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

IN REPLY REFER TO:
HWY-RM
3.74870

TO: GENEVIEVE SALMONSON, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: KAZU HAYASHIDA, DIRECTOR OF TRANSPORTATION

SUBJECT: FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR AT&T FIBER OPTIC TELECOMMUNICATIONS CABLE PROJECT, MAKAHA TO KEAWAULA, FARRINGTON HIGHWAY (KAENA POINT ROAD PROJECT NO. R-AD2(1) AND WPSO 23-B)

The State Department of Transportation has reviewed the comments received during the 30-day comment period which began May 23, 1999. We have determined that this project will not have significant environmental effects and have issued a FONSI. Please publish this notice in the July 23, 1999 Office of Environmental Quality Control Environmental Notice.

We have enclosed a completed OEQC Publication Form, four (4) copies of the Final Environmental Assessment, and the project summary on diskette. Please call Michael Okamoto at 692-7331 if you have any questions.

Enclosures

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OFC. OF ENVIRONMENTAL QUALITY CONTROL

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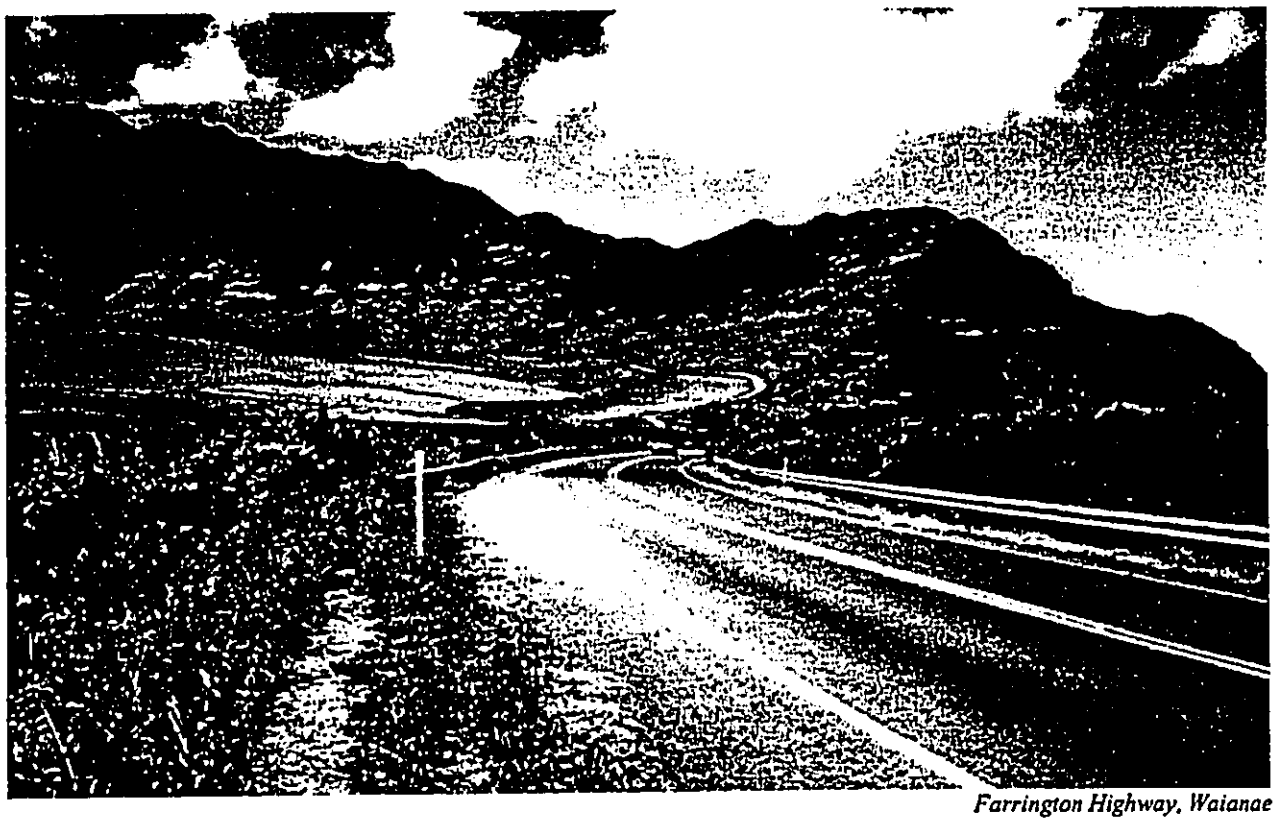
Final

ENVIRONMENTAL ASSESSMENT

AT&T CABLE PROJECT

Makaha to Keawaula

Waianae, Hawaii



Farrington Highway, Waianae

For: AT&T

By: Townscape, Inc.

July 1999

Final
ENVIRONMENTAL ASSESSMENT

AT&T Cable Project
Makaha to Keawaula
Waianae, Hawaii

This document has been prepared pursuant to
Chapter 343, Hawaii Revised Statutes

For: AT&T

By: Townscape, Inc.

July 1999

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SECTION 1 – INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

AT&T's telecommunications system in Hawaii currently consists of a "main switch" for overseas communication located in downtown Honolulu. This main switch is connected to their cable station in Makaha via an underground fiberoptic cable located generally with State and City streets. AT&T also operates a cable station at Keawaula, above Kaena Point State Park, approximately 6 miles north of the Makaha Station.

The two cable stations are located in the Waianae District and receive telecommunications cables from the U.S. mainland and various Pacific and Asian countries through an ocean route. However, AT&T currently does not have a link between the Makaha and Keawaula Cable Stations. Thus, AT&T is proposing to install an underground fiberoptic cable to connect the Makaha Cable Station to the Keawaula Cable Station to upgrade telephone service to their customers.

1.2 PROJECT SUMMARY

Project Name:	AT&T Cable, Makaha to Keawaula
Location:	Farrington Highway Right-of-Way and existing utilities easements, Waianae District (Makaha to Keawaula), for a distance of approximately 5.7 miles
Applicant:	AT&T 1431 N. Market Blvd., Suite 9 Sacramento, California 95834-1942 Attention: Kevin F. Lorenzini, Project Engineer
Agent:	Townscape, Inc. 900 Fort Street Mall, Suite 800 Honolulu, Hawaii 96813 Attention: Ms. Joanne Hiramatsu, Senior Planner
Accepting Authority:	State of Hawaii Department of Transportation
Anticipated Determination:	A FONSI is anticipated because the cable will be installed entirely within the State right-of-way or existing utilities easements or corridors. No significant adverse environmental impacts are expected.

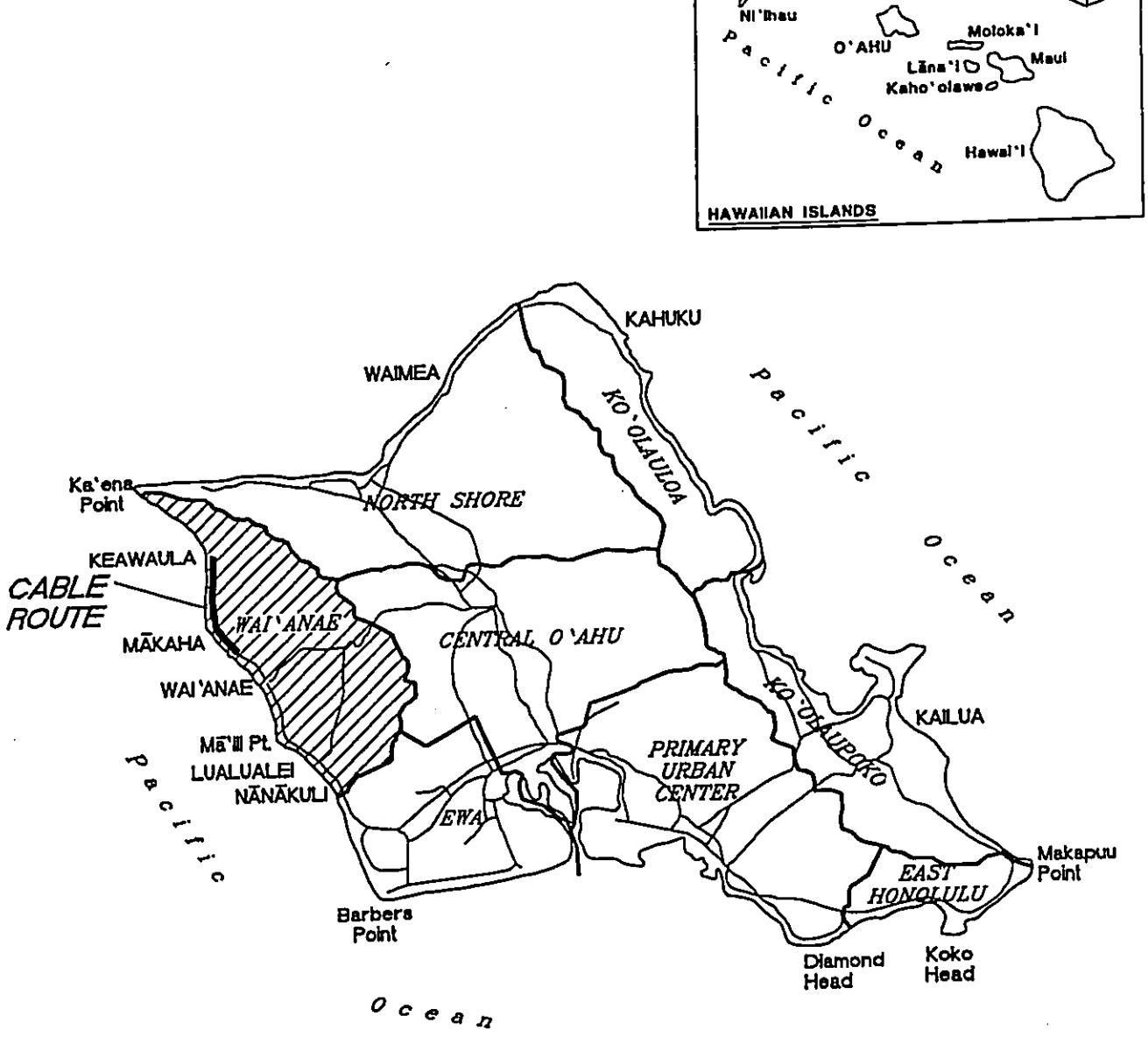

FIGURE 1
LOCATION MAP
ISLAND OF OAHU
AT&T Cable
Makaha to Keawaula
By: Townscape, Inc.
March 1999

1.3 OVERVIEW OF THE PROPOSED ACTION

The proposed alignment of the new fiberoptic cable will be within the State highway right-of-way of Farrington Highway in the Waianae District (see Figure 1). The distance between the Makaha and Keawaula Cable Stations is approximately 5.7 miles. At the Makaha Cable Station, the cable will connect to an existing manhole located on the makai side of Farrington Highway. The cable will then be pulled through an existing spare duct to connect to the cable station. At the Keawaula Cable Station, an existing spare duct from Farrington Highway to the cable station will also be used to house the new fiberoptic cable. Thus, no trenching will be needed for these two sections of the alignment. All other sections of the alignment will be constructed within the State highway right-of-way or existing utilities easements.

Construction of this system will typically require a 2-foot wide trench that is approximately 4 feet deep. Within the trench, a 5-inch conduit containing four 1-1/2-inch inner ducts will be buried at a minimum depth of four feet and concrete encased. AT&T will utilize one of the four inner ducts to pull one fiberoptic cable. The remaining three ducts will be spares. Figure 2 shows the general alignment of the cable route.

PROJECT SCHEDULE

The anticipated construction start date is September 1, 1999 with completion in December 1999. Trenching operations will begin at Makaha and move northerly towards Kaena Point State Park at 800 to 1,000 feet per day.

1.5 ALTERNATIVES CONSIDERED

An ocean route to connect the two cable stations was considered. However, because of environmental concerns and cost, this alternative was eliminated.

Other alternatives considered consisted of the location within the right-of-way of Farrington Highway and of the possibility of using existing spare duct systems that have already been installed within the highway right-of-way by GTE Hawaiian Tel. Because a spare duct was not available for use by AT&T, a new telecommunications duct system connecting the Makaha and Keawaula Cable Stations is proposed. Existing spare ducts will be used to connect the cable from existing manholes at both ends of the route to the Makaha and Keawaula Cable Station within existing easements.

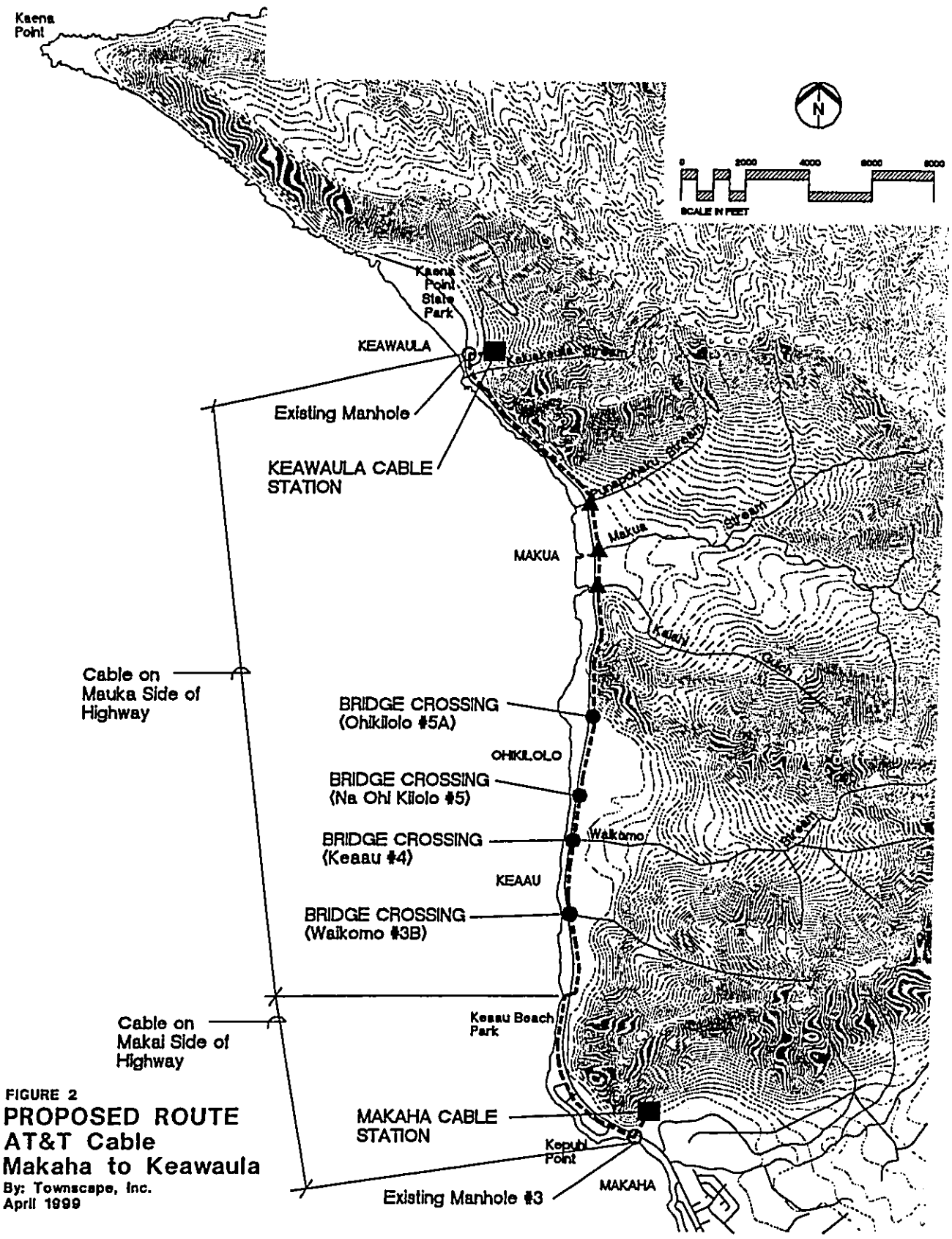

FIGURE 2
PROPOSED ROUTE
AT&T Cable
Makaha to Keawaula
By: Townscape, Inc.
April 1999

1.6 SUMMARY OF IMPACTS AND MITIGATION

The project will not have long-term adverse impacts. The cable alignment area does not contain any rare or endangered plant or animal species; the project will not adversely affect population growth, social-economic trends, or land uses; and the entire alignment has been previously disturbed by construction activities for the highway and other underground utilities systems. Long-term positive impacts will be associated with upgraded services for AT&T customers.

Although there were no archaeological sites of significance along the cable route, there are ~~four~~ culturally sensitive areas where there is a probability of subsurface archaeological resources. ~~Three of these areas occur along the proposed cable route.~~ Thus, an ~~archaeologist will be on site~~archaeological monitoring plan will be prepared for approval by the Department of Land and Natural Resources, Historic Preservation Division to monitor construction activities in the event ~~that~~ archaeological resources are uncovered.

Short-term impacts will be related to construction operations. During construction of the project, a traffic control plan will be needed to facilitate traffic movement. Noise and air quality impacts will be mitigated through the implementation of noise and air pollution procedures regulated by the State and County. Short-term direct and indirect construction jobs will be generated during the construction of the project.

1.7 UNRESOLVED ISSUES

There are no known unresolved environmental issues associated with this project.

1.8 COMPATIBILITY WITH LAND USE PLANS AND POLICIES

The proposed project is compatible with the overall goals and objectives of the County and State. No adverse environmental impacts are expected from the project

1.9 PERMITS AND APPROVALS

Approval of the route is required from the State Department of Transportation (DOT). At the existing manhole at Kaena Point State Park, a Right-of-Entry Permit will be needed from the State Department of Land and Natural Resources, State Parks Division because trenching work within the existing easement occurs within the boundary of Kaena Point State Park. If the cable

alignment is within 40 feet of the certified shoreline, a Shoreline Setback Variance will be required. No Federal permits will be required.

1.10 PURPOSE AND NEED

The purpose of the project is to upgrade telecommunications services provided by AT&T to their customers. Hawaii customers and customers elsewhere in the world will benefit from the upgraded services.

SECTION 2 – DESCRIPTION OF THE PROPOSED ACTION

A fiberoptic cable is proposed to be installed within the State right-of-way of Farrington Highway and existing utilities easements or corridors in the Waianae District to connect the Makaha and Keawaula Cable Stations. This fiberoptic link is approximately 5.7 miles in length. An existing spare duct will be used to pull a new cable from an existing manhole (No. 3) in Farrington Highway to the Makaha Cable Station. At the Keawaula Cable Station, an existing spare duct from Farrington Highway to the cable station will also be used to pull the new fiberoptic cable. Thus, no trenching will be needed in these sections of the system.

A 2-foot wide trench that is approximately 4 feet deep will be required to install the cable. Within the trench, a 5-inch conduit containing four 1-1/2-inch inner ducts will be buried at a minimum depth of four feet. The conduit will be concrete encased for protection of the cable. AT&T will utilize one of the four inner ducts to pull one fiberoptic cable. The remaining three ducts will be spares for future expansion of the system. Figure 2 shows the general alignment of the cable route.

Most of the proposed alignment of the cable is in the mauka side of Farrington Highway, parallel to an existing GTE Hawaiian Telephone cable and an existing water line. The waterline terminates at Makua Military Reservation.

Within he access road to the Makaha Cable Station, AT&T will utilize an existing spare duct in an existing easement to connect to the existing manhole (No. 3) on the makai side of Farrington Highway. From Manhole No. 3, the cable will be installed along the makai side of the highway to ~~Waikomo Bridge~~the second access road of Keaau Beach Park. Beyond ~~Waikomo Bridge~~ Keaau Beach Park, the cable will cross to the mauka side of the highway. The cable will continue along the mauka side of Farrington Highway until it terminates at an existing manhole at Kaena Point State Park. From this manhole, the cable will be pulled through an empty duct to the Keawaula Cable Station.

At four of the concrete bridge crossings (Waikomo #3B, Keaau #4, Na Ohi Kilolo #5, and Ohikilolo #5A), ~~it is proposed that the inner ducts and cable be housed in a steel pipe and hung along the side of the bridges~~ directional boring will be used to install the duct system under the stream bed. There are ~~three~~ other areas ~~between Ohikilolo Bridge and Makua Beach Park~~ along the route where horizontal boring will be used to pass under ~~large~~ box culverts crossing

Farrington Highway~~. These box culverts are located at Kaiahi Gulch, Makua Stream, and Punapohaku Stream~~.

One area fronting Ohikilolo Ranch contains large trees within the right-of-way of Farrington Highway. Directional boring will be used here to minimize damage to the trees' root systems.

Along the makai side of Farrington Highway, the cable will generally be installed in unpaved ground, except where the alignment conflicts with drain lines. To avoid conflict with these drain lines, the alignment typically transitions into the paved shoulder area of the roadway, and then transitions back into unpaved ground. Where the cable passes perpendicular to the drain lines, the cable is planned to be installed below the drain pipes.

Between ~~Waikomo Bridge~~Keaau Beach Park and Kaena Point Beach Park, the cable will be installed on the mauka side of Farrington Highway generally in the ~~unpaved~~ shoulder area of the right-of-way. Portions of the makai side of the highway along this section of the route consist of eroding shoreline or steep banks, and may contain subsurface cultural resources, and are therefore not suitable for installation of the cable.

Manholes will typically be placed in unpaved ground, except in narrow sections of the right-of-way. In these narrow sections, manholes will be placed within the center of the mauka travel lane or in the shoulder area of the highway to reduce vehicular traffic over manhole covers. The location of manholes will be coordinated with the Department of Transportation and the community representative that has knowledge of cultural resources.

SECTION 3 – AFFECTED ENVIRONMENT, IMPACTS AND MITIGATION MEASURES

3.1 GEOGRAPHY AND CLIMATE

The project is situated on the leeward coast of Oahu, in the Waianae District. Annual rainfall for coastal sections of Waianae is less than 20 inches, and the mean annual temperature is about 76 degrees fahrenheit.

A. Impacts

Adverse impacts on the climate and geography are not expected. Thus, no mitigation measures are proposed.

3.2 SURROUNDING LAND USES AND OWNERSHIP

Lands along the proposed cable route are sparsely developed. The only residential subdivision that the cable route will pass is near the Makaha Cable Station, on the makai side of Farrington Highway. Land uses north of this residential subdivision and headed toward Kaena Point consist of scattered house lots, ranch lands, beach parks, the military training area at Makua, and undeveloped lands (mainly owned by the State of Hawaii).

The cable itself will be installed almost entirely within the State right-of-way of Farrington Highway except near the beginning and ending of the cable at the Makaha and Keawaula Cable Stations, respectively. At the Makaha Cable Station, the cable will be pulled through an existing spare duct from Manhole No. 3 to the cable station.

At the Keawaula Station, cable trenching will terminate at an existing manhole on State Conservation lands in Kaena Point State Park. From Farrington Highway the cable will leave the highway right-of-way and enter a utility easement for approximately 50 feet to an existing manhole. From this manhole, the cable will be pulled through an existing spare duct up to the Keawaula Station.

Because the manhole at Kaena Point State Park is within State Conservation land, the Department of Land and Natural Resources (DLNR) was consulted to determine whether or not a State Conservation District Use Permit (CDUP) or other approval would be needed. DLNR determined

that a CDUP was not required. However, a Right-of-Entry permit will be required from DLNR Parks Division for the section of the route within the Conservation district at Kaena Point State Park.

A. Impacts

The cable installation will not have an impact on surrounding land uses or ownership. The land uses and ownership along the cable route will not change as a result of the cable installation.

3.3 SOILS AND TOPOGRAPHY

Information on the soils along the route was taken from the "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii," August 1972. Because of the length of the cable route, eleven soil types occur along the alignment as follows:

BS **Beaches** occur as sandy, gravelly, or cobbly areas that are washed and rewashed by ocean waves.

CR **Coral Outcrop** consists of coral or cemented calcareous sand. Coral reefs formed in shallow water during a time when the ocean water was at a higher level.

JaC **Jaucus Sand, 0-15 percent slopes,** are excessively drained, calcareous soils that occur as narrow strips on coastal plains. These soils developed from wind and water deposited sand derived from coral and seashells. Permeability is rapid and runoff is very low. Water erosion is slight, but wind erosion is severe where vegetation has been removed.

LuA **Lualualei Clay, 0-2 percent slopes,** consists of well-drained soils on alluvial fans and is very sticky and very plastic clay. Permeability is slow, runoff is slow and the erosion hazard is no more than slight.

LvB **Lualualei Stony Clay, 2-6 percent slopes,** is similar to Lualualei Clay, except that stones are present and hinder cultivation. These soils occur on Oahu adjacent to drainageways.

LPE **Lualualei Extremely Stony Clay, 3-35 percent slopes,** is also similar to Lualualei Clay except that there are many stones on the surface and in the profile. Runoff is medium to rapid and the erosion hazard is moderate to severe.

MnC **Mamala Stony Silty Clay Loam, 0-12 percent slopes,** consists of shallow, well-drained soils on coastal plains. These soils formed from alluvium over coral limestone and consolidated calcareous sand. Coral rock fragments are common in the surface and in the profile. Permeability is moderate, runoff is very slow to medium, and the erosion hazard is slight to moderate.

PsA **Pulehu Clay Loam, 0-3 percent slopes,** are well-drained soils on alluvial fans, stream terraces, and in basins. Permeability is moderate, runoff is slow, and the erosion hazard is no more than slight.

PuB **Pulehu Stony Clay Loam, 2-6 percent slopes,** is similar to Pulehu Clay loam except that there are stones in the soil.

PvC **Pulehu Very Stony Clay Loam, 0-12 percent slopes,** is also similar to Pulehu Clay loam except that about 3 percent of the surface contain stones.

rRO **Rock Outcrop** consists of areas where exposed bedrock of basalt and andesite cover more than 90 percent of the surface.

rSY **Stony Steep Land** consists of a mass of boulders and stones deposited by water and gravity on side slopes of drainageways. The stones and boulders cover 50 to 90 percent of the surface.

Figure 3 shows the soil types along the cable route from the Makaha to Keawaula Cable Stations.

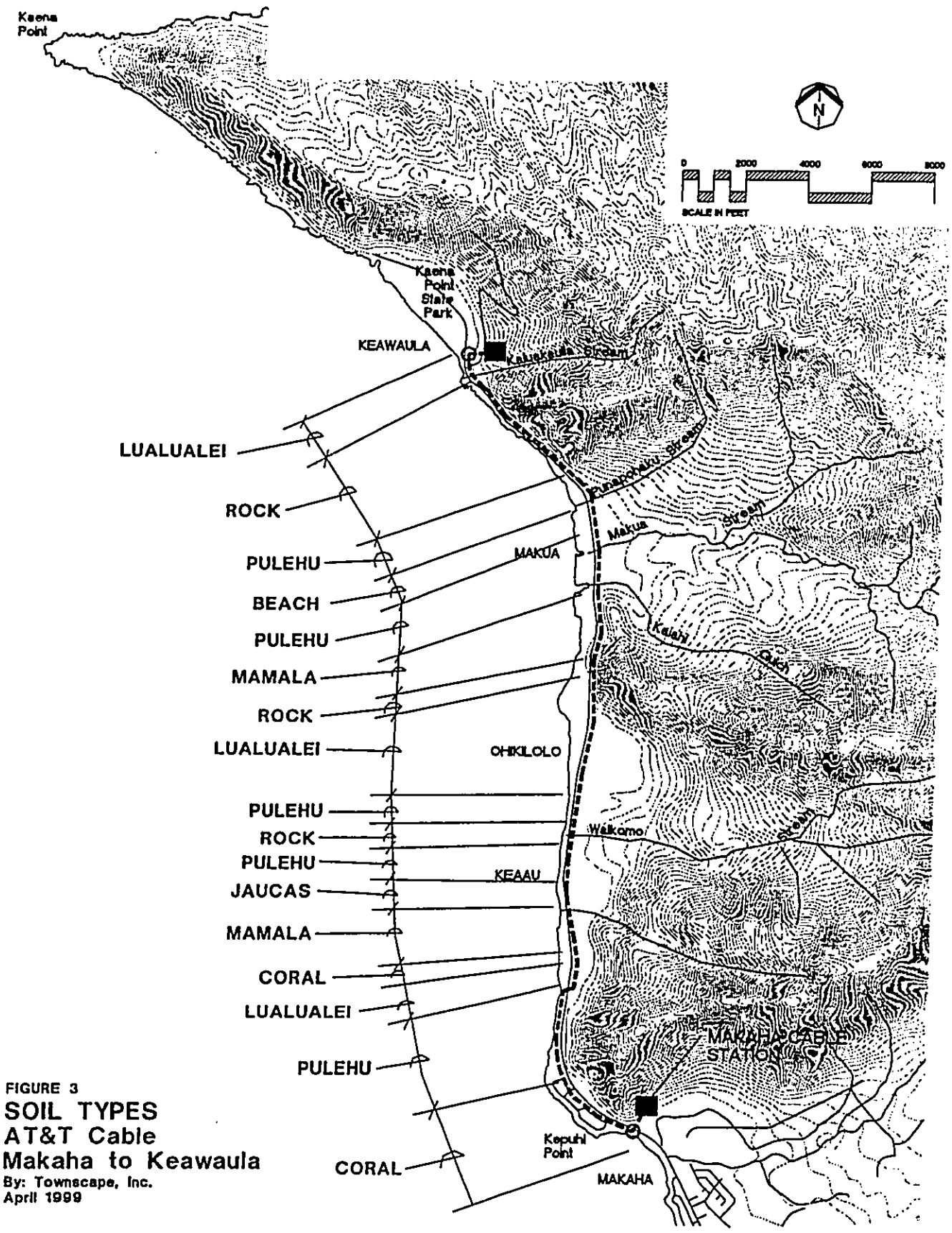

FIGURE 3
SOIL TYPES
AT&T Cable
Makaha to Keawaula
By: Townscape, Inc.
April 1999

A. Impacts

There will be no adverse impacts on the soil types along the cable route. Once the cable has been installed, the same soil material will be used to backfill the trench. Trenching work may be more difficult in areas where the soil contains stones. However, the stones will not prevent the installation of the cable. Backfill borrow material may be needed in areas with a high concentration of stones.

3.4 FLORA

A botanical survey of the cable route was performed by Evangeline J. Funk, PhD, Botanical Consultant, in March 1999 (see Appendix A). The survey revealed that there were no candidate, proposed or listed endangered or threatened plant species along the route. Vegetation along the entire route consisted mainly of kiawe trees, koa haole shrubs, Guinea grass, and buffelgrass.

A. Impacts

The cable installation will not have an adverse impact on candidate, proposed or listed endangered or threatened plant species. Thus, no mitigation measures are proposed.

3.5 FAUNA

Phillip L. Bruner, Environmental Consultant, performed a survey of the fauna along the cable route in March 1999 (see Appendix B). No listed endangered or threatened fauna was seen along the cable route. The only native waterbird seen was the Black-crowned Night Heron, which is a non-endangered species. Two of these birds were seen foraging at Makua Stream, makai of Farrington Highway.

The migratory Golden Plover and Wandering Tattler were seen along the route. However, these species are not listed as endangered or threatened.

Two non-endangered White-tailed Tropicbird seabird species were seen soaring above the Keawaula Cable Station. Other seabirds that nest at Kaena Point, but that were not observed during the survey include the Layson Albatross and the Wedge-tailed shearwater.

Fourteen species of exotic (introduced) birds were seen during the survey. None of these birds are listed as endangered or threatened.

Cats and dogs were seen along the route, and rats and mice are probably present, but were not seen. No endangered or threatened feral mammals were observed along the route.

A. Impacts

None of the species observed along the cable route are listed as endangered or threatened. Thus, no adverse impacts on endangered or threatened fauna are expected and no mitigation measures are proposed.

3.6 ARCHAEOLOGY

An assessment of archaeological resources was conducted along the cable route by Cultural Surveys Hawaii to identify the presence of significant historic or cultural resources. A literature search and survey of the cable route was performed and documented in a report (see Appendix C).

The survey of the cable route indicated that the route was free of any archaeological sites or features. However, the research revealed that four areas along the cable route have been linked to past habitation and possible burial locations. These four sections are as follows:

1. 400 feet south of Waikomo Bridge, extending approximately 1,300 feet on the mauka side of Farrington Highway to the First Hawaiian Bank Recreation Center. If the cable alignment is on the makai side of Farrington Highway, the sensitive area extends for approximately 4,750 feet (0.9 miles). Burials may be present in the sand dunes.

2. 400 feet south of Keaau Stream Bridge, extending 1,500 feet on the mauka side of Farrington Highway to the north end of Na Ohikilolo Stream Bridge. Archaeological sites of significance occur within 10 meters on the mauka side of the highway.

3. Kaneana Cave. This is a religious site.

4. 200 feet south of the cemetery at Makua, extending 600 feet to approximately 200 feet north of the cemetery on the makai side of Farrington Highway. Unmarked graves may be present along the route.

The proposed alignment of the cable in Item 1 above is on the ~~makai~~ mauka side of Farrington Highway. Thus, monitoring is recommended for ~~4,750~~1,300 feet ~~(0.9 miles)~~ of the alignment.

For Item 2, the cable will be installed on the mauka side of the highway. Monitoring by an archaeologist is also recommended because archaeological sites of significance occur within 10 meters of the highway for approximately 1,500 feet.

Archaeological monitoring is recommended in the vicinity of Kaneana Cave (Item 3 above).

In Item 4 above, the cable will be installed on the mauka side of the highway. Thus, monitoring is not recommended.

Remnants of the Oahu Railway and Land Company (OR&L) railroad occur on the makai side of Farrington Highway past Keaau Beach Park. Because the cable will be installed on the mauka side of Farrington Highway, the railway will not be impacted by construction activities.

A. Impacts

Although no archaeological sites or features were found along the surface of the route, subsurface archaeological resources may be present in ~~three~~ sections of the proposed alignment.

B. Mitigation

An on-site archaeologist will monitor construction activities in the ~~three~~ archaeologically sensitive sections of the alignment indicated above. In addition, if archaeological resources are uncovered in any of the unmonitored sections of the alignment, work will stop and the State Historic Preservation Division (SHPD) and Koa Mana will be contacted. Work will continue after appropriate mitigation measures have been performed to the satisfaction of SHPD and Koa Mana. The applicant's agent has consulted and will continue to consult with Koa Mana, which is a group of aboriginal families that have knowledge of burial sites in the area.

An archaeological monitoring plan will be prepared and submitted to the Department of Land and Natural Resources SHPD for approval prior to construction.

3.7 NOISE

During construction, short-term noise will be generated from construction activities and equipment. However, once construction is completed, there will be no adverse noise impacts. The only significant residential subdivision that will be impacted by construction noise is in the Makaha area. All other sections along the route are generally uninhabited, except for a few scattered residential lots and beachgoers utilizing the beach parks along the route.

A. Impacts

Short-term adverse noise impacts will be generated during construction of the project. No long-term noise impacts will be generated.

B. Mitigation

Adverse impacts from construction activity will be mitigated through the establishment of start and curfew times in accordance with the applicable State Department of Health's ~~regulations~~Administrative Rules, Chapter 11-46, "Community Noise Control."

3.8 AIR QUALITY

Fugitive dust and air pollution emissions will be generated from construction activities and equipment. Residents downwind (makai) of the cable route in the vicinity of Makaha may be impacted with poor air quality. Beach park users may also be impacted by air pollution emissions during construction.

A. Impacts

Short-term impacts on air quality will occur during construction of the project from fugitive dust and air pollution emissions from construction equipment.

B. Mitigation

Performing dust control practices in accordance with applicable Department of Health's ~~regulations~~ Administrative Rules, Chapter 11-60.1, "Air Pollution Control" will mitigate these impacts. Frequent watering of the soil will reduce the amount of fugitive dust emissions that are generated during construction.

3.9 FLOODING AND TSUNAMI INUNDATION

Portions of the alignment from the Waikomo Bridge to the Ohikilolo Bridge are within Zone VE or Zone AE on the Flood Insurance Rate Maps of the Federal Emergency Management Agency. These two zones are "special flood hazard areas inundated by the 100-year flood." Zone VE are areas where there is coastal flooding with velocity hazard from wave action and base flood elevations have been determined. Zone AE are areas where base flood elevations have been determined. Visual observation indicated that soil erosion is evident along portions of the makai side of Farrington Highway.

The remaining sections of the alignment are in Zone D, which are areas where flood hazards are undetermined.

With the exception of the links to the cable stations from Farrington Highway, the entire length of the cable route along Farrington Highway is within the tsunami evacuation zone. The actual inundation zone may be further makai of Farrington Highway.

A. Impacts

The project will not affect the flooding pattern in the area. Once the project is completed, the land will generally be restored to its original condition.

The cable route will not have an impact on the tsunami inundation areas. On the contrary, a tsunami could uncover the cable and cause a break in the line.

B. Mitigation

The project will be designed in accordance with appropriate sections of the Land Use Ordinance of the City and County of Honolulu, Article 7, Special District Regulations, relating to flood zones.

SECTION 4 – SOCIO-ECONOMIC ENVIRONMENT AND RELATED IMPACTS

4.1 POPULATION CHARACTERISTICS

The estimated resident population for the State of Hawaii in 1995 was about 1.2 million people, according to the 1997 State Data Book. The island of Oahu accounted for approximately 871,000 people, with the Waianae District having a population of about 38,000 people, which was about 4 percent of the Oahu population.

During the decade of 1980 to 1990, the population of the Waianae District was one of the top three districts for population growth, with a population increase of 18.8 percent, compared to a State population increase of 14.9 percent. However, between 1990 to 1995, the Waianae District had one of the lowest population increases of 1.5 percent, compared to the State population increase of 6.4 percent. These numbers are based on estimates published in the 1997 State Data Book.

A. Impacts

No positive or negative impacts on the population characteristics are expected as a result of the cable installation. However, people will benefit from the upgraded telecommunications services that will be available once the cable has been installed.

4.2 ECONOMIC CHARACTERISTICS

The civilian labor force for the island of Oahu in 1997 was estimated at approximately 425,950 people with 22,500 people unemployed. The highest number of jobs was in the Services Industry with 122,350 jobs, followed by Wholesale and Retail Trade with 99,850 jobs. The Agriculture industry had the lowest job count of 1,950 jobs. The average annual per capita income for the island of Oahu in 1996 was $27,040, which was higher than the State average of $25,421.

A. Impacts

The proposed project will create short-term direct and indirect employment in the construction industry, which will have a positive impact on the economy. Adverse impacts on the economy are not expected.

SECTION 5 - PUBLIC FACILITIES AND SERVICES AND RELATED IMPACTS

5.1 DRAINAGE

Mauka storm water runoff along the cable alignment is discharged into the ocean through a number of culverts and bridge crossings along Farrington Highway. The cable will cross four concrete bridges and three major culverts. At the bridge crossings, the cable will be encased in a steel conduit and hung on the side of the bridges. The section of cable crossing the culverts will entail boring under the box culverts. Thus, no excavation or trenching work will be performed within the drainageways.

A. Impacts

The project will not have an impact on existing drainage structures or drainage patterns in the area.

5.2 POTABLE WATER

A potable water line has been installed on the mauka side of Farrington Highway from Makaha to Makua Valleys. This water line was installed to service military training facilities at Makua Valley. There is no municipal potable water system that services the area beyond Makua Valley.

A. Impacts

The cable installation will not conflict with or affect the existing potable water system that has been installed on the mauka side of Farrington Highway. The cable alignment is on the makai side of Farrington Highway from Makaha Valley to Waikomo Bridge. From Waikomo Bridge to Makua Valley where the waterline terminates, the cable will be installed parallel to the water line on the mauka side of Farrington Highway and will not conflict with the waterline alignment or service.

The project will not have a demand on the water resources in the area. Therefore, there is no impact on water resources.

5.3 WASTEWATER TREATMENT AND DISPOSAL

The municipal wastewater treatment facility is located in Waianae town. This facility has a design capacity of 5.2 MGD and services the entire Waianae District. Effluent disposal is through an ocean outfall. No sewer lines are within the highway along the cable route.

A. Impacts

The proposed project will not have an adverse impact on wastewater facilities. No wastewater will be generated by the project and the cable installation will not conflict with existing underground sewer lines.

5.4 TRANSPORTATION

Farrington Highway is the major roadway servicing the area. This highway terminates at Kaena Point State Park, in the vicinity of the existing manhole where the new cable will connect to the Keawaula Cable Station. The right-of-way width of Farrington Highway along the cable alignment varies from 60 to 90 feet with two travel lanes. Once beyond the residential area at Makaha, the right-of-way narrows to 60 feet wide. The right-of-way then increases to 90 feet in the area fronting Makua Valley and gradually narrows to 80 feet until it terminates at Kaena Point State Park.

With the exception of the connections to the cable stations, the cable will be installed entirely within the Farrington Highway right-of-way or existing utilities easements. A 50-foot section of the cable at Kaena Point State Park will transition into a utilities easement to a manhole mauka of Farrington Highway. From the manhole, the cable will be pulled through an existing spare duct to the Keawaula Cable Station. At the Makaha Cable Station, the cable will also be pulled through an existing spare duct from an existing manhole in Farrington Highway, then up the access road in an existing utilities easement to the cable station.

A. Impacts

During construction, traffic flow may be disrupted along the section of the alignment under construction.

B. Mitigation

To prevent significant disruption in traffic flow, a traffic control plan will be prepared. This traffic control plan will illustrate temporary traffic flow lanes in the section of highway under construction. In areas where two-way traffic is not possible, flagmen will be used to direct traffic.

At the end of each work day, the trench will be covered with plates for safety purposes, and to keep both travel lanes open.

5.5 POWER AND COMMUNICATIONS

Hawaiian Electric Company supplies overhead electrical power to both the Makaha and Keawaula Cable Stations. The new cable will tie into existing equipment at the cable stations and will not increase the demand on electrical power. The equipment in the buildings receives the light signals from the fiberoptic lines and translates the light into the appropriate signals that are sent to the users.

AT&T currently has a fiberoptic cable linking the Makaha Cable Station to a main switch at One Waterfront Tower in downtown Honolulu. From the Makaha Cable Station, the system is connected via an ocean cable to the U.S. mainland and Asia. The Keawaula Cable Station also connects via an ocean cable to other Pacific Rim areas. However, AT&T currently does not have a direct, land-based connection between the Makaha and Keawaula Stations. Installation of the new cable will link the Makaha and Keawaula Cable Stations and upgrade existing services currently provided by AT&T.

A. Impacts

No adverse impacts or demands on existing electrical or communications sytems are expected. The proposed project will have a positive impact by upgrading telecommunications services to customers.

SECTION 6 - RELATIONSHIP TO STATE AND COUNTY PLANS, POLICIES AND CONTROLS

6.1 HAWAII STATE PLAN

The Hawaii State Plan was developed to serve as a guide for future development of the State of Hawaii in areas of population growth, economic benefit, enhancement and preservation of the physical environment, facility systems maintenance and development, and socio-cultural advancement. The Plan identifies, in general, the goals, objectives, policies and priorities for the development and growth of the State. Guidelines have been provided in the Plan to give direction to the overall development of the State.

The proposed project is consistent with the objectives and policies of the Hawaii State Plan. The following describes the relationship and compatibility of the proposed project with the overall plans for the State of Hawaii, as set forth in the Hawaii State Plan.

6.1.1 Population (HRS Section 226-5)

The proposed project will not affect population growth. However, the people will have the benefit of using upgraded telecommunications services that will be provided by AT&T.

6.1.2 Economy (HRS Section 226-6 and 10.5)

Construction of the proposed project will have a short-term positive benefit through the creation of direct and indirect employment. This short-term employment opportunity will be a positive benefit on the economy.

This project is directly related to Section 226-10.5 (b) (1) of the Hawaii State Plan. This new cable link will upgrade communications ties to areas outside of the State, thereby making Hawaii more accessible in the telecommunications arena that may provide new economic opportunities in the information industry.

6.1.3 Physical Environment (HRS Section 226-11, 12 and 13)

Construction of the proposed project will not affect the scenic or natural beauty of the area and identified historic or cultural resources. However, in the event subsurface cultural resources are uncovered during construction, work will stop and the SHPD will be contacted.

Land, air and water quality resources will not be adversely affected by the proposed project. Short-term air quality impacts on a small number of residents may occur during construction. However, these impacts can be mitigated as discussed earlier. Over a long term, the project will not have adverse impacts on air quality.

6.1.4 Facility Systems (HRS Sections 226-14, 15, 16,17 and 18)

During construction, rock or boulders may need to be disposed of to allow for the installation of the duct system. These rocks or boulders could potentially be transported to other construction sites for use in the design or crushed for gravel material. No other solid or liquid wastes are anticipated as a result of the project.

Except for watering of the soil during construction to prevent dust emissions, the project will not have an adverse impact on water resources in the area. The cable system will be installed parallel to the existing potable water line.

The construction period of the project will temporarily impact traffic flow the in area. A traffic control plan will be prepared to facilitate traffic movement during construction. However, once the project has been completed traffic flow will continue as normal.

The proposed project is directly related to the energy and telecommunications goals and objectives of the Hawaii State Plan because the project will upgrade existing telecommunications systems in the State of Hawaii as well as elsewhere in the world to support the needs of the people.

6.1.5 Socio-Cultural Advancement (HRS Sections226-20, 25, and 26)

Construction activities could have a short-term affect on the health and safety of the public because of noise and air quality impacts. However, mitigations measures will be

implemented to reduce impacts from construction noise and air pollution emissions. Open trenches will be covered at the end of each work day to ensure public safety.

6.2 STATE FUNCTIONAL PLANS

The following summarizes the project's consistency with the goals and objectives of various State Functional Plans.

6.2.1 State Transportation Functional Plan

The proposed project will temporarily disrupt traffic movement during construction. A traffic control plan will be prepared and implemented during the construction stage of the project. After construction completion, Farrington Highway will continue to serve as the main access roadway to surrounding areas and not affect traffic flow.

6.2.2 State Historic Preservation Functional Plan

An archaeological reconnaissance survey was performed along the cable route and no archaeological sites or features were found. Historical research indicated that there are four sensitive areas where subsurface historic or cultural resources may be present, three of which occur along the alignment. In these three areas, an archaeologist will be on site to monitoring construction activities. If archaeological resources are discovered during construction, work will cease and the SHPD will be notified and mitigative measures will be implemented to its satisfaction.

6.2.3 State Housing Functional Plan

The project will not affect the housing prices or housing supply in the area.

6.2.4 State Conservation Lands Functional Plan

A 50-foot section of the alignment at Kaena Point State Park is within the State Conservation district. However, this 50-foot section of the alignment is in an existing utilities easement that has been disturbed in the past by the installation of other cable lines. Because the new cable will be within an existing easement, a Conservation District

Use Permit is not required. However, a right-of-entry permit will be required from the State Parks Division for this 50-foot section of the alignment.

6.2.5 State Agriculture Functional Plan

Agricultural lands will not be affected by the proposed project.

6.2.6 State Employment Functional Plan

Short-term direct and indirect employment will be created during the construction phase of the project, which will benefit the economy.

6.2.7 State Tourism Functional Plan

The project will not detract from any tourist attractions or adversely impact any scenic qualities of the area.

6.2.8 State Recreation Functional Plan

During construction access to existing beach parks may be hindered. However, implementation of the traffic control plan will facilitate traffic movement. Short-term noise and air pollution impacts on beach users may also occur. However, mitigation measures will reduce these short-term impacts. Once the project is completed, there will be no adverse impacts on recreational resources.

6.2.9 State Health Functional Plan

The project will be constructed in accordance with all applicable regulations of the State Department of Health to ensure protection of the environment and public health and safety.

6.2.10 State Energy Functional Plan

The project will not adversely affect the goals and objectives related to energy. Large boulders or rocks that may be removed from the trench will be transported to other sites

for use. Other recyclable construction materials that may be generated, will be disposed of at an appropriate site.

6.2.11 State Education and Higher Education Functional Plan

The project will not affect education or higher educational goals and objectives.

6.3 Coastal Zone Management, Special Management Area and Shoreline Setback Rules and Regulations

The project is located near the coastline and within the Special Management Area established by the City and County of Honolulu. However, the project will have no adverse impact on the Coastal Zone Management Area.

Although the project is within the Special Management Area, installation of the underground cable system is a permitted use under Section ~~33-1.3. (A) (xiii)~~25-1.3(2)(M) because it is a utility system that will utilize existing easements or corridors and is within the State right-of-way.

The project will have no long-term impact upon any coastal recreational resources, historic resources, scenic and open space resources, coastal ecosystems, beaches or marine resources, in accordance with the objectives and policies described in Section 205A HRS.

An archaeological review and analysis of the cable alignment has been performed, disclosing no above-ground resources of any archaeological significance. However, an archaeologist will be on site to monitor construction activities along three sensitive areas of the alignment.

The construction of the project will not require any extraordinary grading or cutting of the land, or have any material impact on existing public views to and along the shoreline. The cable system will be placed underground. However, certain sections of the alignment may be within 40 feet of the certified shoreline. If so, a shoreline setback variance will be needed for construction work within the setback area.

6.4. STATE LAND USE

The State Land Use designation for lands mauka of the cable alignment is "Agricultural" from the Makaha Station to near the Kaneana Cave. Beyond Kaneana Cave and along the makai side

of Farrington Highway, the State Land Use designation is "Conservation." A small portion of the alignment on the makai side of Farrington Highway, in the vicinity of Makaha, is within the "Urban" district. The project will not change the State Land Use designations along the proposed route. The cable will be installed entirely within the State right-of-way of Farrington Highway or existing utilities easements.

At Kaena Point State Park, the cable will leave the Farrington Highway right-of-way and enter into an existing utilities easement to an existing manhole in the Conservation district for approximately 50 feet. Because the project will involve trenching work in a State Park, a right-of-entry permit will be required from the State Parks Division.

6.5 DEVELOPMENT PLAN

Under the existing Development Plan, the land use designations are generally consistent with the State Land Use designations. In the Makaha area, the land use designation is "Residential" and "Agricultural." Past Makaha to near the Kaneana Cave, the mauka side of the highway is designated "Agricultural" and the makai side of the highway up to the end of Keaau Beach Park, the land use designation is "Parks and Recreation." Beyond Kaneana Cave, the land use designation is "Preservation."

The Development Plan for the Waianae District in currently being updated by the City and County of Honolulu. However, preliminary results of this update indicate that the lands in the vicinity of the route will continue to be generally in the "Agricultural" and "Preservation" land uses.

The project will not change the Development Plan land uses.

6.6 COUNTY ZONING

Zoning designations along the cable route consist of "R-10" (Residential), "AG-2" (Agricultural), and "P-1" (Preservation). The location of these land uses are similar to those of the Development Plan and the project will not change the County Zoning designations.

SECTION 7 - PERMITS REQUIRED

The following is a list of permits or approvals that will be required for construction of the underground cable.

7.1 STATE PERMITS AND APPROVALS

Department of Transportation	Route Approval, Design Approval
Department of Land and Natural Resources, Parks Division	Right of Entry Permit

7.2 CITY AND COUNTY OF HONOLULU PERMITS

No special permits from the City and County of Honolulu are required. The project will be constructed entirely within the State right-of-way or existing utilities easements. Portions of the cable alignment may be within 40 feet of the certified shoreline. Therefore, a Shoreline Setback Variance may be needed.

A City building permit will be needed.

7.3 FEDERAL PERMITS

No Federal permits will be required.

SECTION 8 - ALTERNATIVES TO THE PROPOSED ACTION

8.1 NO ACTION ALTERNATIVE

The no action alternative would mean that upgraded telecommunications services for existing and future customers of AT&T would not be available. This would potentially reduce the number of options available to Hawaii residents and elsewhere in the world for upgraded services.

8.2 ALTERNATIVES CONSIDERED

An alternative to a land route to connect the two cable stations would be a connection offshore. However, an offshore connection has the potential of impacting a number of important resources, such as the monk seal, coral, shoreline recreation and other ocean related resources. In addition, adding new cables in one of the spare ducts along a terrestrial route would be easier to install. Therefore, the ocean route alternative was not proposed.

Other alternatives considered consisted of the possibility of using existing spare duct systems that have already been installed within the highway right-of-way, and alternative locations of the cable within the right-of-way. Because a spare duct was not available for use by AT&T, a new telecommunications duct system connecting the Makaha and Keawaula Cable Stations is proposed. The proposed alignment was selected because it will be installed in previously disturbed areas and minimizes trenching within the travel lanes of Farrington Highway.

An existing spare duct will be used to connect the manhole at Kaena Point State Park to the Keawaula Cable Station. Thus, trenching along the satellite tracking station access road to the cable station will not be required.

At the Makaha Cable Station, the new cable will be connected to an existing manhole in Farrington Highway and will then be routed through a spare duct in an existing easement leading up to the cable station.

SECTION 9 – DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING DETERMINATION

The following is an assessment, based on the 13 "Significance Criteria" of Title 11, Chapter 200-12 of the Department of Health Administrative Rules.

1) Involves a loss or destruction of any natural or cultural resources.

The project will not involve the loss or destruction of any natural or cultural resources in the area. Botanical, biological and archaeological surveys of the proposed alignment indicate that there are no important natural or cultural resources. However, certain areas of the alignment may contain subsurface cultural resources. For three sections of the route where archaeological resources may be present, an archaeologist will be on site to monitor construction activities in the event that cultural resources are uncovered. If cultural resources are uncovered, work will stop and the State Historic Preservation Division will be consulted.

2) Curtails the range of beneficial uses of the environment.

Development of the project will not curtail any beneficial uses of the land. The highway will continue to be used for vehicular traffic.

3) Conflicts with the State's long-term goals or guidelines as expressed in Chapter 344, HRS.

The proposed development will not have significant environmental impacts, and therefore does not conflict with the long-term goals or guidelines expressed in Chapter 344.

4) Substantially affects the economic or social welfare of the community or state.

The project will not have a negative impact on the economy and the social welfare of the community. Construction of the project will result in short-term direct and indirect construction employment, which will have a positive effect on the economy.

5) Substantially affects public health.

Short-term noise and air quality impacts may occur during the construction phase of the project. However, these impacts can be adequately mitigated, and the project, developed in accordance with all applicable State Department of Health and County Department of ~~Public Works~~Planning and Permitting laws and regulations, will have no adverse impact on the public health.

6) Involves substantial secondary effects, such as population changes or infrastructure demands.

The proposed project will not have secondary effects on population or infrastructure demands. On the contrary, the project will provide upgraded telecommunications services to the people of Hawaii and elsewhere in the world.

7) Involves a substantial degradation of environmental quality.

The project will not degrade the quality of the environment. No long-term noxious uses or emissions will result from the project, and no degradation of environmental quality is expected.

8) Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment to larger actions.

The project involves no commitment to any larger action, and will have no cumulative adverse environmental impacts.

9) Substantially affects a rare, threatened or endangered species or its habitat.

Flora and faunal surveys identified no rare, threatened or endangered species or habitat along the alignment.

10) Detrimentally affects air or water quality or ambient noise levels.

No long-term air quality, water quality or ambient noise impacts are anticipated from the project. Short-term construction noise and air quality impacts will be mitigated as discussed in earlier sections of this Environmental Assessment.

11) Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters.

The cable could suffer damage from a tsunami or from severe wave action if Farrington Highway or the concrete bridges were demolished as part of a natural disaster. To reduce the risk of damage, the underground cable will be housed within a 5-inch duct and concrete encased. Along sections of the alignment where the cable will be attached to the concrete bridges, the cable will be housed within a steel conduit. In the event of a natural disaster, the cable will be reinstalled.

12) Substantially affects scenic vistas and view planes identified in county or state plans or studies.

The cable will be placed underground or attached to the sides of existing bridges and will not have an effect on the scenic vistas and view planes identified in County or State plans or studies.

13) Requires substantial energy consumption.

The project will not require substantial energy consumption. The cable will house fiberoptic lines that will transmit light signals. At the cable stations, the new cables will tie into existing equipment that will translate the light signals and forward the appropriate signals to the users.

For the reasons cited in this EA, no significant adverse environmental impacts are expected from the proposed project.

SECTION 10 - LIST OF INDIVIDUALS, ORGANIZATIONS AND AGENCIES CONSULTED

10.1 STATE

Department of Transportation, Highways Division
Department of Land and Natural Resources, Land Management Division
Department of Land and Natural Resources, Parks Division

10.2 CITY AND COUNTY OF HONOLULU

Department of Planning and Permitting

10.3 OTHERS

U.S. Air Force, Satellite Tracking Station
GTE Hawaiian Tel
Waianae Neighborhood Board
Koa Mana

APPENDIX A

BOTANICAL SURVEY REPORT FOR THE PROPOSED AT&T CABLE PROJECT, MAKAHA TO KEAWAULA

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March 1999

BOTANICAL SURVEY REPORT FOR THE PROPOSED AT&T CABLE PROJECT, MAKAHA TO KEAWAULA

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INTRODUCTION

The proposed AT&T Cable Project – Makaha to KEAWAULA- right-of-way site is located along 9.17 kilometers (5.7 miles) of Farrington Highway. A botanical survey of an area 8.33 meters (25 feet) beyond the paved road shoulder on both sides of the highway was carried out in March 1999.

The study area lies between 3 and 60 meters elevation and is located in a part of the island that Hillebrand (1888) classified as the lowland zone and the A or Xerophytic zone of Ripperton and Hosaka (1942). In more recent years, Gagne' and Cuddihy (1990) included the area in their Lowland Dry Mixed Community where annual rainfall averages between 500 mm and 1200 mm. Before the introduction of grazing animals, this area was probably covered with wiliwili (*Erythrina sandwicensis* Deg.), naio (*Myoporum sandwicense* A. Gray, and other drought tolerant shrubs or similar summer deciduous plants.

Today, March 1999, after a long, dry winter, the vegetation of this part of the lowlands is made up of introduced, drought resistant trees, shrubs and grasses. There are frequent rock outcrops, scant soil, and the area is subject to frequent fires.

The purpose of this survey was to determine and describe what type of vegetation is found along the right-of-way, what species of plants make up this vegetation, and to search for federally proposed or listed threatened or endangered plant species

METHODS.

The walk through survey covered an area 8.3 meters wide on both sides of Farrington Highway from Makaha to Keawaula, Oahu. All taxa encountered were recorded and the results of this survey are presented below.

VEGETATION TYPES

The recurrent vegetation type found along the entire right-of-way is a changing mosaic of scattered kiawe trees (*Prosopis pallida* Kunth) interspersed with koa haole shrubs (*Leucaena leucocephala* (Lam.) de Wit), Guinea grass (*Panicum maximum* Jacq.) and buffelgrass (*Cenchrus ciliaris* L.) with intermittent open sand and small beach parks on the ocean side of the highway. There are infrequent, open, dry pastures, dense stands of pure koa haole, and formidable rock outcrops where Ohikilolo Ridge and the high ridge lying between Punapohaku Stream and Kauakawila Stream intersect Farrington Highway. On the ocean side of the highway in these two places there is a steep drop off into the ocean.

From the KEAWAULA end of the study site to the AT&T Cable Station the vegetation on both sides of the road is almost pure Guinea grass with some widely scattered koa haole shrubs. A list of all plant taxa found along the right-of-way is provided.

CONCLUSIONS

The vegetation found along this corridor is made up almost entirley of scant cover of introduced, weedy species. Similar plant cover can be found on the leeward lowlands of most of the Hawaiian islands. Destruction of this weed community will not have a noticeable effect on the local biota.

ENDANGERED SPECIES

No candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) are known from along this portion of Farrington Highway and none were found during this survey.

SPECIES LIST OF PLANTS FOUND ALONG THE PROPOSED AT&T CABLE PROJECT RIGHT-OF-WAY, MAKAHA TO KEAWAULA

The plant families in the following species list have been alphabetically arranged within two groups, Monocotyledons, and Dicotyledons. The genera and species are arranged alphabetically within families. The taxonomy and nomenclature follow that of Wagner, Herbst, and Sohmer (1990). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a plant introduced to the Hawaiian Islands since Cook or by the aborigines.
2. The scientific name of the plant.
3. The Hawaiian name or the most widely used common name of the plant.
4. Abundance ratings are for this site only and they have the following meanings:
   Uncommon = a plant that was found less than five times.
   Occasional = a plant that was found between five and ten times.
   Common = a plant considered an important part of the vegetation.
   Locally abundant = plants found in large numbers over a limited area. For example the plants found in grassy patches.

This species list is the result of an extensive survey of this site during a very dry winter season (March 1999) and it reflects the vegetation composition of the flora during a single season. Minor changes in the vegetation will occur due to introductions and losses and a different species list would result from a survey conducted during a different growing season.

MONOCOTYLEDONS

Scientific Name	Common Name	Abundance
COMMELINACEAE - Spiderwort Family		
**Commelina diffusa* N. L. Burm.	Honohono	Uncommon
**Setcreasea purpurea* B. K. Boom	Purple tradescantia	Uncommon
CYPERACEAE – Sedge Family		
**Cyperus rotundus* L.	Nut grass	Locally abundant
POACEAE - Grass Family		
**Bothriochloa* pertusa (L.) A. Camus	Pitted beardgrass	Locally abundant
**Cenchrus ciliaris* L.	Bufflelgrass	Common
**Cenchrus echinatus* L.	Common sandbur	Occasional
**Chloris barbata* (L.) Sw.	Swollen fingergrass	Common
**Chloris divaricata* R. Br.	Star grass	Locally abundant
**Cynodon dactylon* (L.) Pers.	Bermuda grass	Common
**Dactyloctenium aegyptium* (L.) Willd.	Beach wiregrass	Uncommon
**Digitaria ciliaris* (Retz.) Koeler	Henry's crabgrass	Common
**Eleusine indica* (L.) Gaertn.	Wiregrass	Occasional
**Eragrostis cilianensis* (All..) Link	Stinkgrass	Locally abundant
**Eragrostis tenella* (L.) Beauv., ex Roem. & Schult.		Locally abundant
**Panicum maximum* Jacq.	Guinea grass	Common
**Rhynchelytrum repens* (Willd.) Hubb.	Natal redtop	Common
**Setaria verticillata* (L.) P. Beauv.	Bristly foxtail	Locally abundant

DICOTYLEDONS

ACANTHACEAE – Acanthus Family		
**Asystasia gangetica* (L.) T. Anderson	Chinese violet	Locally abundant
AMARANTHACEAE – Amaranth Family		
**Alternanthera pungens* Kunth	Khaki weed	Common
**Amaranthus spinosus* L.	Spiny amaranth	Occasional
**Gomphrena globosa* L.	Globe amaranth	Occasional
ASTERACEAE – Sunflower Family		
**Bidens alba* (L.) DC		Occasional
**Bidens cynapiifolia* Kunth		Occasional

Scientific Name	Common Name	Abundance
ASTERACEAE – Sunflower Family con't		
**Calyptocarpus vialis* Less.		Common
**Conyza bonariensis* (L.) Cronq.	Hairy horseweed	Uncommon
**Emilia sonchifolia* (L.) DC	Flora's paintbrush	Uncommon
**Pluchea indica* (L.) Less.	Indian fleabane	Occasional
**Pluchea symphytifolia* (Mill.) Gillis	Sourbush	Common
**Sonchus oleraceus* L.	Pualele	Occasional
**Tridax procumbens* L.	Coat buttons	Common
**Verbesina encelioides* (Cav.) Benth. & Hook.	Golden crown-beard	Occasional
**Vernonia cinerea* (L.) Less.	False daisy	Occasional
BATACEAE – Saltwort Family		
**Batis maritima* L.	Pickleweed	Locally abundant
BORAGINACEAE – Borage Family		
**Heliotropium curassavicum* L		Common
CHENOPODIACEAE – Goosefoot Family		
**Chenopodium murale* L.	'Aheahea	Uncommon
CONVOLVULACEAE – Morning glory Family		
**Ipomoea cairica* (L.) Sweet	Koali 'ai	Occasional
**Ipomoea obscura* (L.) Ker-Gawl.		Common
**Ipomoea indica* (J. Burm.) Merr..	Koali'awa	Uncommon
**Merremia aegyptia* (L.) Urb.	Hairy merremia	Occasional
CUCURBITACEAE – Gourd Family		
**Coccinia grandis* (L.) Voight	Ivy gourd	Locally abundant
**Momordica charantia* L.	Balsam pear	Common
EUPHORBIACEAE – Spurge Family		
**Chamaesyce hirta* (L.) Millsp.	Hairy spurge	Common
**Ricinus communis* L.	Castor bean	Common

Scientific Name	Common Name	Abundance
FABACEAE – Bean Family		
**Acacia farnesiana* (L.) Willd.	Klu	Occasional
**Chamaecrista nictitans* (L.) Moench	Partridge pea	Occasional
.**Crotalaria incana* L.	Fuzzy rattlepod	Occasional
**Desmanthus virgatus* (L.) Willd.	Slender mimosa	Uncommon
**Indigofera spicata* Forssk.	Creeping indigo	Common
**Indigofera suffruticosa* Mill.	Indigo	Occasional
**Leucaena leucocephala* (Lam.) de Wit	Koa haole	Common
**Macroptilium atropurpureum* (DC) Urb.	Cowpea	Locally abundant
**Prosopis pallida* Kunth	Kiawe	Common
**Samanea saman* (Jacq.) Merr.	Monkeypod	Uncommon
**Senna occidentalis (L.) Link*	Coffee senna	Locally abundant
**Tamarindus indica* L.	Tamarind	Locally abundant
LAMIACEAE – Mint Family		
**Leonotis nepetifolia* (L.) R. Br.	Lion's ear	Occasional
**Stachys arvensis* L.	Staggerweed	Locally abundant
MALVACEAE – Mallow Family		
**Abutilon grandifolium* (Willd.) Sweet	Hairy abutilon	Common
**Malva parviflora* L.	Cheese weed	Uncommon
**Malvastrum coromandelianum* (L.) Garcke	False mallow	Common
Sida fallax Walp.	'Ilima	Uncommon
**Sida rhombifolia* L.		Occasional
**Sida spinosa* L.	Prickly sida	Occasional
MORACEAE – Fig Family		
**Ficus microcarpa* L. fil.	Chinese banyan	Common
NYCTAGINACEAE – Four-o'clock Family		
**Boerhavia coccinea* Mill.		Uncommon
PASSIFLORACEAE – Passion Flower Family		
**Passiflora edulis* Sims	Passion fruit	Uncommon
**Passiflora foetida* L.	Love-in-a-mist	Common

Scientific Name	Common Name	Abundance
PLANTAGINACEAE – Plantain Family		
**Plantago lanceolata* L.	Narrow-leafed plantain	Locally abundant
PLUMBAGINACEAE – Plumbago Family		
Plumbago zeylanica L.	'Ilie'e	Uncommon
POLYGONACEAE – Buckwheat Family		
**Emex spinosa* (L.) Campd.		Locally abundant
SOLANACEAE – Nightshade Family		
**Capsicum frutescens* L.	Bird pepper	Uncommon
**Lycopersicon esculentum* Mill.	Tomato	Uncommon
STERCULIACEAE Cacao Family		
Waltheria indica L.	'Uhaloa	Common
VERBENACEAE – Verbena Family		
**Lantana camara* L.	Lantana	Common
**Stachytarpheta dichotoma* (Ruiz & Pav.) Vahl	Owi	Common

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APPENDIX B

SURVEY OF THE AVIFAUNA AND FERAL MAMMALS FOR THE PROPOSED AT&T CABLE PROJECT, MAKAHA TO KEAWAULA, OAHU

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March 31, 1999

SURVEY OF THE AVIFAUNA AND FERAL MAMMALS FOR THE PROPOSED AT&T CABLE PROJECT – MAKAHA TO KEAWAULA, OAHU

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31 March 1999

INTRODUCTION

The purpose of this report is to summarize the findings of a bird and mammal field survey to support a proposed AT&T fiber optic cable installation along the 5.7 mile route between Makaha and Keawaula Cable Stations. The survey took place on 25, 27 March 1999. Also included are references to pertinent literature and unpublished reports. The objectives of the field survey were to:

1- Document what bird and mammal species occur along the route and note other birds and mammals that potentially could be found in this area.

2- Note the presence or likely occurrence of any native fauna, particularly those that are listed as "Endangered" or "Threatened".

3- Determine if the proposed route contains any special or unique resources important to native wildlife.

SITE DESCRIPTION

The 5.7 mile route between the Makaha and Keawaula Cable Stations follows the existing highway. The habitats along this route include: residential, ranchlands, second growth vegetation, sandy and rocky beaches, and a few small stream crossings. These streams are generally dry but can flash flood during heavy rains. The only stream which contained water during this survey was the Makua Valley Stream near Poohuna Point. Pickleweed (Batis maritima), an introduced wetland plant, forms an emergent border

along the edge makai of this stream. Several areas along the route showed evidence of recent fires.

STUDY METHODS

The route was surveyed on 25 and 27 March 1999. All habitats were examined. Field observations were made with the aid of binoculars and by listening for vocalizations.

All species seen or heard were recorded. Table One gives the results of these data for introduced species. Native and migratory species as well as seabirds are noted separately in this report. Published and unpublished reports of birds known from similar habitat on Oahu were also consulted in order to acquire a better perspective of the possible fauna that could occur in this region (Pratt et al. 1987, Hawaii Audubon Society 1993, Bruner 1992, 1998). Observations of feral mammals were limited to visual sightings and evidence in the form of scats and tracks. No attempts were made to trap mammals in order to obtain data on their relative abundance and distribution. Such an effort was not possible nor necessary within the time constraints of the field survey.

Scientific names of birds and mammals used in this report follow those given in Checklist of the Birds of Hawaii (Pyle 1997) and Mammal Species of the World (Honacki et al. 1982).

RESULTS AND DISCUSSION

Resident Endemic (Native) Birds:

No native landbirds were recorded on the survey. The absence of native landbirds was not unexpected given the location, elevation and type of habitats available along this route. The Short-eared Owl or Pueo (Asio flammeus sandwichensis) forages in agricultural fields and pastures as well as in upland forested habitat (Hawaii Audubon Society 1993). This species is listed as endangered on Oahu by the State of Hawaii. Although Pueo were not recorded on this survey they could forage in this area.

Migratory Indigenous (Native) Birds):

Migratory shorebirds winter in Hawaii between the months of August through May. Some juveniles will stay over the summer months as well (Johnson et al. 1981, 1983, 1989). The most abundant shorebird species which winters in Hawaii is the Pacific Golden-Plover (Pluvialis fulva). Plover forage in open areas such as mud flats, lawns, pastures, plowed agricultural fields and roadsides. Plover are extremely site-faithful and most establish winter foraging territories which they defend vigorously. Such behavior makes it possible to accurately census the plover population in a particular area (Johnson et al. 1989). A total of eighteen plover were recorded on the survey. These birds were seen in open cleared land and lawns along the route. The Ruddy Turnstone (Arenaria interpres) is the second most common migratory shorebird in Hawaii. They also forage in pastures and open ranch lands. None were recorded on this survey. Four Wandering Tattler (Heteroscelus incanus) were seen along the shoreline fronting the route. This species forages along beaches, rocky shorelines, streams, mudflats and wetlands. Neither the plover, tattler nor the turnstone are listed as endangered or threatened.

Resident Indigenous (Native) Seabirds:

The only seabird recorded was the White-tailed Tropicbird (Phaethon lepturus). Two birds were seen soaring above Keawaula Cable Station. The Laysan Albatross (Phoebastria immutabilis) and the Wedge-tailed Shearwater (Puffinus pacificus) nest at Kaena Point. All of these species are not endangered or threatened.

Resident (Native) Waterbirds:

Two Black-crowned Night Herons (Nycticorax nycticorax) were observed on the survey. They were seen foraging in Makua Valley Stream just makai of the highway on 27 March. This species is the only native waterbird that is not endangered. They are opportunistic foragers and take a wide variety of prey. They only other native waterbird that may forage in Makua stream or in other flooded areas is the endangered Black-necked Stilt (Himantopus mexicanus). None were recorded on this survey or on an earlier study at Makua (Bruner 1998).

Exotic (Introduced) Birds:

A total of 14 species of exotic birds were recorded during the course of the field survey. This list compares favorably with that obtained on similar lands by Bruner (1992, 1998). Other exotic birds which potentially could occur on the property include: Cattle Egret (Bubulcus ibis), Ring-necked Pheasant (Phasianus colchicus), Barn Owl (Tyto alba), Skylark (Alauda arvensis), Japanese Bush-warbler (Cettia diphone), and Java Sparrow (Padda oryzivora) (Pratt et al. 1987, Hawaii Audubon Society 1993).

Feral Mammals:

Several cats (Felix catus) and dogs (Canis familiaris) were seen along the route. Some of the cats were probably feral but the dogs were likely pets. Rats and mice were not observed but these ubiquitous species undoubtedly occur in this area. The endemic and endangered Hawaiian Hoary Bat (Lasiurus cinereus semotus) is rarely seen on Oahu (Tomich 1986, Kepler and Scott 1990). No bats were observed on this survey. This species is known to roost solitarily in trees and forages for flying insects using echolocation (Jacobs 1993). They use a variety of habitats including native forest, ranchlands, ponds and bays as well as urban areas (Jacobs 1991). The life history of this species is not well known. Recent research on the Big Island has yielded some new insights into their behavior (Reynolds et al. 1998). The endangered Hawaiian Monk seal (Monachus schauinslandi) is occasionally seen resting on the beach at Kaena Point and could also use Makua Beach (Bruner 1998). None were observed on this survey.

SUMMARY AND CONCLUSIONS

A short field survey can only provide a limited view of the wildlife that may use the area. The number of species and their relative abundance may vary throughout the year due to resource (food, water) availability and reproductive success. Species which are migratory will only be a part of the faunal picture at certain times during the year. Exotic species sometimes prosper for a time only to later disappear or become a less significant part of the faunal community (Williams 1987, Moulton 1990). Thus only long term studies can provide a comprehensive view of the bird and mammal populations in a

particular area. However, some general conclusions related to bird and mammal activity along this route can be made. Below is a summary and conclusion for this survey.

1- The entire route was searched. All birds and mammals seen or heard were recorded. All habitats were investigated.

2- No native resident landbirds were tallied on the survey. The native owl (Pueo) occurs on Oahu but was not recorded on this survey. They are listed by the State of Hawaii as endangered on the island of Oahu.

3- Black-crowned Night Heron, a non-endangered species, was the only waterbird recorded. They were seen in Makua stream makai of the highway. The endangered Black-necked Stilt may also forage in this wetland and at other flooded sites.

4- The migratory Pacific Golden-Plover and Wandering Tattler were seen. These species are common migrants and are not endangered or threatened.

5- White-tailed Tropicbird was the only seabird recorded. This is not an endangered species.

6- The list of exotic birds recorded on the suvey (Table 1) was typical for this area and compared favorably with the data obtained by Bruner on earlier studies.

7- Cats and dogs were recorded along the route. Rats and mice probably occur in this area but were not found on this survey. The endangered Hawaiian Hoary Bat was not observed. This species is rare on Oahu.

8- Thelands along the route have been significantly altered. No unique or special resources, aside from a small wetland at Makua, were located on the survey.

Wetland habitats serve as foraging sites for native waterbirds. Presently the only wetland with water was the Makua Valley Stream near Poohuna Point. Along this section of coast there are not many wetlands suitable for waterbirds to forage.

9- The proposed project should not have an impact on the birds and mammals in this area of Oahu. The only sensitive resource is the small wetland at Makua. Care should be taken to avoid adversly impacting this wetland during the installation of the underground cable.

TABLE 1

Introduced species of birds recorded along the route of the proposed AT& T Cable Project, Makaha to Keawaula, Oahu.

COMMON NAME	SCIENTIFIC NAME
Erckel Francolin	Francolinus erckelii
Spotted Dove	Streptopelia chinensis
Zebra Dove	Geopelia striata
White-rumped Shama	Copsychus malabaricus
Red-vented Bulbul	Pycnonotus cafer
Northern Mockingbird	Mimus polyglottus
Common Myna	Acridotheres tristis
Japanese White-eye	Zosterops japonicus
Northern Cardinal	Cardinalis cardinalis
Red-crested Cardinal	Paroaria coronata
House Finch	Carpodacus mexicanus
House Sparrow	Passer domesticus
Common Waxbill	Estrilda astrild
Nutmeg Mannikin	Lonchura punctulata

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APPENDIX C

ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED AT&T CABLE PROJECT FROM MAKAHA CABLE STATION TO KEAWAULA CABLE STATION, WAIANAE, OAHU, HAWAII

By:

Cultural Surveys Hawaii

April 1999

Archaeological Assessment of the Proposed

AT&T Cable Project from Mākaha Cable Station to Keawa`ula Cable Station, Wai`anae, O`ahu, Hawai`i

by

David Perzinski, B.A.
&
Hallett H. Hammatt, Ph.D.

for
Townscape Inc.

Cultural Surveys Hawaii
April, 1999

ABSTRACT

An archaeological assessment of a proposed AT&T cable route from Mākaha Cable Station to Keawa`ula Cable Station, Wai`anae, O`ahu involved field survey of the corridor and historic background research of the area. The route extends from its southern terminus at the Mākaha Cable Station in the *ahupua`a* of Mākaha, along Farrington Highway, and ending at the Keawa`ula Cable Station, the northern terminus.

Portions of the proposed cable alignment run through four areas in which there may be adverse impact to possible archaeological resources. At Waikomo Stream Bridge, Farrington Highway is immediately adjacent to a sand dune which may be the location of one or more human burials. This dune extends north approximately one mile, the majority of which can be avoided if the alignment is to run on the *mauka* side of the highway. At the Kea`au Stream Bridge (formerly Mākaha Bridge #4), several archaeological sites have been recorded; three of these sites (State sites 50-80-03-4424, -4425, and 4426) have been deemed eligible for the National Register of Historic Places. Kāneana Cave is the third area of concern, but will require minimal on-site monitoring due to the deep roadcuts which flank the cave entrance. Lastly, a 600-foot long portion of land along the *makai* side of the highway across from the Mākua Military Installation at the existing cemetery shall warrant monitoring if the alignment is to run along this side. In most cases, however, impact to archaeological resources will most likely be minimal due to past activities which have altered the cable alignment corridor, e.g. extensive buildup of the highway or, conversely, deep road cutting.

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I. INTRODUCTION

A. Project Background

This report details the archaeological assessment survey requested by Townscape Inc. for a proposed AT&T cable project northward from the Mākaha cable station in the *ahupua`a* of Mākaha through Kea`au, `Ōhikilolo, Mākua and terminating in Kahanaha`iki at the Keawa`ula cable station (Figs. 1-3).

The proposed cable line alignment is within the Farrington Highway right of way that begins just south and *mauka* of Kea`au Beach Park in the *ahupua`a* of Mākaha and extends north approximately 5.7 miles long, typically running on the landward (*mauka*) side of the Farrington Highway (Fig. 4). It is assumed that the cable will be installed entirely within the right-of-way of Farrington Highway, except where the cable will have to leave the highway right-of-way in order to tie into existing switching facilities at the two cable stations. The route of the cable from Farrington Highway to the Mākaha cable station and to the Keawa`ula cable station will generally be within existing right-of-way easements that have been set aside for telecommunications facilities.

B. Scope of Work

The scope of work for this archaeological assessment, coordinated with Townscapes Inc., includes:

1. Historical research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.
2. Field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This assessment will identify any sensitive areas that may require further investigation or mitigation before the project proceeds.

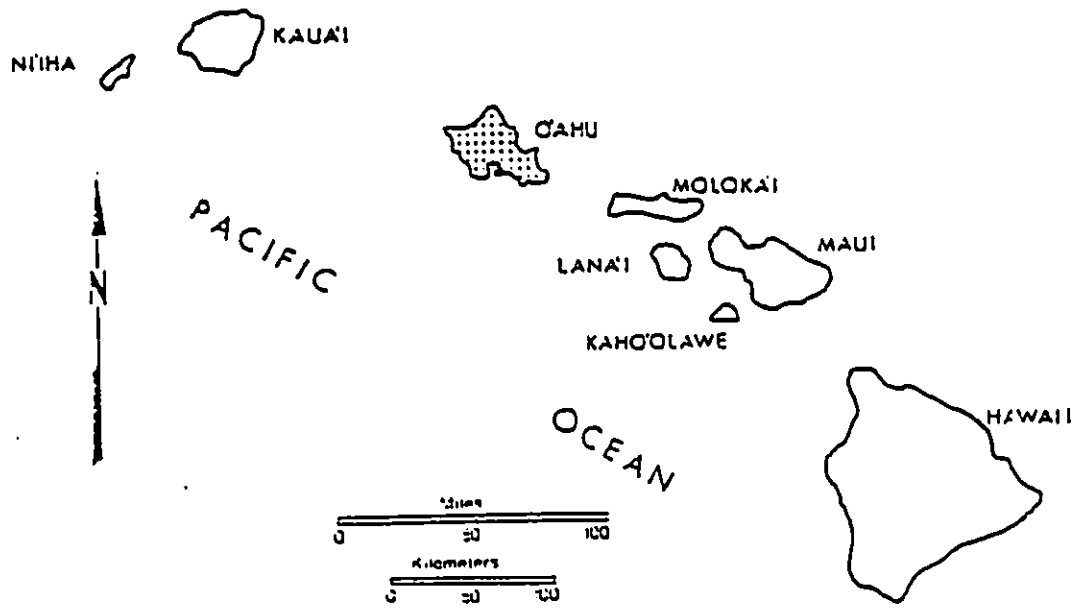

Figure 1 State of Hawai`i

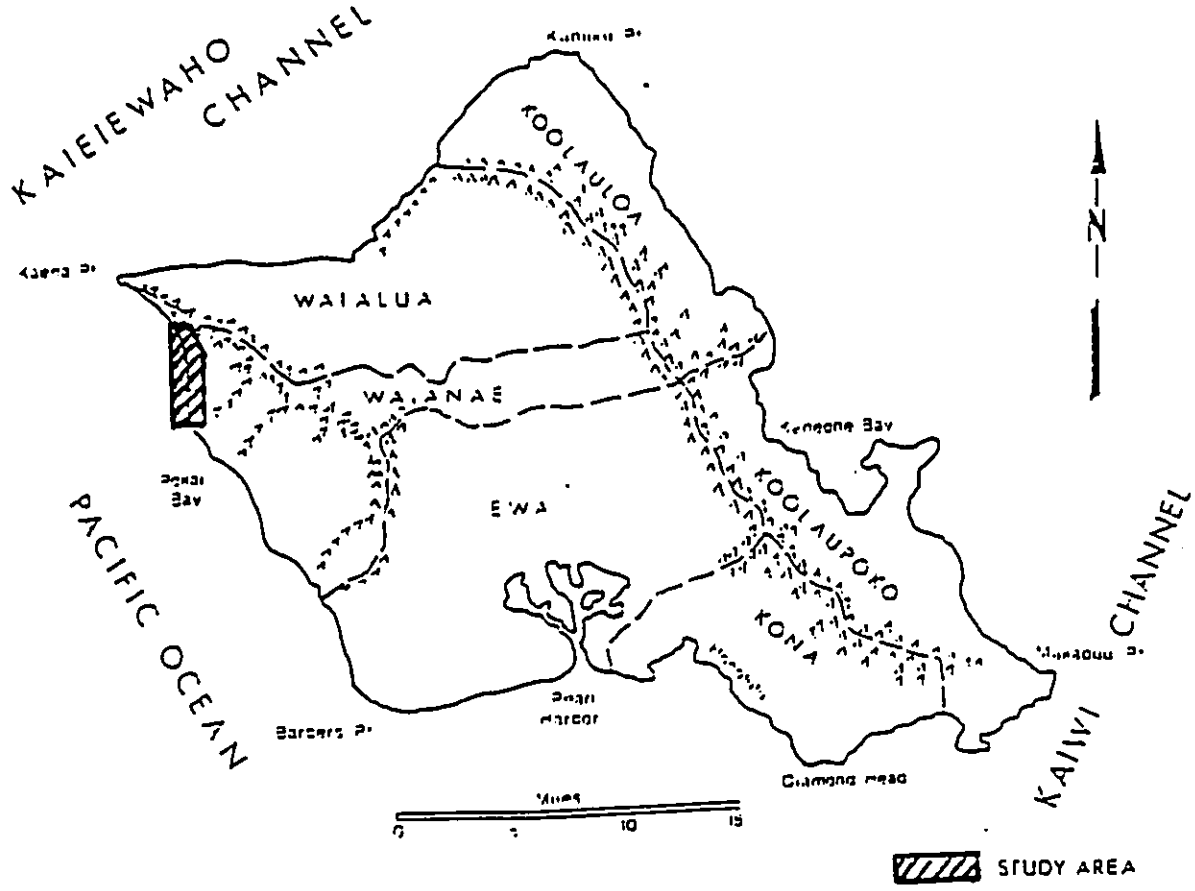

Figure 2 O`ahu Island Location Map

3 U.S.G.S. Topographical Map Showing the Project Corridor

3. Preparation of a report to include the results of the historical research and the fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. It will also provide recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

This archaeological assessment is not intended to meet the requirements of an inventory-level survey per the rules and regulations of SHPD/DLNR. However, the level of work would be sufficient to address site types, locations and allow for future work recommendations.

C. Methods

The archaeological assessment for the proposed cable alignment involved a field survey of the project area on March 23, 1999. Two Cultural Surveys Hawaii archaeologists walked on opposite sides of Farrington Highway starting from the southern terminus and working northward. Archaeological sites and features as well as previously impacted areas which were observable on the surface were photographed, noted and located on a field map.

Historical background research included study of archival sources as well as previous archaeological research in the project area, and Land Commission Awards to construct a history of land use. From these sources, a predictive model was formed to give a general idea of prehistoric and historic coastal land use patterns along the highway corridor.

II. NATURAL SETTING

The proposed cable line lies in an area of relatively low amounts of precipitation. Rainfall is approximately 52 cm. (20 in.) per year, with the majority falling between October and April (Warwick *et al.*, 1973). The current vegetation within the project area is dominated by *kiawe (Prosopis pallida)*, *koa haole (Leucaena glauca)*, and *pili* grass (*Heteropgon contortus*), a native species (Armstrong, 1973).

The project area traverses several soil units as it runs north from the Mākaha cable station adjacent to Kepuhi Point in the northern portion of the *ahupua`a* of Mākaha to the Keawa`ula cable station in the southern portion of the *ahupua`a* of Keawa`ula. These are typically stony to extremely stony clays, clay loams and silty clays of various associations (Foot, *et al,1972)*. The chart below presents soil descriptions within the project area, beginning at the southern boundary of Mākaha and proceeding northward to Kahanaha`iki.

Symbol	*ahupua`a*	Description
CR	Mākaha	Coral outcrop
PvC	Mākaha/Kea`au	Pulehu very stony clay loam 0-12%; 3% of surface covered with stones; runoff slow; erosion slight to moderate; used for pasture and wildlife habitat
LuA	Kea`au	Lualualei clay 0-2%; on alluvial fans; surface 10" thick very dark grayish brown, very sticky, plastic, prismatic structure; underlain by coral, gravel, sand, clay below 40"; permeability slow; erosion slight; used for sugarcane, truck crops, pasture, wildlife habitat, urban development, military installations

MnC	Kea`au	Mamala stony silty clay loam 0-12%; Coral and rock fragments common in surface and profile; surface dark reddish brown silty clay loam to 11"; underlain by coral limestone, consolidated calcareous sand at depths of 8-20"; permeability moderate; runoff very slow to moderate; erosion slight to moderate; used for sugarcane, truck crops and pasture
JaC	Keea`au	Jaucus sand 0-15%; soil is single grain, pale brown to 60"; permeability is rapid; runoff very slow; water erosion slight, wind erosion severe where vegetation has been removed; used for pasture, sugarcane, truck crops, and urban development
PsA	Kea`au	Pulehu clay loam 0-3%; located on alluvial fans, stream terraces and basins; surface dark brown clay loam to 21"; underlain by dark brown, dark grayish brown and brown massive and single grain stratified loam, loamy sand and silty loam to 39"; permeability moderate; runoff slow; erosion slight; used for sugar, truck crops and pasture
rSY	Kea`au / `Ōhikilolo	Stony steep land 40-70%; stones and boulders on 50-90% of surface; vegetation kiawe, koa haole and grasses
LuA	`Ōhikilolo	4 Lualualei clay 0-2%; on alluvial fans; surface 10" thick very dark grayish brown, very sticky, plastic, prismatic structure; underlain by coral, gravel, sand, clay below 40"; permeability slow; erosion slight; used for sugarcane, truck crops, pasture, wildlife habitat, urban development, military installations

LvB	`Ōhikilolo	Lualualei stony clay 2-6%; adjacent to drainage ways; enough stones to hinder machine cultivation; runoff slow; erosion slight; used for urban development, military installations, pasture, truck crops, and sugarcane
LPE	`Ōhikilolo	Lualualei extremely stony clay 3-35%; impractical for cultivation unless stones removed; runoff medium to rapid; erosion moderate to severe; used for pasture
rRO	`Ōhikilolo/ Mākua	Rocky outcrop, i.e. Kāneana Cave
MnC	Mākua	Mamala stony silty clay loam 0-12%; Coral and rock fragments common in surface and profile; surface dark reddish brown silty clay loam to 11"; underlain by coral limestone, consolidated calcareous sand at depths of 8-20"; permeability moderate; runoff very slow to moderate; erosion slight to moderate; used for sugarcane, truck crops and pasture
PvC	Mākua	Pulehu very stony clay loam 0-12%; 3% of surface covered with stones; runoff slow; erosion slight to moderate; used for pasture and wildlife habitat
PsA	Mākua	Pulehu clay loam 0-3%; located on alluvial fans, stream terraces and basins; surface dark brown clay loam to 21"; underlain by dark brown, dark grayish brown and brown massive and single grain stratified loam, loamy sand and sily loam to 39"; permeability moderate; runoff slow; erosion slight; used for sugar, truck crops and pasture
BS	Mākua	Beaches

PsA	Mākua	Pulehu clay loam 0-3%; located on alluvial fans, stream terraces and basins; surface dark brown clay loam to 21"; underlain by dark brown, dark grayish brown and brown massive and single grain stratified loam, loamy sand and sily loam to 39"; permeability moderate; runoff slow; erosion slight; used for sugar, truck crops and pasture
PuB	Mākua	Pulehu stony clay loam 2-6%; stones hinder tillage; runoff slow; erosion slight; used for sugarcane, truck crops and pasture
rSY	Mākua/ Kahanahā`iki	Stony steep land 40-70%; stones and boulders on 50-90% of suface; vegetation kiawe, koa haole and grasses
LPE	Kahanahā`iki	Lualualei extremely stony clay 3-35%; impractical for cultivation unless stones removed; runoff medium to rapid; erosion moderate to severe; used for pasture

III. HISTORIC SETTING AND LAND USE

A. Introduction

The traditional landholding pattern in ancient Hawai`i was based on a sectioning of the land along natural boundaries into *ahupua`a*. The *ahupua`a* was the basic unit of social, economic and political life in pre-contact Hawai`i.

> Ideally an *ahupua`a* land section stretched in a wedge from its apex at a mountain top to its base in the sea, thereby including within its boundaries all environments necessary for a self-sustaining community. Again ideally, the inhabitants of an *ahupua`a* were related by blood and through children, and could claim some degree of relationship to the chiefly family to whom the *ahupua`a* had originally been assigned (Barrere, 1970:3).

The proposed transmission line alignment traverses a large portion of the *ahupua`a* of Mākaha ("fierce" [Pukui, *et al.*, 1974:139]), Kea`au, `Ōhikilolo ("prying out brains" [*ibid.*: 168]), Mākua ("parents" [*ibid.*: 143)], and Kahanahāiki (figure 4).

B. Traditional Accounts

Mākaha *Ahupua`a*

In the *ahupua`a* of Mākaha there are accounts of a talking stone on the hill of Malolokai, and two small pits on the sea side of the road at Kepuhi Point:

> "...We rode to the plain of Kumanomano,... and it is said of the place, the teeth of the sun is sharp at Kumanomano. Mākaha rose above like a rain cloud. We passed in front of a famous hill Malolokai. We saw the talking stone standing there (Haleiwa Hotele [about Leilono]." (Kuokoa, August 11, 1899 IN Sterling and Summers 1978:79)

A site recorded by McAllister in 1933 (site #175) also on Kepuhi Point at the base of the ridge which divides Mākaha and Kea`au Valleys:

> Long ago there lived here a group of people who are said to have been very fond of human flesh. At a high altitude on each side of the ridge, guards were stationed to watch

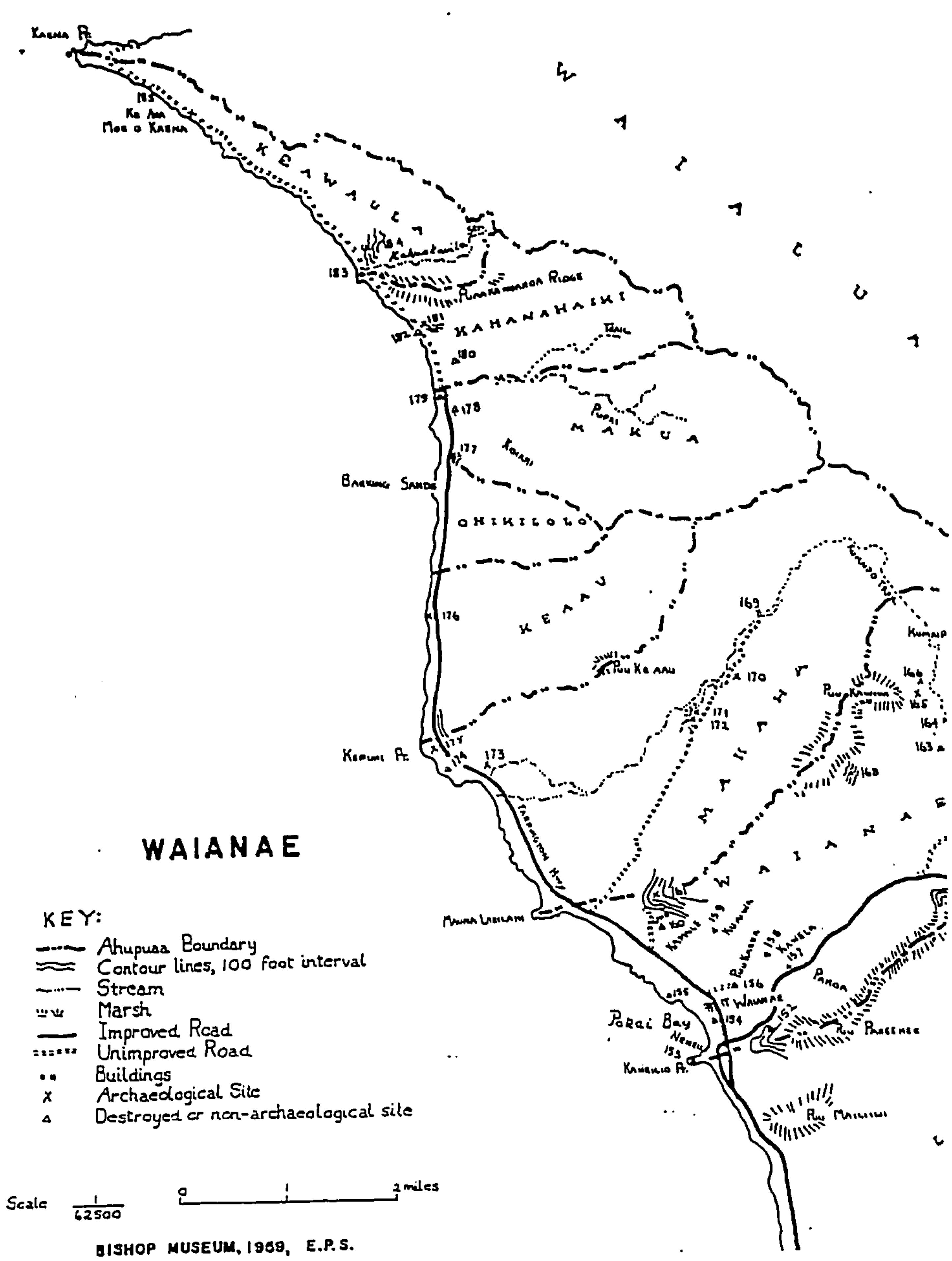

Figure 4 Sterling and Summers Map showing McAllister Sites in the Project Area *Ahupua`a*

for people crossing this narrow stretch of land between the mountains and the sea. On the Mākaha side, they watched from a prominent stone known as Pohaku o Kane; on the Kea`au side, from a stone known as Pohaku o Kaneloa. The individual who passed here was in constant danger of death, for on each side of the trail men lay in wait for the signal of the watcher. If a group of persons approached, too many to be overcome by these cannibalistic peoples, the guards called out to the men hidden below, "Moanakai" (high tide); but if, as frequently happened, only two or three people were approaching, the watchers called, "Mololokai" (low tide). The individuals were then attacked and the bodies taken to two small caves on the sea side of the road. Here the flesh is said to have been removed and the bones, skin and blood left in the holes, which, at high tide, were washed clean by the sea. (McAllister, 1933:121-122)

Kea`au *Ahupua`a*

In this *ahupua`a* there is mention of salt basins (McAllister site no. 176) in rocks projecting from the sands. McAllister (1933:123) describes them as "artificial depressions ranging from 1 to 2 feet in diameter...The spray from the reef continually deeps a film of water in the depressions. Upon evaporation, the film leaves a deposit of salt at the bottom." Also in Kea`au are petroglyphs located at the south end of Kea`au Park on the beach. Cox (1970) notes: "Human figures, open body deeply carved-dog. ±5 units."

`Ōhikilolo *ahupua`a*

In this *ahupua`a* there is the mention of "barking sands" which were known to make a barking sound when traveled upon during the dry season.

> "Ohikilolo appeared before us, a place where sounding sands are found. They sound loud when forced together like the sounding sands of Nohili on Kauai." (Kuokoa, November 17, 1899; IN Sterling and Summers, 1978:83)

There are also numerous accounts of Kāneana or Mākua Cave which is interpreted to mean "Cave of God" (Sterling and Summers, 1978:81). The entrance of the cave can be seen while driving the Farrington Highway and is located on the *mauka* side of the road. Kāneana Cave is mentioned by McAllister as "the dwelling place of a shark goddess who held sway from Kaena Point to Kepuhi Point. When she took the form of a woman, she came up through a sea entrance and lived in the cave" (McAllister, 1933:123; Site 177).

Another story tells of a shark man who lived in the cave:

"It led me downward,
Into the heart of Waianae mountain,
This cave of Mākua;
It was dark, and damp, and very closed-in--
And I am sure I felt and evil force
As if some dark bloody deed had there been done;
So strong was this sense of malevolency
I hurried out
Into the warm sunlight,
Into the blinding day." (Stearns, N.D., Honolulu Star-Bulletin, 9/9/1939; Sterling and Summers, 1978:82)

Mākua *Ahupua`a*

Kumuakuopio *heiau* (McAllister site no. 178) was destroyed by highway construction in the 1960's (Kelly and Quintal, 1977:31) and was distinguished by a sand platform 120 by 100 feet and 20 feet higher than the surrounding land (McAllister, 1933; Sterling and Summers, 1978:83). A fishing shrine (*ko`a*) was also noted by McAllister as site no. 179; it was destroyed by military practice bombing

during World War II. Mākua Beach was also notable:

> "Mākua has a fine sandy beach like Mākaha, and it was a canoe landing of that vicinity, and for the canoes of strangers too. This was true of Mākaha too. This was a resort for travelers and here they slept till morning. It was cool then and so they could continue to Ka`ena. Kanaiki and Keawa`ula are the lands adjoining Mākua." (Na hunahuna no ka moolelo Hawaii, Kuokoa, Jan. 1, 1870, HEN: Vol. I, p. 2707; IN Sterling and Summers 1978:84)

Another story relates the presence of *Olohe* or *Ha`a* people who were trained in the art of wrestling and bone breaking. They were said to have pulled all of their hair out and oiled their bodies so opponents had no hold on them. Legends say they were robbers and perhaps cannibals who would take post in narrow passes where travelers would frequent. (Beckwith; IN Sterling and Summers, 1978:84).

Kahanahāiki *Ahupua`a*

Ukanipo *heiau* was first investigated by Thrum (1907), who records:

> A medium sized *heiau* of *pookanaka* class, paved but not walled, now in ruins; used as a place of burial. (Thrum, 1907:46)

The *heiau* was revisited by McAllister in 1933; he described the traditional uses as:

> The present Hawaiians believe that the bodies of the ali`i were placed on the lele until the kahuna-nui was informed by the gods to remove them to their final resting place appropriate ceremonies and offerings, usually at night. (McAllister, 1933:124)

C. Traditional Land Use

Past archaeological research and early documentation of the Wai`anae Coast suggest that the traditional land use pattern in the project area most likely comprised fishing along the coastal areas, with agriculture the mainstay further up the valleys. Indigenous artifacts found during test excavations for a

water main from Kea`au Beach Park to the Mākua Military Installation in Mākua Valley (Hammatt, *et al.*, 1986) indicated that there was most likely a fishing community occupying this stretch of the coast. These artifacts include "one pearl shell fishhook, three fishhook preforms, coral files, volcanic glass, and basalt tools" (Hammatt, *et al.*, 1986:72). A sub-surface archaeological survey by Tuggle (1994) resulted in the recording of four sites--State site nos. 4424,4425,4426, and 4427 (Fig. 5). The survey collected over 300 fish bones and two shark teeth with possible use wear at Kea`au Stream Bridge (formerly Mākaha Bridge 4). Also present were six species of gastropods, one species of bivalve (oyster) as well as sea urchin (Tuggle, 1994:53,54). These findings also give credence to a subsistence pattern based on exploitation of marine resources.

D. Historic Period

The first people of Hawai`i to sight Cook's ships (Jan. 1778) were from Wai`anae and Waialua O`ahu (McGrath, *et al.*, 1973:17). However, the first European account of the Wai`anae District comes from Capt. George Vancouver in March 1793:

> Westward of Opooroaa (Puuloa) was one barren rocky waste, nearly destitute of verdure, civilization or inhabitants, with little variation all the way to the west point (Kaena) of the Island. (McAllister 1933:112)

Vancouver, who was interested in resupplying his ship(s) was apparently unimpressed with the perceived resources, (i.e. fresh water and cultivated plants) available on the Leeward coast.

In the early 1800's Hawai`i became involved in the trading of sandalwood (*`ili-ahi (Santalum ellipticum)*; it was the first profitable export trade commodity. There were large stands of sandalwood on the slopes of the Wai`anae Mountains and by 1811 ships were anchoring off Wai`anae to trade directly with the local chiefs. From 1816 to 1818 the sandalwood trading in the Wai`anae Range was directly controlled by Kamehameha I, but with his death in 1819 the local chiefs were once again in control. The demands on the people (*maka`āinana*) were so oppressive that they pulled up saplings to avoid having to

harvest trees in the future (Kuykendall, 1938 and 1967). The 1800's were also a time of great decline in native population (especially in the rural areas). Epidemics, starting as early as 1804, and migration to the growing urban centers were the main causes.

> Many people have died in this archipelago in one year, and there are none to replace them; therefore the people of Hawaii are indeed diminishing.
>
> Clearly, the diminishing has taken place on Oahu, at Waialua, and Waianae and Ewa. It is same with our place, here on Kauai." (Translated by Frances Frazier. Unsigned, but probably written by William P. Alexander. [Ed.]: in Schmitt, 1973:25)

Population did not start to increase in the districts of Waialua and Wai`anae until sugar plantations initiated large-scale importation of Asian laborers in the 1880's. One of the few early accounts of the Ka`ena Point area, which was something of a backwater, was by the missionary Levi Chamberlain who recorded the following account of Keawa`ula (*ahupua`a* adjacent to Kahanahāiki) in 1826:

> About 12 o'clock we arrived at Keavaula, an indifferent village, but the place of a school, containing 24 scholars nearly all destitute of books and but five acquainted with the letters. (Chamberlain, 1826:490)

In the mid-1800's, change in land tenure, the *Mahele*, took place in Hawai`i. The change was from Hawaiian use-rights to that of private ownership. Ka`ena, including Kuaokala, was granted to Victoria Kamāmalu, granddaughter of Kamehameha I. She gave up the rights to the land, however, shortly after the original grant in 1848-49. These lands then became Crown Lands and by 1860 were converted to Government Lands. There were no grants of *kuleana*, "lands awarded to native tenants," which for the most part were "taro lands and considered the more valuable lands in the Islands" (Kuykendall, 1938: In Chinen 1958:31).

During the second half of the 19th century traditional subsistence was disappearing with the new emphasis on a market economy and maximizing profits of the privately owned lands. Sugar plantations started up in Wai`anae and Mākaha in the late 1870's and 1880's. In 1895, "Dillingham's Folly," the O`ahu Railway and Land Company, reached Wai`anae and by 1898 extended around Ka`ena Point.

Some of the railroad bed and associated infrastructure are still visible along the Farrington Highway which lies *makai* (seaward) of the road and but out of the cable alignment. Many Japanese worked on railroad construction which is reflected in the popular name for Keawa`ula Bay "Yokohama Bay." The rail line moved passengers and cattle and late in its career (mid-1940s) moved municipal refuse to a dump site at Keawa`ula. With railway service to Honolulu, sugar companies sprang up on O`ahu's north shore, including Waialua (ca. 1898).

However, within the project area, the main focus of the new commercialism was on ranching. The first lease of the newly created government lands of Kuaokala went to Peter Larken in 1868, but in 1873 the lease was taken over by Samuel Andrews who already leased Mākua-Kahanāiki-Keauwa`ula areas for cattle ranching. Samuel Andrews was the son of a missionary, but he took up life with a Hawaiian woman, Malaea Naiwi, in Mākua Valley in 1869. Andrews is said to have "identified himself with the native Hawaiians" (McGrath, *et al.*, 1973:31). On the shoreline of Mākua he and his wife built a church and a school house that supported a small community. In the 1880's, a Mrs. Kamealani got the government lease for "Kaena Palis`" it is not known what she did with the land, but she gave up the lease within 10 years.

In 1897 L.L. McCandless purchased Mākua Valley properties and leases from Andrews and requested the purchase of government lands at Ka`ena/Kuaokala. He was turned down and leased the land instead. By the early 1900's the McCandless ranching "empire" included large tracts of land in Nanākuli, Lualualei, Wai`anae, Mākaha, Kea`au, `Ōhikilolo, Mākua, and Kuaokala. McCandless lost the lease of Mākua-Kahanahāiki-Keauwa`ula-Kuaokala (General Leases 1740 & 1741) to Frank Woods in 1925. Woods, a cattle rancher from Kohala, Hawai`i was to use the lands as "fattening lands" to "top-off" cattle before sending them to the slaughter house. Woods only kept the leases for some three years, at which time he turned them back over to McCandless. McCandless' "stock" (cattle, pigs, and goats)

were said to have caused severe damage to the forest reserve(s) as fencing was inadequate (McGrath, *et al.*, 1973:31).

Yent (1991:6) has noted that "enclosures, corrals, and well sites are recorded at Keawa`ula but the ranchers lived at Kahanaiki or Mākua." By the early 1920's, the Dillingham Ranch was based in Mokuleia.

Another entrepreneur more important for the project area was the Honolulu real estate man and politician C.D. Pringle. Starting in 1921, Pringle began an enterprise to grow pineapple up on the Kuaokalā plateau in association with farmers of Japanese ancestry. A major problem they faced was how to get the pineapples down off the steep sided 800' high plateau. A War Department Corps of Engineers map dated 1922 (Fig. 5) shows no roads whatsoever back from the coast. "Pringle tried to construct a cable arrangement to lower pineapple he and other farmers grew on the high flatlands to Keaau for packing and rail shipment to Honolulu" (Whitten 1966:B-2). It is related that "Pringle abandoned the cable project and transported the pineapple by wagon down the Pringle Route to meet O`ahu Railway and Land Company trains on the north shore" (*ibid.*).

E. Mahele Claims

The of land claims of the Māhele (1848-1853) within the project area are situated along the coast and in general list the sea and/or *pali* as one of the boundaries. In all of the *ahupua`a,* cultivation was the dominant description for land use in the claims. These agricultural lands were most likely used for the production of sweet potatoes; as Handy (1940) notes "sweet potatoes were planted on the dry slopes of Nanakuli, Lualualei, Waianae-kai, and the other small valleys as far as Mākua" (Handy, 1940:156). Fishing was also a major component of diet as documented in the archaeological findings of Hammatt, *et al.*, (1986).

Land claim #s	Claimant	Ili	Land Use	Landscape features	Awarded/Not awarded
6057	Hawea	Keau	cultivation, house	dunes	not awarded
5967	Muki	Keaunui	cultivation, house,	pali, sea	Aw. 1 apana; 1 kula; 6.398 acres
5739	Kanaue	Keaunui	cultivation	pali, sea	Aw. 2 apana; 1 kula; 1 house lot; 17.32 acres
5736	Kihi	Keaunui	pasture, house	pali, sea, loko (pond)	Aw. 1 apana; 1 kula; 1 house lot; 12.98 acres
2937	Harbottle, Wm.	*`Ōhikilolo*	pasture	n/a	Aw. 1 apana; 532.2 acres
6044	Ainoa	*`Ōhikilolo*	cultivation, house	pali, sea	Aw. 1 apana; 1 kula; 1 house lot; 6.25 acres
6048	Wahapuu	*`Ōhikilolo*	cultivation, house	pali, wall/fence, sea	not awarded
9705	Hoewaa	Haunouli, Papaa, Papaakai	house	beach, pali, stream	Aw. 1 apana; 14.931 acres
9709	Kuli	Haunouli, Koiahi 3, Kawela	house lot	wall, pali, kou tree	Aw. 3 apana; 14.967 acres

Land claim #s	Claimant	Ili	Land Use	Landscape features	Awarded/Not awarded
9054	Kawaa	Kalena	n/a	stream, kula,	Aw. 1 apana, 18.1 acres
9053	Kealahua	Kulaelawa	n/a	pali, sea shore	Aw. 1 apana; 12.922 acres
236K	Kalama	Haonouli	n/a	ediface, road, pali	Aw. 1 apana; 3.136 acres
5556	Kalauli	Kahaniki	cultivation	pali, sea, wall	Aw. 2 apana; 3.63 acres
5565	Kamaka	Kahanaiki	cultivation, house	pali, sea	Aw. 1 apana; 23.94 acres
5667	Kaheana	Kahanaiki	cultivation, house	pali, sea, boundary wall	Aw. 2 apana; 12.53 acres
6092	Moo	Kahanaiki	cultivation, house	pali, sea, boundary wall, road of Kamaka	Aw. 2 apana; 10.732 acres
6134	Nika	Kaoawa	cultivation, house	pali, sea, house of Kaheana	Aw. 2 apana; 2.169 acres
9055	Kamae	Punapohaku	n/a	pali, stream, sea shore, hau tree, valley	Aw. 2 apana; 9.64 acres

IV. PREVIOUS ARCHAEOLOGICAL RESEARCH

A. Mākaha

McAllister (1933:121) designated two sites in the *ahupua`a* of Mākaha which fall into close proximity of the project area, which have since been destroyed. McAllister site # 174, Laukinui *heiau*, located on Kepuhi Point was described "Low walls inclose, what appear to be two low stone-paved platforms, the lower of which extends 10 feet beyond the end of the walls which open to the east... The *heiau* is so old as to be accredited to the menehunes and is said to have been the important one in the Mākaha Valley..." (ibid: 121). Also noted by McAllister were two small pits (also destroyed), Site # 175 Mololokai, which were on the sea side of the road "at the foot of the ridge which divides Keaau and Mākaha Valleys" (ibid; 121). This site was attributed to the group of people who were said to have been cannibals and would place the defleshed bodies of their victims in these small pits to be washed clean by the sea at high tide. The Mākaha Valley Historical Project (E.J. Ladd and D.E. Yen, editors) recorded site C4-93 (historical), in the lower valley survey area, and sites C4-265 and C4-287 (both historical) in the upper valley survey area. All three of these sites are well out of the present project area. In November, 1990, human skeletal remains were found in the Mauna Lahilahi area (site 80-07-3704), but were reinterred before analysis could be done (Kawachi, 1990). This burial was out of the present project area as well; it is noted here to indicate that this coastal area was used for burials. Michele Douglas (1991) examined a skeleton which had eroded from the sand near Mākaha Surfside Apartments (site 80-07-4064). The skeletal remains were found to be that of a 8-9 year old child (sex unknown). This site is also well south of the project area and therefor will be unaffected by the proposed project. Two other skeletons were examined by Elaine Jourdane in 1995 which were found eroding from the sand bank fronting the Mākaha Surfside Apartments (site 80-07-4064). The remains of two individuals were noted, one of which was a child, and both were subsequently reinterred (Jourdane, 1995).

B. Kea`au and `Ōhikilolo

McAllister (1933:123) identified one site in the *ahupua`a* of Kea`au. Site #176 was identified as salt basins which were artificial depressions in the protruding lava rocks used for collecting salt which had remained after sea spray evaporated. This site will not be affected by the proposed cable line. In the *ahupua`a* of `Ōhikilolo, McAllister also noted Kāneana Cave (see Traditional Accounts) which carried with it various legends, particularly that of the dwelling place of the shark goddess. Kennedy (1984) identified five sites (80-03-2887:1-5) in the back of Kea`au Valley, believed to be the locus of sweet potato cultivation (Kennedy, 1984). These sites will not be affected by the proposed cable alignment. One other site identified by Kennedy and his team were the remains of three railroad ties just *makai* of Farrington Highway, undoubtably remnants of the Dillingham Railroad. Lufty and Welch (1991) conducted an archaeological reconnaisance survey of Mākaha Bridges 3B, 4,5, and 5A and identified nine features northeast of Bridge 4 (Kea`au Stream Bridge). The features were given four site numbers (50-80-03-4424-4425-4426-4427) with three features on north bank of Kea`au Stream (4425), one alignment on north side of the stream (4426) and three terraces (4427). Site -4424 and -4425 were associated with permanent habitation, site 4427 being of agricultural function, and 4426 being remnants of an `ili boundary (Lufty and Welch 1991:7,8). Riford (1985) conducted an archaeological survey of `Ōhikilolo Valley and identified twenty-one sites, none of which are in the project area, and include walls, shelters, mounds, platforms and various agricultural features. One historic grave was recorded and identified as that of George Poe and is surrounded by a "roughly square wall of stacked boulders, filled and topped with cement, and dated May 11, 1984, constructed as a protective measure as the area had been graded before." (Riford, 1985:41) Hammatt, Borthwick and Schideler (1986) conducted subsurface testing along Farrington Highway from Kea`au Beach Park to Mākua Military Reservation. A total of nineteen 1 x 1 square test trenches were excavated which produced 275 artifacts (68 indigenous) from six test units (1, 2, 4, 5, 8, and 8C). Trenches 4 and 5 contained "undisturbed prehistoric (?) cultural layers

suggesting that the portion of the project right of way fronting `Ōhikilolo is the most archaeologically sensitive." (Hammatt, *et al*, 1986:62) Tuggle (1994) conducted a Phase II archaeological inventory survey for Mākaha Bridge 4 (now Kea`au Stream Bridge) which was a continuation of Lufty and Welch's 1991 investigation. The information collected during the excavations was sufficient to recommend sites 4424 (habitation deposit) and the associated structures of sites 4425,4426 and 4427 as eligible for nomination into the National Register of Historic Places (figure 5).

> This entire complex is one of the few intact examples of this phase of Hawaiian history remaining on the island of O`ahu. This deposit also probably contains a pre-1778 component. Consequently the potential is extremely high that Sites 4424,4425 and perhaps 4426, contain information that could contribute significantly to numerous questions regarding pre-contact to contact (1778) transition. (Tuggle, 1994:59)

Tuggle also notes that members of the Koa Mana Resources indicated that site 4424 "encompasses a traditional family burial ground, based on information from their kupuna." (Tuggle, 1994:18). This area is immediately adjacent to the project area and would therefore be considered sensitive. Davis (1989) conducted an archaeological reconnaisance of a portion of Kea`au and `Ōhikilolo *ahupua`a* and recorded 346 new features in his project area. One area of surface deposits is located on the *mauka* side of the highway approximately 800 feet north of the `Ōhikilolo Stream Bridge while the remainder of the features are not within the current project area. The density of these features, which are some of the highest in O`ahu ,"attests to the spatial integrity of what appear to be interrelated features comprising a major prehistoric and early historic Hawaiian settlement" (Davis, 1989:13).

C. Mākua and Kahanahāiki

Some of the earliest archaeological sites recorded in Mākua and Kahanahāiki were identified by McAllister (1933). Kumuakuopio *heiau* (site #178) and a fishing shrine (site# 179) have both been destroyed (Sterling and Summers, 1978:83). Site #180, Kaahihi *heiau*, has been destroyed. Site #181

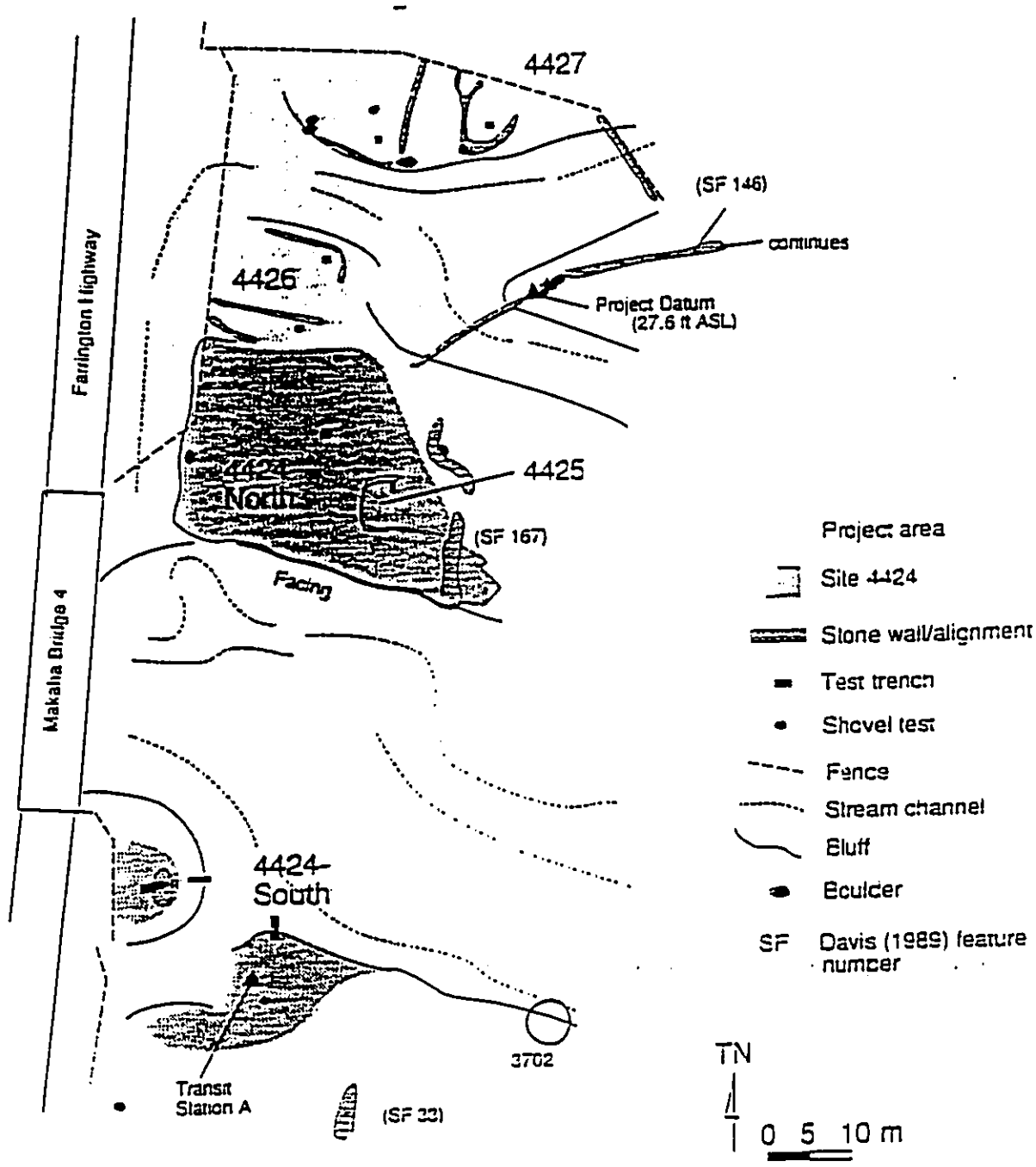

Figure 5 Map of Archaeological Sites (50-80-03-4424, -4425, -4426, -4427) from Tuggle (1994:6)

was identified as Ukanipo *heiau*, and site #182, a swimming pool which was used by the ali`i and located on the sea side of the Ukanipo *heiau* .

Hommon (1980) conducted an intensive survey of Ukanipo *heiau* and Kahanahāiki Terrace and found Ukanipo to be eligible for inclusion into the National Register of Historic Places (*Ibid*: 38). Kahanahāiki Terrace, however, "is evidently a natural physiographic step that has been minimally modified by clearing and the addition of veneers or retaining walls which were constructed, in part, of stones cleared from the central earth surface" (*Ibid*: 41). This structure was declared ineligible for the National Register of Historic Places because of it's lack of significance in understanding of the history or prehistory of the area.

Other portions of Mākua *ahupua`a* have been the subject of some intensive archaeological surveying and reconnaissance by Kelly and Quintal (1977). With a survey covering 1316.51 acres, they were able to inventory nineteen sites, ten of which were not previously recorded. Two of these sites, Ko`iahi gulch wall (site # 50-80-03-9525) and Punapohaku Complex (site # 50-80-03-9520) are near the project area, but will not be impacted.

D. Summary of the History of Land Use in Project Area

In general these studies show early (late prehistoric) and continuous (through the present) use of shoreline areas for fishing camps and marine exploits. During the early 1800's up until 1820 sandalwood exporting was common along the Wai`anae Coast until the resource was exhausted. By the mid-1800's the Wai`anae Coast saw a decline in traditional subsistence with an increase in sugarcane cultivation as far north as Makaha. The lands of Kea`au, `Ōhikilolo, Mākua and Kahanahāiki were utilized for ranching and pasture, with sweet potato cultivation being the most common crop grown in this arid region.

V. SURVEY RESULTS

The field survey was conducted by two Cultural Surveys Hawaii archaeologists walking the length of the project area. On March 23, 1999 the investigation consisted of a walking survey along Farrington Highway with one archaeologist on each side. From previous background research, the archaeologists were aware of previously recorded sites and features along the proposed alignment.

Near the Mākaha Cable Station terminus which is located *makai* of the highway, at the southern project area boundary, a residential community has been developed. The *mauka* side is predominantly a graded, bulldozed area up to the southern edge of Kea`au Beach Park (figure 6). Along this portion were four culverts, constructed of cut basalt, which are most likely greater than 50 years old (figure 7). Along Kea`au Beach Park on the *mauka* side of the highway the vegetation is predominantly *kiawe* with scattered houses fronting the road (figure 8). Past the beach park on the *makai* side distinct portions of the old O`ahu Railway and Land Company (OR&L) railroad bed were observed. The bed was lined in sections with coral and basalt boulders (figure 9).

At the Waikomo Stream Bridge the archaeologists investigated the profile of the sand dune which lies on the *makai* side of the highway and is currently eroding (figure 10). In this vicinity several isolated burials have been found eroding out of the sand dune and onto the beach, usually after strong wave action due to storm surges (Kawachi, 1991). Though there is a cultural layer existing in the upper portion of the dune, relatively little midden was observed actively eroding out (figure 11). Across the highway from electric pole 151 on the *makai* side of the highway is an unexploded artillery shell approximately 88 cm in length (figure 12). The specific class of ordnance it belongs to was not ascertained. Others like it may lie below the surface which would represent a definite hazard when digging a trench for the cable. Between electric poles 151-156 there is a roadcut on the *mauka* side of the highway about 1 meter in depth and trenching along this portion should not have any archaeological impact (figure 13).

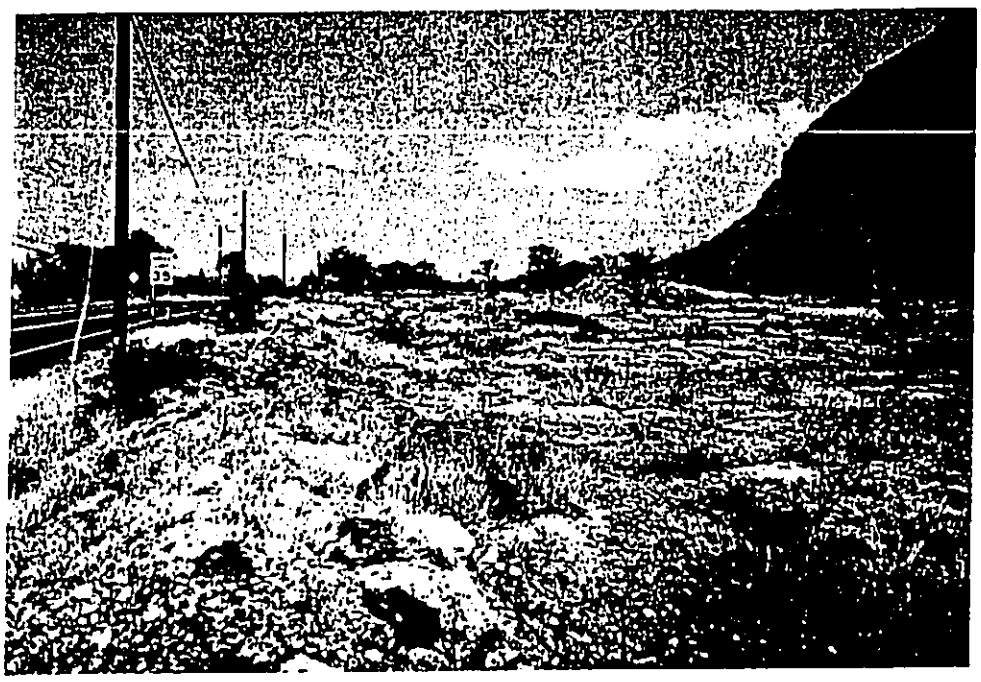

Figure 6 View of Bulldozed Area at the Southern Terminus of the Project Area

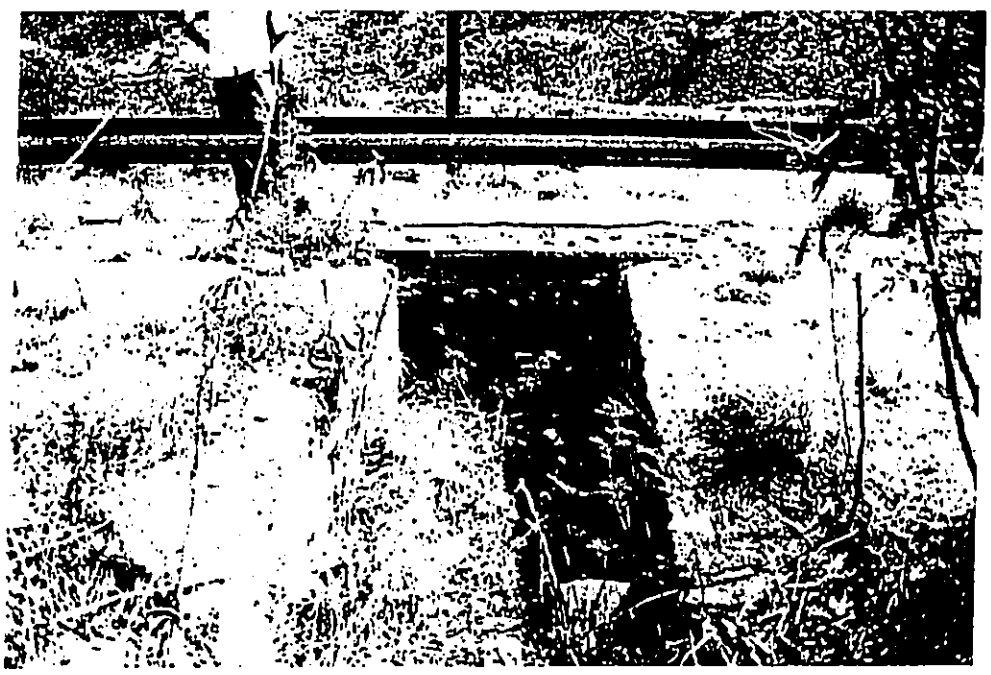

Figure 7 View of Drainage Culvert at Approximate Location of Makaha - Kea`au Border. Culvert is Observable from Both Sides of Farrington Highway.

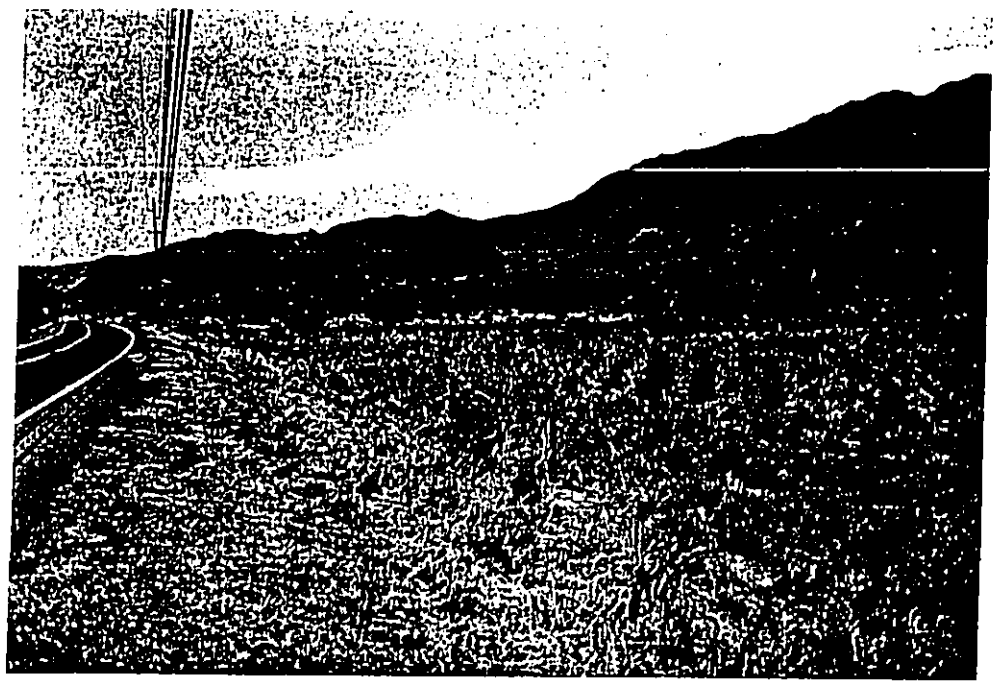

Figure 8 View of Kea`au Valley looking North (note Kiawe Trees and Road Berm)

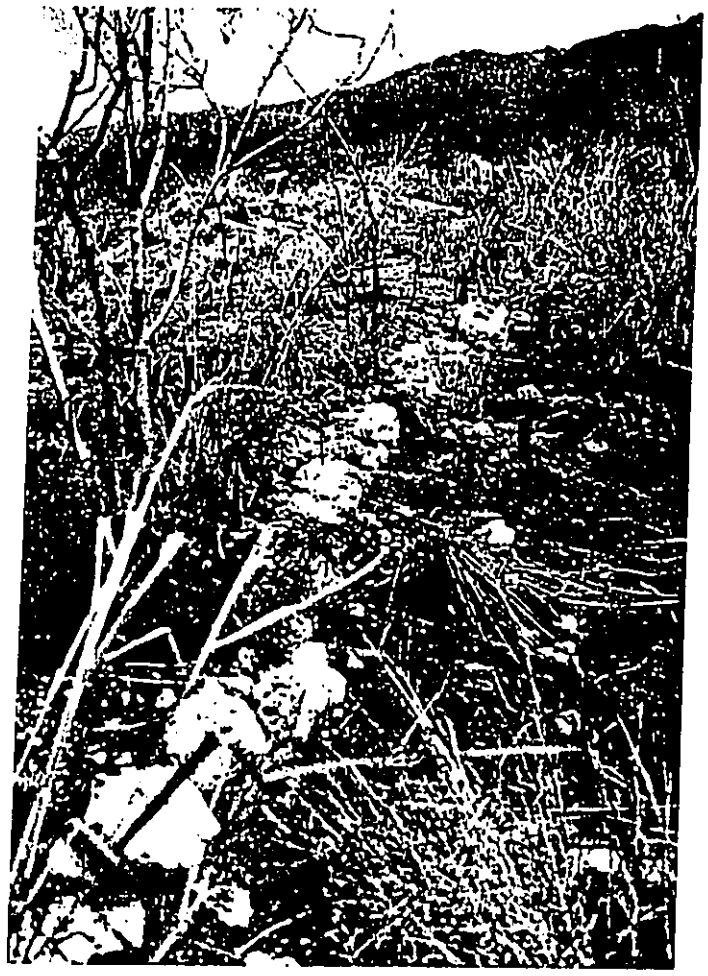

Figure 9 View of OR&L Railroad Bed with Coral Boulders Lining the Bed

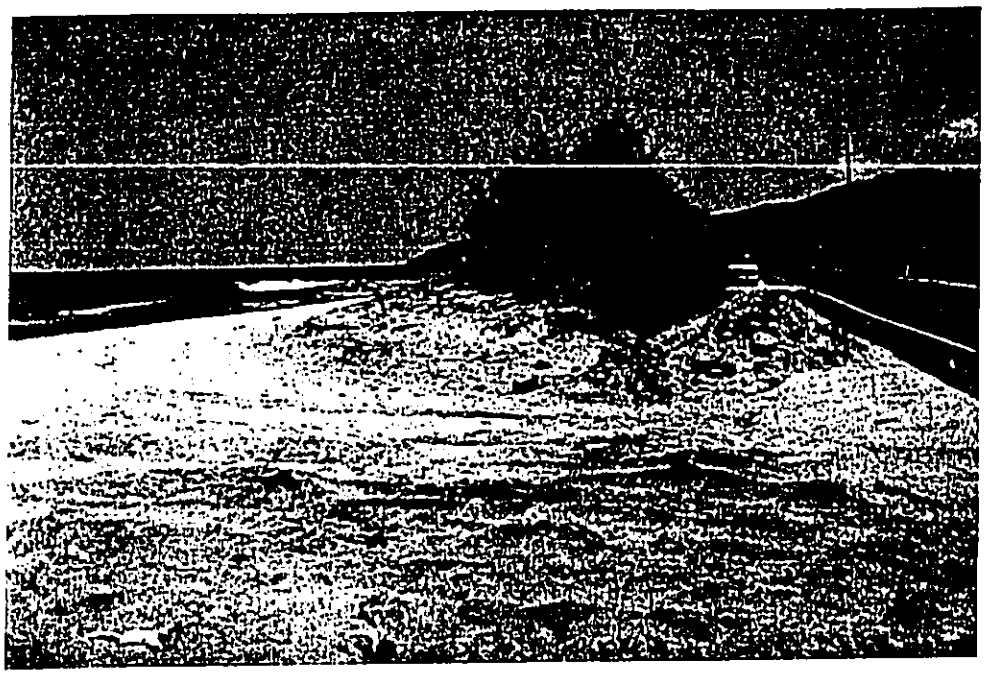

Figure 10 View of Sand Dune Fronting Farrington Highway Looking North

Figure 11 View of Dune Profile Fronting Farrington Highway Looking East (note: Dark Band near Surface which Shows Extent of Cultural Layer)

Figure 12 View of Artillery Shell

Figure 13 View of Mauka Road Cut South of Kea`au Stream Bridge

At Kea`au Stream Bridge (formerly known as Mākaha Bridge #4, immediately south of electric pole 160), the area has undergone extensive archaeological research and numerous sites and features have been located along the stream banks (Riford, 1985; Hammatt, *et al*, 1986; Davis, 1989; Lufty and Welch, 1991; Kornbacher, 1994; and Tuggle, 1994) (figure 14). Tuggle (1994) described site 4424 (which is present on both the north and south sides of Kea`au Stream) as "an extensive cultural habitation...(with) deposit ranges from 10-20 cm in thickness. It contains numerous sub-surface features, including hearths, trashpits, and possible postholes. No human interments were located during the present work, but they probably exist within the site area" (Tuggle, 1994:20). This area is sensitive and will require on-site monitoring by an archaeologist when any sub-surface trenching is in progress.

Past the Kea`au Stream Bridge is the `Ōhikilolo Ranch entrance. Farrington Highway is built up on a berm on the *mauka* side and is adjacent to a dune on the *makai* side. Along the *makai* portion of the highway is a graded area which extends northward to the `Ōhikilolo Stream Bridge (figure 15). Construction and improvements, as well as older railroad construction, have heavily impacted this area. On the *mauka* side the road bed and shoulder have been built up on a berm. This appears to preclude the possibility that trenching in this area will have any adverse effects on any archaeological sites or features. *Mauka* of electric pole 180 is a portion of a basalt boulder wall/terrace structure which will not be impacted by the cable alignment.

Continuing northward the archaeologists surveyed the area around Kāneana Cave (figure 16) and found the road to be cut on the northern and southern ends on the cave outcrop with only a small portion immediately in front of the cave (on both the *mauka* and *makai* sides) which will require on-site monitoring. Signage explaining the cave's significance is across the road on in the parking area (figure 17). Past the cave is an elongated outcrop extending north with a basalt boulder and cobble platform observable from the highway. This feature is in a high explosives area about 40 m *mauka* (west) from the highway.

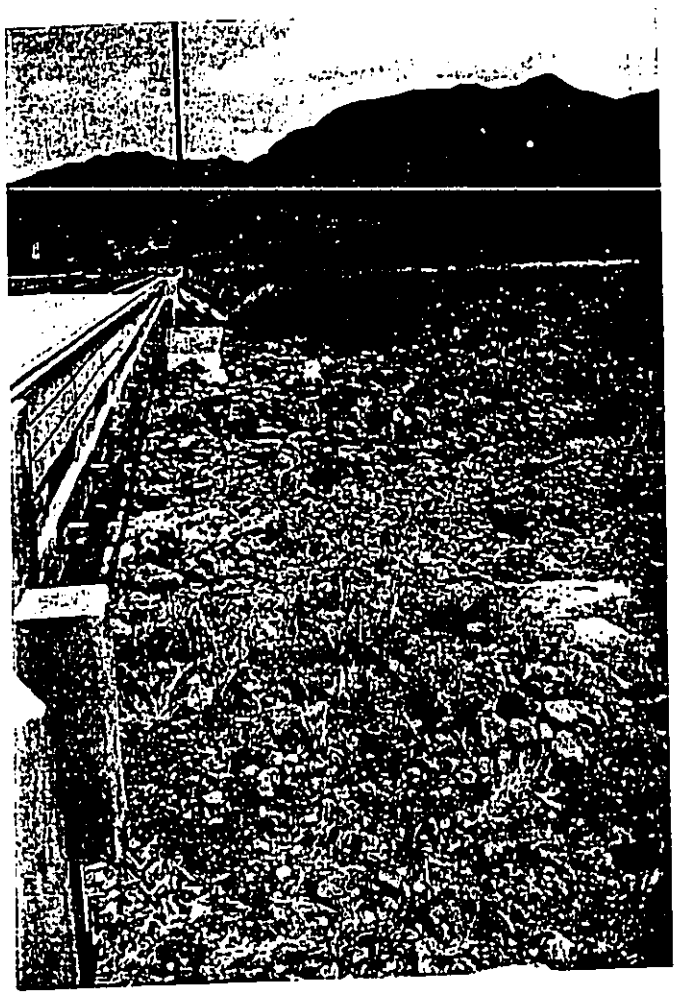

Figure 14 View Across Kea`au Stream Bridge Looking North

Figure 15 View of Graded Area Across from `Ōhikilolo Ranch on *Mauka* Side of Highway Looking North

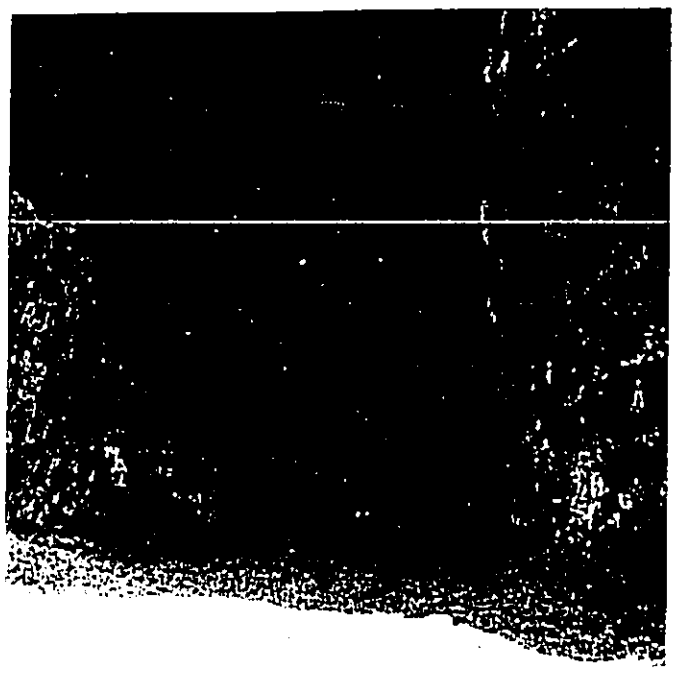

Figure 16 View of Kāneana Cave Entrance Looking East

Figure 17 View of Kāneana Cave Signage

From the beginning of the high explosives area in the Mākua Valley to the cemetery across from the Mākua Military Installation the highway is cut on the *mauka* side and no archaeological features were observed which will be impacted if the alignment stays on the *mauka* shoulder. The cemetery on the *makai* side of the highway which is across from the Mākua Military Installation Lookout Tower contained several marked graves with interment dates from the late 1800's (figure 18). Also present were several gravestones with Chinese or Japanese characters as well as gravestones with no markings whatsoever. It is very probable that there are many graves in the cemetery which are not marked at all, in which case monitoring will be recommended if the alignment runs on the cemetery (*makai*) side of highway. The area approximately 200 feet north of the cemetery extending 200 feet south of the cemetery would be part of the monitoring plan.

North of the Mākua Military Installation the archaeologists relocated the Ukanipo *heiau* and the Kahanahāiki platform (figures 19 and 20), both of which are well (>25 m) *mauka* of the highway and out of the proposed cable alignment. From this point up to Ka`ena Point State Park the highway has been cut on the *mauka* side into bedrock and any trenching along this stretch should not impact any archaeological sites or features.

Figure 18 View of Cemetery and Mākua Military Installation Looking East

Figure 19 View of Ukanipo *Heiau*

Figure 20 View of Kahanahāiki Platform

VI. SUMMARY AND RECOMMENDATIONS

A. Summary

Background research and a field survey suggested that the proposed alignment for a AT&T telecommunications cable from the Mākaha Cable station in the northern portion of the Mākaha *ahupua`a* along the Farrington Highway extending up to the Keawa`ula Cable Station appears to be relatively free of archaeological encumberance. Because of the construction of the highway roadbed and road cuts, much of the highway right-of-way is free of any archaeological sites or features. There are, however, four areas of the project corridor which have escaped previous development activities and have been linked to past habitation and possible burial locales (figure 21).

B. Recommendations

Below are four areas of archaeological concern which are recommended for on-site monitoring during the construction of the proposed cable alignment:

1) Beginning at a point 400 feet south of the Waikomo Stream Bridge, monitoring is recommended north, extending approximately 1300 feet to the First Hawaiian Bank Recreation Center access road on the *mauka* side of the freeway. Because of the dune which is adjacent to the highway, and the presence of burials in similar types of environments, this area is considered extremely sensitive (Kawachi, 1991). If the cable alignment is to run on the *makai* side of the highway, however, monitoring is recommended from the same southern point, but will extend .9 miles north along the adjacent sand dune.

2) Beginning at a point 400 feet south of the Kea`au Stream Bridge, on the *mauka* side of the highway, monitoring is recommended up to the north end of the Na `Ōhikilolo Stream Bridge, a stretch of about 1500 feet. Portions of archaeological sites 50-80-03-4424, -4425, -4426 and -4427 are situated on the *mauka* side within 10 meters of the Kea`au Stream Bridge on both the north and south banks of the

stream. This area was found eligible by Tuggle (1994) for the National Register of Historic Places as a complex which possess integrity, has made an important contribution to the broad pattern of history and has yielded or is likely to yield information that is important for research on prehistory and has important traditional cultural value (Tuggle, 1994:60).

3) Along the entrance (*makai* and *mauka* of Farrington Highway) of Kāneana Cave. Though this site has not been nominated for the National Register of Historic Places, Kāneana Cave was used for "ancient rites" into historic times as late as 1875 (*Honolulu Star-Bulletin, 4-4-25; Sterling and Summers,* 1978:81) and is still widely regarded as a sacred place. Because of the importance of this cave in both prehistoric and historic times monitoring is recommended to take place in the areas immediately in front of the cave entrance on both sides of the highway except where the road cut has obviously penetrated into the bedrock.

4) On the *makai* (west) side of the highway across from the Mākua Military Installation, monitoring is recommended at a point 200 feet south and extending 200 feet north of the cemetery for a total of about 600 feet.

As a note of caution, if any inadvertent discovery of burials or other cultural resource is uncovered during trenching of any monitored or unmonitored portions, all work in the immediate vicinity must be halted and the SHPD should be contacted immediately.

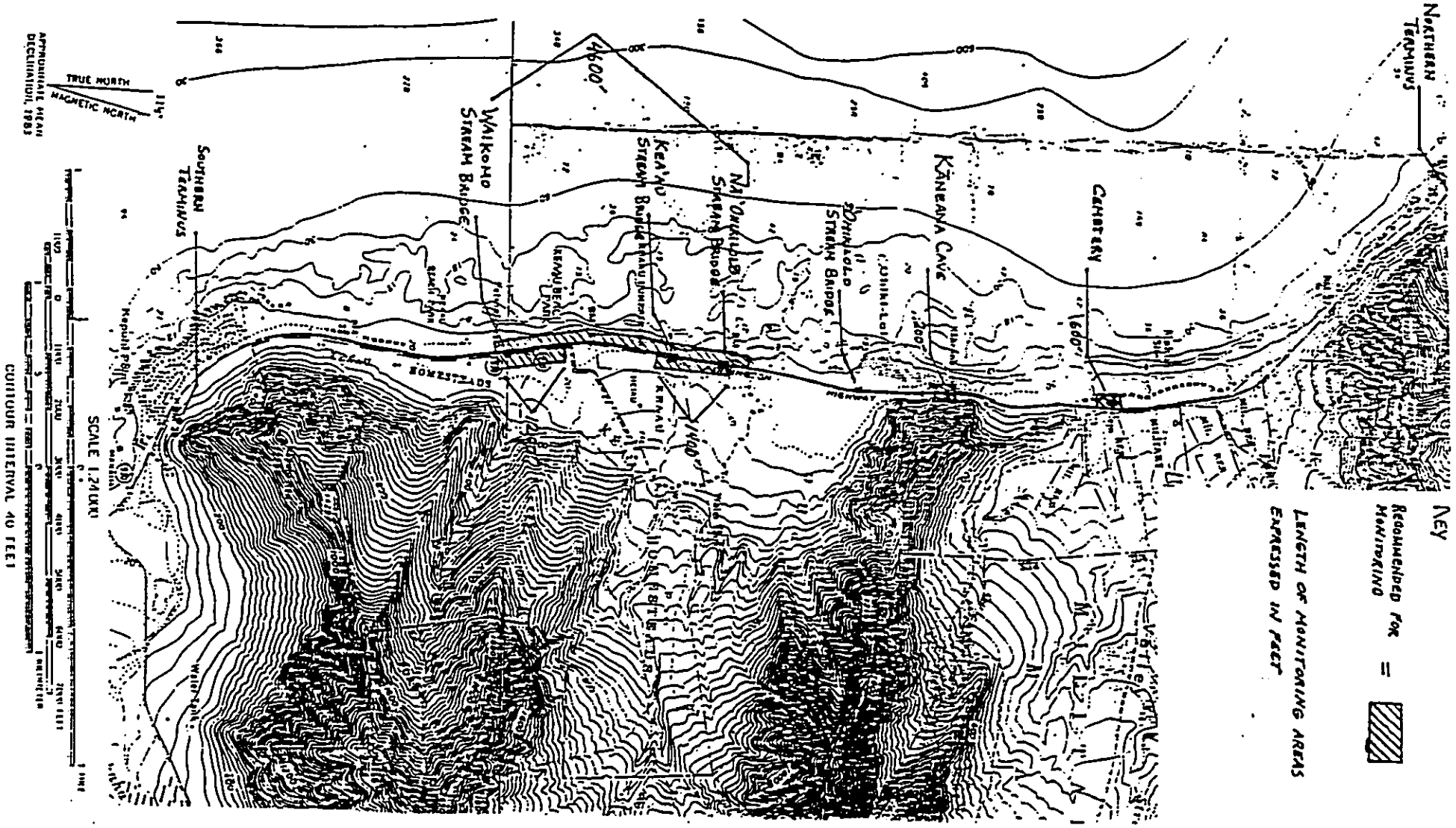

Figure 21 U.S.G.S. Topographic Map Showing Areas Recommended for Monitoring Along Project Corridor

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APPENDIX D

Comments and Responses to the Draft Environmental Assessment

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 10TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4182 • FAX: (808) 523-4054

JEREMY HARRIS
MAYOR

WILLIAM D. BALFOUR, JR.
DIRECTOR

MICHAEL T. AMII
DEPUTY DIRECTOR

May 8, 1999

Mr. Kevin F. Lorenzini
AT&T
1431 North Market Boulevard, Suite 9
Sacramento, California 95834-1942

Dear Mr. Lorenzini:

Re: Draft Environmental Assessment
AT&T Cable Project, Waianae, Oahu, Hawaii

We have reviewed the draft of the above-referenced document and find that the project will not have any impact on our public recreational facilities or programs.

Thank you for the opportunity to review the project's draft environmental assessment.

Should you need further information, please contact Mr. John Eveland, Executive Assistant, at (808) 527-6038.

Sincerely,

W. D. Balfour Jr.

WILLIAM D. BALFOUR, JR.
Director

WDB:cu
(99-1102GT)

cc: Mr. Michael Amuro, Department of Transportation
✓Ms. Joanne Hiramatsu, Townscape, Inc.

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July 6, 1999

Mr. William D. Balfour, Jr., *Director*
Department of Parks and Recreation
City and County of Honolulu
650 South King Street, 10th Floor
Honolulu, Hawaii 96813

Dear Mr. Balfour:

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated May 20, 1999 for the subject project. We appreciate your review of the document.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

DEPARTMENT OF DESIGN AND CONSTRUCTION

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 2ND FLOOR
HONOLULU, HAWAII 96813
PHONE: (808) 523-4564 • FAX: (808) 523-4567

JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI, AIA
DIRECTOR

ROLAND D. LIBBY, JR., AIA
DEPUTY DIRECTOR

DCP 99-356

May 20, 1999

AT&T
1431 N. Market Blvd., Suite 9
Sacramento, CA 95834-1942

Attention: Kevin F. Lorenzini

Greetings!

Subject: Draft Environmental Assessment (DEA)
for AT&T Cable Project

The following are comments to the Draft Environmental Assessment for AT&T Cable Project:

1. Elaborate on impact to access to Makaha Beach Park and Keaau Beach Park. What is the anticipated construction duration? Draft EA refers to State recreation resources. These are City public facilities.

2. Appendix C: Archaeological Assessment

   Will the remnants of the OR&L be further impacted? Is existing documentation adequate and satisfactory, and if so the sources should be cited in the Draft EA.

If you have any questions, please call Greg Hee of the Division of Planning and Programming at 527-6977.

Very truly yours,

for RANDALL K. FUJIKI
Director

cc: OEQC
Dept. of Transportation
Townscape, Inc.

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July 6, 1999

Mr. Randall K. Fujiki, Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 2nd Floor
Honolulu, Hawaii 96813

Dear Mr. Fujiki:

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated May 20, 1999 for the subject project. We appreciate your review of the document.

The construction and installation period for the project is expected to occur from September to December 1999, with service beginning in Year 2000. Access to Makaha Beach Park will not be impacted by construction activities because the trenching will begin at an existing manhole on the northern side of the park.

At Keaau Beach Park, there are two access points. Because approximately 800 to 1000 feet of the cable project will be constructed each day, the impact on these two access points will be no more than one day each. At least one access to the park will be left open at all times.

The OR&L will not be impacted by the project. The OR&L is located makai of Farrington Highway and the cable installation. The cable alignment has changed to the mauka side of Farrington Highway starting at the western end of Keaau Beach Park.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

WAIANAE COAST NEIGHBORHOOD BOARD NO. 24
c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

June 8, 1999

AT&T
Attn: Mr. Kevin F. Lorenzini
1431 N. Market Blvd., Suite 9
Sacramento, CA 95834-1942

Dear Mr. Lorenzini:

Re: AT&T Cable Project, O`ahu

The Wai`anae Coast Neighborhood Board No. 24 (WCNB#24) heard a proposal regarding the proposed plan for routing at AT&T cable from Makaha to Keawa`ula at our regular board meeting scheduled June 1st. At that time the board approved a motion to support the project as proposed by the consultant, Townscape, Inc. (Joanne Hiramatsu). The vote taken was 17-0-1 (Ayes-Nays-Abstentions).

Support for the project was given on the basis of the need for the project and that all considerations regarding impacting cultural sites had been addressed by the consultant and that they had contracted with a local resident knowledgeable about cultural sites along the route the cable was projected to run.

The major concern raised reflected the community's desire to guarantee cultural sites were properly considered in the planning of the project.

If you have any questions regarding this subject, please do not hesitate to contact me at 696-0131.

Sincerely,

Cynthia K.L. Rezentes, Chair
Wai`anae Coast Neighborhood Board No. 24

cc: Neighborhood Commission
Senator Colleen Hanabusa
Representative Emily Auwae
Representative Mike Kahikina
Councilmember John DeSoto
Department of Transporation, State of Hawaii, Attn: Mr. Michael Amuro

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July 6, 1999

Ms. Cynthia K.L. Rezentes, Chair
Waianae Coast Neighborhood Board No. 24
C/o Neighborhood Commission
City Hall, Room 400
Honolulu, Hawaii 96813

Dear Ms. Rezentes:

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 8, 1999 for the subject project. We appreciate your review of the document and the Board's support for the project.

We will continue to consult with the local resident that is knowledgeable about cultural resources along the cable route to ensure that any impacts on cultural resources are properly mitigated.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
JANET E. KAWELO

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

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

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

June 14, 1999

Kevin F. Lorenzini
AT&T
1431 N. Market Blvd., Suite 9
Sacramento, CA 95834-1942

LOG NO: 23595
DOC NO: 9906EJ05

Dear Mr. Lorenzini:

SUBJECT: **Chapter 6E-42 Historic Preservation Review--Draft Environmental Assessment for AT&T Cable Project Makaha to Keawaula, Wai'anae, Hawaii**
Makaha to Keawaula, Wai'anae, O'ahu
TMK: Zone 8

Thank you for the opportunity to review the draft environmental assessment (DEA) for the AT&T Cable project. The project proposes to install a fiber optic cable within the State right-of-way of Farrington highway and in existing utility easements in order to connect the Makaha and Keawaula Cable stations. A review of our records shows that ground disturbance for this project has the potential to have an adverse effect on unknown subsurface historic sites within the 5.7 mile project corridor.

Although no surface historic sites exist within the project corridor, the archaeological assessment (included in Appendix C of the DEA) indicates that there are four areas within the corridor where it is likely that the trenching activities may have an adverse effect on historic sites. Several sites including an habitation and agricultural complex (50-80-03-4424, 4425, 4426 and 4427) the Kaneana Cave, and portions of a historic cemetery at Makua are adjacent to the proposed corridor. Also, human burials may be located in the dune sand deposits within the proposed corridor. These sites are considered significant for the information they have or are likely to yield which is important to the history and prehistory of the area, and they also have cultural significance due the presence of human burials.

Therefore, we recommend that archaeological monitoring be conducted within the four areas specified in section 3.6 of the DEA.

An acceptable archaeological monitoring plan should be prepared and submitted to this office for review and acceptance prior to beginning any ground disturbance. In addition, provisions must be made for the treatment of human burial remains discovered inadvertently during routine construction activities.

An archaeological monitoring plan must contain the following eight specifications: 1) The kinds of resources that are anticipated; 2) Where in the construction area the resources are likely to be found; 3) How the expected types of resources will be treated, if found; 4) The archaeologist conducting the monitoring has the authority to halt construction in the immediate area of a find in order to carry out the plan; 5) A coordination meeting between the archaeologist and construction crew is scheduled, so that the construction team is aware of the plan; 6) What laboratory work will be done on resources that are collected; 7) A schedule for report preparation; and 8) Details concerning the archiving of any collections that are made.

If an acceptable archaeological monitoring plan is prepared which addresses these concerns, and if the plan is implemented, then we believe that the adverse effect this project would have on significant historic sites will be mitigated.

If you have any questions please call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk

c: Michael Amuro, Department of Transportation State of Hawaii 869 Punchbowl St. Honolulu, HI 96813-5097
✓Joanne Hiramatsu, Townscape, Inc. 900 Fort Street Mall, Suite 800, Honolulu, HI 96813

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July 6, 1999

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

Dear Mr. Hibbard:

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 14, 1999 for the subject project. We appreciate your review of the document.

As a result of consultation with a local resident knowledgeable about cultural resources along the cable alignment, a portion of the route from the western end of Keaau Beach Park to Waikomo Bridge has been realigned to the mauka side of Farrington Highway to avoid possible subsurface archaeological resources. Thus, the DEA will be revised to recommend monitoring in this area for approximately 1,300 feet from 400 feet south of Waikomo Bridge to the First Hawaiian Bank Recreation Center. All other archaeological monitoring recommendations made in Section 3.6 of the DEA will remain the same.

As stated in the DEA, archaeological monitoring was not recommended at the cemetery at Makua because the cable will be installed on the mauka side of Farrington Highway and in the paved shoulder area. Farrington Highway fronting Makua Valley was constructed on fill material that is approximately eight to ten feet above the natural ground elevation. Therefore, archaeological monitoring will occur in three sections of the alignment as stated in the DEA.

An archaeological monitoring plan will be prepared and submitted to your office for review and acceptance prior to any ground disturbance.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843

June 15, 1999

Mr. Kevin F. Lorenzini
AT&T
1431 North Market Boulevard, Suite 9
Sacramento, California 95834-1942

Dear Mr. Lorenzini:

Subject: Your Transmittal of May 17, 1999 on the Draft Environmental Assessment for the Proposed AT&T Cable Project from Makaha to Keawaula, Waianae, Oahu

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the proposed AT&T cable project in Waianae.

The construction plans showing the location of the existing Board of Water Supply waterlines should be submitted for our review.

If there are any questions, please contact Barry Usagawa at (808) 527-5235.

Very truly yours,

CLIFFORD S. JAMILE
Manager and Chief Engineer

cc: Office of Environmental Quality Control, State of Hawaii
Department of Transportation, State of Hawaii
Joanne Hiramatsu, Townscape, Inc.

TOWNSCAPE, INC.

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July 6, 1999

Mr. Clifford S. Jamile
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Mr. Jamile:

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 15, 1999 for the subject project. We appreciate your review of the document.

The construction plans showing existing Board of Water Supply waterlines in the vicinity of the cable route will be submitted to your office for review.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

TOWNSCAPE, INC.
900 Fort Street Mall, Suite 800
Honolulu, Hawaii 96813

June 15, 1999

Mahalo for the opportunity to review and comment on the planned AT&T Cable Project from Makaha to Keawaula. To minimize the impact that construction work might have on culturally sensitive sites in the area I have consulted with kupukaaina, native Hawaiian families that have ancestral ties to the Keaau-Makua-Keawaula district. The following recommendations for the cable alighnment are:

. that the tie in begins at the existing Makaha Cable Station spare duct manhole on the makai side of Farrington Highway.

. that the alignment follows this makai route along Farrington Highway to the last access road to Keaau Beach Park (Keawaula end).

. that from this point the alignment crosses over to the mauka side of Farrington Highway and continues on the mauka route parallel to the existing GTE Hawaiian Telephone cable and existing waterline.

. that horizontal boring be used under culverts, bridges, elevated roadsides and known historic sites to minimize erosion and prevent negative impact to cultural sites.

. that excavation be minimal and not greater than the 2-foot wide and 4 feet deep trench.

. that AT&T receive input from me before selecting the 12 manhole alignment sites.

. that the construction contractor consult with Mr. Albert Silva of Ohikilolo Ranch when construction work impedes on his property and fence line.

. that horizontal boring be used in front of the large monkeypod trees lining Ohikilolo Ranch to prevent disturbance to its root system.

that the alignment remain as much as possible on the shoulders of Farrington Highway.

. that cultural and burial monitoring be conducted in the identified culturally sensitive areas and sand dunes of Keaau-Waikomo beach, Pahoa-Keaau Stream habitation complex, Ohikilolo Ranch, Kalaeopaakai, Kaneana Cave and Makua-Keawaula sites.

. that no trenching be excavated along the Makua Military Range fence line to avoid burial and archaeological sites as well as unexploded ordnances.

. that Koa Mana, a Waianae kupukaaina organization be contacted if burial and cultural sites are inadvertently disturbed en route.

. that the alignment ends at the existing manhole for the Keawaula Cable Station.

Sincerely submitted,

Glen Kila

Glen Kila

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July 6, 1999

Mr. Glen Kila
85-140 Maiuu Road
Waianae, Hawaii 96792

Dear Mr. Kila:

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 15, 1999 for the subject project and for working with us on the cable alignment. We appreciate your review of the DEA and your expertise on cultural resources.

Your list of recommendations will be incorporated into the construction documents for the project. The DEA will be revised to reflect recommendations applicable to the environmental review process.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

HWY-D 4005

RECEIVED
'99 JUN 15 P1:41
DEPT OF TRANSPORTATION
HIGHWAYS

DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
RECORD OF PLAN REVIEW

DATE: JUN 15 1999

SUSPENSE DATE: June 21, 1999

PROJECT: FARRINGTON HIGHWAY (KAENA POINT ROAD PROJECT NO. R-AD2(1) AND WPSO 23-
AT&T FIBER OPTIC TELECOMMUNICATIONS CABLE PROJECT, MAKAHA TO KEAWA

Please review enclosed DRAFT ENVIRONMENTAL ASSESSMENT for the subje project. Your comments and recommendation are greatly appreciated. you have any questions, please call Michael Okamoto at 692-7331.

PLEASE RESPONSD BY JUNE 21, 1999

FROM: RIGHT-OF-WAY BRANCH

TO:

[1] HWY- D Date Rec'd_____ Date Completed_____

Cost Estimate_____ Checked by_____

Hwy-DH p. 19 How is cable being bored under culverts ? Provide 1' space between culvert & cable

HWY-DO no comments

Hwy-D - No Comment.

[2] HWY-R Date Rec'd JUN 17 1999 Date Completed 6/18/99 Chk'd by

[3] HWY-RM Date Rec'd_____ Date Completed_____ Chk'd by_____

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July 6, 1999

State of Hawaii
Department of Transportation
Highway Division
Right-of-Way Branch
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Attention: Highway Design Office

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 15, 1999 for the subject project. We appreciate your review of the document.

In areas where the cable alignment passes under culverts, directional boring will be used to install the duct system. A one-foot space between the culvert and the cable will be specified in the construction documents.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
RECORD OF PLAN REVIEW

DATE: JUN 15 1999

SUSPENSE DATE: June 21, 1999

PROJECT: FARRINGTON HIGHWAY (KAENA POINT ROAD PROJECT NO. R-AD2(1) AND WPSO 23-1
AT&T FIBER OPTIC TELECOMMUNICATIONS CABLE PROJECT, MAKAHA TO KEAWA

Please review enclosed DRAFT ENVIRONMENTAL ASSESSMENT for the subje
project. Your comments and recommendation are greatly appreciated.
you have any questions, please call Michael Okamoto at 692-733

PLEASE RESPONSD BY JUNE 21, 1999

FROM: RIGHT-OF-WAY BRANCH

TO:

[1] HWY-P 277 - PSP Date Rec'd 6/16/99 Date Completed 6/17

Cost Estimate _____ Checked by 277

Inform applicant that we have an ongoing project involving possible relocation/ realignme of existing Farrington Hwy from the vicinity of Lepeuo St to Makaha Beach Park. In the event that the Highway is not realigned, in the future, we may need to widen Farrington Hwy on the mauka side.

[2] HWY-R Date Rec'd JUN 22 1999 Date Completed 6/22/99 Chk'd by

[3] HWY-RM Date Rec'd _____ Date Completed _____ Chk'd by

a:\at&t.c&r \ AT&T Cable \ 06-15-99

TOWNSCAPE, INC.

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email address: townscap@panworld.net
New e-mail: townscap@dps.net

July 6, 1999

State of Hawaii
Department of Transportation
Highway Division
Right-of-Way Branch
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Attention: Highway Planning Office

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 15, 1999 for the subject project. We appreciate your review of the document.

The applicant is aware that there are plans for possible relocation or realignment of existing Farrington Highway from Upena Street to Makaha Beach Park.

AT&T would appreciate being notified of the timing on the relocated/realigned highway and of any roadway widening projects that may affect their underground duct system.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
RECORD OF PLAN REVIEW

DATE: JUN 15 1999

SUSPENSE DATE: June 21, 1999

PROJECT: FARRINGTON HIGHWAY (KAENA POINT ROAD PROJECT NO. R-AD2(1) AND WPSO 23-I AT&T FIBER OPTIC TELECOMMUNICATIONS CABLE PROJECT, MAKAHA TO KEAWAUL

Please review enclosed DRAFT ENVIRONMENTAL ASSESSMENT for the subje project. Your comments and recommendation are greatly appreciated. ? you have any questions, please call Michael Okamoto at 692-7331.

PLEASE RESPONSD BY JUNE 21, 1999

FROM: RIGHT-OF-WAY BRANCH

TO:

[1] HWY- T Date Rec'd 6/15/99 Date Completed 6/29/99

Cost Estimate _____ Checked by PJ

Manholes must not be placed within the travelway. (All manholes must be placed outside of travelway) R/W should be wide enough to accommodate this. Make sure HWY-DB approves the hanging of the cables on the bridges.

[2] HWY-R Date Rec'd JUN 30 1999 Date Completed 6/30/99 Chk'd by ~

[3] HWY-RM Date Rec'd _____ Date Completed _____ Chk'd by _____

a:\at&t.c&r \ AT&T Cable \ 06-15-99

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New e-mail: townscap@dps.net

July 6, 1999

State of Hawaii
Department of Transportation
Highway Division
Right-of-Way Branch
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Attention: Highway Traffic Office

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 15, 1999 for the subject project. We appreciate your review of the document.

Wherever possible, manholes will be placed outside of the travelways. The design engineers for the project will coordinate with your office on the appropriate location of the manholes during the construction plans review process.

After further assessment of the alignment and bridges along Farrington Highway, it was determined that directional boring will be used under the streams versus hanging the cable on the bridges. Therefore, all bridge crossings will utilize the direction boring method to install the duct system.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743

JEREMY HARRIS
MAYOR

JAN NAOE SULLIVAN
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

June 16, 1999

1999/CLOG-3202(ST)
'99 EA Comments - Various

Mr. Kevin F. Lorenzini
AT&T
1431 North Market Boulevard, Suite 9
Sacramento, California 95834-1942

Dear Mr. Lorenzini:

Draft Environmental Assessment (EA)
AT&T Cable Project - Makaha to Keawaula
Waianae, Tax Map Keys: Various

We have reviewed the Draft EA for the above-referenced project received on May 14, 1999, and our comments are as follows:

Section 6.3 - Coastal Zone, Special Management Area (SMA) and Shoreline Setback Rules and Regulations

This section of the final EA should be revised to clarify that the installation of the proposed lines within existing utility corridors are exempt from SMA requirements pursuant to Section 25-1.3(2)(M), Revised Ordinances of Honolulu (ROH).

Section 9 - Determination, Findings and Reasons for Supporting Determination

We note that the Department of Public Works no longer exists. This section of the final EA should be revised to indicate compliance with the Department of Planning and Permitting.

Should you have any questions, please contact Steve Tagawa of our Coastal Lands Branch at 523-4817.

Very truly yours,

JAN NAOE SULLIVAN
Director of Planning
and Permitting

JNS:am

cc: Office of Environmental Quality Control
Michael Amuro, Department of Transportation
Joanne Hiramatsu, Townscape, Inc.

posse doc no. 5146

TOWNSCAPE, INC.

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July 6, 1999

Ms. Jan Naoe Sullivan
Director of Planning and Permitting
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Ms. Sullivan:

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 16, 1999 for the subject project. We appreciate your review of the document.

The DEA will be revised to reference Section 25-1.3(2)(M), Revised Ordinances of Honolulu (ROH), rather than Section 33-1.3(A)(xiii). References made to the "Department of Public Works" in Section 9 of the DEA will also be changed to "Department of Planning and Permitting."

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF STATE PARKS
P.O. BOX 621
HONOLULU, HAWAII 96809

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

JUN 17 1999

AT&T
Attention: Mr. Kevin F. Lorenzini
1431 N. Market Blvd., Suite 9
Sacramento, California 95834-1942

Dear Mr. Lorenzini:

Environmental Assessment for
AT&T Cable Project, Makaha to Keawaula, Waianae, Hawaii, May 1999

It is our understanding that installation of the AT&T cable will require opening a 2-foot wide, 4 feet deep trench between Makaha and Keawaula. The cable will be installed along Farrington Highway on either the makai or the makua side of the highway.

Ka'ena Point State Park includes a coastal strip from Makua to Ka'ena Point, and a well and pump station at Makua on the mauka side of the highway. Existing State Park improvements and a future State Park project may be impacted by the AT&T cable installation.

Existing Water System Improvements

In 1988 State Parks installed a well, pump station and waterlines at the north side of Makua Valley on the mauka side of the highway. The waterline route is highlighted in red on the attached drawing. The AT&T cable alignment crosses the State Park waterline alignment. At the edge of the road, the waterline is buried with approximately 2 feet of cover. State Parks asks that AT&T contact our Development Branch prior to finalizing plans for this section of the cable installation, and as installation work nears the waterline. The State Parks Development Branch Chief, Norman Shiroma, can be contacted at (808) 587-0305. State Parks will flag the waterline and monitor AT&T trenching in this area.

Future State Park Project to Enhance the Kaneana Cave

The Division of State Parks is also planning to enhance the area around Kaneana Cave. Improvements may include signage and landscaping. The DEA does not

indicate an anticipated date for cable installation. State Parks asks that this date be provided in order to insure that AT&T and State Parks project scheduling is coordinated.

Other Utilities Present in the Cable Alignment

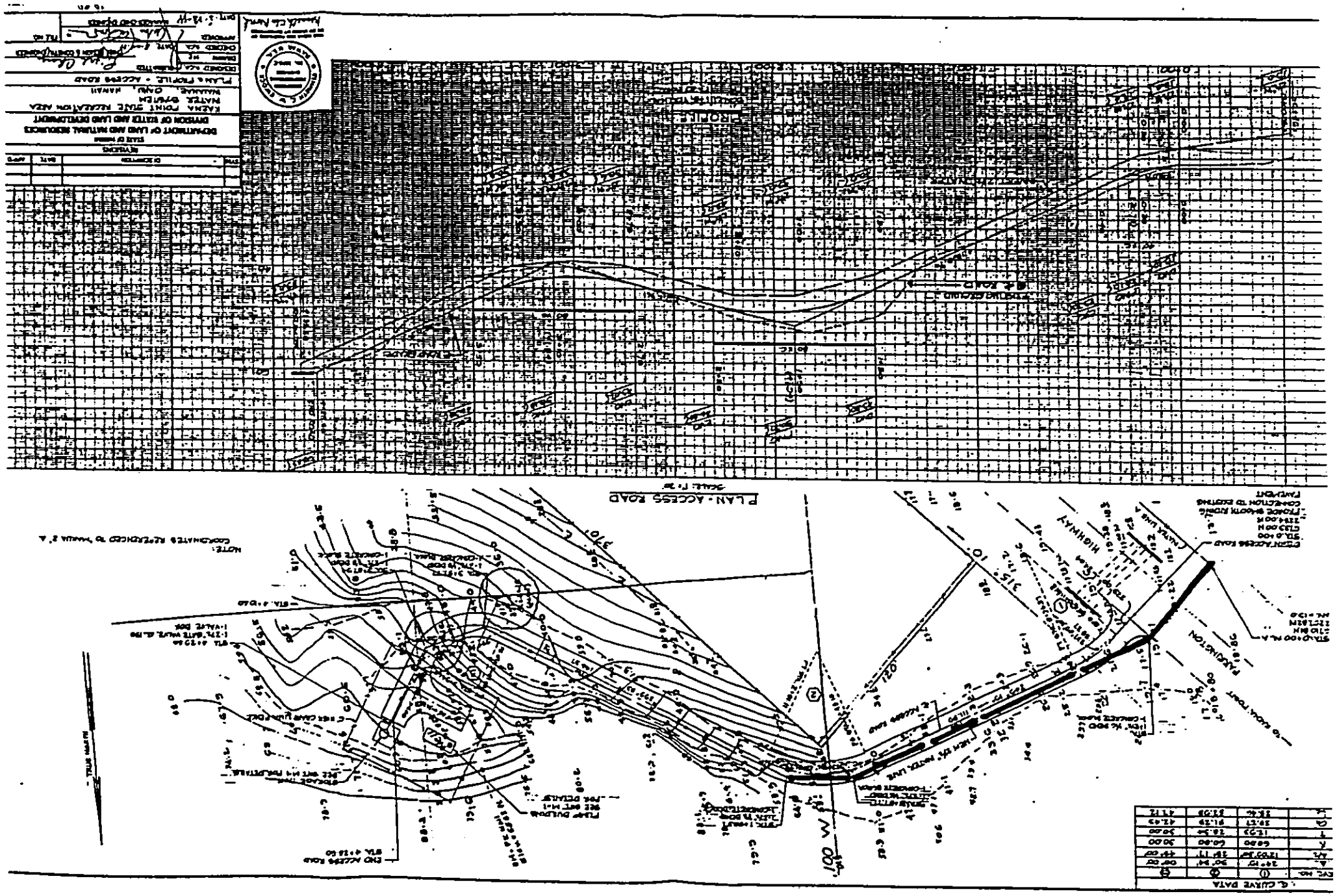
There may be other utility lines located within, or across the highway right of way, such as the United States Army waterline is buried on the mauka side of the highway at Makua Valley, and a GTE Hawaiian Telephone company line. The location of such lines must be confirmed to insure that service is not disrupted.

Thank you for the opportunity to review the DEA and provide comments. We look forward to working with AT&T during the installation of the cable.

Sincerely yours,

RALSTON H. NAGATA
State Parks Administrator

Attachments:
Ka'ena Point State Park Water System Plan



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July 6, 1999

Mr. Ralston H. Nagata
State Parks Administrator
Department of Land and Natural Resources
Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Nagata:

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 17, 1999 for the subject project. We appreciate your review of the document.

The State Parks Development will be contacted as construction nears the waterline at Makua, so that State Parks personnel can flag the waterline and monitor trenching activities.

The anticipated construction start date is September 1, 1999 with completion in December 1999. Trenching operations will begin at Makaha and move northerly towards Kaena Point State Park at 800 to 1,000 feet per day.

We are aware of the Army waterline and GTE telephone line on the mauka side of Farrington Highway. Location of these utilities will be shown on the construction drawings to insure that service is not disrupted during construction.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. BOX 621
HONOLULU, HAWAII 96809

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

JUN 22 1999

Ref:PS:EH

Mr. Kevin F. Lorenzini
AT&T
1431 Market Blvd., Suite 9
Sacramento, CA 95834-1942

Dear Mr. Lorenzini:

Subject: Draft Environmental Assessment (DEA)
AT&T Cable Project: Makaha to Keawaula
Waianae, Oahu

We have reviewed the subject DEA document and offer the following comments for your consideration.

Engineering Branch:

Please see attached comments.

Thank you for the opportunity to comment on the proposed project.

Should you have any questions, or require further assistance, please contact staff planner Ed Henry at (808) 587-0380.

Very truly yours,

TIMOTHY E. JOHNS
Chairperson

Attachment

ENGINEERING BRANCH

COMMENTS

We recommend that the proposed developments located in the flood zone be designed in accordance with Section 7.10-4 Development Standards and Section 7.10-7 Coastal High Hazard District, Article 7 Special District Regulations of the City and County of Honolulu Land Use Ordinance, latest edition.

We confirm that portions of the alignment from Waikomo Bridge to Ohikilolo Bridge are within Zone VE or Zone AE. Zone VE is an area within the 100-year flood plain with coastal flooding with velocity hazard (wave action), and base flood elevations determined. Zone AE is an area located within the 100-year flood plain with base flood elevations determined. The remainder of the alignment is located in Zone D. This is an area in which flood hazards are undetermined.

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email address: townscap●panworld.net
New e-mail: townscap@dps.net

July 6, 1999

Mr. Timothy E. Johns, Chairperson
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Engineering Branch

Dear Mr. Johns:

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 22, 1999 for the subject project. We appreciate your review of the document.

The project will be designed in accordance with appropriate sections of the Land Use Ordinance of the City and County of Honolulu, Article 7, Special District Regulations, relating to flood zones.

We appreciate your confirmation of the identified flood zones, as determined by the Federal Emergency Management Agency.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

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

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

In reply, please refer to:
File:

June 24, 1999

99-094/epo

Mr. Kevin F. Lorenzini
AT&T
1431 N. Market Boulevard, Suite 9
Sacramento, California 95834-1924

Dear Mr. Lorenzini:

Subject: Draft Environmental Assessment (DEA)
Cable Project - Makaha to Keawaula
Waianae, Hawaii

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

Water Pollution

1. The applicant should contact the Army Corps of Engineers to identify whether a federal permit (including a Department of Army permit) is required for this project. If a federal permit is required, then a Section 401 Water Quality Certification is required from the State Department of Health, Clean Water Branch.

2. A National Pollutant Discharge Elimination System (NPDES) general permit is required for the following discharges to waters of the State:

   a. Storm water discharges relating to construction activities, such as clearing, grading, and excavation, for projects equal to or greater than five acres; and

   b. Construction dewatering activities.

   Any person requesting to be covered by a NPDES general permit for any of the above activities should file a Notice of Intent with the Department's Clean Water Branch

at least 30 days prior to commencement of any discharge to waters of the State.

Any questions regarding these comments should be directed to Mr. Denis Lau, Branch Chief, Clean Water Branch at 586-4309.

Noise Concerns

Activities associated with the construction phase of the project must comply with the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control."

a. The contractor must obtain a noise permit if the noise levels from the construction activities are expected to exceed the allowable levels of the rules as stated in Section 11-46-6(a).

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

c. The contractor must 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(d)(4).

Should there be any questions on this matter, please call Mr. Jerry Haruno, Environmental Health Program Manager of the Noise, Radiation and Indoor Air Quality Branch at 586-4701.

Fugitive Dust

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:

a. 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;

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

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

d. Controlling of dust from shoulders and access roads;

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

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

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

Sincerely,

Virginia Pressler
for

GARY GILL
Deputy Director for
Environmental Health

c: DOT
Townscape
CWB
CAB
NR&IAQB

TOWNSCAPE, INC.

Planned Communities, Master Plans, Land Use Permits

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July 6, 1999

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

Subject: Draft Environmental Assessment
Proposed AT&T Cable Project

Thank you for your comments on the Draft Environmental Assessment (DEA) dated June 24, 1999 for the subject project. We appreciate your review of the document.

The U.S. Army Corps of Engineers was consulted. They determined that the project would not require a permit.

A National Pollutant Discharge Elimination System (NPDES) general permit is not anticipated to be needed at this time because of the shallow depth of the trench, the existing ground elevation and the small area of land that will be disturbed at any given time. However, an NPDES permit will be requested in the event conditions are other than expected.

During the construction phase of the project, the Contractor will comply with the applicable Department of Health's "Community Noise Control" and "Air Pollution Control" Administrative Rules, Chapters 11-46 and 11-60.1, respectively.

If you have any questions, please feel free to contact the undersigned.

Sincerely,

Joanne Hiramatsu
Senior Planner