such as dogs, cats, rats and mongoose are likely to be present in close proximity to the alignment. Avifauna typically found adjacent to the corridor include Northern and Red-crested Cardinal, Common Mynah, Japanese white-eye, House Finch

and House Sparrow.

Five (5) endangered species were recorded to be located in the vicinity of the roadway corridor of the proposed Kalamaula to Ualapue route. See Table 18.

Table 18

KALAMAULA TO UALAPUE KNOWN ENDANGERED SPECIES IN ROUTE VICINITY		
Scientific Name	***Common Name***	***Location Observed***
monachus schauinslandi	Hawaiian Monk Seal	Kaunakakai
fulica alai	'Alae Ke'oke'o, Hawaiian Coot	Kaunakakai/Kawela
himantopus mexicanus knudseni	Ae'o, Hawaiian Stilt	Kaunakakai/Kawela/ Kamalo/ Kamalo
gallinula chloropus sandvicensis	'Alae-ula, Hawaiian Gallinule	Kaunakakai/Kawela
lasiurus cinereus semotus	'Ope 'Ape 'A, Hawaiian Hoary bat	Kamalo/Kamalo

(2) Impacts and Mitigation Measures

The proposed fiber optic ductline is being placed underground within the existing rights-of-way of portions of Maunaloa Highway and Kamehameha V Highway. There should be no adverse impact upon flora, fauna or avifauna within the region.

F. AIR AND NOISE CHARACTERISTICS

1. Island of Lanai

a. Lanai City Junction to Manele Boat Harbor

(1) Existing Conditions

There are no point sources of air or noise pollution along this segment of the fiber optic route. Although fallow agricultural lands border a portion of Manele Road through Palawai Basin, there are no current agricultural operations which may generate intermittent dust or noise conditions. Ambient air quality conditions along this segment, therefore, is considered good. Noise sources along this segment is generally limited to traffic and construction activity occurring at the Manele Resort. These sources however, are not considered to generate long-term adverse noise conditions.

(2) Impacts and Mitigation Measures

The installation of the fiber optic ductline will create temporary construction noise and fugitive dust conditions associated with trenching and backfilling work. The construction conditions are not considered significant in terms of the surrounding lands and distances from noise and dust sensitive areas.

b. Lanai City Junction to Kaumalapau

(1) Existing Conditions

This section of Kaumalapau Highway is bordered by former agricultural lands as well. Air and noise

emission generators along this route include the Maui Electric Power Plant at Miki Basin, the Lanai Airport and the Kaumalapau Quarry. The Maui Electric Power Plant and the Lanai Airport are located approximately one (1) and 0.8 mile, respectively from Kaumalapau Highway. The Kaumalapau Quarry is located along the Kaumalapau Highway. These sources operate in relatively remote locations, away from potentially sensitive residential areas. Under current operating conditions, these sources do not create noise and air quality conditions considered adverse to the general public.

(2) ***Impacts and Mitigation Measures***

The proposed installation of the fiber optic line will not create long-term air quality or noise conditions which are deemed adverse to the local community.

c. ***Lanai City Junction to Lanai City***

(1) ***Existing Conditions***

This part of Lanai consists of residential uses and the Lanai City commercial area (including Dole Park). Air quality and noise conditions are therefore generally governed by the country town/residential uses, principally traffic.

(2) ***Impacts and Mitigation Measures***

Construction activities for the fiber optic ductline will

require the use of best management practices to ensure that air and noise conditions do not affect the residential areas of Lanai City. Work activities are planned to occur during normal daylight hours and will comply with applicable State and County regulations.

2. Island of Maui

a. Waiehu to Puunene

(1) Existing Conditions

The proposed fiber optic route between Waiehu to Puunene traverses a varied land use landscape from agricultural to residential, commercial and industrial uses. As such, air and noise parameters vary although the following considerations are noteworthy:

- The primary air quality and noise source through this routing segment is associated with automobile traffic.
- Notable sources of air and noise emissions along and in the vicinity of the route include the Maui Electric Power Plant at Kahului Harbor, Kahului Airport, and the HC&S Sugar Mill in Puunene.
- Dust and noise attributed to agriculture occurs along portions of Puunene Avenue and Mokulele Highway between the HC&S Mill and the route's Puunene terminus. These lands are currently cultivated in sugar cane.

Potential noise and dust sensitive areas include residences in the Sand Hills area, and along Wakea Avenue and Puunene Avenue (just north of Kuihelani

Highway).

(2) ***Impacts and Mitigation Measures***

The installation of the fiber optic ductline will create temporary construction noise and fugitive dust conditions associated with construction activity. Appropriate equipment noise mitigation measures and erosion management practices will be employed to minimize nuisance impacts associated with construction. In the long term, adverse impacts associated with the fiber optic ductline installation is not anticipated.

b. Kahului to Kula

(1) ***Existing Conditions***

The majority of this section of the fiber optic ductline traverses agricultural lands. Along Hana Highway and Haleakala Highway to Lower Kula, surrounding lands are predominantly in sugar and pineapple. Beyond Lower Kula to Keokea, the route is bordered by rural residential and agricultural lands. Air quality and noise characteristics therefore, reflect those surrounding uses, which on an intermittent basis include the burning of sugar cane and other dust and noise associated agricultural operations.

(2) ***Impacts and Mitigation Measures***

Noise and dust emissions associated with construction

are considered temporary. There are no long-term impacts to air and noise quality associated with the completed project.

c. Kula to Kahikinui

(1) Existing Conditions

With the exception of the Keokea and Ulupalakua Village areas, the majority of this segment of the proposed ductline can generally be characterized as agricultural (grazing), undeveloped and open lands. As such, areas along the Kula Highway and Piilani Highway rights-of-way can be described as having a relatively high quality of air and noise conditions. Traffic along the roadways would be the principal source of man-made air and noise emissions in this vicinity.

(2) Impacts and Mitigation Measures

Beyond the construction period, there will be no adverse impacts to air and noise parameters along this segment of the route. Construction activities are not anticipated to create significant adverse conditions to air and noise conditions.

d. Kihei to LaPerouse Bay

(1) Existing Conditions

This route segment traverses agricultural lands as well as urban environments and natural open areas. These surrounding uses govern the character of the ambient

air quality and noise conditions. The predominant source of noise through this segment is traffic traveling along the roadway sections. In addition, construction noise along South Kihei Road, Wailea Alanui and Makena Alanui (e.g., Worldmark, the Club and Makena Resort's infrastructure upgrade projects) may result in temporary increase in noise levels and reduction in air quality. Beyond the Makena Resort, to the south, the rural and open character govern air quality and noise conditions. Along the Ahihi-Kani`u Natural Area Reserve, for example, pristine surroundings provide for a quiet and "clean" setting.

It is noted that burning of sugar cane may result in a temporary decrease in air quality during harvesting operation. In particular, cane burning may affect the Kihei region which lies downwind of Central Maui sugar fields. These conditions are intermittent and temporary in nature, with prevailing trades dispersing airborne particulates to allow quick return to normally conditions.

(2) Impacts and Mitigation Measures

The proposed action involves the installation of an underground ductline. Construction activities may result in temporary increases in noise and dust. Best Management Practices (BMPs) will be used to ensure that wind-blown emissions are minimized.

In the long term, there are no adverse impacts to noise and air quality anticipated from the proposed action.

e. ***Kihei to Maalaea***

(1) ***Existing Conditions***

North Kihei Road, along this segment of the fiber optic line, traverses the Kealia National Wildlife Refuge and agricultural lands. The Maui Electric Maalaea power plant is located along this segment representing a point source of air and noise emissions. On occasion, during dry periods, dust may be generated from the Kealia wetland areas. Additionally, air quality conditions may be affected by sugar cane burning in the vicinity of North Kihei Road. Traffic along North Kihei Road is considered the predominant sources of noise along this corridor.

(2) ***Impacts and Mitigation Measures***

Construction impacts will be of a limited and temporary nature. There are no long-term impacts associated with the installation of the fiber optic ductline.

f. ***Maalaea to Honokowai***

(1) ***Existing Conditions***

Air quality and noise conditions along this routing segment is governed by agricultural and urban lands which abut the corridor. Traffic along Honoapiilani Highway is the primary source of noise. Adverse air

quality conditions are generally associated with fugitive dust generated from agricultural lands in the nearby vicinity.

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline will not create long-term impacts to the area's ambient air and noise conditions. Construction related noise and dust effects will be temporary in nature and is not considered to be significant.

3. ***Island of Molokai***

a. ***Kalamaula to Hoolehua***

(1) ***Existing Conditions***

Air quality and noise conditions along this segment of the route is characterized as good. Conditions which affect both air quality and noise are generally attributed to traffic, as well as agricultural operations which may occur on an intermittent basis. Noise conditions are also affected by the Molokai Airport at Hoolehua.

(2) ***Impacts and Mitigation Measures***

The proposed action may create short-term construction noise and air quality impacts. However, given the scale and duration of construction, it is anticipated that impacts will be minimal. There will be no long-term impacts to air quality and noise as a result of the project.

b. ***Hoolehua to Kalaupapa Lookout***

(1) ***Existing Conditions***

Like the Kalamaula to Hoolehua segment, this portion of the route is characterized by good air and noise quality conditions. Traffic and agricultural operations define air quality and noise conditions in this area. Beyond Kualapuu, to the Kalaupapa Lookout, rural residential and undeveloped conditions prevail, further defining the air and noise ambiance of this section of the route.

(2) ***Impacts and Mitigation Measures***

There are no adverse impacts to air quality and noise conditions for this routing section anticipated as a result of the proposed action.

c. ***Kalamaula to Ualapue***

(1) ***Existing Conditions***

The southern coastline of Molokai experiences air quality and noise conditions which are characterized as good. Traffic is the predominant source of noise and air emissions. Traffic volumes through Kaunakakai Town is higher than the outlying rural areas towards Kalamaula (to the west) and Ualapue (to the east).

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline installation through this routing segment is not anticipated to create adverse

impacts to air and noise quality.

G. ARCHAEOLOGICAL RESOURCES

1. Island of Lanai

a. Lanai City Junction to Manele Boat Harbor

(1) Existing Conditions

An archaeological assessment of the Lanai Island routes was conducted by Cultural Surveys Hawai'i, Inc. (CSH). The assessment methodology involved inspection of soil surveys, inspection of maps to identify the presence of Land Commission Awards, review of geographic information system data and archaeological reports, field inspection of the entire route and consultation with the State Historic Preservation Division. In addition, CSH's local knowledge and familiarity with community issues facilitated the preparation and completion of the assessment. A copy of CSH's full assessment report is contained in Appendix "A-1" of this environmental assessment document.

Based on CSH's review of completed archaeological studies performed by others, a total of nine (9) previously recorded sites were identified. Two (2) sites are located in the Kaumalapau Harbor area with seven (7) sites identified in the Manele Bay area. The Kaumalapau Harbor sites include a historic house complex of sites which include a terrace, mound and

harbor-related infrastructure. The Manele Bay sites include historic debris, platforms, terraces, walled structures and roadway/trail. These sites are described in further detail in Appendix "A-1".

(2) ***Impacts and Mitigation Measures***

All route segments are evaluated to have a low potential for yielding subsurface archaeological resources. A "low" assessment was based on historic and archaeological data, soil survey data, and the absence of Land Commission Awards in the vicinity.

It is noted that a field inspection of the routes was conducted by CSH on November 21, 2000. This inspection indicated no subsurface concerns along the Lanai City Junction to Kaumalapau segment. Inspection of the route in the vicinity of the Manele Boat Harbor which holds sandy sediments indicated that these sandy soils have a high percentage of terrigenous material. Thus, these sandy soils are regarded as different from the large, clean aeolian-deposited sands located to the south of the route corridor. As such, it is judged that the soils adjacent to Manele Road would have a low probability of containing human remains.

Based on the low potential for subsurface deposits, no further archaeological work is recommended along the entire study route on the island of Lanai. However, in

the event that archaeological deposits are encountered during excavation activities, all work will be halted in the area and the staff of the State Historic Preservation Division (SHPD) will be notified.

Lastly, there are no known traditional Native Hawaiian cultural practices which would be affected by work occurring within the rights-of-way of existing State highways and County roadways on the island of Lanai. The nature of the underground cables would not restrict access to cultural resources, practices or traditional gathering activities along the shoreline. However, appropriate coordination with the SHPD would be conducted during the project's design and construction to address any potential issues which may arise.

2. ***Island of Maui***

An archaeological assessment of the Maui Island routes was conducted by CSH. The assessment methodology utilized on Maui was similar to that used on Lanai. A copy of CSH's full assessment report is contained in Appendix "A-2" of this environmental assessment document.

In addition to the Maui Island archaeological assessment prepared by CSH, Aki Sinoto Consulting in association with Archaeological Services of Hawaii, LLC (ASH) completed an archaeological addendum report in order to address specific concerns raised by the Maui/Lana'i Islands Burial Council (MLIBC) during project

consultation. The addendum report is contained in Appendix A-4 of this document.

In assessing the cultural sensitivity of the proposed routes on the island of Maui, the addendum report utilized three (3) assessment levels of low, moderate and high to indicate the predictability of encountering subsurface archaeological material or cultural deposits within the vicinity of the roadway corridor. Generally, a low assessment reflects areas where previous archaeological information indicate minimal probability of subsurface remains. A moderate assessment reflects segments with no previous archeological information or existing surface materials. However, the areas designated as moderate do contain soil deposition and may have prior history of large scale agricultural cultivation, namely sugar cane and pineapple. A high assessment is indicative of lands that contain previously recorded and unrecorded surface or subsurface remains in the vicinity of the roadway area and encompasses environments identified as having high probabilities for containing significant subsurface archaeological remains.

a. ***Waiehu to Puunene***

(1) ***Existing Conditions***

The archaeological addendum report indicates that the first section of the route, from Waiehu Kou to the intersection of Kaahumanu Avenue and Wakea Avenue, has a high sensitivity for encountering archaeological remains or cultural deposits. See Figure 14. The majority of this section of the route is located

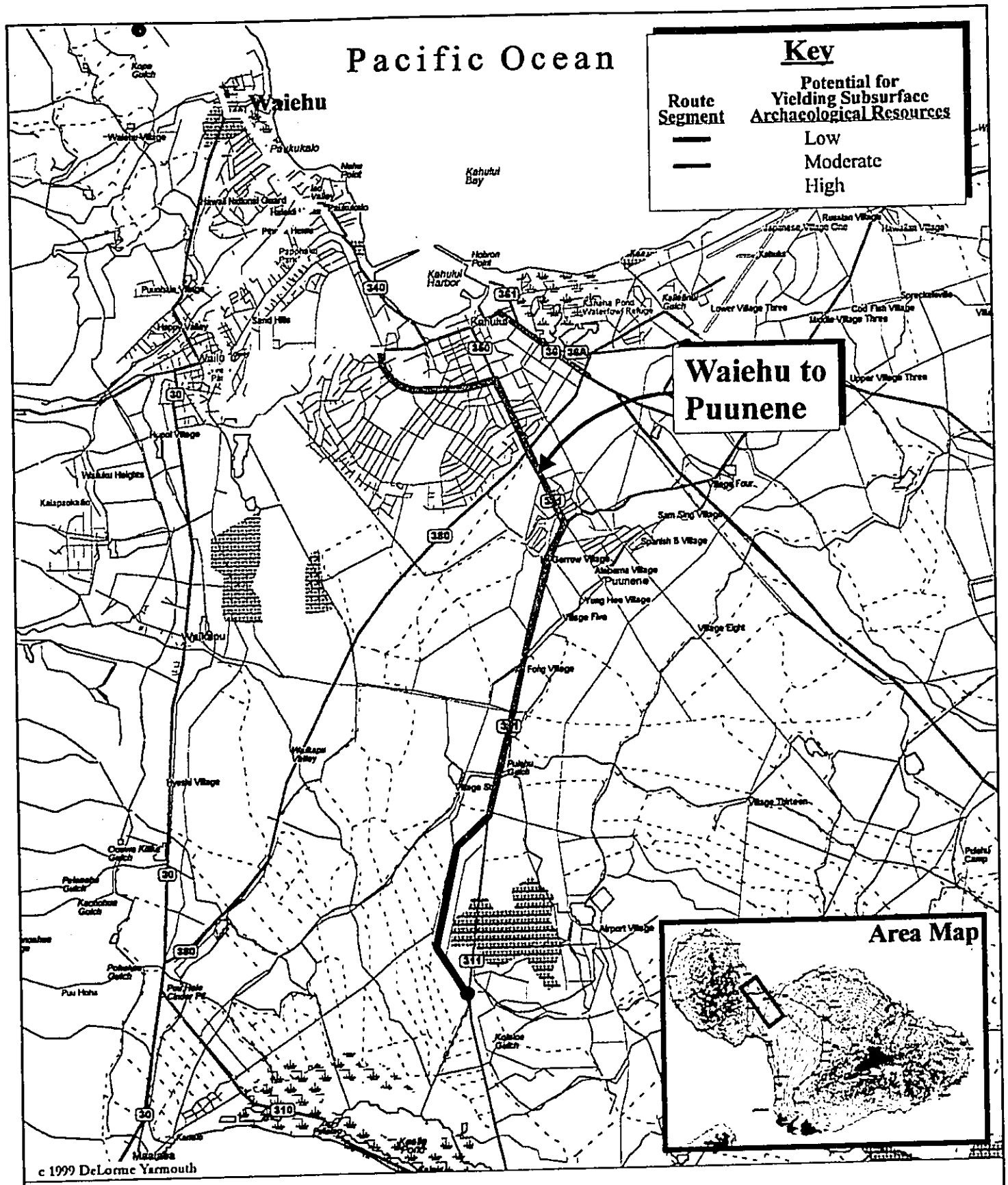

Figure 14

Sandwich Isles Communications
Fiber Optic Ductline
Waiehu to Puunene
Archaeological Assessment

0 2500 Feet
1250 5000

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in Puuone sand dunes, indicating a high probability of encountering burials. Portions of the route also negotiate lands previously utilized in prehistoric and historic times, for taro cultivation. In addition, the presence of 26 Land Commission Awards (LCA's) in the vicinity of the proposed roadway corridor indicates a high probability of encountering cultural materials.

In the vicinity of the Lower Main Street-Waiale Road corridor, previously documented cases of existing burial sites have been identified in the roadway areas. The close proximity of existing cemeteries adjacent to the proposed alignment also increases the likelihood of encountering burials during utility line installation. Information regarding burial finds and culturally sensitive areas along this section of the proposed route is presented in Appendix A-4.

It is noted that for the portion of this route segment between the Wells Street-Waiale Road intersection and the Kaohu Street-Waiale Road intersection, an alternate alignment following Wells Street, Market Street and Kaohu Street has been identified. The purpose of delineating this alternate alignment is to provide design and implementation flexibility in the event route modification is warranted. This alternative has been assessed and is discussed in further detail in Chapter VI of this document.

The second portion of the Waiehu to Puunene route, from the Kaahumanu Avenue-Wakea Avenue intersection to Puunene, has been assessed as having a moderate level of archaeological sensitivity. This assessment is predicated on prior large scale agricultural activities on the lands in the vicinity of the route alignment. Although the lands surrounding this route segment have been heavily utilized for sugar cane cultivation, subsurface remains have been encountered below the agricultural till zone in other parts of the island (see Appendix A-4). Also contributing to the moderate assessment level is the general lack of archaeological information available on lands located in the proposed utility line corridor.

The final segment of the Waiehu to Puunene route is a short one mile section traversing lands formerly used as the Puunene Naval Air Station during World War II. This section of the route has been assessed as having a low level of archaeological sensitivity. Lands underlying the proposed route in this section are characterized by a history of extensive ground disturbances associated with the excavation and construction of the Naval Air Station, including runways, taxiways, fuel tanks and underground bomb shelters. Previous subsurface archaeological work in this area have produced no evidence of cultural remains.

(2) ***Impacts and Mitigation Measures***

Based on the high assessment of cultural sensitivity for the first portion of the route, from Waiehu Kou subdivision to Kaahumanu Avenue-Wakea Avenue intersection, it is recommended that full time monitoring be employed during utility line installation. See Appendix A-4. In addition, mechanical trenching should proceed at increments of 3 to 4 inches in order to minimize potential displacement and disturbance of human remains. In areas where cultural deposits are anticipated, with low potential for human remains, the trenching should proceed in increments of 6 to 8 inches to minimize disturbance of potential cultural materials that may exist.

Should any human remains be encountered or inadvertently discovered during installation, all construction activities shall be halted in the immediate vicinity of the find. The State Historic Preservation Division (SHPD) will be contacted and any further actions will be coordinated with the MLIBC regarding appropriate mitigation. However, installation-related work, beyond the immediate area may continue in consultation with the archaeologist.

The second portion of the route, from Kaahumanu Avenue-Wakea Avenue intersection to the terminus of the route along the Mokulele Highway, is designated as

moderate in its potential for encountering subsurface archaeological materials. During utility line installation in the moderate designated areas, monitoring would be utilized in accordance with the proposed monitoring plan presented in Appendix A-4. In this regard, initial mechanical trenching should proceed in increments of approximately 12 inches. Should subsurface conditions be adequately assessed, spot monitoring may be instituted at the discretion of the supervisory monitor.

The last segment of the Waiehu to Puunene route has been assessed as having a low cultural sensitivity. The low sensitivity rating would involve initial full time monitoring, as required. There would be no requirement to restrict mechanical procedures, and spot-monitoring will be instituted at the discretion of the supervisory monitor.

b. ***Kahului to Kula***

(1) ***Existing Conditions***

The first portion of the proposed route from Kahului to Kula has been assessed as moderate in its potential for yielding subsurface archaeological materials. See Figure 15. The moderate section of the route includes lands in the corridor from the origin of the route, up the Haleakala Highway, past the intersection of Haleakala Highway and Kula Highway to Kaluapulani Gulch. The moderate assessment is based on prior existence of

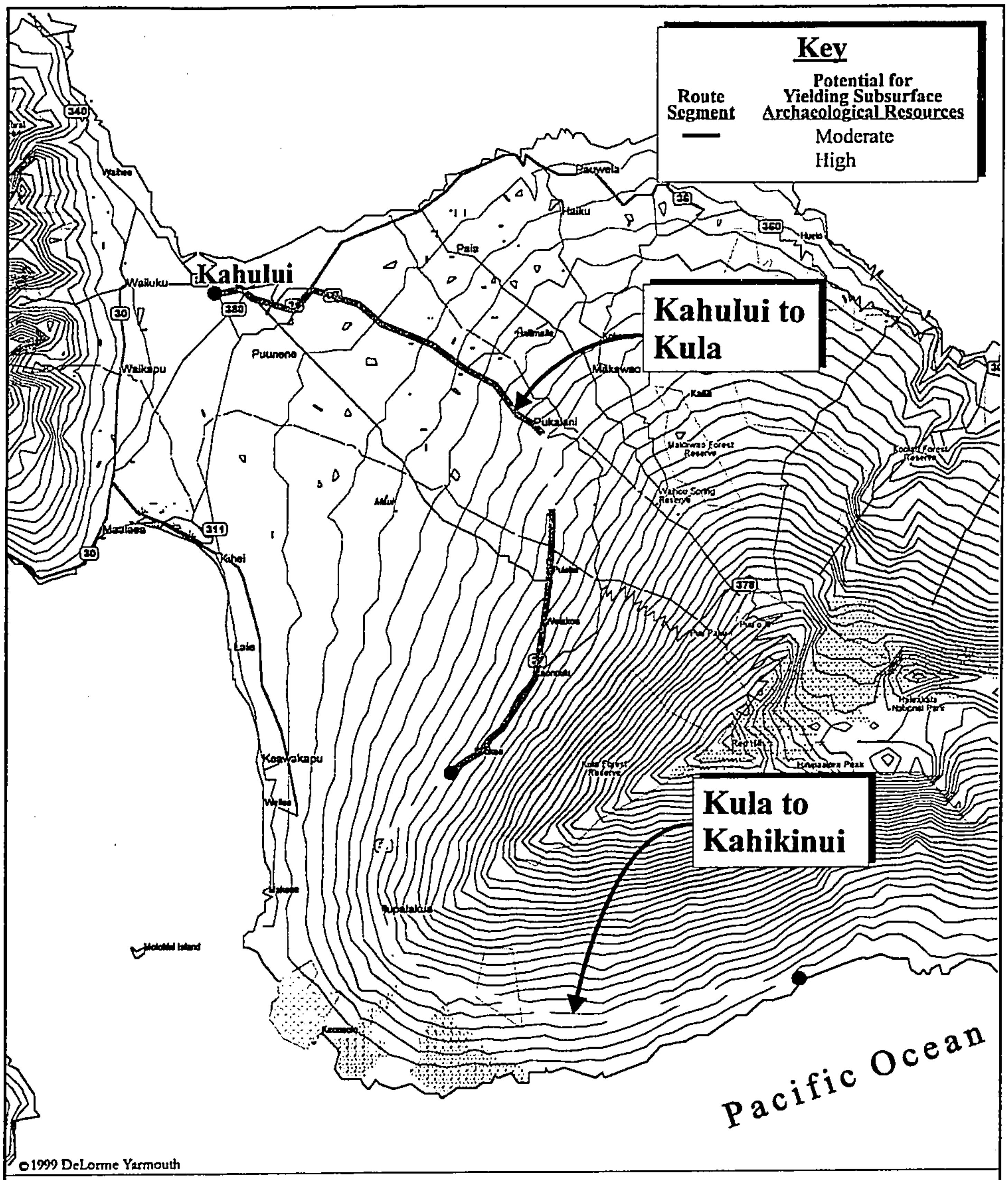

Figure 15 Sandwich Isles Communications Fiber Optic Ductline

Kahului to Kahikinui Archaeological Assessment

0 1.0 2.0 4.0 Miles

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large scale agricultural activities, general lack of archaeological data available in the proposed vicinity of the project alignment and four (4) identified LCAs along the roadway corridor.

The second section of the route, located between Kaluapulani Gulch and the intersection with Noholoa Street, has been designated as having a high level of archaeological sensitivity. The high assessment is predicated on several human burials which have been encountered more than 200 feet outside of the roadway area, near the new Kulamalu residential subdivision.

The last segment of the route, from Noholoa Street to the route terminus in Keokea, has been designated as having a moderate level of archaeological sensitivity. The lack of archaeological studies in the vicinity of the roadway corridor, the inland climate well suited for agricultural activities combined with eleven former LCAs all contribute to the segment's moderate assessment.

(2) Impacts and Mitigation Measures

Based on the moderate designation of cultural sensitivity from Kahului to the Pukalani area, both full time and part time monitoring would remain in effect, as warranted by specific site conditions. As set forth by the proposed monitoring plan, mechanical trenching will proceed in increments of not more than 12 inches.

Lastly, when the subsurface conditions have been adequately assessed, spot-monitoring may be instituted at the discretion of the supervisory monitor.

In the Pukalani area of the route, near the Kulamalu development, the addendum report indicated a high archaeological sensitivity rating based on recent identification of human burials. Accordingly, full time monitoring would remain in effect in this vicinity. In addition, mechanical trenching should proceed at increments of 3 to 4 inches in order to minimize potential displacement and disturbance of human remains. In areas where cultural deposits are anticipated, with low potential for human remains, the trenching should proceed in increments of 6 to 8 inches to minimize disturbance of potential cultural materials that may exist.

Should any additional human remains be encountered or inadvertently discovered during the proposed project, all construction activities shall be halted in the immediate vicinity of the find. The SHPD will be contacted and appropriate action taken in coordination with the MLIBC. However, installation-related work, beyond the immediate area may continue in consulation with the archaeologist.

The last section of the Kahului to Kula route from

Noholoa Street to the route terminus, has been designated as having a moderate level of archaeological sensitivity. In order to minimize the potential adverse impacts of the proposed project on the cultural environment, both full time and part time monitoring would remain in effect, as warranted. In addition, initial mechanical trenching would not proceed in increments larger than 12 inches. Lastly, spot-monitoring may be instituted at the discretion of the supervisory monitor.

c. Kula to Kahikinui

(1) Existing Conditions

From Keokea to the route terminus in Kahikinui, the proposed route alignment has been assessed as having a high level of archaeological sensitivity. Refer to Figure 15. This assessment is predicated on the existence of extensive prehistoric and historic archaeological sites located in the areas of Ulupalakua, Kanaio and Kahikinui. In addition, eight (8) LCAs have been identified along this portion of the route.

(2) Impacts and Mitigation Measures

In order to minimize or eliminate potential adverse impacts on the archaeologically sensitive areas along this proposed route segment, full time monitoring would remain in effect, as warranted. In addition, mechanical trenching should proceed at increments of 3 to 4 inches

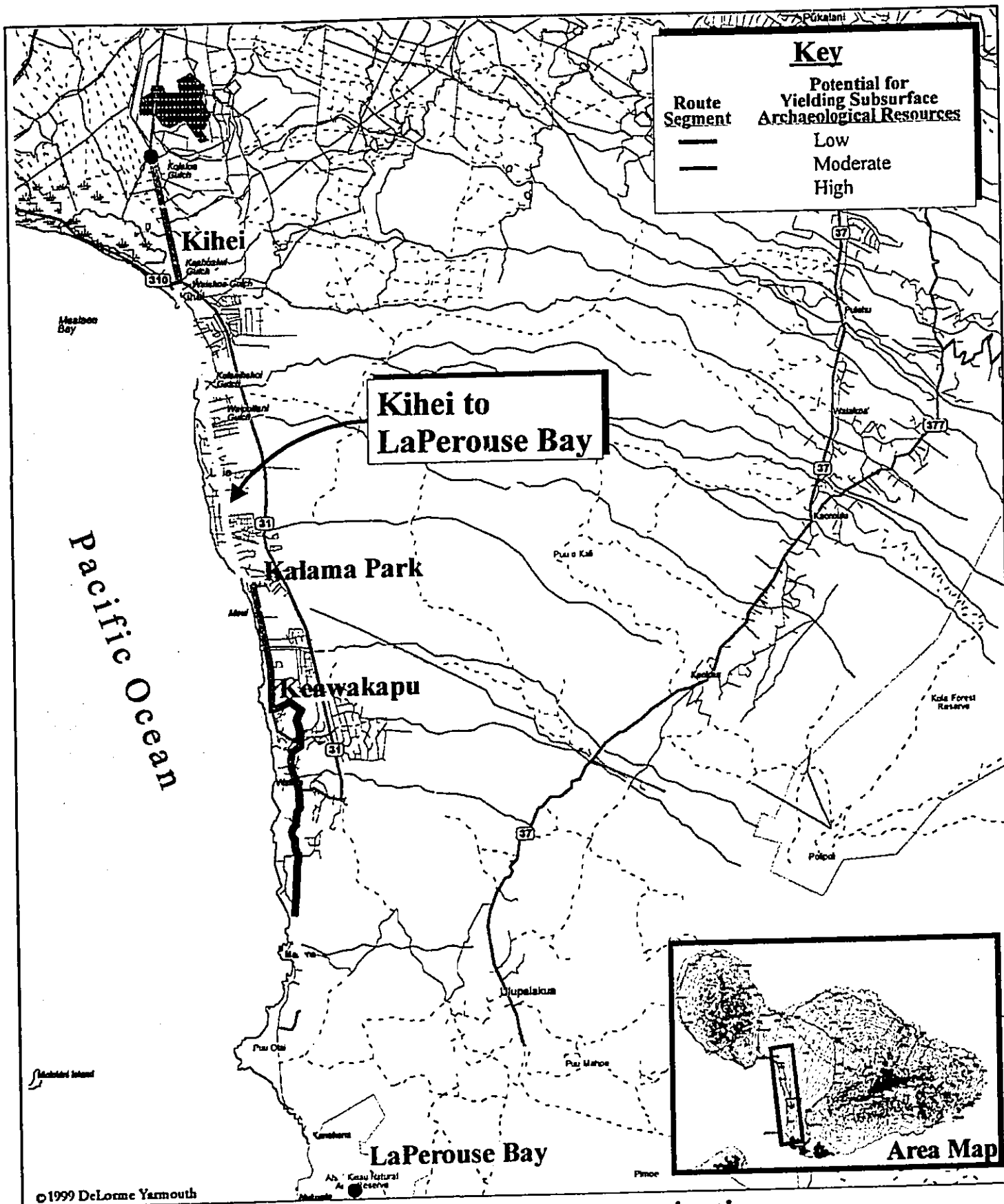
in order to minimize potential displacement and disturbance of possible human remains. In areas where cultural deposits are anticipated, with low potential for human remains, the trenching should proceed in increments of 6 to 8 inches to minimize disturbance of potential cultural materials that may exist.

Further, should any human remains be encountered or inadvertently discovered during the proposed project, all construction activities in the vicinity of the area will be halted immediately. The SHPD will be contacted and mitigation actions coordinated with the MLIBC. However, installation-related work, beyond the immediate area may continue in consultation with the archaeologist.

d. ***Kihei to LaPerouse Bay***

(1) ***Existing Conditions***

The proposed route alignment from North Kihei to LaPerouse Bay has been assessed to have areas of low, moderate and high archaeological sensitivity ratings. See Figure 16. The origin of the route, from the terminus point of the Waiehu to Puunene route to the Piilani Highway-South Kihei Road intersection, has been assessed as having a moderate level of archaeological sensitivity. This assessment is based on a lack of previous archaeological information in the roadway area and the possibility of archaeological



remains that may exist below the till zone of the land which has been extensively used for sugar cane production.

The second portion of the route, from the Piilani Highway-Mokulele Highway intersection to the southern extent of Kalama Park, and the final portion of the route, from the southern extent of the Makena Prince Resort to LaPerouse Bay have been assessed as having a high archaeological sensitivity rating. These assessments are based on the identified existence of human burials, cultural remains related to historic and prehistoric eras and habitation sites located in the vicinity of the proposed route corridor. In addition, the presence of the Kalepolepo Fish Pond, as well as four (4) previous LCAs were identified along the route in the Kihei area. Six (6) previous LCAs were identified in the Makena area, contributing to the high archaeological sensitivity ratings. The proposed route area, from the southern extent of Kalama Park to Keawakapu, has been assessed as having a moderate sensitivity rating. The assessment is based on existing beach and dune sand environments which present a high probability for containing human burials.

Along a short section of the route in the Makena area, from Keawakapu, along Wailea Ike Drive to the southern extent of the Makena Prince Resort property, the proposed route alignment was assessed as having a low level of archaeological sensitivity. This assessrnent is based on the extensive development-related disturbances, the use of

imported fill and a solid bedrock environment which exists under the roadway corridor. It is noted that one (1) LCA has been identified along this section of the route.

(2) ***Impacts and Mitigation Measures***

The North Kihei area and LaPerouse area of the proposed route alignment is assessed as having a high level of archaeological sensitivity. In order to minimize or eliminate the project's potential adverse impacts on the culturally significant areas, full time monitoring would remain in effect, as warranted. In addition, mechanical trenching should proceed at increments of 3 to 4 inches in order to minimize potential displacement and disturbance of possible human remains. In areas where cultural deposits are anticipated, with low potential for human remains, the trenching should proceed in increments of 6 to 8 inches to minimize disturbance of potential cultural materials that may exist.

The first segment of the route, from the origin point of the Kihei to LaPerouse route to the Mokulele Highway-Piilani Highway intersection, has been assessed as having a moderate level of archaeological sensitivity. In addition, the section of the route from the southern extent of Kalama Park to Keawakapu was also assessed as having a moderate level of archaeological

sensitivity. In order to minimize the potential adverse impacts of the proposed project on the cultural environment, both full time and part time monitoring would remain in effect, as warranted. In addition, initial mechanical trenching would not proceed in increments larger then 12 inches. Lastly, spot-monitoring may be instituted at the discretion of the supervisory monitor.

It is noted that for the portion of this route segment between the Mokulele Highway-Piilani Highway intersection and the Wailea Ike-Wailea Alanui intersection, an alternate alignment following Piilani Highway has been identified. The purpose of delineating this alternate alignment is to provide design and implementation flexibility in the event route modification is warranted. This alternative has been assessed and is discussed in further detail in Chapter VI of this document.

Along the Wailea-Makena portion of the route, from Keawakapu to Makena Resort , the low sensitivity rating would involve initial full time monitoring, as required. There would be no requirement to restrict mechanical procedures, and spot-monitoring would be instituted at the discretion of the supervisory monitor.

e. ***Kihei to Maalaea***

(1) ***Existing Conditions***

The proposed route alignment from the North Kihei origin to the Maui Electric Power Plant was assessed as having a low level of archaeological sensitivity. See Figure 17. This indication was based primarily on recent paleo environmental studies which indicate that this area was submerged in the past, thereby minimizing the possibility and expectations of encountering significant cultural remains. Continuing north along the Kihei to Maalaea alignment, the route segment from the Maui Electric Power Plant to the North Kihei Road-Honoapiilani Highway intersection has been assessed as having a moderate level of archaeological sensitivity. This indication was predicated on the lack of archaeological data available, prior large scale agricultural activities, and the identification of one (1) LCA.

(2) ***Impacts and Mitigation Measures***

In the area of the route alignment from the Piilani Highway-Mokulele Highway intersection to the Maui Electric Power Plant, the roadway corridor was designated as having a low level of archaeological sensitivity. Initial full time monitoring would be involved as site specific conditions warrant. There would be no initial necessity to restrict mechanical procedures, and spot-monitoring will be instituted at the discretion of the

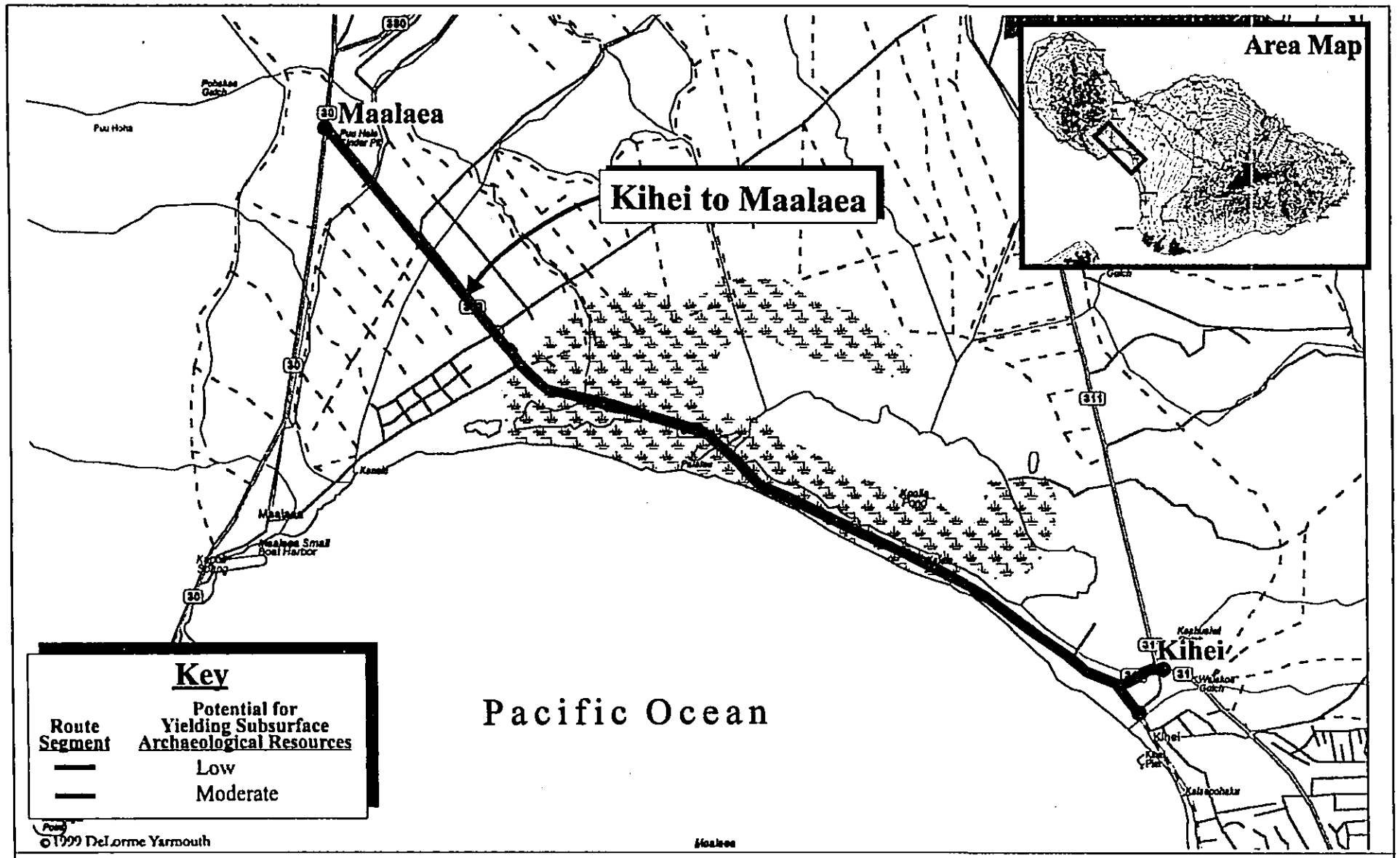


Figure 17 Sandwich Isles Communications Fiber Optic Ductline

Kihei to Maalaea Archaeological Assessment

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supervisory monitor.

The area from the Maui Electric Power Plant to the North Kihei Road-Honoapiilani Highway intersection, having been designated as moderate archaeological sensitivity, would require both full time and part time monitoring. Mechanical trenching would proceed in increments not greater than 12 inches until the subsurface conditions have been adequately assessed. Lastly, spot-monitoring may be instituted at the discretion of the supervisory monitor.

Should any human remains be encountered or inadvertently discovered during the proposed project, all construction activities in the vicinity of the area will be halted immediately. The SHPD will be contacted and further actions will be coordinated with the MLIBC. However, installation-related work, beyond the immediate area may continue upon consultation with the archaeologist.

f. ***Maalaea to Honokowai***

(1) ***Existing Conditions***

From the North Kihei Road-Honoapiilani intersection to the south entrance to Maalaea Harbor, the proposed alignment has been assessed as having a moderate level of archaeological sensitivity based on the lack of archaeological information available. See Figure 18.

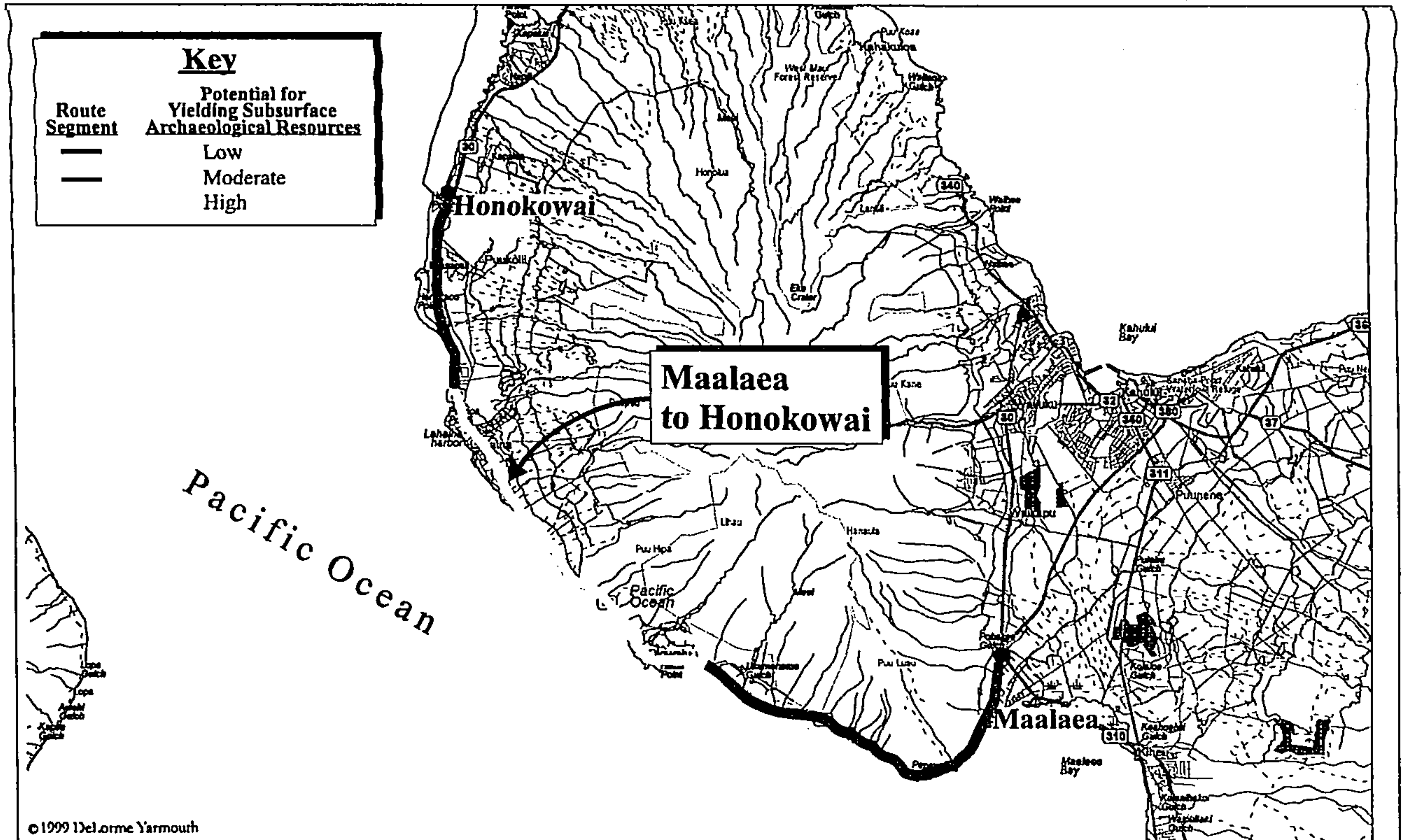

Figure 18 Sandwich Isle Communications Fiber Optic Ductline
Maalaea to Honokowai
Archaeological Assessment

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The route segment traversing the pali, from the south entrance of Maalaea Harbor to Papalaua Gulch, has been assessed as having a low archaeological sensitivity level due to the underlying rock environment on the pali section of the highway. No history of prior LCAs have been recorded in this area of the route alignment.

From Papalaua Gulch to the Honoapiilani Highway-Kupunakea Street intersection north of Lahaina Town, the route has been assessed as having a high level of archaeological sensitivity. This assessment is based on the presence of multiple burials located near Olowalu. In addition, 59 prior LCAs have been identified along this segment. Finally, the Lahaina Town Historic District also contributed to the segment's high rating.

From the Kapunakea Street-Honoapiilani Highway intersection to the terminus of the route in Honokowai, the alignment has been assessed as having a moderate level of archaeological sensitivity. This assessment is based on the lack of archaeological data available and the identified presence of 16 prior LCAs. In addition, the silty clay loam soils present along the route in association with the route's close proximity to the shoreline suggest a possibility of encountering human burials. These factors contribute to the segment's moderate assessment.

(2) ***Impacts and Mitigation Measures***

The first portion of the alignment from the route origin to the Maalaea Harbor has been assessed as having a moderate level of archaeological sensitivity. In addition, the final portion of the route, from Kupunakea Street to the terminus of the route in Honokowai, is designated as moderate. To minimize potential adverse impacts on the cultural environment in areas of moderate archaeological sensitivity, both full time and part time monitoring would remain in effect, as warranted by specific site conditions. In addition, mechanical trenching would proceed in increments not greater than 12 inches and when the subsurface conditions have been adequately assessed. Lastly, spot-monitoring may be instituted at the discretion of the supervisory monitor.

Along the pali portion of the alignment, from Maalaea Harbor to the Papalaua Gulch, the level of archaeological sensitivity has been assessed as low. The low sensitivity rating will necessitate initial full time monitoring, as required by site specific conditions. As construction work proceeds, conditions may warrant reduced levels of monitoring, as indicated by the supervisory monitor. In the areas assessed as low, there would be no restrictions to mechanical procedures, and spot monitoring would be instituted at the discretion of the supervisory monitor.

As the route alignment enters the vicinity of Lahaina town, from Papalaua Gulch to Kapunakea Street, the level of archaeological sensitivity is assessed as high. In order to minimize the potential adverse impacts of the proposed project on the cultural environment, full time monitoring would remain in effect, as warranted by specific site conditions. In addition, mechanical trenching should proceed at increments of 3 to 4 inches in order to minimize potential displacement and disturbance of possible human remains. In areas where cultural deposits are anticipated, with low potential for human remains, the trenching should proceed in increments of 6 to 8 inches to minimize disturbance of potential cultural materials that may exist.

Further, should any human remains be encountered or inadvertently discovered during the proposed project, all construction activities in the vicinity of the area will be halted immediately. The SHPD will be contacted and further actions coordinated with the MLIBC. However, installation-related work, beyond the immediate area may continue in consultation with the archaeologist.

3. *Island of Molokai*

a. *Kalamaula to Hoolehua*

(1) *Existing Conditions*

An archaeological assessment of the Molokai Island routes was conducted by CSH. The assessment

methodology utilized on Molokai was similar to that used on Lanai. A copy of CSH's full assessment report is contained in Appendix "A-3" of this environmental assessment document.

Based on CSH's review of completed archaeological studies performed by others, no significant sites were discovered. There were no Land Court Awards in this section. The underlying roads contain none of the soil types likely to contain historical or prehistorical material. Former long term agricultural disturbances in the affected area and the mechanical alteration of the ground surfaces resulting from the construction of Maunaloa Highway and Farrington Avenue have drastically altered the original surface material.

(2) ***Impacts and Mitigation Measures***

Archaeological data, soil survey data, and the absence of Land Commission Awards in the vicinity yield a low potential for subsurface deposits. No further archaeological work is recommended for the Kalamaula to Hoolehua route. However, in the event that archaeological deposits are encountered during excavation activities, all work will be halted in the area and the staff of the State Historic Preservation Division will be notified.

On the island of Molokai, there are no known traditional

Native Hawaiian cultural practices which would be affected by work conducted within the rights-of-way of existing State highways and County roadways. The nature of the underground cables would not restrict access to cultural resources, practices or traditional gathering activities along the shoreline. Accordingly, there are no anticipated adverse effects on cultural practices of the community and the State. However, appropriate coordination with the SHPD would be conducted during the project's design and construction to address any issues which may arise.

It is noted that a number of roadways for this alignment is under the jurisdiction of the DHHL. Should any Native Hawaiian burials be found on lands owned by the DHHL, such finds will be subject to the provisions of the Native American Graves Protection and Repatriation Act.

b. Hoolehua to Kalaupapa Lookout

(1) Existing Conditions

Based on CSH's review of completed archaeological studies performed by others, one particular section of this route corridor may hold potential for subsurface archaeological material. See Figure 19. Located on Farrington Avenue, between Moomomi Avenue and the intersection with Kalae Highway (470), the 1920's historic town of Kualapuu may contain historic era trash

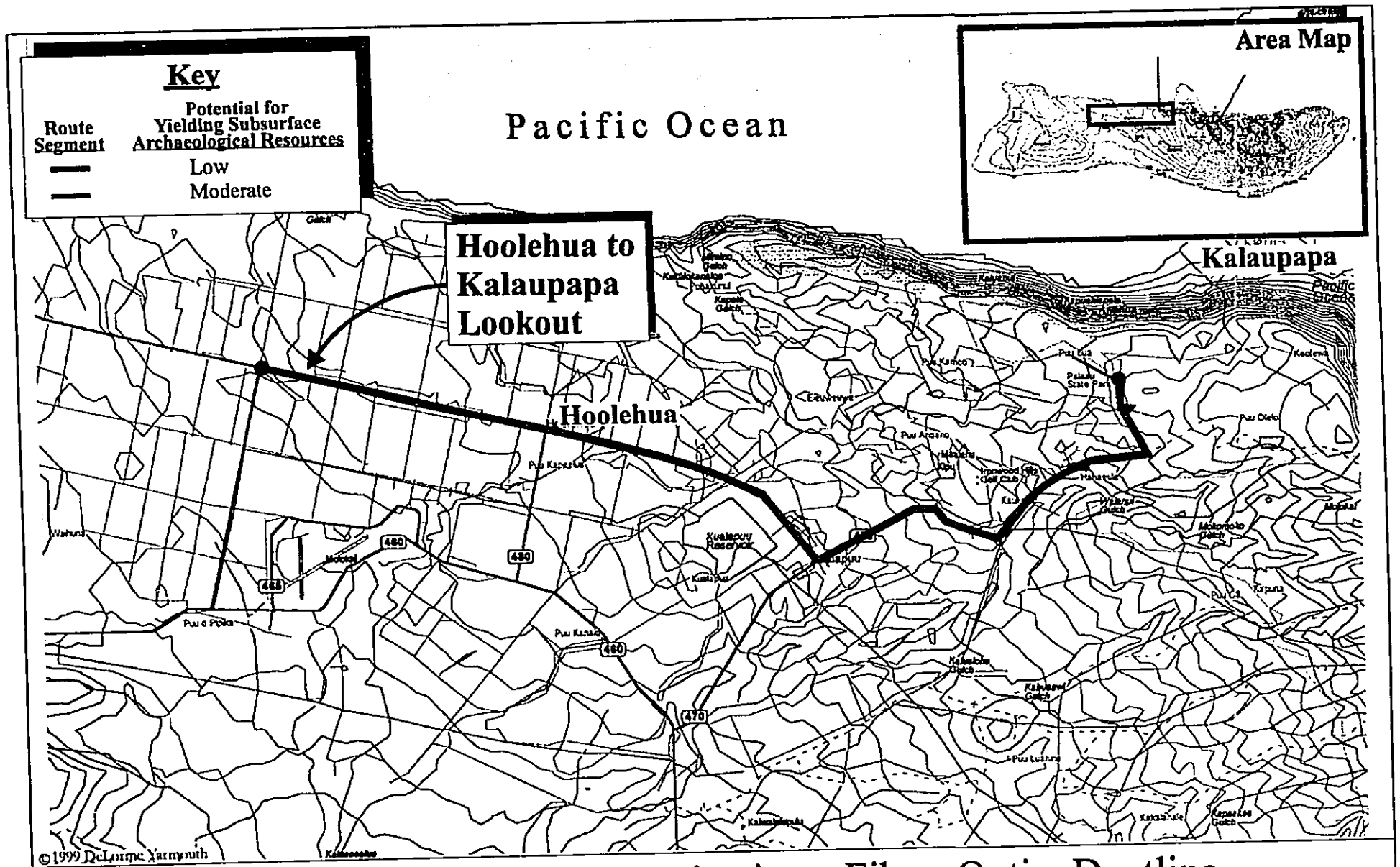

Figure 19 Sandwich Isles Communications Fiber Optic Ductline
Hoolehua to Kalaupapa Lookout Archaeological Assessment

2,500 Feet
0 1,250 5,000

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Prepared for: Sandwich Isles Communications, Inc.

pits or other subsurface features. It should be noted that three (3) *kuleanas* or Land Commission Awards were recorded along this route segment. The first is located along Farrington Avenue (480), approximately 0.5 mile southeast of the Farrington-Moomomi intersection. The two (2) other kuleanas are located along the Kalae Highway at Kauluwai.

(2) ***Impacts and Mitigation Measures***

The above-mentioned section (Farrington Avenue at Kualapuu) is determined to have moderate potential for subsurface archaeological resources based on historic and archaeological data and the presence of a Land Commission Award in the vicinity. Due to the moderate assessment, it is recommended that an on-call monitoring program be adapted during excavation activities for the specified area. Consideration may also be given to spot checking as well as on-call monitoring with a cultural monitor.

As for the remaining areas of the route segment, evaluations found the area to have low potential for yielding subsurface archaeological resources. Significant mechanical alteration of the ground surface during construction of the Kalae Highway and previous history of commercial agriculture in a portion of the route reduce the potential impact to cultural properties.

It is noted that Farrington Avenue to the Pu`upe`elua Avenue (Highway 480) intersection is under the jurisdiction of the DHHL. Should any Native Hawaiian burials be found on lands owned by the DHHL, such finds will be subject to the provisions of the Native American Graves Protection and Repatriation Act.

c. Kalamaula to Ualapue

(1) Existing Conditions

In the first 6 mile section of this route corridor, from Maunaloa Highway (460) along the Kamehameha Coconut Grove, to Kamehameha V Highway (450) to the west side of the Kanoa Fishpond, the majority of the areas surrounding the route is underlain with sandy soils, with archaeological sites previously recorded in the vicinity. See Figure 20. In particular, the Kamehameha Coconut Grove is an important historic site with sandy soils and water springs. Burials have been encountered in this area. However, these were above ground internments within stone structures, mauka of the highway.

In the Kaunakakai area, there are subsurface deposits, including historic and prehistoric cultural layers. East of Kaunakakai there are recorded habitation complexes past Kamiloloa Gulch.

The highway area along this section of the route from

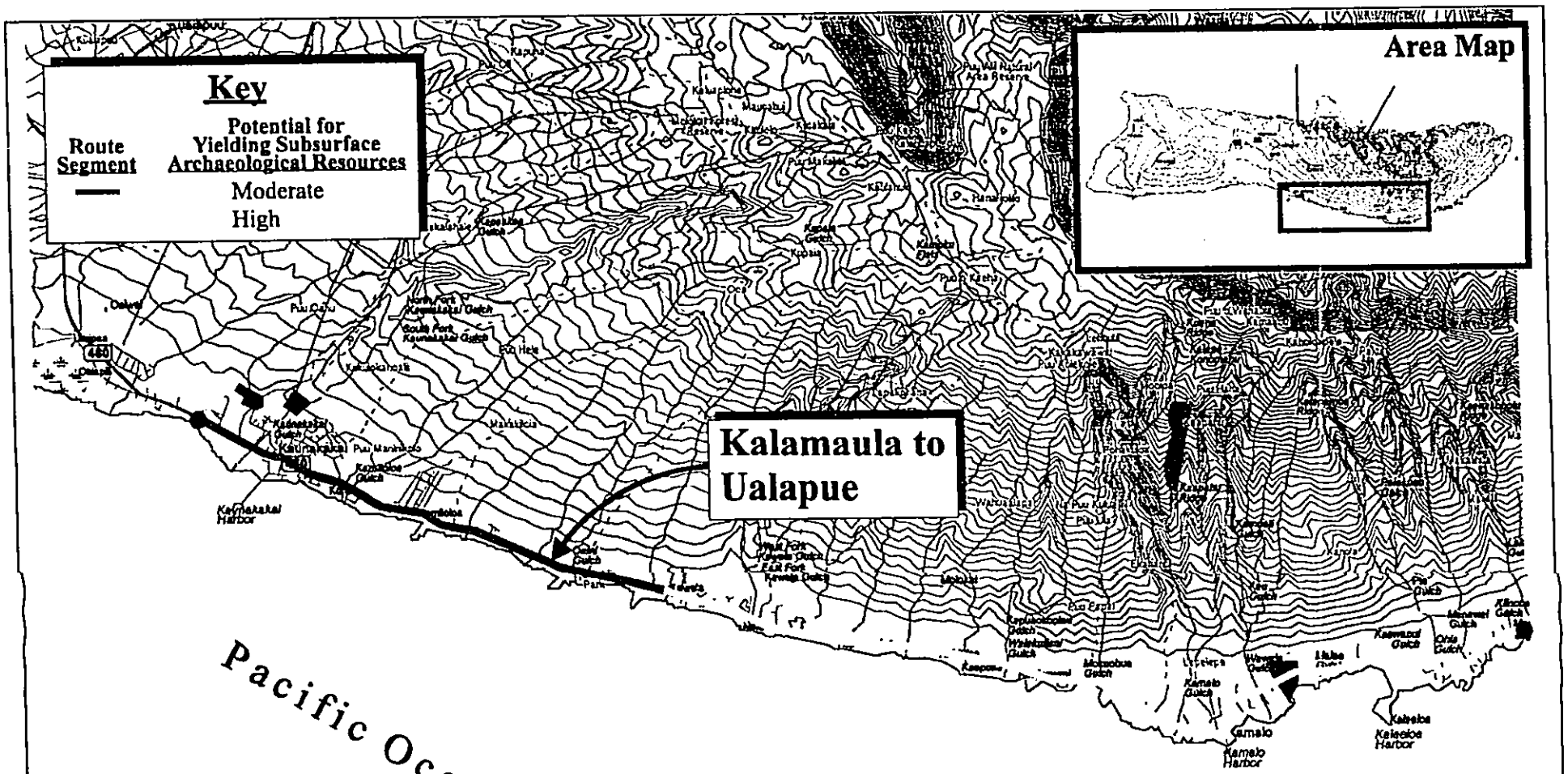


Figure 20 Sandwich Isles Communications Fiber Optic Ductline

Kalamaula to Ualapue
Archaeological Assessment

0 2,000 4,000 8,000 Feet

MUNEKIYO & HIRAGA, INC.

Prepared for: Sandwich Isles Communications, Inc.

the Kamehameha Coconut Grove to the west side of Kanoa Fishpond, is predominately of a low berm character. In the low spots, cut and fill have been pushed to make a consistent berm, and ridges have been cut to replicate road levels. For much of this section, the road is immediately underlain by berm fill material.

The second segment of this route, from the west side of Kanoa Fishpond to the terminus corridor of Ualapue (9.7 miles), runs through an area underlain by sandy soils. There have been multiple Land Court Awards recorded in the vicinity. The archaeological site Kawela Mound was found to contain evidence of Hawaiian habitation and human burials. There are numerous historic fishponds along this route and the areas around them may contain subsurface cultural material.

(2) ***Impacts and Mitigation Measures***

The two (2) sub-segments that make up this route section have been assessed as moderate and high, respectively, in their potential for yielding subsurface archaeological resources. The first section, along Maunaloa Highway through Kaunakakai, and then along Kamehameha V Highway, was given a moderate assessment for potential yielding of subsurface archaeological resources. It is recommended that a monitoring program with on-call monitoring be

observed.

The second section, along Kamehameha V Highway, from the west side of Kanoa Fishpond to the terminus of corridor at Ualapue, was given a high assessment for potential yielding of subsurface archaeological resources. This designation was based on the presence of sand, Land Court Awards in the vicinity, and historic properties. It is recommended that there be a monitoring program with continual on-site monitoring.

H. HISTORIC RESOURCES

This section addresses existing bridges and structures located along the proposed route which will be encountered by the proposed fiber optic ductline. All bridges listed were built prior to 1955. The information presented in this section has been obtained from file documents located at the Maui offices of the DOT and the County of Maui DPWWM. It is noted that the records for some structures located along various routes were incomplete.

The following information presented provides a brief synopsis of information contained in the public record.

1. Island of Lanai

There are no bridges older than 50 years identified along routes proposed for the Island of Lanai.

2. *Island of Maui*

a. *Waiehu to Puunene*

(1) Existing Conditions

The proposed Waiehu to Puunene route will involve crossing under the Waiale Drive Bridge. See Table 19. The Waiale Drive Bridge in Wailuku Town was built in 1936, and carries Kaahumanu Avenue across the underlying Waiale Drive/Lower Main roadway corridor. The Waiale Drive Bridge is identified as a Historic Bridge Structure by Spencer Mason Architects, who compiled the Historic Bridge Inventory and Evaluation for the State Department of Transportation in 1990. Waiale Drive Bridge, under State DOT jurisdiction, is recognized as one (1) of only two (2) steel rigid-frame bridges in the state.

While not currently 50 years old, the Iao Stream Bridge was constructed in 1953. It is listed in Table 19 as it is approaching historic designation status. The Iao Stream Bridge is also under DOT jurisdiction.

Table 19

NOTABLE BRIDGE STRUCTURES ALONG THE WAIEHU TO PUUNENE ALIGNMENT			
Bridge Structure	***Year Built***	***Length/Width (ft)***	***Renovated***
Iao Stream Bridge	1953	183/28	No
Waiale Drive Bridge	1936	79/34	No
Source: State of Hawaii DOT and County of Maui DPWWM			

(2) ***Impacts and Mitigation Measures***

The proposed fiber optic ductline will be attached to the substructure of the Iao Stream Bridge, hidden from view. There are no anticipated adverse impacts on the visual or structural components of the bridge. Further, coordination with the State DOT will ensure that installation designs conform with all applicable State and County standards.

The Waiale Bridge will not be impacted by the installation of the fiber optic ductline as the route will be placed in trenches along the Lower Main/Waiale Drive corridor which travels beneath the Waiale Bridge. No impacts to the visual character or the structural integrity of the bridge are anticipated. However, the design of the underground ductline along this section of the route will be coordinated with the Maui County CRC prior to installation to ensure full communication and understanding of project parameters.

b. ***Kahului to Kula***

(1) ***Existing Conditions***

The proposed route from Kahului to Kula encounters four (4) bridges that are more than 50 years old. See Table 20. Kalialinui Stream Bridge is located along the Hana Highway near the intersection with Hansen Road. Kaipoioi Bridge and Waiohului A and B Bridges are located in the Waiakoa area. Kalialinui Stream Bridge

was renovated in 1990. All four (4) bridges are under DOT jurisdiction.

Table 20

NOTABLE BRIDGE STRUCTURES ALONG THE KAHULUI TO KULA ALIGNMENT			
Bridge Structure	***Year Built***	***Length/Width (ft)***	***Renovated***
Kalialinui Stream	1944	50/104	1990
Kaipoioi	1933	75/25	No
Waiohuli "A"	1933	25/22	No
Waiohuli "B"	1933	25/22	No
Source: State of Hawaii DOT and County of Maui DPWWM			

(2) Impacts and Mitigation Measures

There are no anticipated adverse impacts on the bridges located along the Kahului to Kula route. To the extent practicable, fiber optic ductlines will be placed on the inside of support girders, hidden from view. There are no anticipated impacts on the structural or visual elements of the existing bridges. Further, coordination with the State DOT and the County of Maui DPWWM during the design stages will ensure that all work is done in compliance with existing State and County standards. As with other historic bridges, work affecting these structures will be coordinated with the Maui County CRC.

c. ***Kula to Kahikinui***

(1) ***Existing Conditions***

The Kula to Kahikinui route encounters two (2) bridges more than 50 years old. See Table 21. Kepuni Bridge 1 and 2 are located on the Piilani Highway near the terminus of the Kula to Kahikinui route. Both bridge structures were renovated in 1985, and are under the jurisdiction of the County of Maui.

Table 21

NOTABLE BRIDGE STRUCTURES ALONG THE KULA TO KAHIKINUI ALIGNMENT			
Bridge Structure	***Year Built***	***Length/Width (ft)***	***Renovated***
Kepuni #1	1948	23/19	1985
Kepuni #2	1948	22/19	1985
Source: State of Hawaii DOT and County of Maui DPWWM			

(2) ***Impacts and Mitigation Measures***

There are no anticipated adverse impacts on the bridges located along the Kula to Kahikinui route. To the extent practicable, the fiber optic ductlines will be attached to existing bridge structures, hidden from view. There are no anticipated impacts to the structural and visual elements of the existing bridges. Coordination with the State DOT during the design stages of the project will ensure compliance with existing State standards. Work associated with the proposed project will be coordinated with the Maui County CRC.

d. ***Kihei to LaPerouse***

(1) ***Existing Conditions***

Two (2) bridge structures along the Kihei to LaPerouse route are more than 50 years old. See Table 22. Kulanihakoa Ditch bridge is under the jurisdiction of the County of Maui, while Kolaloa Bridge is under State of Hawaii jurisdiction. Several bridge structures located along the proposed route were not assessed or inventoried by the DOT or DPWWM. Therefore, no information was available for the bridges, including the original date of construction. These include Bridge Structure #125 (unnamed) along the Mokulele Highway, Pulehu Bridge, Keahuaiwi Bridge, Waipualani Bridge, Charley Young Bridge, and the Kamaole Bridge.

Table 22

NOTABLE BRIDGE STRUCTURES ALONG THE KIHEI TO LaPEROUSE ALIGNMENT			
Bridge Structure	***Year Built***	***Length/Width (ft)***	***Renovated***
Kulanihakoa Ditch	1911	28/22	No
Kolaloa	1924	23/22	1976
Source: State of Hawaii DOT and County of Maui DPWWM			

(2) ***Impacts and Mitigation Measures***

There are no anticipated adverse impacts on bridges located along the Kihei to LaPerouse route. To the extent practicable, fiber optic ductlines will be attached to the bridge structures in a manner which will not impact the structural or visual components of the individual bridges. Design work will be coordinated with

the DOT and the DPWWM to ensure that all installation plans are consistent with existing standards. With regard to the Kulanihakoa Ditch Bridge, the structure spans over a waterway that may be considered *tidal.* Consultation with the Department of the Army will ensure that required permits are obtained prior to installation, and that the fiber optic duct lines do not impact the surrounding tidal environment. Coordination will also be undertaken with the Maui County CRC.

e. Kihei to Maalaea

(1) Existing Conditions

The proposed fiber optic duct line along the Kihei to Maalaea route encounters one bridge structure built in 1911 and renovated in 1992. See Table 23. The Kealia Pond Outlet Bridge is under State of Hawaii jurisdiction.

Table 23

NOTABLE BRIDGE STRUCTURES ALONG THE KIHEI TO MAALAEA ALIGNMENT			
Bridge Structure	***Year Built***	***Length/ Width (ft)***	***Renovated***
Kealia Pond Outlet	1911	41/22	1992
Source: State of Hawaii DOT			

(2) Impacts and Mitigation Measures

No adverse impacts are associated with the attachment of the fiber optic duct line to the substructure of the Kealia Pond Bridge. The hidden attachment will ensure

no impacts to the visual character of the existing bridge structure. The structure spans over a waterway that may be considered *tidal*. Consultation with the Department of the Army will be undertaken to ensure that necessary permits are obtained prior to installation. Further, coordination with the Maui County CRC during design of the fiber optic ductline will be conducted.

f. Maalaea to Honokowai

(1) Existing Conditions

The proposed Maalaea to Honokowai route encounters four (4) bridges more than 50 years old. See Table 24. All four (4) bridges are under State of Hawaii jurisdiction. It is also noted that the Olowalu Tunnel, located on the *Pali*, was constructed in 1950.

Table 24

NOTABLE BRIDGE STRUCTURES ALONG THE MAALAEA TO HONOKOWAI ALIGNMENT			
Bridge Structure	***Year Built***	***Length/Width (ft)***	***Renovated***
Ukumehame Stream	1950	35/44	No
Olowalu Stream	1938	62/36	1990
Olowalu B Unnamed Stream	1938	26/36	1990
Launiupoko Stream	1938	42/36	1990
Source: State of Hawaii DOT and County of Maui DPWWM			

It is noted that Lahaina Town is listed as a National Historic Landmark, with more than 60 sites located on the National and State Register of Historic Places. The

area once served as the capital of the Hawaiian Kingdom, and was an established commonplace for Hawaiian Royalty, including the sacred island of Moku`ula, located at the site of the present day Malu-ulu-olele Park. Many of the historic structures, built in the mid 19th century, represent a physical link to Lahaina's historical past. These landmarks include the Pioneer Inn, the Wo Hing Society Building and Lahainaluna High School.

(2) ***Impacts and Mitigation Measures***

To the extent practicable, the proposed fiber optic ductlines will be attached to the undercarriage of the bridge structures, hidden from view. Work through the Olowalu Tunnel will involve roadway trenching work only, without affecting the tunnel structure. No adverse impacts are associated with the ductline attachment to the visual or structural components of the bridges or tunnel. In addition, the underground route will be located within the limits of the Honoapiilani Highway corridor, and will not encroach upon the significant attributes and historical nature of Lahaina Town itself. The project design will be coordinated with the DOT and Maui County CRC.

3. *Island of Molokai*

a. *Kalamaula to Hoolehua*

(1) Existing Conditions

There are five (5) bridge structures located along the proposed Kalamaula to Hoolehua route. See Table 25. All bridges are under State of Hawaii jurisdiction.

Table 25

NOTABLE BRIDGE STRUCTURES ALONG THE KALAMAULA TO HOOLEHUA ALIGNMENT			
Bridge Structure	***Year Built***	***Length/Width (ft)***	***Renovated***
Kaunakakai Stream	1953	74/37	1971
Kalamaula #1	1954	35/36	No
Kalamaula #2	1954	35/36	No
Kalamaula #3	1954	35/36	No
Kalamaula #4	1954	35/36	No
Source: State of Hawaii DOT and County of Maui DPWWM			

(2) Impacts and Mitigation Measures

The proposed fiber optic ductlines will, to the extent practicable, be attached to bridge supporting structures, hidden from plain view. No adverse impacts are associated with the ductline attachment to the visual or structural components of the bridges. Designs will be coordinated with the DOT, DPWWM and Maui County CRC.

b. ***Hoolehua to Kalaupapa Lookout***

(1) ***Existing Conditions***

There are no identified bridge structures located along the proposed Hoolehua to Kalaupapa Lookout alignment that were constructed prior to 1955.

c. ***Kalamaula to Ualapue***

(1) ***Existing Conditions***

Along the proposed Kalamaula to Ualapue route, there are a total of three bridge structures that are more than 50 years old. See Table 26. All three (3) bridges are under State of Hawaii jurisdiction.

Table 26

NOTABLE BRIDGE STRUCTURES ALONG THE KALAMAULA TO UALAPUE ALIGNMENT

Bridge Structure	*Year Built*	*Length/Width (ft)*	*Renovated*
Kamiloloa	1940	25/26	No
Makakupaia	1940	23/26	No
Kawela	1940	46/26	No

Source: State of Hawaii DOT and County of Maui DPWWM

(2) ***Impacts and Mitigation Measures***

To the extent practicable, the proposed fiber optic ductline will be attached to the supporting elements of bridge structures. Utility lines are intended to be hidden from plain view. No adverse impacts are associated with the ductline attachment to the visual or structural components of the bridges. Designs will be coordinated

with the DOT, DPWWM and Maui County CRC.

I. CULTURAL IMPACT CONSIDERATIONS

The proposed action on each of the islands is limited to work within the roadway right-of-way. As such, there are no surface cultural features which will be impacted by the fiber optic cable installation. Moreover, the proposed action will not affect gathering practices nor limit access to gathering areas.

The key cultural resource component which would therefore need to be addressed relative to the proposed action is that relating to encounters with subsurface material, including burials. With regard to Native Hawaiian religious concepts, MacKenzie notes that "to Hawaiians, religion was a way of life". It is in this context of spiritual commitment that Native Hawaiian burial practices have been defined. Native Hawaiian beliefs reflect that human bones or *iwi* must be guarded, respected and treasured (Pukui). It is with this respect that burial sites were carefully selected as places of safekeeping (MacKenzie).

Archaeological assessments conducted for the project identifies areas having high potential for encountering subsurface resources. It is these areas which require careful consideration in terms of mitigation to ensure that conflicts with burial sites are avoided. The formulation of an acceptable mitigation plan is to be undertaken through a separate Section 106 consultation process pursuant to the National Historic Preservation Act. Under this process, a Memorandum of Agreement (MOA) will be entered into by the Rural Utilities Service. The MOA would provide for the preparation of an archaeological monitoring plan in the event burials are encountered.

Consulting parties to the Section 106 process include the Maui County Cultural Resources Commission (CRC), Maui/Lanai Islands Burial Council, and the Molokai Island Burial Council. At its meeting of May 31, 2001, the Maui/Lanai Islands Burial Council voted to designate the Chair and Vice-Chair to work with SIC and its consulting team to ensure the coordinated formulation of the monitoring plan and MOA.

It is through this cooperative effort that appropriate measures can be identified to mitigate impacts to burials.

J. SCENIC AND OPEN SPACE RESOURCES

1. Island of Lanai

a. Lanai City Junction to Manele Boat Harbor

(1) Existing Conditions

Scenic vistas along this segment of the project are defined by mountainous lands sloping downward from the island's summit at Lanaihale (3,370 feet amsl), as well as by the coastline, Manele Bay, Hulopoe Bay, and the Pacific Ocean. Hulopoe Beach, the Manele Bay Hotel, and the Challenge at Manele, a championship golf course, represent scenic features in the vicinity of the Manele Boat Harbor. Open space along this segment is characterized by the vast expanse of former agricultural lands in the Palawai Basin, as well as by undeveloped lands descending toward the ocean from the Basin.

(2) ***Potential Impacts and Mitigation Measures***

The proposed fiber optic ductline will not impact scenic and open space resources. The proposed ductline will not be visible as it will be installed underground within the roadway right-of-way.

b. ***Lanai City Junction to Kaumalapau***

(1) ***Existing Conditions***

Scenic resources along this segment of the project are characterized by the shoreline and the Pacific Ocean, as well as by the mountainous lands extending from Lanaihale. Open space along this segment is exemplified by the former agricultural lands of the Palawai Basin, as well as by the vacant lands that extend from the Basin to the ocean.

(2) ***Potential Impacts and Mitigation Measures***

Scenic and open space resources will be unaffected by the proposed fiber optic ductline. The proposed ductline will be placed underground within the roadway right-of-way.

c. ***Lanai City Junction to Lanai City***

(1) ***Existing Conditions***

The scenery along this segment of the project is exemplified by the mountainous lands tapering downward from Lanaihale, while open space is reflected by the former pineapple lands surrounding

Lanai City.

(2) Potential Impacts and Mitigation Measures

No negative impacts to scenic and open space resources are anticipated from the proposed fiber optic ductline. Proposed for subsurface installation, the ductline will be installed within the roadway right-of-way and will not be visible.

2. Island of Maui

a. Waiehu to Puunene

(1) Existing Conditions

Scenic features along this segment of the project are provided by Haleakala (10,023 feet amsl) and the West Maui Mountains (5,788 feet amsl at Puu Kukui), as well as the coastline bordering Paukukalo and Kahului Bay. Open space is characterized by agricultural lands utilized for sugar cane and formerly by macadamia nut cultivation.

(2) Potential Impacts and Mitigation Measures

The proposed fiber optic ductline will not impact scenic and open space resources. The proposed ductline will not be visible as it will be installed underground within the roadway right-of-way.

b. ***Kahului to Kula***

(1) ***Existing Conditions***

In addition to the shoreline and the Pacific Ocean, scenic resources along this segment of the project are defined by Haleakala, the West Maui Mountains, the Central Maui isthmus, and the offshore islands of Molokini, Kahoolawe, and Lanai. Open space along this segment is typified by the Kanaha Pond Wildlife Sanctuary, at the outskirts of Kahului, and the vast expanse of sugar cane fields, farmlands, and undeveloped lands along the northern and western flanks of Haleakala.

(2) ***Potential Impacts and Mitigation Measures***

Scenic and open space resources will be unaffected by the proposed fiber optic ductline. The proposed ductline will be unseen as it will be placed underground within the roadway right-of-way.

c. ***Kula to Kahikinui***

(1) ***Existing Conditions***

In addition to the shoreline and the Pacific Ocean, scenic vistas provided by this segment of the project include Haleakala and the offshore islands of Molokini, Kahoolawe, Lanai, and Molokai, as well as Puu Olai, LaPerouse Bay, and the lava fields which span the lower elevations of Haleakala. Open space along this segment is defined by vacant, undeveloped lands as

well as by lands encompassed by the Tedeschi Vineyards and the Ulupalakua Ranch.

(2) ***Potential Impacts and Mitigation Measures***

Scenic and open space resources will be unaffected by the proposed fiber optic ductline. The proposed ductline will be unseen as it will be placed underground within the roadway right-of-way.

d. ***Kihei to LaPerouse***

(1) ***Existing Conditions***

In addition to Haleakala and the West Maui Mountains, scenery along this segment of the project is provided by the Pacific Ocean and the offshore islands of Molokini and Kahoolawe, as well as Puu Olai and the numerous white sand beaches scattered along the Kihei, Wailea, and Makena coastlines. The open space character near the project's northern terminus (at Puunene) is characterized by lands planted with sugar cane. Within the predominantly developed Kihei area, open space along this part of the alignment is reflected by scattered undeveloped parcels of land, while within the Wailea and Makena Resorts, the open space character of this portion of the alignment is primarily defined by the resort's golf courses and tracts of vacant land. From Puu Olai to its southern terminus, a lava flow and large expanses of undeveloped land define the open space along this part of the alignment.

(2) ***Potential Impacts and Mitigation Measures***

The proposed fiber optic ductline will not affect scenic and open space resources.

e. ***Kihei to Maalaea***

(1) ***Existing Conditions***

Scenery along this segment of the project is provided by Haleakala, the West Maui Mountains, the Pacific Ocean, and the white sand beach along Maalaea Bay, as well as by the offshore islands of Molokini and Kahoolawe. Open space along this segment is defined by lands planted with sugar cane and the Kealia National Wildlife Refuge situated along Maalaea Bay, as well as by the vacant lands located along the coastline and at the base of the West Maui Mountains.

(2) ***Potential Impacts and Mitigation Measures***

No negative impacts to scenic and open space resources are anticipated from the proposed fiber optic ductline. Proposed for subsurface installation, the ductline will be installed within the roadway right-of-way and will not be visible.

f. ***Maalaea to Honokowai***

(1) ***Existing Conditions***

Scenic features along this segment of the project include the West Maui Mountains, the Pacific Ocean, numerous white sand beaches, Olowalu and

Ukumehame Valleys, and the offshore islands of Molokini, Kahoolawe, Lanai, and Molokai, and the historic, former whaling town of Lahaina. In addition to vacant lands formerly cultivated with sugar cane, open space along this segment is characterized by lands which are planted with corn, coffee, alfalfa, and pineapple, as well as by the highlands in the West Maui Mountains which comprise the West Maui Conservation District.

(2) Potential Impacts and Mitigation Measures

The proposed fiber optic ductline will not impact scenic and open space resources. The proposed ductline will not be visible as it will be installed underground within the roadway right-of-way.

3. Island of Molokai

a. Kalamaula to Hoolehua

(1) Existing Conditions

In addition to the coastline and the Pacific Ocean, scenic vistas along this segment of the project include the mountainous lands tapering downward from the island's summit at Kamakou (4,970 feet amsl). Open space along this segment is characterized by vacant, undeveloped lands, as well as by agricultural lands.

(2) Potential Impacts and Mitigation Measures

No negative impacts to scenic and open space

resources are anticipated from the proposed subsurface fiber optic ductline.

b. ***<u>Hoolehua to Kalaupapa Lookout</u>***

(1) ***<u>Existing Conditions</u>***

Scenic resources along this segment of the project are provided by Palaau State Park; the Pacific Ocean; the Kalaupapa Peninsula, a former Hansen's disease colony; and the steep cliffs which overlook the Peninsula that rise to about 1,600 feet amsl. Open space along this segment is represented by agricultural and undeveloped lands.

(2) ***<u>Potential Impacts and Mitigation Measures</u>***

The proposed fiber optic ductline will not impact scenic and open space resources. The proposed ductline will not be visible as it will be installed underground within the roadway right-of-way.

c. ***<u>Kalamaula to Ualapue</u>***

(1) ***<u>Existing Conditions</u>***

Scenery along this segment of the project is defined by the shoreline, the Pacific Ocean, and the mountainous lands tapering downward from Kamakou, as well as by numerous ancient Hawaiian fishponds. Open space along this segment is characterized by vacant, undeveloped lands.

(2) ***Potential Impacts and Mitigation Measures***

Scenic and open space resources will be unaffected by the proposed fiber optic ductline.

K. *PUBLIC SERVICES*

1. *Island of Lanai*

a. *Existing Conditions*

Police and security services for island residents are provided by the County of Maui Police Department. The Lanai Police Station is situated in Lanai City.

Fire prevention, protection and suppression services for the island of Lanai are provided by the Maui County Department of Fire Control. The Lanai Fire Station is located in Lanai City, near the intersection of Kaumalapau Highway and Fraser Avenue.

The Lanai Community Hospital is the only major medical facility on the island. The 14-bed facility provides acute and long-term medical care, as well as 24-hour emergency medical service.

Also in Lanai city is the Lanai Health Center which provides outpatient medical care for the island's residents.

The Lanai region is served by the State Department of Education's public school system. Located in Lanai City, Lanai High and Elementary School provides educational services for

children from kindergarten through the twelfth grade.

Public parks and recreational facilities are administered and maintained by the Maui County Department of Parks and Recreation (DPR). DPR parks and facilities in Lanai City include: the Lanai Community Center, the Lanai Gym and Tennis Courts, and the Lanai Little League Field.

There are also a number of privately owned and maintained recreational facilities that are available for public use. Situated in Lanai City, Dole Park is a privately owned park utilized by the public. Additional privately owned parks utilized by the public include Olopua Woods Park, Waialua Park, and Hulopoe Beach Park. Olopua Woods Park and Waialua Park are located in Lanai City, while Hulopoe Beach Park is situated near Manele Small Boat Harbor in the Manele Project District.

The Lanai Recreation Center is a privately owned and maintained recreational complex which is utilized by the public. The Center encompasses a heated swimming pool, basketball court, exercise track, fitness course, softball fields, recreational building, and playground.

Other privately operated recreational facilities on Lanai include two (2) 18-hole championship golf courses and a 9-hole golf course. The Experience at Koele and the Challenge at Manele adjoin the Lodge at Koele and the Manele Bay Hotel, respectively. In addition to guests, these privately operated

facilities are also available for use by the public. The 9-hole Cavendish Golf Course is a privately operated facility in Lanai City which provides recreational opportunities for Lanai residents at no cost.

Single family solid waste disposal on Lanai is provided by the Maui County Department of Public Works and Waste Management (DPWWM) on a weekly basis, while commercial disposal service is provided by a private company. Opened in 1974, approximately 17 acres of the Lanai landfill's 35.67 acre site is currently utilized as a landfill.

b. Impacts and Mitigation Measures

The proposed project is not anticipated to affect the service area limits or requirements for emergency services, such as police, fire and medical services. Although one (1) lane of traffic may be closed during the period of construction, vehicular and emergency traffic will be able to utilize remaining laneage. Furthermore, the project will not affect educational and recreational parameters. Any solid waste generated by the project will be disposed of in accordance with applicable County requirements. In the long term, the proposed fiber optic ductline should have no negative effect on public services since it is located underground within public rights-of-way.

2. *Island of Maui*

a. Existing Conditions

The County of Maui's Police Department is headquartered in

the Wailuku Station. There are three (3) patrol divisions on the island of Maui. These include the Wailuku, Lahaina and Hana divisions. The Wailuku division covers Central Maui, Paia-Haiku, Kihei-Makena and Upcountry Maui.

Fire prevention, suppression and protection services for the Wailuku-Kahului region is provided by the County Department of Fire Control's Wailuku Station, located in Wailuku Town. In addition, the Kahului Station, located on Dairy Road, also services the region. The Kihei Fire Station, located in Central Kihei, services the Kihei-Makena region. Upcountry Maui has the Makawao Fire Station and the Kula Fire Station to provide for its fire protection needs. The County also has a Paia Fire Station. In Lahaina, there is the Lahaina Fire Station located in the Lahaina Civic Center, and a station in Napili to serve its needs.

Maui Memorial Medical Center is the only major medical facility on the island. Acute, general and emergency care services are provided by the approximately 200-bed facility. In addition, numerous privately operated medical/dental clinics are located in the Wailuku-Kahului area to serve the region's residents. Upcountry Maui, Kihei and West Maui also have a number of medical and dental clinics to serve residents in those areas.

The Wailuku-Kahului region is served by the State Department of Education's public school system. Department of Education facilities in the Kahului area include Lihikai and Kahului

Elementary Schools (Grades K-5), Maui Waena Intermediate School (Grades 6-8), and Maui High School (Grades 9-12). Existing facilities in the Wailuku-Waiehu-Waihee area include Wailuku and Waihee Elementary Schools (Grades K-5), Iao Intermediate School (Grade 6-8), and Baldwin High School (Grade 9-12).

In the Kihei area, the State Department of Education operates three schools. Kihei and Kamalii Elementary Schools cover grades K-5. Lokelani Intermediate School includes grades 6-8. Public high school students residing in Kihei-Makena attend Maui High School in Kahului.

In Upcountry Maui, the State Department of Education operates five (5) public schools. They are: Makawao, Pukalani and Kula Elementary Schools (Grades K-5), Kalama Intermediate School (Grades 6-8), and King Kekaulike High School (Grades 9-12).

The State Department of Education operates four (4) public schools in West Maui: King Kamehameha III and Princess Nahienaena Elementary Schools (Grades K-5), Lahaina Intermediate School (Grades 6-8), and Lahainaluna High School (Grades 9-12).

Single family solid waste collection service is provided by the County of Maui on a once-a-week basis. Residential solid waste collected by County crews are disposed at the County's

55-acre Central Maui Landfill, located 4.0 miles southeast of Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies.

b. Impacts and Mitigation Measures

The proposed project is not anticipated to affect the service area limits or requirements for emergency services, such as police, fire and medical services. Although one (1) lane of traffic may be closed during the period of construction, vehicular and emergency traffic will be able to utilize remaining laneage. Furthermore, the project will not affect educational and recreational parameters. Any solid waste generated by the project will be disposed of in accordance with applicable County requirements. In the long term, the proposed fiber optic ductline should have no adverse effects on public services since it is located underground within public rights-of-way.

3. Island of Molokai

a. Existing Conditions

Police services on Molokai are provided by the Maui County Police Department. The Molokai station, staffed by administrative, professional and support personnel, is located at the Mitchell Pauole Center in Kaunakakai.

Fire prevention, protection and suppression services are provided by the Maui County Department of Fire Control. The

Department maintains stations in Hoolehua and Kaunakakai, and a substation in Puko'o. If necessary, additional firefighting support can be provided by the Aircraft Rescue and Firefighting staff based at Molokai Airport.

Molokai General Hospital, which is owned by Queen's Health Systems on Oahu, is the only major medical facility on the island. The 30-bed facility is located in Kaunakakai.

Other medical facilities include the Molokai Family Health Center in Kaunakakai, a general practice medical clinic. In addition, the Women's Health Center located at the hospital, provides mid-wife and maternity services for local residents.

There are five (5) public schools on Molokai. Kaunakakai School, Kualapuu School, Kilohana School and Maunaloa School provide elementary school education from Grades K-6. Molokai High and Intermediate School, which provides educational services from grades 7-12, is located in Hoolehua.

The island of Molokai offers a wide range of recreational opportunities. These include facilities such as Kaunakakai Ball Park, Mitchell Pauole Center, One Alii Park, Kakahaia Park, Puu Hauole Park, Kilohana Community Center, and Kualapuu Park, and Palaau State Park.

Single-family solid waste collection service is provided by a private disposal company under contract with the County of

Maui. Solid waste from other businesses and other non-residential uses are handled by private disposal companies. Solid waste is collected and disposed of at the County Landfill at Naiwa. The landfill has been designed to cover an area of approximately 12 acres and have a maximum depth of 70 feet. It has a projected life of 30 years and a capacity of 584,000 cubic yards.

b. Impacts and Mitigation Measures

The proposed project is not anticipated to affect the service area limits or requirements for emergency services, such as police, fire and medical services. Although one (1) lane of traffic may be closed during the period of construction, vehicular and emergency traffic will be able to utilize remaining laneage. Furthermore, the project will not affect educational and recreational parameters. Any solid waste generated by the project will be disposed of in accordance with applicable County requirements. In the long term, the proposed fiber optic ductline should have no negative effect on public services since it is located underground within public rights-of-way.

L. SOCIO-ECONOMIC CONSIDERATIONS

1. Island of Lanai

a. Existing Conditions

By the early 1900's, Castle & Cooke had acquired more than 98 percent of the island of Lanai and established a 16,000-acre pineapple plantation surrounding its company town, Lanai City. It should be noted that the location of this community

was based on the need to make it accessible to the pineapple fields that used to occupy the island's central plateau. In the early 1990's, new corporate ownership, the declining profitability of pineapple, and the lure of tourism, brought major changes to Lanai. With the termination of pineapple cultivation on the island, the visitor industry has emerged as the major source of new jobs (Atlas of Hawaii-Third Edition, 1998).

With its shift to a visitor industry-based economy, the island of Lanai has emerged as one of the foremost luxury resort destinations in the world. This accomplishment is evidenced by the success of the Manele Bay Hotel, which is located along the south coast of the island, and the Lodge at Koele, which is situated on the outskirts of Lanai City. In addition to these world-class resorts, local businesses and services in Lanai City help support the island's economy.

Largely populated by former immigrant laborers and their descendants, almost all of the island's residents live in Lanai City, which serves as the island's population center, as well as its civic, social, and commercial core. In addition to Lanai City and the Lodge at Koele, which are located in the central part of the island, pockets of development occur along the east coast where there are a few scattered homes, on the south coast where the Manele Small Boat Harbor and the Manele Bay Hotel are situated, and in the southwest part of the island where the Lanai Airport and the Kaumalapau Harbor are

located.

The population on the island of Lanai increased from 2,119 in 1980 to 2,426 in 1990, an increase of 14.5 percent. From 1990 to the year 2000, the population of Lanai has been projected to increase by 112 percent to an estimated 5,144. A projection for the year 2010 reflects virtually no change from the current year's population estimate (Maui County Data Book, 2000).

Just as the population has increased, so have the number of jobs on Lanai. Currently, there are an estimated 2,764 jobs on the island, an increase of 115 percent from the 1,287 jobs in 1990. The number of jobs are anticipated to increase slightly to 2,801 in the year 2010 (Maui County Data Book, 2000). As of September 2000, the unemployment rate for the island of Lanai was 3.9 percent, while the rate for Maui County was 4.4 percent (State Department of Labor and Industrial Relations, November 2000).

b. Impacts and Mitigation Measures

Construction activities for the proposed ductline will provide a temporary increase in construction jobs which will further support the local economy. The proposed fiber optic ductline will improve communications for the DHHL homesteads. It will also lend support to the local economy by increasing tax revenues and employing local contractors and businesses. The project will not alter the character of the communities

along the route, nor will it change or impact resident or visitor populations.

2. Island of Maui

a. Central Maui

(1) Existing Conditions

The island of Maui is comprised of three (3) geographic regions: Central Maui, East Maui, and West Maui. Central Maui was formed by the isthmus connecting Haleakala and the West Maui Mountains and encompasses the segments of the project that extend from Waiehu to Puunene and Kihei to Maalaea, as well as a portion of the segment from Kahului to Kula.

The population of Central Maui is concentrated in the contiguous towns of Wailuku and Kahului. Wailuku serves as the seat for County government, while Kahului functions as the center for commerce, industry, recreation, and transportation. The fertile lands of the Central Maui plain support vast tracts of land that are planted in sugar cane. Kahului Harbor, the island's only deep-water port, handles local inter-island, U.S. domestic, and foreign international cargo vessels and passenger ships. Kahului Airport, the second busiest facility in the State, accommodates local and domestic cargo and passenger aircraft. In addition to the urban centers of Wailuku and Kahului, the Central Maui region includes the communities of Waiehu and Waihee to the

north, as well as Waikapu, Puunene, Maalaea and Kihei-Makena to the south.

The population in Central Maui has been projected to increase by 26 percent from 48,181 in 1990 to an estimated 60,544 for the year 2000. From 2000 to the year 2010, the population of the region is projected to grow by 15 percent to an estimated 69,568 (Community Resources, Inc., January 1994).

Just as the population has increased, so have the number of jobs in Central Maui. Currently, there are an estimated 34,188 jobs in the region. The number of jobs are anticipated to increase by 14 percent to 39,051 in the year 2010 (Community Resources, Inc., January 1994). As of September 2000, the unemployment rate for the island of Maui was 3.6 percent, while the rate for Maui County was 4.4 percent (State Department of Labor and Industrial Relations, November 2000).

(2) ***Potential Impacts and Mitigation Measures***

Socio-economic conditions will be enhanced for DHHL homesteaders as new telecommunications opportunities are provided by the proposed action. There are no adverse impacts to the socio-economic environment anticipated as a result of the project. In the long-term, the proposed action will support personal and business productivity through enhanced

communications technology.

b. ***East Maui***

(1) ***Existing Conditions***

East Maui embraces the segment of the project that stretches from Kula to Kahikinui and a portion of the segment from Kahului to Kula. East Maui, in the vicinity of the proposed project, is defined by the Makawao-Pukalani-Kula sub-region, which is better known as Upcountry. The population of the Upcountry area is concentrated in the communities of Makawao and Pukalani. Situated on the northwest flank of Haleakala, these areas are characterized by a mixture of rural, suburban, and small-scale commercial development. The Kula area, which also includes Ulupalakua, traverses the western flank of Haleakala and is best described as a mixture of rural- residential and diversified agricultural development. Ranchlands occupy the marginal upland areas, while farmlands occupy the more productive lands. In addition to quality produce grown for the local Hawaiian market, the Kula area is renown for its exotic protea and sweet "Maui" onions, which are exported to mainland and international markets. Beyond Ulupalakua to Kahikinui, the landscape is characterized by a vast expanse of vacant, undeveloped lands that extend from the highlands to the sea.

The population of the Upcountry area has been estimated to be 21,760 for the year 2000. From 2000 to the year 2010, the population of Upcountry is anticipated to grow by 9.5 percent to an estimated 23,830 (Community Resources, Inc., January 1994).

Currently, there are an estimated 2,783 jobs Upcountry. The number of jobs are expected to grow by 16 percent to 3,228 in the year 2010 (Maui County Data Book, 2000).

(2) Potential Impacts and Mitigation Measures

During the construction phase of project development, benefits will accrue to the local economy with construction expenditures. In the long term, the installation of the proposed fiber optic ductline will provide enhanced telecommunications capabilities for the DHHL and its homesteaders. These improvements are anticipated to provide support to commerce and improve overall productivity for residents and businesses.

c. West Maui

(1) Existing Conditions

West Maui includes a majority portion of the project route that reaches from Maalaea to Honokowai. The town of Lahaina is the population and commercial center of the region. In addition to Lahaina and

Kaanapali, a band of urban development extends along the shoreline between Honokowai and Kapalua. In addition, a small pocket of rural-residential development is located at Olowalu.

The West Maui region has seen significant growth in almost all aspects of development, especially in the decades from 1970 to 1990. During this period, new construction associated with the construction of hotels and condominiums spurred investment and created employment opportunities. Following this period, however, growth in the region moderated as overall economic indicators in the State of Hawaii reflected stagnant to poor conditions.

Existing development in West Maui mirrors the region's visitor-industry ties. Hotels, condominiums, and high-end homes occupy the coastline in Lahaina, Kaanapali, Honokowai, Mahinahina, Kahana, Napili, and Kapalua. The Kaanapali and Kapalua Resorts both provide first-class accommodations and championship golf courses, as well as white sand beaches, tennis facilities, and quality shops and restaurants.

Agriculture is another prime component of the region's economy. Until the closure of its sugar cane growing operations in 1999, Pioneer Mill planted most of its 6,700 acres of fee-simple and leased lands with sugar

cane. Pioneer Mill and its sister company, Kaanapali Estate Coffee, currently cultivate their fee-simple lands with coffee, sweet corn, seed corn, and alfalfa. Pineapple still remains important to the region's agricultural base, with Maui Land & Pineapple's fields occupying the slopes at the foot of the West Maui Mountains north of Lahaina.

The population of West Maui has been estimated at about 40,000 for the year 2000. From 2000 to the year 2010, the population of the region is projected to grow by 14 percent to an estimated 46,026 (Community Resources, Inc., January 1994).

Given the local economy's dependence on tourism, the number of jobs in the West Maui region reflected a loss as a result of the economic slowdown during the 1990's. Currently, there are an estimated 12,000 jobs in the region (Community Resources, Inc., January 1994).

(2) Potential Impacts and Mitigation Measures

Benefits to the local economy are anticipated during the construction phase of project development. These benefits will occur in the form of direct wages and salaries, as well as demand for services and products from local vendors. In the long term, the installation of the proposed fiber optic ductline will provide enhanced telecommunications capabilities for the DHHL and its

homesteaders. These improvements are anticipated to support local commerce and improve overall productivity for residents and businesses.

3. *Island of Molokai*

a. *Existing Conditions*

Like Lanai, the socio-economic fabric of Molokai is largely derived from its plantation heritage. Pineapple fields formerly occupied large tracts of land on the central plain around Kualapuu and on the rolling hills and plateaus surrounding Maunaloa. However, high labor and shipping costs, as well as stiff competition from foreign growers overseas, resulted in the end of pineapple cultivation on the island when Dole Foods closed its Maunaloa plantation in 1975, followed by the termination of Del Monte's Kualapuu operations in 1983.

Kaunakakai, the civic, commercial, and population center of the island, is situated along Molokai's south central coastline, while the former plantation towns of Kualapuu and Maunaloa are located in the central and western sections of the island, respectively. Situated to the west of Kualapuu is the Hawaiian homestead of Hoolehua, while to the north is the rural community of Kalae. Along the south shore of the island, to the east of Kaunakakai, are scattered pockets of rural residential development.

The population on the island of Molokai was 6,717 in 1990. From 1990 to the year 2000, the population of Molokai has

been estimated to increase by 5 percent to a projected 7,068 (Maui County Data Book, 2000).

Just as the population has increased, so have the number of jobs on Molokai. Currently, there are an estimated 2,322 jobs on the island. As of September 2000, the unemployment rate for the island of Molokai was 20.8 percent, while the rate for the County of Maui was 4.4 percent (State Department of Labor and Industrial Relations, November 2000).

As evidenced by the island's high unemployment rate, and despite venturing into resort and eco-tourism development, as well as diversified agricultural crops (coffee, snap beans, sweet pepper, watermelon, sweet potatoes) and activities (ranching, plant breeding, commercial fishing), improving the local economy remains a high priority for residents.

b. Impacts and Mitigation Measures

During the construction phase of project implementation, temporary benefits to the local economy are anticipated as construction expenditures and the need for support services become reality. From a long-term perspective, the provision of improved telecommunications capabilities is anticipated to facilitate improvements in personal and business productivity.

M. INFRASTRUCTURE

1. Island of Lanai

a. Lanai City Junction to Manele Boat Harbor

(1) Existing Conditions

Manele Road is a two-lane, two-way State roadway which provides access to Manele Boat Harbor. Portions of the roadway leading to the boat harbor have narrow shoulders, which may require the widening of existing shoulder areas.

Wastewater collection and treatment facilities for the Manele Resort are provided by a private system. The Manele Wastewater Treatment Plant is located to the west of Manele Road at an elevation of approximately 400 feet. The current capacity of the plant is 140,000 gallons per day. Domestic water service for the island of Lanai, including the Manele Resort area is provided by the Lanai Water Company, a privately owned utility regulated by the Public Utilities Commission. Drainage culverts are along this segment of the route are provided to convey to downstream sections of natural drainage ways. Overhead electrical and telephone lines are found along portions of Manele Road.

(2) Impacts and Mitigation Measures

Temporary traffic delays may be experienced during ductline installation to accommodate movement of equipment, as well as trenching and backfilling

activities. Appropriate traffic control measures will be implemented to ensure the safe and smooth flow of traffic during these periods.

While there are no water or sewer lines within the Manele Road right-of-way, coordination with the Lanai Water Company and Department of Land and Natural Resources will be undertaken to ensure that potential utility conflicts are addressed during the design phase of project development.

There are no long-term adverse impacts to infrastructure systems created by the proposed action.

b. Lanai City Junction to Kaumalapau

(1) Existing Conditions

Kaumalapau Highway is a two lane, two-way State highway extending from Lanai City to Kaumalapau Harbor. Paved shoulders are provided along both sides of the highway.

There are no water distribution and wastewater collection lines along this segment of the route. Wastewater is handled via cesspools or septic tanks. With the exception of culvert crossings, there are no major drainage improvements found along this section of the route. Roadway runoff sheetflows to the adjacent agricultural and undeveloped lands. Overhead

electrical and telephone lines are placed within the Kaumalapau Highway right-of-way within this segment of the route.

(2) ***Impacts and Mitigation Measures***

Appropriate traffic controls will be implemented to ensure that installation activities do not create hazardous conditions for motorists along this segment of highway. There are no long term adverse impacts to infrastructure systems associated with the proposed action.

c. ***Lanai City Junction to Lanai City***

(1) ***Existing Conditions***

The proposed ductline for this routing segment follows Fraser Avenue and Fifth Street, both two-lane, two-way County roadways.

Domestic water service for Lanai City is provided by the Lanai Water Company. Domestic water and sewer lines are located within the County rights-of-way. Wastewater collection and treatment services for Lanai City is provided by the County of Maui, Department of Public Works and Waste Management. The Lanai Wastewater Reclamation Facility, with a treatment capacity of approximately 0.5 million gallons per day is located at the southwest extent of Lanai City. Overhead electrical and telephone lines are located

within the right-of-way.

(2) ***Impacts and Mitigation Measures***

As with other project segments, appropriate traffic control measures will need to be implemented to ensure safe traffic operating conditions. Coordination with the Lanai Water Company, and the Department of Public Works and Waste Management will be undertaken during the design phase of work to ensure that potential utility conflicts are fully addressed. As required, coordination will also be conducted with utility service providers.

There are no long-term adverse impacts associated with the proposed action.

2. *Island of Maui*

a. *Waiehu to Puunene*

(1) *Existing Conditions*

Roadways which comprise this route segment of the fiber optic ductline include both State and County Facilities. State facilities include Waiehu Beach Road, Kaahumanu Avenue, Puunene Avenue and Mokulele Highway. These roadways provide adequate space within existing rights-of-way for ductline installation. Along portions of the route, the line may be placed within the unpaved shoulder area. For example, local streets such as Nakoa Drive and Waiale Drive are

within older neighborhoods, and do not have roadway sections built to current standards (i.e., sidewalks, curbs and gutters).

This segment of the fiber optic ductline is served by both County water and wastewater systems. Underground distribution and collection lines are found along several sections of the route including Waiehu Beach Road, Eha Street, Imi Kala Street, Waiale Drive, Nakoa Drive, Wakea Avenue and Puunene Avenue. Water transmission lines are also found within the Mokulele Highway right-of-way, in the vicinity of the Old Puunene Airport. In addition, underground drainlines are also found along specific section of roadway, such as Eha Street, Imi Kala Loop and Waiale Drive.

Maui Electric Company, Ltd. overhead lines as well as telephone and cable lines are also located within the rights of way for this routing segment.

(2) ***Impacts and Mitigation Measures***

There are no adverse impacts to infrastructure systems anticipated in connection with the proposed action. It is noted that the State of Hawaii is planning the repaving of Kaahumanu Avenue, during the current fiscal year. The installation of the ductline along Kaahumanu Avenue will be coordinated with the State DOT to ensure proper coordination of construction timetables.

In addition, the DOT proposes the widening of Mokulele Highway between Puunene and Piilani Highway within the near future. Ductline installation will also be coordinated with the DOT along this route segment to ensure that scheduling of construction activities are appropriately handled.

Similar coordination will be undertaken with the County Department of Water Supply (DWS) and DPWWM, and utility and cable companies to address design requirements which may affect other infrastructure facilities.

b. Kahului to Kula

(1) Existing Conditions

This segment of the ductline route originates in Kahului, following Hana Highway to its intersection with Haleakala Highway. Along the project route, Hana Highway is a four (4) lane arterial. The route continues along Haleakala Highway and Pukalani Bypass to Kula Highway, to its terminus at Keokea. Haleakala Highway to the Pukalani Bypass consists of two (2) lanes in the makai direction and one (1) lane in the mauka direction. The Pukalani Bypass segment is a four (4) lane highway (with traffic signals at Makawao Avenue), converging to a two (2) lane roadway at its approach with the Haleakala Highway-Kula Highway signalized intersection. Kula Highway is a two-lane arterial. These

highways are State facilities with adequate rights-of-way for ductline installation.

County of Maui waterlines are found within the right-of-way along portions of Hana Highway, and intermittently along Kula Highway in the Kulamalu/Waiakoa and Waiohuli/Keokea areas. There are no County wastewater collection systems along the Upcountry portion of this routing segment. Overhead utility lines are found along this corridor. Major drainage structures include bridge crossings over drainage gulches. The applicant will coordinate with the State Department of Transportation during the design phase to ensure that an acceptable method of traversing the drainageways is determined.

(2) ***Impacts and Mitigation Measures***

The installation of the underground fiber optic ductline along this routing segment is not anticipated to have an adverse long-term impact upon infrastructure systems. However, design and construction activities will need to be coordinated with the State DOT and County DPWWM, to ensure that traffic safety is not compromised during construction activities. As appropriate, coordination will also be undertaken with other governmental and utility entities to ensure that temporary effects of construction are minimized.

c. *Kula to Kahikinui*

(1) *Existing Conditions*

Kula Highway, between Keokea and Ulupalakua, is generally characterized as a narrow, two-way, two-lane State facility. Beyond Ulupalakua to Kanaio and Kahikinui, Piilani Highway is a substandard two-way, two-lane road. Traffic along this route is considered light given the area's relatively sparse population. With the exception of a short segment of a 6-inch waterline at Ulupalakua Village, there are no major County water distribution or transmission facilities along this route. In addition, there are no County wastewater collection and transmission facilities along this route segment.

Similarly, there are no major drainage improvements serving the area. Roadway runoff sheet flows towards the shoulders and is directed to gullies and gulches which convey storm runoff in the makai direction.

Overhead utility lines are positioned within the right-of-way along portions of Kula Highway, while there are no overhead utility lines between Ulupalakua and Kahikinui.

(2) *Impacts and Mitigation Measures*

Although traffic along this segment is relatively light, traffic control measures will be implement to ensure the safe passage of vehicles during installation.

Appropriate coordination will be undertaken with the State DOT and the County DWS and DPWWM during both design and construction of the proposed ductline system to ensure that potential utility conflicts are identified and reconciled.

In the long-term, the proposed project will provide new telecommunications system capacities without adversely impacting other infrastructure components within the roadway right-of-way.

d. Kihei to LaPerouse Bay

(1) Existing Conditions

Mokulele Highway from the Old Puunene Airport to its intersection with Piilani Highway is a two-way, two-lane State arterial. As previously noted, Mokulele Highway is slated for widening improvements over the new few years. South Kihei Road is a two-way, two-lane collector. A segment of South Kihei Road, north of Lipoa Street provides a four lane typical section. Wailea Alanui, between Okolani Drive and Kaukahi Street is also a four-lane roadway. Makena Alanui and Makena Keoneoio Road are two-lane roadways. All roadway segments, with the exception of Makena Keoneoio Road are constructed to County Standards. Makena Keoneoio Road from Makena to LaPerouse Bay is a narrow sub-standard roadway.

County waterlines are located with Mokulele Highway, South Kihei Road, Wailea Alanui, Makena Alanui and Makena Keoneoio Road. There are also County sewerlines within South Kihei Road and portions of Wailea Alanui. There is no County wastewater collection and treatment system for the Makena Resort and areas beyond, to the south. However, the Makena Resort is currently undertaking infrastructure improvements which includes the installation of new sewerlines within Makena Alanui.

With regard to drainage improvements, portions of South Kihei Road include curb inlets, and drainlines which convey flows to drainageways which discharge to the ocean. Sections of South Kihei Road (e.g., in the vicinity of Ohukai Road), do not have major roadway drainage improvements although future improvement projects for these sections will provide appropriate County-standard drainage upgrades. Wailea Alanui is constructed with curbs and gutters and storm runoff is directed to master-planned drainageways within the resort. There are no curbs, gutter, and curb inlets along Makena Alanui. There are however, culvert crossings along Makena Alanui which conveys storm flows from mauka lands to the ocean

Overhead utility lines are found along South Kihei Road.

(2) ***Impacts and Mitigation Measures***

Appropriate traffic control measures will be used during ductline installation to provide for the safe flow of traffic with minimal delays. Plans review will be undertaken with the County DPWWM, DWS, and utility and cable television companies during the design phase of work to ensure that possible utility conflicts are properly are properly addressed.

The new ductline system will provide new telecommunications capabilities for DHHL lands. This action therefore represents an improvement to the region's infrastructure system.

e. ***Kihei to Maalaea***

(1) ***Existing Conditions***

North Kihei Road from Piilani Highway to Honoapiilani Highway is a two-lane, two-way State facility. Paved shoulders are provided on both sides of the roadway. There are no water lines or sewerlines in the right-of-way, except in the vicinity of the Sugar Beach Resort, Kealia Beach Plaza, and Kealia Resort which are served by both County water and sewer systems located within the North Kihei Road right-of-way. With the exception of a bridge crossing at the Kealia Wildlife Refuge, there are no major drainage facilities along this segment of roadway. Overhead electrical transmission lines placed on steel poles are found along North Kihei

Road from the Maui Electric Company's Maalaea Power Plant to Honoapiilani Highway.

(2) ***Impacts and Mitigation Measures***

North Kihei Road is a heavily utilized roadway and as such, appropriate traffic control measures will be implemented to ensure smooth and safe operating conditions during construction. Such measures may include the use of police or security personnel to direct and control traffic. In addition, appropriate traffic signage will be used to inform and direct motorists of construction activities. In the long-term, the proposed installation of the fiber optic ductline along this routing segment is not anticipated to have an adverse impact upon infrastructure systems.

f. ***Maalaea to Honokowai***

(1) ***Existing Conditions***

The Maalaea to Honokowai route follows Honoapiilani Highway along its entire length. This State facility is a two-lane arterial between Maalaea and Lahaina Town, where it widens to four (4) lanes at Lahainaluna Road. The four-lane section continues north and converges back to a two-lane section at Honokowai.

There are no County water or wastewater systems between Maalaea and Launiupoko. The Olowalu Village which lies between Maalaea and Lahaina Town

is served by a private domestic water system and cesspools and/or septic systems. The County water system in the West Maui region services the coastal areas from Launiupoko to Kaanapali and from Honokowai to Napili (County of Maui, Department of Water Supply, 1990). In this regard, County waterlines are found within the Honoapiilani Highway right-of-way through Lahaina Town and Kaanapali, to the Honoapiilani Highway/Lower Honoapiilani Road intersection. In addition to the County system, the Kaanapali Water Corporation serves the Kaanapali resort area.

The County's wastewater collection and transmission system and the Lahaina Wastewater Reclamation Facility accommodates the region's wastewater needs. The Lahaina Wastewater Reclamation Facility is located along Honoapiilani Highway, just north of the Kaanapali Resort and has a design capacity of 9.0 million gallons per day. Underground lines within the Honoapiilani Highway right-of-way through the Lahaina wastewater service area include force mains, gravity lines and an effluent reuse line (at Kaanapali).

Roadway drainage improvement, which include drain inlets and catch basins, along with underground drainlines are provided within Honoapiilani Highway through Lahaina Town. Major drainage crossings

include structures at Olowalu Stream, Launiupoko Stream, Kaaula Stream, Kahoma Stream and Hahakea Gulch, and Honokowai Stream. Minor culvert crossing are found at various locations along this route as well.

Overhead utility lines within the Honoapiilani Highway right-of-way begin at Ukumehame and continues north to Honokowai.

(2) Impacts and Mitigation Measures

As with other route segments, appropriate traffic controls will be used to maintain the safe progression of traffic through construction limits. Once installed, the fiber optic system is not anticipated to have an adverse impact upon infrastructure systems.

3. Island of Molokai

a. Kalamaula to Hoolehua

(1) Existing Conditions

This segment of the proposed fiber optic ductline follows the alignment of several roadways: Maunaloa Highway, Airport Loop Road, Mokulele Avenue, Nenehanaupo Avenue, Mo'omomi Avenue, and Farrington Avenue. Maunaloa Highway (460) and the Airport Loop Road (465) are under the control of the State DOT, while Mokulele Avenue, Kolea Avenue, Mo'omomi Avenue, and the portion of Farrington Avenue west of its intersection with Pu'upe'elua Avenue

are under the jurisdiction of the State DHHL. The DOT is charged with the maintenance of the roadways under its control, while the County of Maui DPWWM handles the maintenance of the roadways under DHHL jurisdiction (Department of Transportation, Department of Hawaiian Home Lands, and Department of Public Works and Waste Management, November 2000).

Along this segment of the project, Maunaloa Highway is a two-lane arterial highway with a posted speed limit of 45 miles per hour (mph). The typical roadway section along this segment of the project consists of paved travel lanes and shoulders which vary in width, as well as curbs and drainage swales along sections of the highway. The segments of the project along the Airport Loop Road, Mokulele Avenue, Mo'omomi Avenue, Nenehanaupo Avenue and Farrington Avenue also are paved. Kolea Avenue is a narrow unpaved dirt road with no posted speed limit. Concrete drainage swales adjoin the grassed planting strips which border the travel lanes along sections of the alignment on Farrington Avenue.

Domestic water service along this segment of the project is provided by the DHHL's Ho'olehua Water System. This system, which is registered as a public utility and includes waterlines located within the roadway rights-of-way, serves the Hawaiian Home

Lands in Kalamaula, Ho'olehua, and parts of Kalae (Department of Hawaiian Home Lands, November 2000).

There are no public or private wastewater systems that serve the developed properties along this segment of the project. Wastewater generated by land uses along this alignment is accommodated by cesspools or septic tanks (Department of Hawaiian Home Lands and Department of Public Works and Waste Management, November 2000).

Drainage improvements along this segment of the project include concrete swales within the roadway rights-of-way along sections of Maunaloa Highway and Farrington Avenue. Several drainageway crossings lie along the segment of the project between Kalamaula and the Airport Loop Road including a major bridge at Manawanui Gulch. Drain inlets positioned just upslope of the bridge convey surface runoff from the highway into the gulch.

Overhead power and telephone lines are located within the roadway rights-of-way along Maunaloa Highway, Mokulele Avenue, Mo'omomi Avenue, Farrington Avenue and a part of the Airport Loop Road (along the frontage of the Molokai Airport terminal). There are no power and telephone lines along Kolea Avenue.

(2) ***Impacts and Mitigation Measures***

A traffic control plan will be utilized to provide for the safe and orderly passage of vehicles through construction areas. Coordination with the appropriate regulatory agencies will be undertaken for the installation of the proposed ductline. The proposed action is not expected to have an adverse affect on existing infrastructure systems.

b. ***Hoolehua to Kalaupapa Lookout***

(1) ***Existing Conditions***

This segment of the proposed fiber optic ductline alignment includes Farrington Avenue and the portion of Kalae Highway that extends from the Kalae Highway/Farrington Avenue intersection to the Kalaupapa Lookout. Farrington Avenue, from its western terminus to its intersection with Pu'upe'elua Avenue, is under the jurisdiction of the DHHL and is maintained by the County of Maui. From this point, to its intersection with Kalae Highway, Farrington Avenue is controlled and maintained by the DOT. Kalae Highway is a two-lane arterial highway that also falls under the jurisdiction and maintenance of the DOT (Department of Transportation, Department of Hawaiian Home Lands, and Department of Public Works and Waste Management, November 2000).

Domestic waterlines situated in the roadway rights-of-

way along this segment of the project belong to the DHHL's Ho'olehua Water System, which serves part of Kalae, as well as the system operated by the County's DWS, which provides service to most of the Kalae area (Department of Hawaiian Home Lands and Department of Water Supply, November 2000).

With the exception of Kualapuu, which is collectively served by a wastewater collection system operated by the County of Maui DPWWM and a wastewater treatment system operated by Molokai Ranch, wastewater generated by land uses along this segment of the project is accommodated by cesspools or septic tanks. Wastewater transmission lines under the control of the DPWWM are located in the Farrington Avenue right-of-way (Department of Hawaiian Home Lands, Department of Public Works and Waste Management, November 2000).

Several drainageways lie along the Kalae Highway segment of the project. Drainage improvements include culvert crossings, as well as concrete swales within the roadway right-of-way along sections of Kalae Highway and Farrington Avenue.

Overhead power and telephone lines are located within the Farrington Avenue and Kalae Highway rights-of-way.

(2) ***Impacts and Mitigation Measures***

To provide for the safe and orderly passage of vehicles during construction, a traffic control plan will be prepared and implemented. In addition, applicable governmental agencies will be consulted to coordinate the installation of the proposed ductline. The proposed action is not expected to have an adverse affect on the existing infrastructure.

c. ***Kalamaula to Ualapue***

(1) ***Existing Conditions***

This segment of the proposed fiber optic ductline alignment includes Maunaloa Highway and Kamehameha V Highway. Maunaloa Highway transitions into Kamehameha V Highway at the intersection of Ala Malama Avenue in Kaunakakai. As with Maunaloa Highway, Kamehameha V is a two-lane arterial highway that is controlled and maintained by the DOT. (Department of Transportation and Department of Hawaiian Home Lands, November 2000).

Domestic waterlines located in the roadway right-of-way to the west of Kaunakakai belong to the DHHL's Ho'olehua Water System, while waterlines in the right-of-way between Kaunakakai to Kawela (except for Kawela Plantation) and Kamalo to Ualapue belong to the DWS. Private wells provide domestic water for the few developed properties between Kawela and Kamalo

(Department of Hawaiian Home Lands and Department of Water Supply, November 2000).

Wastewater collection and treatment service in Kaunakakai is provided by the DPWWM. The limits of the County wastewater transmission lines in the Kamehameha V Highway right-of-way extend from a wastewater pump station about 100 yards west of Ala Malama Avenue to a point just east of Oki Place. Wastewater generated by land uses along the remaining portion of the alignment is accommodated by cesspools or septic tanks (Department of Hawaiian Home Lands and Department of Public Works and Waste Management, November 2000).

Several drainageways lie along this segment of the project's alignment. Drainage improvements include culvert crossings at the drainageway locations. In addition, there are two (2) roadway fords located 10.8 miles and 13.2 miles east of Kaunakakai and a single ford situated 0.38 mile west of Kaunakakai that extends 0.10 mile to the west (Department of Transportation, November 2000).

Overhead power and telephone lines are located within the Maunaloa Highway and Kamehameha V Highway rights-of-way.

(2) ***Impacts and Mitigation Measures***

A traffic control plan will be utilized to provide for the safe and orderly passage of vehicles through construction areas. Consultation with the appropriate regulatory agencies will be undertaken for the design and implementation of the proposed project. The proposed action is not expected to have adverse impacts upon existing infrastructure systems.

Chapter III

Cumulative and Secondary Impacts

III. CUMULATIVE AND SECONDARY IMPACTS

A cumulative impact is defined as an impact to the environment which results from the incremental impact of an action when added to other past, present and reasonably foreseeable actions regardless of what agency or person undertakes such other actions. Secondary impacts, on the other hand, include potential for indirect impacts which may arise out of the proposed action. Such indirect impacts, for example, may include increases in population or indirect demands placed upon infrastructure systems. The proposed rural fiber optic cable system has been reviewed and assessed in terms of both cumulative and secondary effects.

With regard to the land-based cable systems being installed on Lanai, Maui and Molokai, potential cumulative impacts may be considered in terms of construction issues, such as temporary traffic delays, increases in fugitive dust and noise, or potential encounters with cultural material. Each parameter however, will be subject to applicable best management practices or monitoring protocols to ensure appropriate mitigation is implemented. In the long-term therefore, there are no adverse cumulative impacts anticipated for the proposed action.

The context for cumulative effects may also be established by recognizing that a statewide fiber optic system serving all DHHL lands is the ultimate goal of SIC. Thus, land-based fiber optic systems are being implemented on the islands of Oahu, Kauai, Hawaii, Lanai, Maui and Molokai. Each island system however, is viewed as a separate and distinct system capable of operating on a stand-alone basis.

Once the land-based system is in place and capability for intra-island service available, a broader scheme for networking can then be implemented via an undersea cable system. The undersea cable system will be defined via a separate planning and design process which will consider landing site alternatives based on

environmental, cultural, geographic and cost criteria.

From a long-term cumulative perspective then, impacts which are not applicable for assessment under this EA will need to be assessed prior to implementation of the undersea cable system. Impacts associated with future actions, however, are anticipated to be mitigated or minimized through appropriate construction methodologies, alternatives analyses and coordination with agencies, organizations and individuals. The need for impact assessment and mitigation notwithstanding, when taken in total, any future inter-island system integrated via undersea cable is viewed as beneficial in terms of provision of fiber capacity and linkage opportunities.

With regard to secondary impacts, the proposed fiber optic project will provide new construction revenue which will filter through the local economy. Indirect benefits to local businesses may arise accordingly. From a functional standpoint, the provision of fiber optic access to DHHL lands may lead to indirect benefits which may not be readily apparent. For example, such access would provide opportunity for improved research and educational opportunities, or treatment of illnesses via telemedical procedures. With "next generation" technologies still to be defined, the beneficial impacts associated with the proposed fiber-optic system appear significant.

The proposed fiber optic system will not directly affect population growth or settlement patterns. Such population characteristics are defined by primary infrastructure service parameters such as roadways, water systems and drainage systems. Once these systems are in place and DHHL lands deemed developable, the proposed fiber optic system will provide the needed supporting system to ensure that tenants are serviced by the most modern telecommunications technology.

While there are no significant secondary impact anticipated by the proposed action, consideration has been given to other planned projects which may be affected by or affect the proposed fiber optic system. Such interaction may be viewed as a secondary impact. For example, the proposed Kihei to LaPerouse segment on the island of Maui will follow Mokulele Highway. The State of Hawaii DOT is currently designing a four lane widening improvement for this highway. While presented as an example only, secondary or indirect impacts which may occur include additional construction traffic delays if proper coordination is not undertaken. Since traffic congestion relief along Mokulele Highway is the primary objective of DOT's widening project, any roadway related construction which delays or interrupts the timely implementation of the project would be considered to be less than desirable. It is in this context that SIC will continue to undertake full coordination with various State and County agencies. Other projects which should be considered in this light include improvements to South Kihei Road, proposed interim improvements to Piilani Highway, proposed improvements to Honoapiilani Highway, between North Kihei Road and Kuihelani Highway, and the proposed Haleakala Highway widening.

Chapter IV

Relationship to Land Use Plans, Policies and Controls

IV. RELATIONSHIP TO LAND USE PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission, establishes the four (4) major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agriculture" and "Conservation".The proposed fiber optic system placed within existing roadway rights-of-way is permitted within the Urban, Agricultural and Rural Districts. Any work related to the proposed project performed within the State Conservation District may be considered to be accessory to existing roadways. In this regard, the project may not require a Conservation District Use Permit. It is noted that SIC will coordinate with the DLNR during the design phase to ensure that applicable regulatory concerns have been met. For informational purposes, the State Land Use Districts affected by the proposed action are described for each of the islands.

1. Island of Lanai

State Land Use Districts affected by the proposed action on the Island of Lanai are summarized in Table 27. State Land Use Commission District Boundary Maps showing the routes relative to the various district boundaries are included in Appendix "B" of this document.

Table 27

STATE LAND USE DISTRICT SUMMARY *ISLAND OF LANAI*		
Segment	***Land Use District***	***Comments***
Lanai City Junction to Kaumalapau	Agricultural, Rural, Urban	Lands predominantly Agricultural; short segment of Rural lands near Kaumalapau; terminus point at Harbor within Urban District
Lanai City Junction to Manele Boat Harbor	Agricultural, Urban, Conservation	Lands predominantly Agricultural; segment through Manele Resort is Urban; terminus point at Manele Boat Harbor is Conservation
Lanai City Junction to Lanai City	Urban	Entire route within the Urban District

2. *Island of Maui*

Table 28 summarizes the State Land Use Districts encompassed by the respective ductline routes. Refer to Appendix "B" for State Land Use Commission District Boundary Maps.

Table 28

STATE LAND USE DISTRICT SUMMARY ISLAND OF MAUI		
Segment	***Land Use District***	***Comments***
Waiehu to Puunene	Urban, Agricultural	Agricultural lands traversed from Waiehu Kou to Waiehu Heights residential area; Urban lands traversed through developed Wailuku-Kahului area; Agricultural lands traversed to Puunene and along Mokulele Highway
Kahului to Kula	Urban, Agricultural, Rural	Urban lands traversed through Kahului industrial area; lands beyond, along Hana Highway, Haleakala Highway and Kula Highway are Agricultural; portions of Kula Highway, from Pukalani to Keokea bordered by Urban lands (Kulamalu) and Rural lands (Waiohuli, Keokea, Waiakoa)
Kihei to LaPerouse	Agricultural, Urban, Rural, Conservation	Mokulele Highway bordered by Agricultural lands; S. Kihei Road bordered by Urban lands; Wailea Alanui and Makena Alanui bordered by Urban and Agricultural lands; pockets of Rural lands border Keoneoio Road in Makena; roadway through Cape Kinau, to LaPerouse Bay within Conservation District
Kihei to Maalaea	Urban, Agricultural, Conservation	Lands along North Kihei Road in the vicinity of Mokulele Highway intersection are Urban; lands through Kealia National Wildlife Refuge are Conservation designated; lands beyond, to Honoapiilani Highway, are Agricultural
Maalaea to Honokowai	Urban, Agricultural, Conservation	Lands between Maalaea and Ukumehame within Conservation District; segment from Ukumehame to Lahaina Town include Agricultural lands mauka of highway and Conservation lands makai of highway; lands bordering highway through Lahaina Town and Kaanapali principally Urban; beyond Kaanapali to Honokowai mauka lands are Agricultural and makai lands are Urban
Kula to Kahikinui	Agricultural, Rural, Urban	Kula Highway from Keokea to Ulupalakua bordered by Agricultural lands; Piilani Highway through Kanaio and Lualailua to project terminus bordered by Agricultural lands

3. *Island of Molokai*

State Land Use Districts affected by the proposed action on the Island of Molokai are summarized in Table 29. Refer to Appendix B for State Land Use Commission District Boundary Maps.

Table 29

STATE LAND USE DISTRICT SUMMARY ISLAND OF MOLOKAI		
Segment	***Land Use District***	***Comments***
Kalamaula to Hoolehua	Rural, Agricultural	Route predominantly traverses Agricultural lands; Rural lands are designated at Kalamaula
Hoolehua to Kalaupapa Lookout	Agricultural, Urban	Route predominantly traverses Agricultural lands; Urban lands at Molokai High and Intermediate School, Kualapuu and Kalae
Kalamaula to Ualapue	Agricultural, Rural, Urban, Conservation	Kamehameha V Highway traverses Urban lands at Kaunakakai, Kamiloloa, Kawela and Ualapue; limited Rural areas designated near Kawela and in the vicinity of Kalaeloa Harbor; lands mauka of Kamehameha V Highway predominantly Agricultural, with makai lands designated Conservation. Portions of highway are within Conservation district

B. *CONSERVATION DISTRICT USE PERMIT*

As noted above, work performed within the State Conservation District is governed by Chapter 13-5, Hawaii Administrative Rules, relating to the Conservation District. Conservation areas affected by the proposed action are noted in Table 27, Table 28, and Table 29. As previously noted, the action may be considered an accessory use to existing roadways based on preliminary discussions with DLNR staff.

C. *MAUI COUNTY GENERAL PLAN*

The Maui County General Plan (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter, "The purpose of the General Plan is to recognize and state the major problems and opportunities concerning the needs and the development of the County and the social, economic and environmental effects of such development and set forth the desired sequence, patterns and characteristics of future development". The proposed action is in keeping with the following General Plan objective and policies.

Objective

To anticipate and provide public utilities which will meet community needs in a timely manner.

Policies

- Maintain all power and utility systems so as to meet public health and safety standards.
- Support programs, services and institutions which provide economic diversification.

D. *COMMUNITY PLANS*

Within the County of Maui, there are nine (9) community plan regions. From a General Plan implementation standpoint, each region is governed by a community plan which sets forth desired land use patterns, as well as goals, objectives, policies and implementing actions for a number of functional areas including infrastructure-related parameters. The nine (9) regions are: Molokai, Lanai, West Maui, Wailuku, Kahului, Kihei-Makena, Makawao-Pukalani-Kula, Paia-Haiku, Hana and Kahoolawe.

From a community plan land use standpoint, the proposed installation of fiber optic ductlines within State and County rights-of-ways are permitted. More importantly, support for the project can be found in the goal, objectives, policies and implementing actions of the applicable community plans. Project consistency with the plans are addressed below.

1. ***Goal, Objectives and Policies of the Lanai Community Plan (1998 Update)***

Government

Goal

Ensure the effective, efficient, and reliable provision of government services through recognition of the unique access, communication and program needs of Lana`i residents.

Objective/Policy

Encourage and support the use of telecommunications technology to link Lana`i residents with State and County government functions and activities through an interactive communication mode.

2. ***Goal, Objectives and Policies of the Wailuku-Kahului Community Plan***

The Wailuku-Kahului Community Plan currently in effect was adopted in 1987. While this version of the plan has no specific reference to telecommunications systems, there are recommendations which encourage and promote the provision of utility support systems. The Wailuku-Kahului Community Plan is currently being updated and is being processed through the Maui County Council. The proposed updated plan also recognizes the need to develop adequate

infrastructure systems. Although the updated version is not yet adopted, policy support for the proposed action is found in the proposed text of the plan. For example, the proposed plan states "support public and private partnerships to fund the planning and construction of infrastructure".

3. ***Goal, Objectives and Policies of the Kihei-Makena Community Plan (1998 Update)***

Physical and Social Infrastructure

Goal

Provision of facility systems, public services and capital improvement projects in an efficient, reliable, cost effective, and environmentally sensitive manner which accommodates the needs of the Kihei-Makena community, and fully support present and planned land uses, especially in the case of project district implementation.

Allow no development for which infrastructure may not be available concurrent with the development's impacts.

Objectives/Policies

Support the development of communication infrastructure and promote telecommuting to minimize travel.

Encourage the provision of public utilities which will meet community needs in a timely manner.

4. ***Goal, Objectives and Policies of the Makawao-Pukalani-Kula Community Plan (1998 Update)***

Department of Hawaiian Home Lands

Goal

The immediate implementation of programs and settlement of Native Hawaiians on lands of the Department of Hawaiian Home Lands, that diversifies and enriches the Upcountry community.

Objective/Policy

Encourage and support planning and implementation of Department of Hawaiian Home Lands projects that benefit native Hawaiians, that include a variety of land uses in order to form a complete community, and that are in harmony with the goals and objectives of the Makawao-Pukalani-Kula Community Plan.

5. ***Goal, Objectives and Policies of the West Maui Community Plan (1998 Update)***

Infrastructure

Goal

Timely and environmentally sound planning, development, and maintenance of infrastructure systems which serve to protect and preserve the safety and health of the region's residents, commuters, and visitors through provision of clean water, effective waste disposal and efficient transportation systems which meets the needs of the community.

6. ***Goals, Objectives and Policies of the Hana Community Plan (1994 Update)***

Physical Infrastructure

Goal

Timely and environmentally sensitive development and maintenance of infrastructure systems which protect and preserve the safety and health of the Hana region's residents and visitors, including the provision of domestic water, utility and waste disposal services, and effective transportation systems which meet the needs of residents and visitors while protecting the region's rural character.

Objective/Policy

Improve energy and communication systems to ensure reliable service to the residents and businesses of the Hana region.

It should be noted that the Maui County Council Resolution 00-124 entitled, "Supporting the State Department of Hawaiian Home Lands Telecommunications Infrastructure and Service Project" supports the SIC project by, "encouraging the County of Maui to provide expedient and consistent access to public rights of way that is needed to connect Hawaiian Home Lands parcels to the project infrastructure..." (See Appendix C.)

E. COUNTY ZONING

Permitted uses and performance standards are set forth by Title 19 of the Maui County Code relating to zoning. Utility systems such as the proposed fiber optic ductline system are considered an incidental use which is permitted in each of the County zoning districts. Inasmuch as the proposed ductline route falls within either State or County rights-of-way, there are no

specific zoning standards or requirements which would require discretionary review from Lanai, Maui, or Molokai Planning Commissions or the Maui County Council.

F. *COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES*

Portions of the proposed fiber optic ductline system fall within the County of Maui's Special Management Area (SMA). Route segments which fall within the SMA are summarized in Table 30.

Table 30

SUMMARY OF ROUTE SEGMENTS WITHIN THE SMA		
Island	***Segment***	***Comments***
Lanai	Lanai City Junction to Manele Boat Harbor	Terminus point at Manele Boat Harbor
	Lanai City Junction to Kaumalapau Harbor	Terminus point at Kaumalapau Harbor
Maui	Kula to Kahikinui	Piilani Highway from Kanaio to Kahikinui
	Kihei to LaPerouse Bay	Portion of Mokulele Highway in the vicinity of Piilani Highway intersection; S. Kihei Road, Wailea Alanui, Makena Alanui, Makena Keoneoio Road (i.e., entire segment between Piilani Highway and LaPerouse Bay)
	Kihei to Maalaea	North Kihei Road, between Piilani Highway and vicinity of Maui Electric Power Plant access drive
	Maalaea to Honokowai	Honoapiilani Highway between Maalaea and Lahaina Town
Molokai	Kalamaula to Hoolehua	Short portion of Kamehameha V Highway at Kalamaula
	Kalamaula to Ualapue	Kamehameha V Highway between Kalamaula and Ualapue

Coordination is being undertaken with the Maui County Planning Department to verify the applicability of SMA permitting requirements for the proposed action. In particular, those segments of the proposed project which fall within the SMA will be reviewed by the Department of Planning through the formal filing of a SMA Assessment application.

Ongoing coordination notwithstanding, consistency with SMA objectives and policies for the islands of Lanai, Maui and Molokai have been addressed.

(1) ***Recreational Resources***

Objective:
Provide coastal recreational opportunities accessible to the public.

Policies:

(A) Improve coordination and funding of coastal recreational planning and management; and

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

(ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public

safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and

(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed improvements will be placed within State and County rights-of-way. The installation and long-term operation of the system is not anticipated to affect existing coastal or inland recreational resources.

(2) ***Historic Resources***

Objective:

Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

(A) Identify and analyze significant archeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: Archaeological assessments have been conducted for each of the three (3) Maui County islands. Each route segment has

been evaluated and categorized on the basis of potential to yield subsurface archaeological resources. Refer to Appendices "A-1" through "A-4". These levels address segments having lower potential for subsurface deposits to areas having higher potential, including areas which contain known burials or cultural layers. Recommendations for appropriate mitigation measures for each assessment level have been provided and will be implemented, as approved by the State Historic Preservation Division.

(3) Scenic and Open Space Resources

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

Policies:

(A) Identify valued scenic resources in the coastal zone management area;

(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(D) Encourage those developments which are not coastal dependent to locate in inland areas.

Response: The proposed action is a sub-grade installation and will not impact coastal scenic and open space resources and will not affect public views to and along the shoreline.

(4) ***Coastal Ecosystems***

Objective:
Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

(A) Improve the technical basis for natural resource management;

(B) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

(C) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; *and*

(D) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

Response: The subject action is not expected to adversely impact coastal ecosystems. Trenching and backfilling work will be undertaken with appropriate best management practices measures in place.

(5) ***Economic Uses***

Objectives:
Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse

social, visual, and environmental impacts in the coastal zone management area; and

(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
(i) Use of presently designated locations is not feasible;
(ii) Adverse environmental effects are minimized; and
(iii) The development is important to the State's economy.

Response: The project would have a beneficial short-term impact on the economy during construction by providing construction-related employment. In the long-term, the completed project will support and facilitate communications system operations for DHHL projects and residents.

(6) Coastal Hazards

Objectives:
Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

Policies:

(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;
(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;
(D) Prevent coastal flooding from inland projects; and
(E) Develop a coastal point and nonpoint source pollution control program.

Response: Erosion control measures will be incorporated during the construction period to minimize soil loss and erosion hazards. Temporary drainage improvements, as required, to facilitate ductline installation, will conform to County standards to ensure no adverse drainage impacts to adjoining and downstream properties. As an underground utility, the completed project will not affect life and property as it related to natural hazards such as tsunamis and flooding.

(7) ***Managing Development***

Objectives:
Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
(B) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Response: In compliance with requirements of Chapter 343, Hawaii Revised Statutes, this environmental assessment has been prepared to facilitate public understanding and input to the project.

Applicable State and County requirements will be adhered to in the design and construction of the fiber optic ductline.

(8) ***Public Participation***

Objectives:

Stimulate public awareness, education, and participation in coastal management.

Policies:

(A) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;
(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and
(C) Organize workshops, policy dialogues, and site-specific medications to respond to coastal issues and conflicts.

Response: As previously noted, public awareness of the project is being promoted through the environmental assessment process. The proposed project is not contrary to the objective of public awareness, education, and participation.

(9) ***Beach Protection***

Objectives:
Protect beaches for public use and recreation.

Policies:

(A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;
(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
(C) Minimize the construction of public erosion-protection

structures seaward of the shoreline.

Response: The subject action will be implemented within State and County rights-of-way. Consequently, the project is not anticipated to adversely impact beach resources.

(10) ***Marine Resources***

Objectives:
Implement the State's ocean resources management plan.

Policies:

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
(B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
(C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;
(D) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
(E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
(F) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: The proposed project is not anticipated to have adverse effects upon marine and coastal resources.

Chapter V

Summary of Adverse Environmental Effects Which Cannot Be Avoided

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed project will result in unavoidable construction-related impacts which include noise-generated impacts occurring from the installation of the proposed fiber optic ductline. In addition, there may be temporary air quality impacts associated with dust generated from site work and exhaust emissions discharged by construction equipment.

The proposed project is not anticipated to create any significant, long-term adverse environmental effects.

Chapter VI

Alternatives to the Proposed Action

VI. ALTERNATIVES TO THE PROPOSED ACTION

A. ALTERNATIVE A

Alternative A is the no action or no build alternative. This alternative would forego the implementation of the proposed project and maintain the status quo. The no action alternative is not considered a viable scenario as DHHL residents would be deprived of the benefits of modern technological advances in the telecommunications field that would otherwise improve their lifestyle and business productivity.

B. ALTERNATIVE B

Alternative B is the deferred action alternative. This alternative would have similar consequences as the no action or no build alternative in that the implementation of the proposed project would be delayed and would not be immediately realized. This alternative could potentially result in higher installation costs due to increases in labor and material costs. Based on the preceding, the deferred action alternative was omitted from consideration.

C. ALIGNMENT ALTERNATIVES

Alternative fiber optic ductline alignments and alternative segments were examined to ensure that all feasible options were not overlooked. The alignment/segment identification process involved an analysis of cost estimates, construction efficiency, operational objectives, and maintenance accessibility, governmental agency consultation, as well as linear and spatial relationships and adjacencies. Privately owned lands were also examined during this process but were deleted due to higher cost and implementation factors.

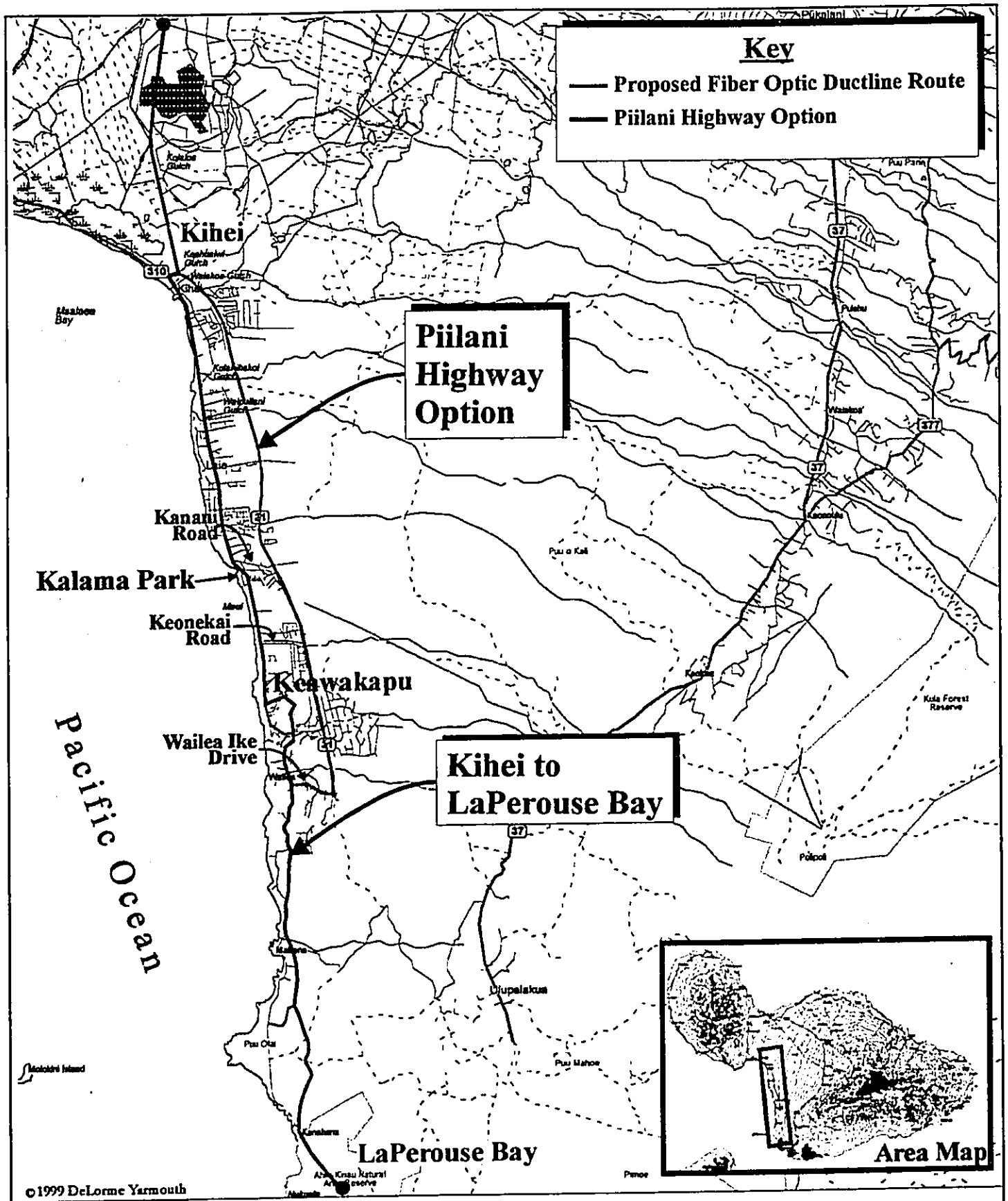
1. Piilani Highway Option

Although routes which have been identified are considered most

appropriate in terms of design and implementation criteria noted above, the County of Maui, Department of Public Works and Waste Management (DPWWM) has indicated that the Kihei to LaPerouse Segment give preference to utilizing Piilani Highway instead of South Kihei Road. This preference is based on the congested conditions along South Kihei Road, both in terms of traffic and subsurface utilities. While the preferred route for SIC continues to be South Kihei Road, the Piilani Highway option will be placed as an alternative to be considered to ensure implementation and coordination flexibility. In this context, a local assessment of the Piilani Highway option is presented to address possible impacts and mitigation measures, should this routing option be ultimately selected.

The proposed alternative route alignment begins at the Piilani-Mokulele Highway intersection, and travels south along the Piilani Highway roadway corridor, parallel to the Kihei shoreline and South Kihei Road. See Figure 21. The route continues along Piilani Highway to the Piilani-Wailea Ike Drive intersection. Here the route turns west, or makai, and continues to the Wailea Ike -Wailea Alanui intersection. At this point, the route merges with Wailea Alanui and continues south towards the terminus of the La Perouse area, following the current route alignment.

Uses along the Piilani Highway corridor include a broad mix of the Kihei region's single-family, multi-family, recreational, public/quasi public, business and industrial land uses. Near the origin of the route, residential uses are typified by single-family subdivisions, such as the Ka'Ono'Ulu Estates, Waikoa Kai Estates, and Kihei Heights. Mauka



of the Piilani Highway, notable land uses include the Kihei Gateway Plaza and the Kihei Professional Plaza, the Elleair Golf Course, vacant ranch land, the County of Maui's Kihei Wastewater Reclamation Facility, and Maui Meadows.

Makai of the Piilani Highway, land use is predominantly residential, with exceptions typified by the recently completed Piilani Village Shopping Center, Kihei Community Center, Kihei Elementary School and Kamalii Elementary School.

As with other route segments, the Piilani Highway option would provide for underground ductlines within the shoulder areas of the existing roadway corridor. As such, should the cable follow this alternative path, the project is not anticipated to have any adverse effects on surrounding land uses.

The telecommunication cables and ancillary structures, proposed for utility purposes, are permitted in the land use districts through which the Piilani Highway traverses. Additionally, this route is located outside the boundaries of the County of Maui's Special Management Area.

In terms of the alternative's physical environs, the highway traverses relatively flat to gentle sloping lands, with elevations ranging from approximately 11 feet above mean sea level (amsl) (at the Piilani Highway-Mokulele Highway intersection), to approximately 320 feet amsl at the Piilani Highway-Wailea Ike Drive intersection. Underlying soil associations are the Pulehu-Ewa-Jaucas association, the

Waiakoa-Keahua-Molokai association and the Keawekapu-Makena association. (Refer to Waiehu to Puunene segment for description of the Pulehu-Ewa-Jaucas association; the Kahului to Kula segment for description of the Waiakoa-Keahua-Molokai association; and the Kihei to LaPerouse segment for description of the Keawekapu-Makena association.)

The majority of the Piilani Highway alternative route is designated by Flood Insurance Rate Maps as Zone C, or areas of minimal flooding. Exceptions include limited areas near the origin of the route, near the Mokulele Highway intersection, which lie in Zone AO, an area of 100 year flooding. Near the East Welakahao intersection, the alternative route enters a limited area designated as Zone AH, an area of 100-year shallow flooding and Zone B, defined as an area between limits of the 100-year flood and 500-year flood. Additionally, the entire route area is located outside the designated boundaries of the tsunami evacuation areas.

The Piilani Highway alternative involves the installation of an underground ductline system within an existing right-of-way, outside any significant flood areas. Should this route be utilized, it is not anticipated to have adverse effects on drainage structures, nor will it alter the existing topography within the roadway corridors.

Natural vegetation along the Piilani Highway consists of kiawe, koa haole, bristly foxtail, bermuda grass, fingergrass, ilima and Australian saltbrush. Ornamental landscape plantings are found along developed properties of Auhana Road, Kanakanui Road and

Keonekai Road. Cats, mongoose, rats and axis deer are among the feral animals found in this region. Avifauna common to the area include the Common Mynah, Golden Plover, Japanese White-eye, Northern Cardinal, Sparrow, Spotted Dove and Zebra Dove. It is noted that the Kealia Pond is located just north of the Piilani Highway-Mokulele Highway intersection. Kealia Pond is home to the Hawaiian black necked stilt (*Ae'o*) and the Hawaiian coot (*'Alae Ke'oKe'o*), both endemic and endangered species. The American golden plover (*kolea*) and the black crowned night heron (*'auku'u*) also frequent the Kealia Pond area. See Section E, Island of Maui, Kihei to Maalaea route for additional discussion of the native birds in the Kealia Pond area. There are no other identified rare or endangered species located within the immediate vicinity of the proposed Piilani alternative route.

The proposed fiber optic ductline will be placed underground in the roadway corridor. As such, there are no anticipated adverse impacts on flora, fauna and avifauna in the region.

This alternative route follows a heavily urbanized environment. Air quality and noise conditions are principally defined by traffic which travels along the highway. In addition, construction projects along this route may temporarily increase noise and fugitive dust levels. The burning of sugar cane to the northeast may also result in temporary decreased air quality during harvesting operations. However, these conditions are considered intermittent and temporary in nature due to prevailing trade winds.

Construction activities along the alternative route may result in temporary increases in dust and noise. Best Management Practices (BMP's) will be used to ensure that wind-blown emissions are minimized. There are no long-term adverse impacts associated with the underground installation of the fiber optic cables, should this route be selected.

As with other route segments, an archaeological assessment of the alternative route was completed by Aki Sinoto Consulting and Archaeological Services Hawaii (ASH). See Appendix A-4. The assessment methodology utilized for the alternative route was consistent with the techniques employed for the other routing segments.

The entire alternative route along Piilani Highway has been assessed as moderate in its potential for yielding subsurface archaeological materials. See Figure 22. This assessment is based on the existence of twenty-nine previously recorded archaeological sites within the vicinity of the roadway corridor. These sites consist primarily of traditional Hawaiian sites, including heiau, habitation and agricultural complexes and various isolated features. In addition, three (3) previous Land Commission Awards were recorded in the vicinity of the roadway.

The ASH report indicated that the construction of the Piilani Highway may have altered or destroyed many of the existing archaeological

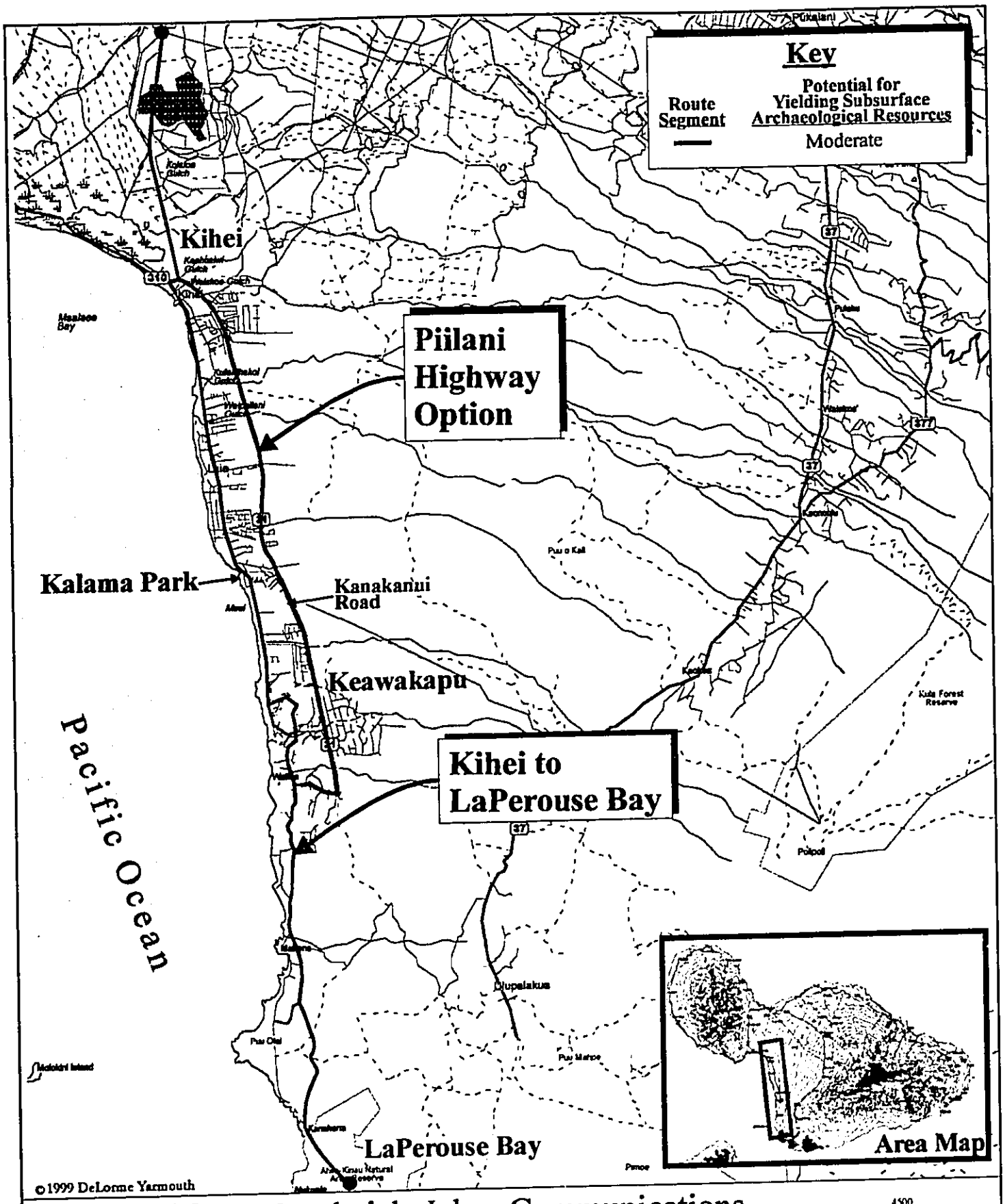


Figure 22 Sandwich Isles Communications
Fiber Optic Ductline
Piilani Highway Option
Archaeological Assessment

MUNEKIYO & HIRAGA, INC.

Prepared for: Sandwich Isles Communications, Inc.

resources within the proposed alternative alignment. Nevertheless, the area has been designated as having a moderate level of archaeological sensitivity due to the twenty-nine previously recorded sites within the corridor area.

Based on the moderate level of cultural sensitivity along the Piilani alternative route, both full time and part time monitoring will remain in effect, as warranted by specific site conditions. In addition, mechanical trenching will not proceed in increments larger than 12 inches. Lastly, when the subsurface conditions have been adequately assessed, spot-monitoring (twice daily) may be instituted at the discretion of the supervisory monitor.

It is noted that there are no bridges or structures along this route alternative which are more than 50 years old.

There are no known cultural practices that would be adversely impacted by the installation of the underground fiber optic cables. Additionally, access to the ocean would not be affected, nor would the underground cables impact access to any potential areas of cultural importance within the general vicinity of the proposed alternative route.

The existing scenic environment along the proposed alternative route is defined by Haleakala to the east, the West Maui Mountains, Pu'u Olai, the Pacific Ocean and the off-shore islands of Molokini and