

BENJAMIN J. CAYETANO
Governor of Hawaii



RECEIVED

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. Box 621
Honolulu, Hawaii 96809

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

Chairperson
MICHAEL D. WILSON
Board of Land and Natural Resources

Deputy Director
GILBERT COLOMA-AGARAN

Aquaculture Development
Aquatic Resources
Boating and Ocean Recreation
Bureau of Conveyances
Conservation and Environmental Affairs
Conservation and Resources Enforcement
Forestry and Wildlife
Historic Preservation
Land Management
State Parks
Water and Land Development

FILE NO.: KA-2754
I.D. NO.: 5408

REF: OCEA: SKK

MAR 17 1995

MEMORANDUM

TO: Mr. Gary Gill, Director
Office of Environmental Quality Control

FROM: MICHAEL D. WILSON, Chairperson
Board of Land and Natural Resources

SUBJECT: Negative Declaration for a Cellular Services Communications
Facility at Princeville, Hanalei, Kauai, TMK: 5-3-01: por. 16

The Department of Land and Natural Resources has reviewed the comments received during the 30-day public comment period which began on December 8, 1994. We have determined that this project will not have significant environmental effect and have issued a negative declaration determination based on the Final Environmental Assessment. Please publish this notice as soon as possible in the OEQC Bulletin.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the final EA. Please contact Sam Lemmo of our Office of Conservation and Environmental Affairs at 587-0377, should you have any questions.

Attachment

xc: Michael H. Lau

1072

36

1995-04-08-RA-~~FEA~~-Cyber Tel Cellular ^{with more than} Facility
APR 8 1995

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'84 FEB 8 AM 8:55

DLNR
OCEA

AMERITECH CELLULAR SERVICES

FINAL

ENVIRONMENTAL ASSESSMENT

COMMUNICATIONS FACILITY

AT HANAIEI, KAUAI, HAWAII

a) Amm...
FINAL ENVIRONMENTAL ASSESSMENT

(1) Identification of Applicant

CyberTel Corporation dba Ameritech Cellular Services
c/o Michael Lau, Esq.
Oshima Chun Fong & Chung
841 Bishop Street, Suite 400
Honolulu, Hawaii 96813
Telephone: 528-4200

CyberTel Corporation dba Ameritech Cellular Services ("Ameritech" or "Applicant") is an Illinois corporation registered to do business in the State of Hawaii and is regulated by the Hawaii Public Utilities Commission. Ameritech currently operates one of the two cellular telephone systems mandated by the Federal Communications Commission ("FCC") serving the Kauai Rural Service Area ("RSA").

(2) Identification of Approving Agency

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

This Environmental Assessment is prepared pursuant to Hawaii Revised Statutes Section 343-5(a)(2) which requires the preparation of an environmental assessment for actions which propose to use lands classified as conservation districts by the State Land Use Commission. The Department of Land and Natural Resources administers uses of conservation district lands.

(3) Identification of agencies consulted

State Historic Preservation Office
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Department of Health
State of Hawaii
P. O. Box 3378
Honolulu, Hawaii 96801

Office of State Planning
Hemmeter Center
250 South Hotel Street, 4th Floor

Honolulu, Hawaii 96813

Planning Department
County of Kauai
4280 Rice Street
Lihue, Hawaii 96766

- (4) General Description of the action's technical, economic, social, and environmental characteristics

Proposed Action. Applicant proposes to construct a communicationx facility which will consist of a communications monopole approximately 60-feet in height. The monopole will contain three whip antennas and a six-foot microwave grid antenna. Also part of the communications facility will be an electronics equipment building approximately 11-1/2 feet by 26 feet by 9 feet in height, an auxiliary electrical generator located next to the equipment building, and an above-ground fuel storage tank for the generator. The generator will be used only in the event of electrical failure. The area needed for the proposed facility is approximately 2,800 square feet, although the Applicant has a license from the landowner to use approximately 10,000 square feet for communications purposes.

Need for Proposed Action. The Applicant currently operates one of the two cellular telephone systems mandated by the FCC serving the Kauai RSA. Presently, the Applicant operates six permanent cell sites (at Kilohana Crater, Lihue, Kapaa, Kalaheo, Olokele and Anahola), a temporary site at Kilauea (which, subject to the cellular coverage provided by the Princeville cell site, may be discontinued once the proposed Princeville site is operational), one cell extender site (at Makaha Ridge), and two cell repeater stations (two at Barking Sands).

The present system services the Applicant's cellular telephone subscribers from Barking Sands to limited portions of the Princeville area on the North Shore. Due to the island's topography, however, cellular service is not available from the system beyond the immediate Princeville area. Under current plans, with the addition of the proposed communications monopole and facility at Princeville, along with the deployment of one other cell site and one cell extender, it is anticipated that Ameritech will have full high quality islandwide cellular coverage.

Technical Characteristics of Proposed Action. Cellular telephones work by receiving and transmitting signals between a telephone unit and a cell site. A cell site typically consists of a tower with antennas connected to low-powered receivers and transmitters housed in an electronics equipment building, and a stand-by power generator which keep the cell site and related equipment operating when there is an electrical failure.

Because of the low power output, the coverage area provided by a cell site is limited by distance and terrain. In designing a cellular telephone system, coverage is overlapped to allow a cellular call to be "handed off" when the signal strength weakens as the customer travels through a cell's coverage area and moves through the next coverage area. This enables a cellular telephone user to move between coverage areas without interruption in the call. The

system which the Applicant currently has in place on Kauai provides uninterrupted cellular coverage along the main highway and surrounding areas between Barking Sands on the west side of Kauai up to limited portions of the Princeville area on the North Shore. Because of the area's topography, uninterrupted coverage is not provided in the areas beyond the central Princeville area. Installation of the proposed cell site would provide enhanced coverage between Princeville and Hanalei and beyond. Depending on the the topography and atmospheric conditions, coverage could potentially reach Haena.

The proposed facility will be located within the Princeville Nursery. It will consist of a 60-foot monopole with three 13-foot long whip antennas at the top of the tower. The antennas are approximately 2 inches in diameter. At about the 40-foot height, a four-foot microwave grid dish will be attached to the monopole to receive and transmit signals from the active mid-island repeater station at Kualapa.

The electronics equipment building will be 11-1/2 feet wide by 26 feet long by 9 feet in height. Next to the building will be a standby auxiliary generator to provide power in times of electrical failure, and an above-ground fuel storage tank encased in concrete for the generator. A security fence will encircle the facility. To minimize the immediate visual impact of the facility (excluding the monopole), the facility will be sited within an area of the Princeville Nursery which is surrounded by palms and other landscaping trees and shrubbery. Additional landscaping will be made if necessary to further minimize the immediate visual impact.

Approximately 2,800 square feet are required for the facility, although the Applicant has a license from the Princeville Corporation to utilize up to approximately 10,000 square feet for telecommunications activities.

Economic Characteristics. Construction of this proposed cell will cost approximately \$450,000. Although the proposed action will not have a significant direct economic impact, the provision of cellular telephone services along the North Shore will have a positive economic impact for those doing business from or within the North Shore area.

Social Characteristics. The proposed action will improve the ability of residents and businesses to communicate with or from the North Shore while mobile, resulting in less time wasted while in traffic, etc. More importantly, it provides a communications alternative to the wireline telephone system. This alternative has been proven to be critical in times of emergencies and natural disasters, as evidenced by how Applicant's cellular telephone system operated and played a significant role in the Kauai rebuilding efforts following Hurricane Iniki. While all other communications systems were destroyed, because Applicant's system is designed to withstand hurricanes and other natural disasters, Applicant was able to provide virtually uninterrupted service to Kauai residents and relief personnel.

With respect to microwave equipment which will be utilized by Applicant to connect this cell site to the rest of Applicant's network (in lieu of using landline telephone service), Applicant recognizes that there may be some concern about radiation effects on human health. However, as demonstrated in Applicant's response letter to Mr. Leslie Au of the

Department of Health, Applicant's facility will emit radiation at levels which are substantially less than all standards currently in effect. A copy of Applicant's response to the Department of Health is attached hereto as part of Applicant's responses to those agencies providing comments to Applicant's Application. Moreover, because the siting of Applicant's microwave equipment will be located in areas which are generally inaccessible to the general public, any impact will be minimal. Finally, while the long term impacts are still not known, it is known that the health effects of the proposed facility will be no greater than those of common household appliances.

Environmental Characteristics.

(1) Flora and Fauna.

The site is not known to contain any endangered or threatened species of flora or fauna. The proposed facility will be located within the Princeville Nursery site. The Nursery propagates and grows plants and landscape materials used in the Princeville Resort development.

Plants grown at the Nursery include ornamental plants such as ferns, hibiscus, plum trees, palms, orchids, monkeypods, etc. Vegetation outside of the Nursery consists of Christmas berry (*Schinus terebinthifolius*), kikuyu grass (*Pennisetum clandestinum*), and various grasses. Annual rainfall is 70-100 inches for the area.

(2) Topography/Drainage

The nursery site is located on the upland plateau ridge overlooking the Hanalei River valley on the eastern edge. The side (west) adjacent to the Hanalei River valley is abrupt and steep. The Nursery site, however is relatively flat with a gentle fall towards the bluffline overlooking Hanalei Valley. The site chosen for the proposed communications facility is relatively flat. Elevation is approximately 420 feet AMSL.

The site of the proposed communications facility is relatively flat and free from erosion. Any earth that is removed in laying the foundation for the equipment building and monopole will be used within the Nursery site. The area immediately surrounding the communications facility will be covered with gravel, and other graded areas will be revegetated to prevent soil erosion.

(3) Soils

The soil classification of this upland area is primarily of the *Makapili* series with small soil deposits belonging to *Po'oku* series. The *Makapili* soils are associated with the *Po'oku* soil series. The *Makapili* and *Po'oku* soils are silty clays and clay loam with strongly acidic surface and subsurface layers.

The U.S. Land Study Bureau's Detailed Land Classification Study (Map Panel 67) rates the soils of the project site as C-29, moderate agricultural productivity. According to

Map Panel K-6 of the Agricultural Lands of Importance to the State of Hawaii, the project site is designated as "prime" agricultural lands.

(4) Visual and Aesthetic Resources

The nursery site is located on the upland plateau ridge overlooking the Hanalei River valley on the eastern edge. The side (west) adjacent to the Hanalei River valley is abrupt and steep. Attached hereto are copies of photographs which have been computer enhanced to illustrate how Applicant's telecommunications facility and monopole will appear in relation to the surrounding areas. Applicant does not believe that its monopole, as altered by the pine tree appearance, will have any negative or adverse visual impact.

(5) Historic Resources

The proposed communications facility will be located within the Princeville Nursery site. Immediately north of, and adjacent to, the Nursery is Po'oku Heiau. In 1993, the State Historic Preservation Office and the Nursery agreed on a set of mitigative measures to preserve and enhance this historic site. The Nursery agreed to establish a buffer zone of 200 to 400 feet around the base of the heiau with the possibility of a low fence being erected for further protection with a gate for controlled public access. It further agreed to hand clear the heiau of unsightly vegetation and erect interpretive signs to inform the public of this historic site. Inasmuch as the proposed communications facility will be within the Nursery site and a considerable distance away from the Po'oku Heiau, impacts on the heiau have already been addressed with one exception: the placement of Applicant's monopole may potentially impact a portion of the view corridor for the heiau.

(6) Infrastructure

Access to the proposed site is from Kapa'ka Street, which is a paved roadway, constructed to county standards, which services Princeville Agricultural Subdivision from Kuhio Highway. From Kapa'ka Street, an existing dirt and coral cover road leads into the Nursery.

Electricity, telephone services, and potable water are available at the site.

(7) Surrounding Uses

The proposed facility will be located within the Princeville Nursery site. The Nursery propagates and grows plants and landscape materials used in the Princeville Resort development. Plants grown at the Nursery are ornamental plants including ferns, hibiscus, plum trees, palms, orchids, monkeypods etc. In 1992, Princeville Corporation applied for an after-the-fact CDUA for the Princeville Nursery (DLNR File No. KA-4/24/92-2572).

IMPACTS ON AFFECTED ENVIRONMENT AND MITIGATION MEASURES PROPOSED

Impact on Historic Resources. The proposed communications facility will be located within the Princeville Nursery site. Immediately north of, and adjacent to, the Nursery is Po'oku Heiau. In 1993, the State Historic Preservation Office and the Nursery agreed on a set of mitigative measures to preserve and enhance this historic site. The Nursery agreed to establish a buffer zone around the base of the heiau with the possibility of a low fence being erected for further protection with a gate for controlled public access. It further agreed to hand clear the heiau of unsightly vegetation and erect interpretive signs to inform the public of this historic site. Inasmuch as the proposed communications facility will be within the Nursery site and at a considerable distance from the Po'oku Heiau, impacts on the heiau have already been addressed with one exception: the placement of the monopole may potentially impact a portion of the view corridor for the heiau.

Although the visual impact cannot be avoided, the Applicant is willing to take several measures to mitigate the impact. In addition to utilizing low profile antennas, Applicant is willing to invest in the purchase of a monopole tower that resembles a pine tree which will blend in better with the surrounding foliage. By these measures, the antenna will be made to blend in more with the natural surroundings and lessen its impact on the viewer. Enclosed as part of the Environmental Assessment are copies of photographs which have been computer enhanced with the monopole tree to illustrate how the monopole will appear from different view planes.

Visual Impacts. In addition to the potential impact to a portion of the view corridor of the heiau, a portion of the monopole would be visible from Hanalei Valley Lookout. Again, the measures described above should significantly mitigate any adverse visual impact.

ALTERNATIVES CONSIDERED

Selection of this site for the communications facility was the result of careful deliberation and elimination of a number of alternative sites. There are a number of considerations in selecting a site for this cellular telephone communications facility. The most essential ones are: (1) It must be within the line of sight from CyberTel's mid-island active repeater microwave station, since microwave signals travel in straight lines. (2) It must be of sufficient elevation to provide desired coverage. A lower ground elevation would result in a higher tower. (3) The site must be accessible for the monthly or twice monthly maintenance checks which must be conducted by CyberTel personnel. (4) There must be a source of electricity. Although a generator will be placed on the site, it will be used only during times of electrical outage.

The alternative sites for the communications facility which were considered but not selected are as follows:

(1) Crater Hill site. The U.S. Fish and Wildlife Service has indicated objection to any additional communications facilities on Crater Hill.

(2) Concrete Batch Plant. This site does not allow for a microwave shot from the mid-island repeater microwave station to Kilohana Crater. Additionally, Princeville Development has plans to eventually develop this site for higher density residential uses, with which this communications facility may not be compatible. Finally, due to this site's lower elevation, the tower will have to be substantially higher than 60 feet. Being in the vicinity of the Princeville Airport, FAA regulations require that such a structure be painted orange and white and equipped with a blinking or strobe light at the top. The visual impact of such a tower would be significantly more adverse than the proposed monopole.

(3) Princeville Airport. At this elevation, the tower would have to be approximately 200 feet in height. Also, as noted above, it would have to be painted orange and white with a blinking or strobe light at the top. Situated close to the highway, the visual impact would affect a larger population.

(4) Princeville Water Tank. Because the tank site is further up against the mountains, coverage at this site would be restricted and probably would not provide service to the Kilauea and Hanalei areas. Additionally, it is within the radius of the Princeville Airport where FAA regulations would require that the tower be painted orange and white and equipped with a blinking or strobe light at the top.

(5) Princeville Shopping Center. At this elevation, the tower height would have to exceed 200 feet to provide the desired coverage. While Applicant's competitor, GTE Mobilnet of Hawaii Incorporated, has installed a tower at this location, it is unwilling to allow Applicant to co-locate its antennas at this site. Moreover, because the existing tower is less than 200 feet in height, the coverage from this site would be less than from the proposed site. Therefore, Applicant would need to construct a higher tower. Being in the midst of a populated area, the visual impact of adjacent towers would affect a larger population.

(6) Above Po'oku Heiau. This site is restricted by a covenant which requires that the land be left as a park and open space. While the site would be less visible from Kuhio Highway, the tower would be highly visible to the residents of the Princeville Agricultural Subdivision. It would still be visible from the Hanalei Valley Lookout. Finally, the tower would have to be substantially increased in height, otherwise Po'oku Heiau would block service to the Princeville area. As the site is within the radius of the Princeville Airport where the FAA regulations require that the tower be painted orange and white, the mitigation measures proposed by the Applicant would be prohibited.

(7) Below the Princeville Nursery Barn. Although at this site the tower will be further away from Po'oku Heiau, it would be at a lower elevation and closer to Kuhio Highway. This means a higher tower would be required and the visual impact would affect a larger population.

DETERMINATION

The proposed communications facility will be located within the site of the Princeville Nursery. An environmental assessment was prepared for the Nursery in 1992, and a negative declaration issued by the Department of Land and Natural Resources. Most of the environmental considerations for the communications facility at this site are identical with those of the Nursery. The only significant difference is the potential visual impact which may be generated by the communications monopole. The Applicant is proposing to take measures to have the monopole blend into the surrounding environment thus mitigating such adverse impact.

Based on the foregoing, the proposed action will not result in any significant environmental and ecological impacts, and an environmental impact statement should not be required for the proposed action.

AGENCIES TO BE CONSULTED

A number of agencies have already been consulted in two related processes. First, in processing Princeville Nursery's after-the-fact CDUA, agencies were consulted and provided comments. Inasmuch as the comments relate to the site, rather than the proposed use, the comments remain relevant.

Second, previously, the site was erroneously believed to be within an agricultural rather than a conservation district. As such, an application for a zoning variance for the proposed use was processed through the relevant County agencies. Through that process, a number of State and County agencies commented on the Applicant's proposed use. Those agencies which provided substantive comments were the County of Kauai Planning Department, the State Department of Health, the State Historic Preservation Office and the Office of State Planning. The primary concerns raised by the Kauai Planning Department and the State Department of Health dealt with the potential radiation and health hazards. Those concerns, however, were fully addressed in the technical report specifically commissioned by Ameritech to address the radiation concerns, which was presented to the two agencies.¹ The State Historic Preservation Office was concerned about whether the proposed site was within the Po'oku Heiau or other historic sites. The Office of State Planning's concerns related to the visual impact Applicant's tower would have on the surrounding areas.²

Under Applicant's current filing of a Conservation District Use Application, copies of the Application and Environmental Assessment were forwarded by the Department of Land and Natural Resources to various state, federal and county agencies. The agencies providing comments included the State of Hawaii Department of Health, the State Department of

¹ The report, prepared by Hall & Associates, demonstrated that the radiation levels from Applicant's proposed facility would be substantially below any standards then in effect.

² Unlike Applicant's present proposal for a 60 ft. monopole configured as a pine tree, Applicant's previous proposal contemplated a 60 ft. lattice tower which did not include any measures to mitigate the visual impact.

Transportation, the Federal Aviation Administration, the State Department of Finance and the County of Kauai Planning Department. With the exception of unsubstantiated concerns raised by the State Department of Health (which concerns were thoroughly addressed in Applicant's response to that department), all other comments raised were non-substantive or readily addressed by Applicant. Copies of Applicant's responses to the commenting agencies are attached hereto. Applicant further notes that, unlike its prior application to the County of Kauai, no comments regarding the visual impact issue were received. Applicant believes that its mitigative measures of utilizing a tree like monopole structure and meeting with the State Historic Preservation Office prior to filing its Application is the primary reason why no substantive comments on the visual impact of the tower were received.

PHOTOGRAPHS OF
VIEW PLANES ENHANCED
WITH MONOPOLE "TREE"

- A. View of monopole "tree" from outside Po'oku Heiau buffer zone.
- B. View of monopole "tree" from downslope from Po'oku Heiau.
- C. View of monopole "tree" from Princeville Nursery access road.
- D. View of monopole "tree" from Hanalei Valley Lookout.

DOCUMENT CAPTURED AS RECEIVED



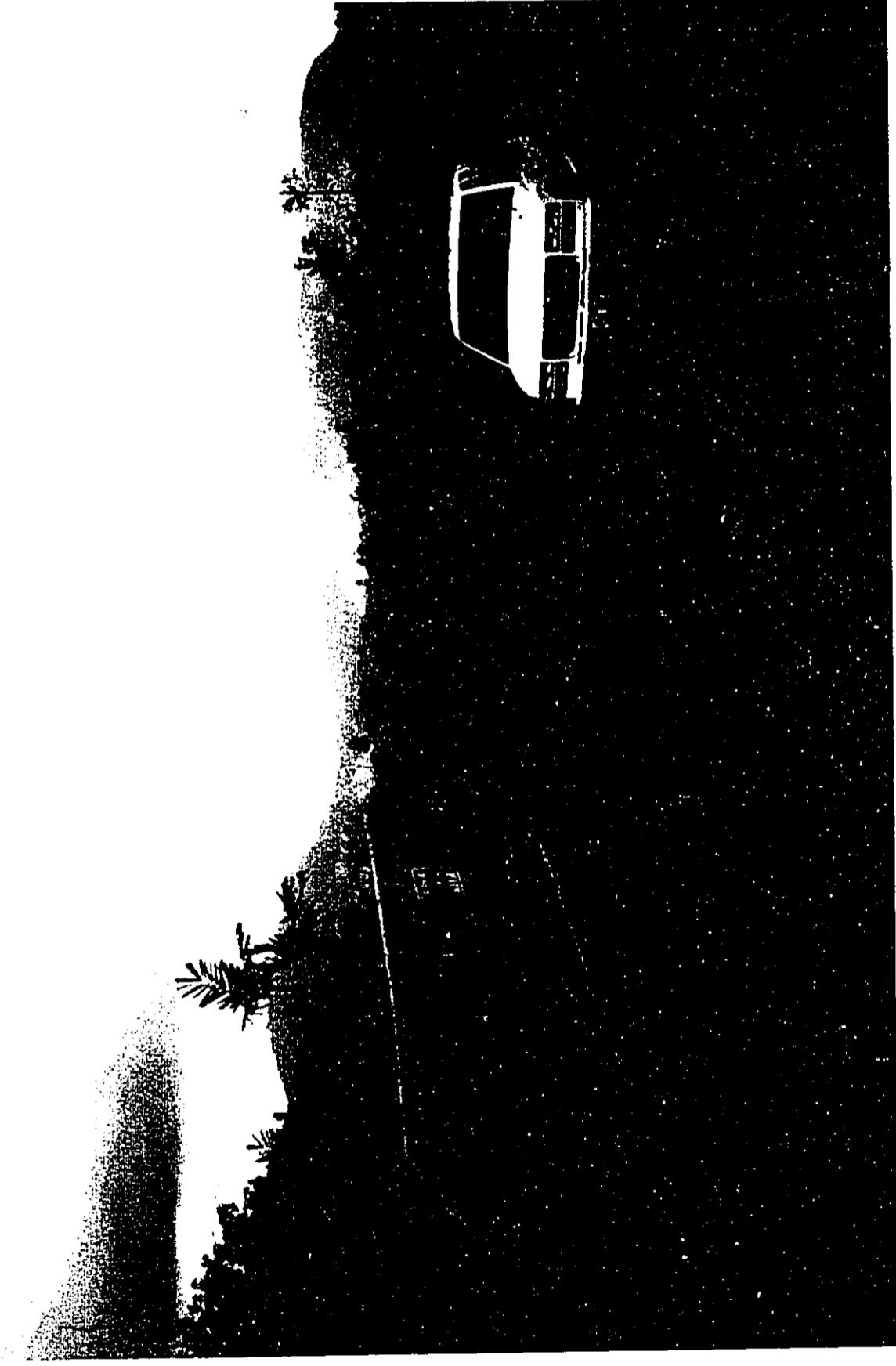
A

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B

DOCUMENT CAPTURED AS RECEIVED



C

DOCUMENT CAPTURED AS RECEIVED



D

AMERITECH CELLULAR SERVICES'

RESPONSES TO AGENCIES

PROVIDING COMMENTS

OSHIMA CHUN FONG & CHUNG
ATTORNEYS AT LAW

SUITE 400
DAVIES PACIFIC CENTER
841 BISHOP STREET
HONOLULU, HAWAII 96813

January 6, 1995

TELEPHONE
(808) 528-4200
TELECOPIER
(808) 531-8466

Ms. Darice Young
Real Estate and Utilities Branch, AHNL-56
Logistics Division
Federal Aviation Administration
P.O. Box 50109
Honolulu, Hawaii 96850-4983

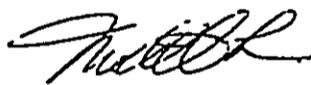
RE: CyberTel Corporation, dba Ameritech Cellular Services

Dear Ms. Young:

Pursuant to your earlier request, enclosed are the frequencies and antennas which will be utilized by CyberTel Corporation, dba Ameritech Cellular Services at its proposed location at Princeville. I have also included technical information relating to the cellular and microwave antennas which will be deployed for your additional reference and analysis.

Please call me if you have any questions regarding this matter.

Very truly yours,



Michael H. Lau

MHL:kclh

Enclosure

cc Mr. Hollis Crozier (w/o encl.)

MHL/CYBERTELA/TR-DY DOC

01/03/95 16:59 8608 531 8466
NOV 21 '95 14:47 FROM RWP-480H

OSHIMA CHUN FONG --- CYBERTEL-ENGIN.

2004

94 NOV 21 13:20

PHSE.081

TO: REAL ESTATE AND UTILITIES
BRANCH, AHNL-56
LOGISTICS DIVISION
FEDERAL AVIATION ADMINISTRATION
P. O. BOX 50109
HONOLULU, HI 96850-4983

DATE: 5 January 1995

The frequency(ies) and antenna(s) listed below are submitted for
FAA approval for installation and operation of the FAA
Princeville site.

Proposed User AMERITECH Cellular

Address 3-3277 Kuhio Hwy, Lihui, HI. 96766

Person/group to contact Mr. Hollis Crozier Phone 808-639-5000

Form submitted by James P. Roth (Kauai System Eng.) Phone 314-920-4792

(Please provide drawings of the equipment location, antenna(s),
cables, and any other pertinent information, such as floor and rack
layouts, tower placement, etc.)

I. EQUIPMENT. Use one form for each piece of equipment.

Type and Model No. RBS880 (Ericsson) Cellular Telephone Base Sta.

Transmit Freq. 869-892Mhz Power 130 ^(ERP) Watts Receive Freq. 824-847 Mhz

Use Provide Cellular Telephone Service (Cellular Band A) (Cellular Band A)

Antenna(s) which are connected to this equipment _____

CELWAVE Model PD10017 Omnidirectional Antenna

II. ANTENNAS. Use one form for each antenna. Include antenna
radiation pattern drawings.

A. MICROWAVE.

Transmit Freq. _____ Power _____ Watts Receive Freq. _____

Use _____

Dish Diam _____ ft. Gain _____ dB. () Solid () Grid
() Fixed () Rotary

OPTIONAL FORM NO. 75 (7-88)

FAX TRANSMITTAL

1 of 2

To Michael Lee From Darice Young FAA

01/03/96 16:59 808 531 8488
NJU 21 '94 14147 FROM RWP-480H

OSBIMA CHUN FONG 444 CYBERTEL-ENGIN.

PAGE.002

Polarization: () Horiz () Vert () Circ
Mainbeam azimuth _____ °T.

Equipment antenna connected to: _____

B. VHF/UHF.

Transmit Freq. 869-892Mhz Power 130 ^(ERP) Watts Receive Freq. 824-847Mhz

Use Provide cellular telephone service

Antenna style (Colinear, Yagi, etc.) OMNI Gain 10 dB

Antenna length 13 ft.

Antenna height AGL at feed point 58 ft.

If directional antenna, mainbeam azimuth N/A °T.

Equipment antenna connected to: 6' out-rig mount at top of 60' Monopole

III. ANY OTHER REMARKS OR PERTINENT INFORMATION.

- * Overall Antenna Height(Tip) = 73' (AGL)
- * Antenna C/L of radiation = 66' (AGL)

01/05/95 18:59 808 531 8466
NOV 21 '94 14:47 FROM RWP-488H

OSHIMA CHUN FONG +++ CYBERTEL-ENGIN.
94 NOV 21 13:12

004
PAGE 001

TO: REAL ESTATE AND UTILITIES
BRANCH, AHNL-56
LOGISTICS DIVISION
FEDERAL AVIATION ADMINISTRATION
P. O. BOX 50109
HONOLULU, HI 96850-4983

DATE: 5 January 1995

The frequency(ies) and antenna(s) listed below are submitted for
FAA approval for installation and operation of the FAA
site.
Princeville

Proposed User AMERITECH Cellular

Address 3-3277 Kuhio Hwy. Lihue, HI. 96766

Person/group to contact Mr. Hollis Crozier Phone 808-639-5000

Form submitted by James P. Roth (Kauai System Eng.) Phone 314-920-4792

(Please provide drawings of the equipment location, antenna(s),
cables, and any other pertinent information, such as floor and rack
layouts, tower placement, etc.)

I. EQUIPMENT. Use one form for each piece of equipment.

Type and Model No. Digital Microwave Corp. DVH6RMDMC2M-04

Transmit Freq. 2166.8 Mhz Power 191 ^(ERP) Watts . Receive Freq. 2116.8 Mhz

Use Provide interconnect for cellular switch and cellular base station.

Antenna(s) which are connected to this equipment _____

Andrew Corp. Model KP4E-19

II. ANTENNAS. Use one form for each antenna. Include antenna
radiation pattern drawings.

A. MICROWAVE.

Transmit Freq. 2166.8Mhz Power 191 ^(ERP) Watts Receive Freq. 2116.8 Mhz

Use Provide interconnect for cellular base station and cellular switch

Dish Diam 4.0 ft. Gain 26.4 dB. () Solid (x) Grid
(.) Fixed () Rotary

OPTIONAL FORM NO. 7-88

FAX TRANSMITTAL

Pages = 2

To Mr. J. J.

From Division 4.

01/05/95 16:59 8808 531 8466
NJU 21 '94 14:47 FROM RWP-288M

OSHIKA CHUN FONG +++ CYBERTEL-ENGIN.

PAGE .002

Polarization: () Horiz (X) Vert () Circ
Mainbeam azimuth 165.45 °T.

Equipment antenna connected to: 4" Pipe @ 40' (AGL) on 60' monopole

B. VHF/UHF.

Transmit Freq. _____ Power _____ Watts Receive Freq. _____

Use _____

Antenna style (Colinear, Yagi, etc.) _____ Gain _____ dB

Antenna length _____ ft.

Antenna height AGL at feed point _____ ft.

If directional antenna, mainbeam azimuth _____ °T.

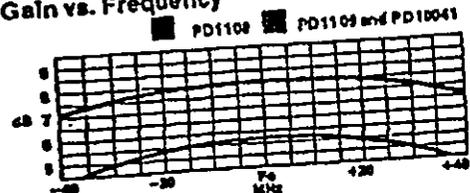
Equipment antenna connected to: _____

III. ANY OTHER REMARKS OR PERTINENT INFORMATION.

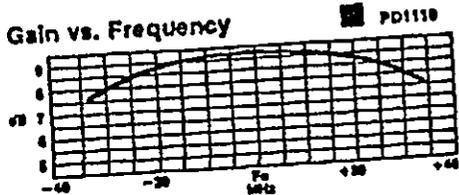
Omnidirectional Broadband Collinear Antennas

Continued

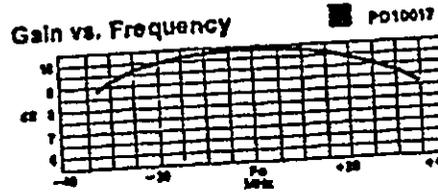
Gain vs. Frequency



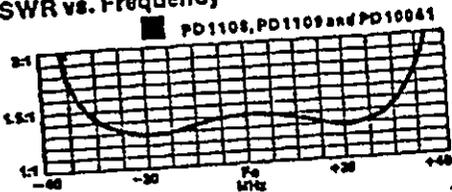
Gain vs. Frequency



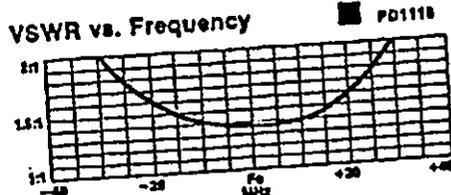
Gain vs. Frequency



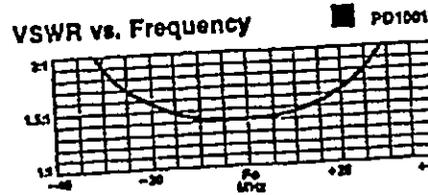
VSWR vs. Frequency



VSWR vs. Frequency



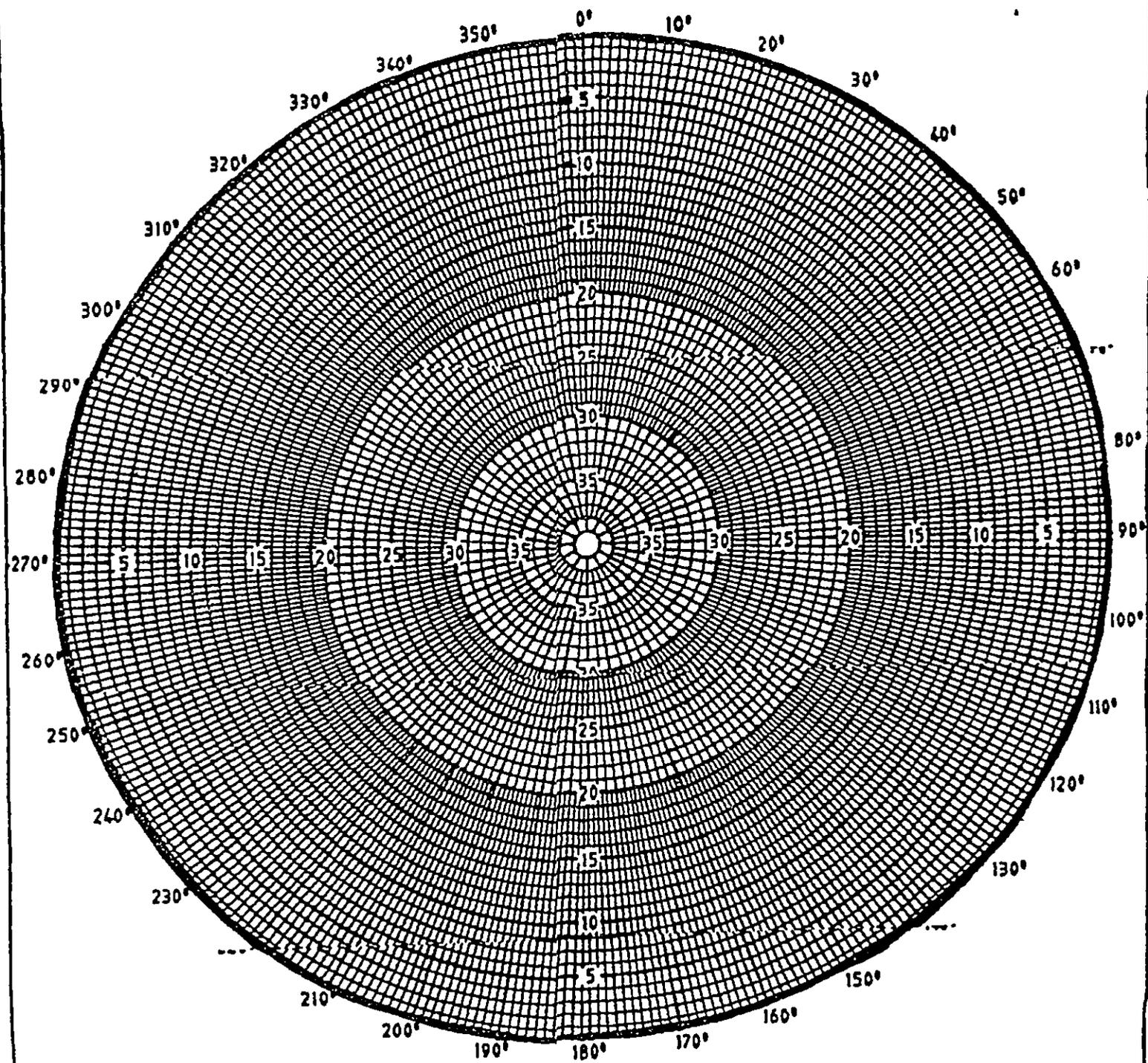
VSWR vs. Frequency



Electrical Specifications	PD1108	PD1109	PD10041	PD1110	PD10017
Frequency Range—MHz	806-960	806-960	806-960	806-960	806-960
Gain—dB	8	60	60	35	35
Bandwidth—MHz for 1.5:1 VSWR	60			800-836 831-866 865-900	806-841 845-881 900-935
Standard Bandwidths—MHz	806-866	820-880	825-890	835-895	860-920
Vertical Beamwidth (1/2 Power Points)	12°	8°	8°	6°	5.5°
Maximum Power Input—Watts	500	500	500	500	500
Lightning Protection	Direct Ground				
Termination—Direct (Fixed)	Type N (Female)				
Flexible Extension—(Supplied)	18 in. (457 mm) RG393/U Flexible Cable with Type-N (Male) Connectors Attached.				
Note: All VSWR data referenced to 50 ohms.					

Mechanical Specifications	PD1108	PD1109	PD10041	PD1110	PD10017
Overall Length—ft. (m)	8.27 (2.52)	10.42 (3.18)	10.42 (3.18)	13.17 (4.02)	15.17 (4.63)
Element Housing Length—ft. (m)	6.10 (1.86)	8.25 (2.52)	8.25 (2.52)	11 (3.35)	13 (3.96)
Support Pipe Diameter—in. (mm)	2-3/4 (70)	2-3/4 (70)	2-3/4 (70)	2-3/4 (70)	2-3/4 (70)
Support Pipe Mounting Length—in. (mm)	24 (610)	24 (610)	24 (610)	24 (610)	24 (610)
Weight—lbs. (kg)	10 (4.5)	17 (7.71)	19 (8.62)	20 (9.07)	25 (11.3)
Radiating Element Material	Copper				
Element Housing Material	Fiberglass				
Support Pipe Material	6061-T6 Aluminum Pipe				
Wind Loading Area (flat plate equivalent)—ft. ² (m ²)	0.85 (.079)	1.28 (.119)	1.33 (.124)	1.70 (.158)	2.00 (.185)
Rated Wind Velocity —MPH (km/hr)	100 (161)	100 (161)	125 (201)	100 (161)	100 (161)
Lateral Thrust at Rated Wind —lbs. (kg)	34 (15.5)	51 (23.2)	63 (37.7)	68 (30.9)	80 (36.4)
Bending moment 1 in. (25 mm) Below top of Support Pipe @ rated wind—ft. lbs. (kg m)	68 (9.4)	180 (24.9)	297 (41.2)	340 (47.1)	480 (66.5)
Mounting Hardware—(Supplied)	PD48 Clamp Set				
Mounting Hardware—(Options)	PD241 Wall Mount, PD246 Pole Mount, PD10024 Side Mount (Short), PD10028 Side Mount (Long)				
Shipping Weight—lbs. (kg)	29 (13.2)	35 (15.9)	38 (18.3)	37 (16.8)	46 (20.9)
Shipping Volume—ft. ³ (m ³)	1.4 (.04)	2.43 (.068)	2.43 (.068)	2.74 (.077)	2.97 (.084)
Shipping Mode	Common Carrier				

CELWAVE



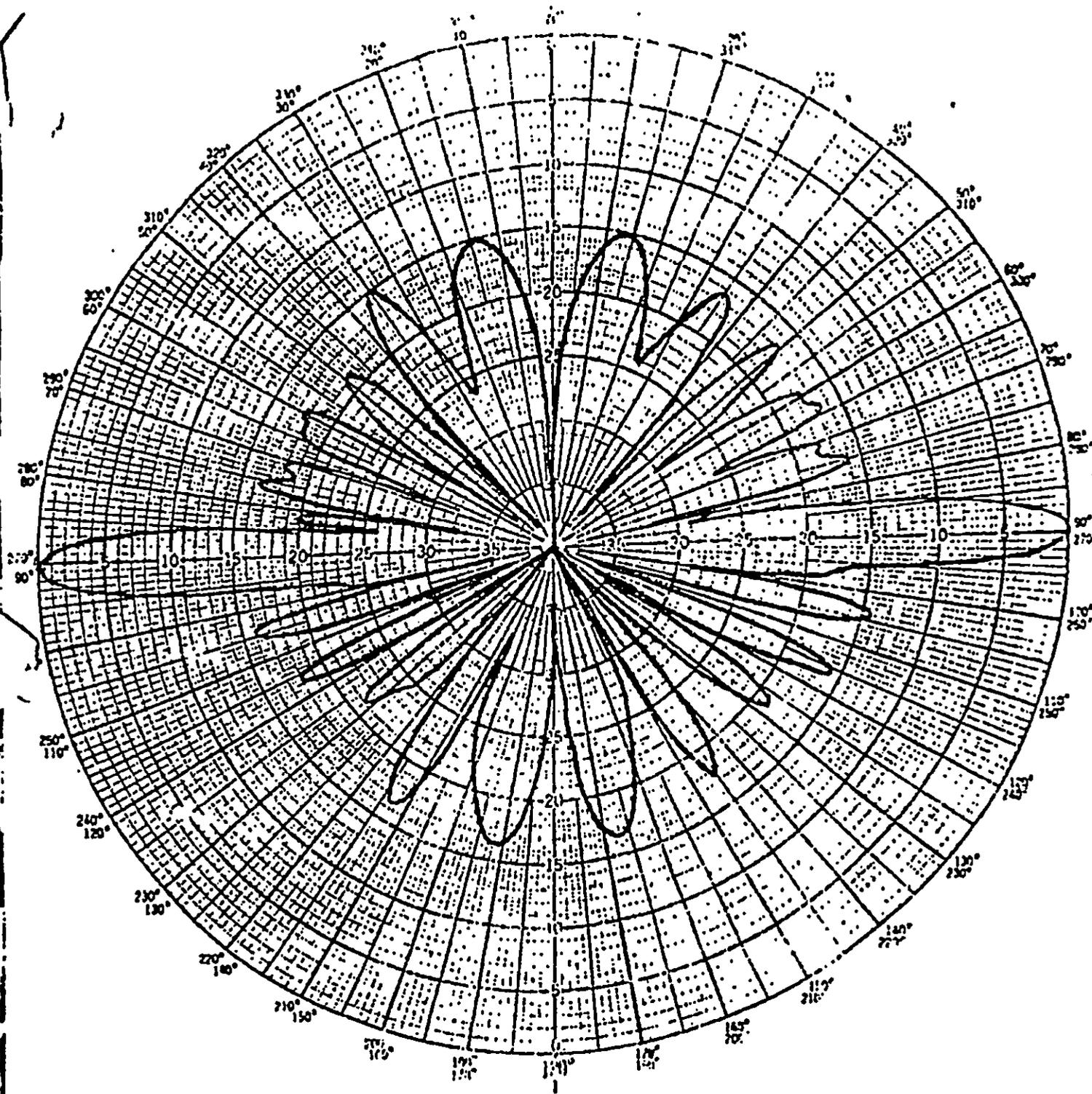
PD10017
 10DB GAIN
 OMNIDIRECTIONAL
 ANTENNA

TITLE HORIZONTAL PATTERN OF A PD10017 OMNI		DRAWING NO.
DRAWN BY	APPROVED BY	
CELWAVE R.F.		
MARLBORO. N.J.		PHOENIX. AZ

04/09/91

10:21

CELWAVE (505) 300-0010



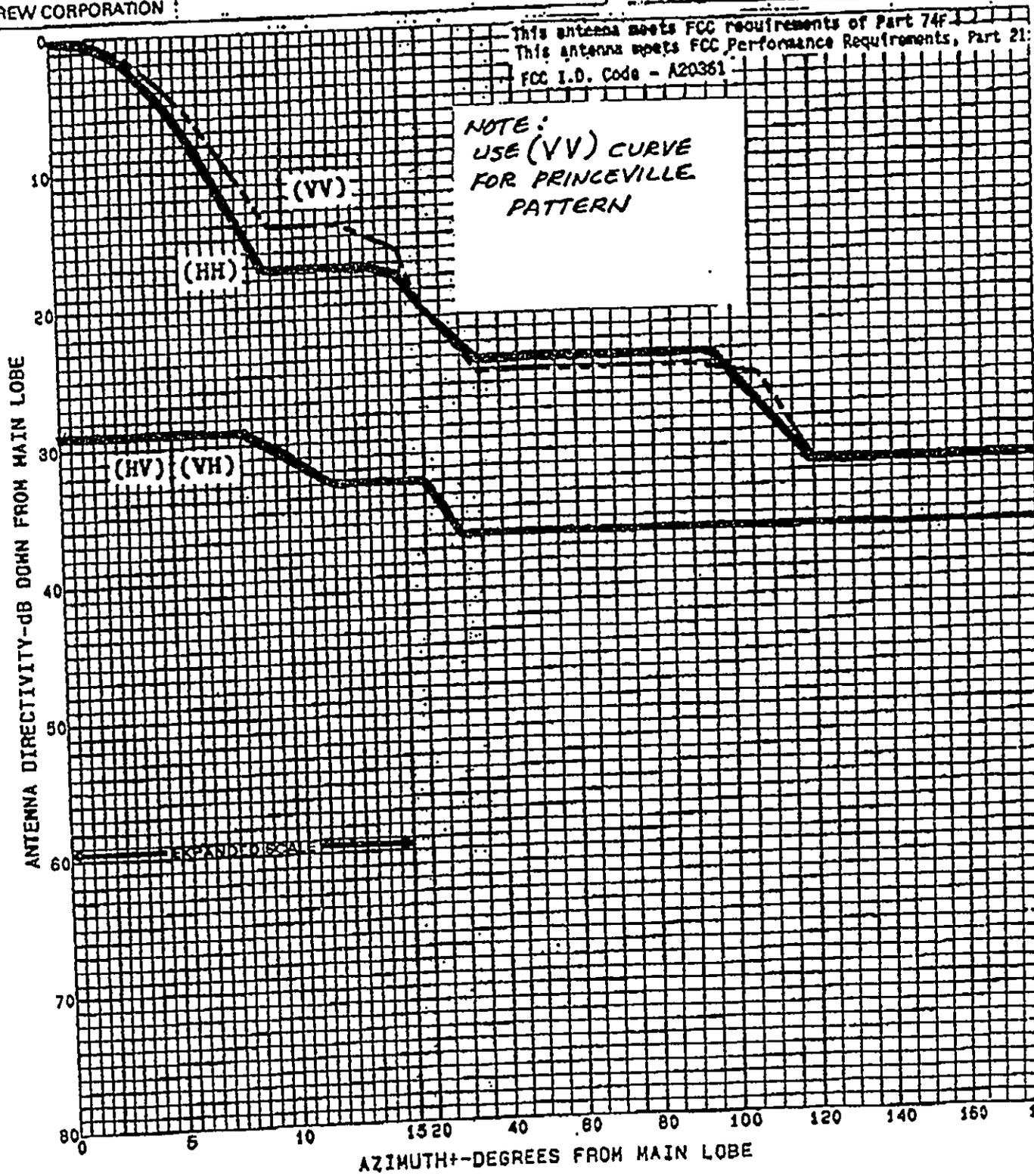
TITLE VERTICAL PATTERN OF A PD10017 ANTENNA	DRAWING NO. A-42317
DRAWN BY <i>JSJ</i> 2-8-88	APPROVED BY <i>PC</i> 2-9-88
CELWAVE R.F. INC.	

Radiation Pattern Envelope

Antenna Type Number KP4F-19
 4 Foot Antenna 1.9 to 2.3 GHz Plane Polarized
 Gain: 26.4 ± 0.2 dBi at 2.1 GHz

— Envelope for a Horizontally Polarized Antenna (HH, HV)
 - - - Envelope for a Vertically Polarized Antenna (VV, VH)
 For further information, ask for Andrew Bulletin 1032, "Radiation Pattern Envelopes."
 ANDREW CORPORATION

ANDREW
 RPE 3587
Edward Eric Ostroff
 Approved
 15 September 1984



RPE 3587 ANTENNA TYPE KP4F-19 SEPTEMBER 15, 1984

TABLE OF BREAK POINTS DEFINING THE RPE (SEE NOTE)

ANGLE (±DEG)	HH (DB)	ANGLE (±DEG)	HV (DB)	ANGLE (±DEG)	HV (DB)	ANGLE (±DEG)	VV (DB)	ANGLE (±DEG)	VV (DB)	ANGLE (±DEG)	VH (DB)	ANGLE (±DEG)	VH (DB)
0.0	0.0	0.0	29.0	0.0	29.0	0.0	0.0	12.5	14.0	0.0	29.0	0.0	29.0
0.7	0.0	7.5	17.0	9.0	27.0	1.4	0.0	15.0	14.0	8.0	27.0	8.0	27.0
1.3	0.1	13.8	17.0	12.0	23.0	2.0	0.2	20.0	20.0	12.0	23.0	12.0	23.0
2.0	0.4	20.0	20.0	20.0	23.0	2.0	0.4	25.0	23.0	20.0	23.0	20.0	23.0
2.8	1.1	29.0	24.0	20.0	27.0	3.1	1.2	30.0	23.0	20.0	27.0	20.0	27.0
3.3	2.0	34.0	24.0	20.0	27.0	4.0	2.2	104.9	23.0	180.0	27.0	180.0	27.0
4.7	4.0	120.0	22.0	180.0	27.0	5.1	2.8	111.9	23.0				
5.2	5.0	120.0	22.0			6.2	3.7	120.5	23.0				
6.4	8.0					7.3	5.8	143.0	22.0				
7.2	10.8					9.8	14.0	180.0	22.0				

TABLE OF RPE VALUES AT SMALL ANGLE INCREMENTS

ANGLE (±DEG)	HH (DB)	HV (DB)	VV (DB)	VH (DB)	ANGLE (±DEG)	HH (DB)	HV (DB)	VV (DB)	VH (DB)	ANGLE (±DEG)	HH (DB)	HV (DB)	VV (DB)	VH (DB)
0.0	0.0	29.0	0.0	29.0	21.0	20.0	23.4	20.8	33.4	101.0	28.7	27.0	23.5	27.0
1.5	0.2	27.0	0.2	29.0	22.0	20.8	23.8	20.7	33.8	102.0	28.0	27.0	23.4	27.0
3.0	1.4	27.0	1.4	29.0	23.0	20.8	24.2	21.0	34.2	103.0	28.2	27.0	23.6	27.0
4.5	3.7	27.0	3.7	29.0	24.0	21.1	24.6	21.3	34.6	104.0	28.7	27.0	23.7	27.0
6.0	7.0	27.0	7.0	29.0	25.0	21.8	25.0	21.7	35.0	105.0	27.8	27.0	23.7	27.0
7.5	11.6	27.0	11.6	29.0	26.0	21.8	25.4	22.0	35.4	106.0	27.2	27.0	23.8	27.0
9.0	14.1	30.0	14.1	29.0	27.0	21.8	25.8	22.0	35.8	107.0	27.7	27.0	23.8	27.0
10.5	17.0	31.3	17.0	29.0	28.0	22.1	26.2	22.0	36.2	108.0	28.0	27.0	24.7	27.0
12.0	17.0	33.0	17.0	29.0	29.0	22.4	26.6	22.0	36.6	109.0	28.3	27.0	24.7	27.0
13.5	17.0	33.0	17.0	29.0	30.0	22.7	27.0	22.0	37.0	110.0	28.7	27.0	27.2	27.0
14.0	17.2	33.0	17.2	29.0	31.0	22.9	27.0	22.0	37.0	111.0	27.0	27.0	27.6	27.0
15.0	17.7	33.0	17.7	29.0	32.0	23.2	27.0	22.0	37.0	112.0	27.0	27.0	28.0	27.0
16.0	18.1	33.0	18.1	29.0	33.0	23.5	27.0	22.0	37.0	113.0	27.0	27.0	28.8	27.0
17.0	18.6	33.0	18.6	29.0	34.0	23.7	27.0	22.0	37.0	114.0	27.0	27.0	29.0	27.0
18.0	19.1	33.0	19.1	29.0	35.0	24.0	27.0	22.0	37.0	115.0	27.0	27.0	29.8	27.0
19.0	19.5	33.0	19.5	29.0	36.0	24.0	27.0	22.0	37.0	116.0	27.0	27.0	30.4	27.0
20.0	20.0	33.0	20.0	29.0	37.0	24.0	27.0	22.0	37.0	117.0	27.0	27.0	30.9	27.0
					38.0	24.0	27.0	22.0	37.0	118.0	27.0	27.0	31.4	27.0
					39.0	24.0	27.0	22.0	37.0	119.0	27.0	27.0	31.9	27.0
					40.0	24.0	27.0	22.0	37.0	120.0	27.0	27.0	31.9	27.0
					41.0	24.0	27.0	22.0	37.0	121.0	27.0	27.0	32.0	27.0
					42.0	24.0	27.0	22.0	37.0	122.0	27.0	27.0	32.0	27.0
					43.0	24.0	27.0	22.0	37.0	123.0	27.0	27.0	32.0	27.0
					44.0	24.0	27.0	22.0	37.0	124.0	27.0	27.0	32.0	27.0
					45.0	24.0	27.0	22.0	37.0	125.0	27.0	27.0	32.0	27.0
					46.0	24.0	27.0	22.0	37.0	126.0	27.0	27.0	32.0	27.0
					47.0	24.0	27.0	22.0	37.0	127.0	27.0	27.0	32.0	27.0
					48.0	24.0	27.0	22.0	37.0	128.0	27.0	27.0	32.0	27.0
					49.0	24.0	27.0	22.0	37.0	129.0	27.0	27.0	32.0	27.0
					50.0	25.0	27.0	22.0	37.0	130.0	27.0	27.0	32.0	27.0

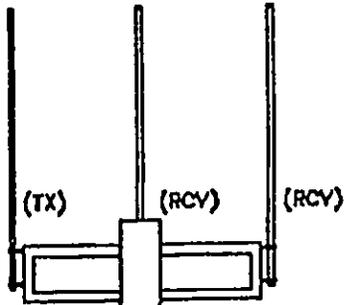
NOTE: THE RPE IS DEFINED BY CONNECTING THESE POINTS WITH STRAIGHT LINES AS GRAPHICALLY DISPLAYED ON THE REVERSE SIDE.

PARALLEL POLARIZATION:
 HH- HORIZONTAL PORT RESPONSE TO A HORIZONTAL SIGNAL.
 HV- HORIZONTAL PORT RESPONSE TO A VERTICAL SIGNAL.
 VV- VERTICAL PORT RESPONSE TO A VERTICAL SIGNAL.

CROSS POLARIZATION:
 HV- HORIZONTAL PORT RESPONSE TO A VERTICAL SIGNAL
 VH- VERTICAL PORT RESPONSE TO A HORIZONTAL SIGNAL

- Andrew Corporation 10600 W. 163rd St. Orlando Park, IL U.S.A. 60462
- Andrew Antennas Lochgelly, Fife, Great Britain
- Andrew Antennas Campbellfield, Victoria, Australia
- Andrew Antenas Limitada Sorocaba, SP, Brazil
- Antenas de Transmision S.A de C.V Mexico, D.F. Mexico
- Antennes Andrew S.A.R.L. Buc, France
- Andrew Corporation Tokyo, Japan
- Andrew GmbH Munich, West Germany
- Andrew S.R.L. Milan, Italy

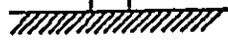
PD10017 ANT.@58'(AGL)



AZ=165.45°



KP4F-19 ANT.@ 40'(AGL)



PRINCEVILLE

22-12-37

159-28-10

ELEV: 401'(AGL)

OSHIMA CHUN FONG & CHUNG
ATTORNEYS AT LAW

SUITE 400
DAVIES PACIFIC CENTER
641 BISHOP STREET
HONOLULU, HAWAII 96813

January 11, 1995

TELEPHONE
(808) 528-4200
TELECOPIER
(808) 531-8466

Mr. Leslie Au
Hazard Evaluation & Emergency
Response Office
Department of Health
919 Ala Moana Boulevard
Honolulu, Hawaii 96814

RE: CyberTel Corporation, dba Ameritech Cellular Services

Dear Mr. Au:

This office represent CyberTel Corporation, dba Ameritech Cellular Services ("Ameritech"), applicant for a Conservation District Use Permit to operate a cellular communications facility in the Princeville area. We are in receipt of Peter A. Sybinsky, Ph.D.'s comments letter dated December 8, 1994 to the Department of Land and Natural Resources, requesting additional information on the microwave equipment which will be utilized at this site.

At the outset, Ameritech notes that while the proposed site is located within the Princeville Nursery area, the tower and equipment building (which will be enclosed by a perimeter fence) will be situated on the ridgeline side of the nursery, away from most of the nursery plant stock. As a result, there should be few, if any, nursery workers in this area.

Notwithstanding this fact, Ameritech intends to utilize Digital Microwave Corp. equipment which transmits at 2166.8 Mhz. and receives at 2116.8 Mhz. Ameritech also intends to install a 4-foot Andrew Corp. Model KP4F-19 parabolic microwave antenna at approximately the 40-foot level of the monopole structure. The microwave equipment has an effective radiated power (ERP) of 191 watts out of this parabolic antenna. This microwave antenna will be directionalized to an area on the horizon to link up the Princeville cell site with the rest of Ameritech's cellular system. Because of the low operating power and Ameritech's use of a parabolic microwave antenna (any radiation will be focused into a very narrow beam of approximately 7.7 degrees total), the radiation risk to humans and wildlife are extremely low. As will be discussed below, Ameritech's proposed installation will meet all current standards applicable to radio frequency ("RF") radiation.

Since I understand RF radiation was an issue previously raised by your office in an earlier proceeding, I have enclosed a copy of an earlier report on RF radiation prepared by Hall & Associates, Inc. on January 25, 1991, which Ameritech previously commissioned for this site. Although some of the data utilized in the report has changed, the overall conclusion is still accurate---that any RF radiation emitted from Ameritech's proposed facility will be well below all established standards.

Mr. Leslie Au
January 11, 1995
Page 2

At the time the Hall & Associates report was issued, the ANSI established RF protection standard applicable to the microwave's frequency (see Table 1 of report) was 5 mw/cm². As you may be aware, the City and County of Honolulu at that time adopted a much stricter standard of .5 mw/cm², or 10 times the ANSI standard. While I believe these standards are still in effect, since I am not an engineer, I have not been able to independently verify the same.

In analyzing the "worst possible case" scenario under these standards, Ameritech made several assumptions, including utilizing a "point source" microwave antenna, in which the radiation is emanated in all directions (instead of the focused beam which Ameritech intends to utilize). In applying the formula from the Hall & Associates report to the 191 ERP, the power density at ground level is computed as follows:

$$S = \text{EIRP}/\pi(D)^2 \text{ or } 191000/3.14(1219)^2 = .040901 \text{ mw/cm}^2$$

As noted above, the resulting power density is approximately 12 times less than the City and County standard and approximately 120 times less than the ANSI standard.

Although no information was requested on the cellular transmitter equipment, since the Hall & Associates report also analyzes the power density for the cellular transmitter equipment, I will provide the same. Ameritech will be utilizing Ericsson base station equipment which transmit at the 869-892 Mhz. frequencies and receive at the 824-847 Mhz. frequencies. The equipment has an ERP of 130 watts. At these frequencies, the ANSI limit is 2.9 mw/cm² and the City and County standard is .29 mw/cm² (see Table 1 of report). Ameritech will utilize CELWAVE Model PD10017 Omnidirectional antennas mounted at the top of the monopole. The computed power density for the cellular transmitter equipment is as follows:

$$S = \text{EIRP}/\pi(D)^2 \text{ or } 130000/3.14(2012)^2 = .010227 \text{ mw/cm}^2$$

Again, the resulting power density is nearly 28 times less than the City and County standard and approximately 280 times less than the ANSI standard.

Because the cellular and microwave equipment are operated at relatively low power levels, as demonstrated by the computed power density for the respective equipment, the radiation hazards are relatively low. Further, with the positioning of the antennas, the type of antennas utilized, and the overall proximity of the site in an area that is not heavily traversed, the likelihood of potential hazards to humans is further minimized.

Mr. Leslie Au
January 11, 1995
Page 3

Dr. Sybinsky also raised concerns about possible hazards to birds which may roost on the "tree" monopole. Thousands of cellular communications towers have been erected throughout the United States, including several dozen within the State of Hawaii alone. Of the numerous issues which frequently arise related to the towers, Ameritech is not aware of any relating to hazards to birds. Moreover, since the proposed site is not located in an area populated by birds (like the Kilauea Wildlife Refuge, for example), Ameritech does not believe this will be an issue. If, however, you wish to discuss this issue further, I am available to discuss your department's concern.

If there is any further information you require, please contact me at 528-4200.

Very truly yours,



Michael H. Lau

MHL:kclh
Enclosure

cc: Mr. Jim Roth
Mr. Hollis Crozier
Department of Land & Natural Resources

MHL/CYBERTEL/TR-LA.DOC

HALL & ASSOCIATES, INC.
TELECOMMUNICATIONS ENGINEERING

1088 BISHOP ST.
SUITE 2408
HONOLULU, HI 96813

TEL: (808) 524-3928
MCI: 353-2777
FAX: (808) 536-1825
TELEX: 6503532777

January 25, 1991

In reference to: RF Radiation Study

Ms. Donna L. Morrow
CyberTel Cellular Telephone Company
1935 Beltway Drive
St. Louis MO 63114

Dear Ms. Morrow:

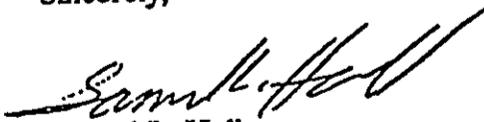
As you requested, we have studied the radiofrequency radiation at your proposed Princeville site on Kauai. The report is attached.

There is considerable discussion in the industry at this time as to what is the correct standard to judge exposure to radiofrequency radiation. The only standard that applies to the Kauai installation is the American National Standards Institute standard C95.1-1982 (ANSI Standard) as enforced by the Federal Communications Commission. Several local governments, including the City and County of Honolulu, have adopted RF radiation standards that are one-tenth of the ANSI standard. We used a such a standard (one-tenth the ANSI standard) to judge your proposed installation.

Our conclusion is that the proposed installation will meet the current legal standards for human exposure to radiofrequency radiation as well as proposed standards at one-tenth the current standard. In fact, we would expect the actual levels to be well below our estimates.

Please call if you would like to discuss this in more detail.

Sincerely,


Samuel L. Hall

Atts.
Copy (with att.) to
Mr. Hollis Crocier ✓

RADIOFREQUENCY RADIATION AT PRINCEVILLE, KAUAI

1. INTRODUCTION

The firm of Hall & Associates, Inc. has been retained by CyberTel Corporation to analyze their cellular transmission site at Princeville, Kauai for human exposure to radiofrequency radiation.

2. BACKGROUND

There have been concerns about the human health impacts of exposure to radiofrequency radiation since high power radiofrequency devices became widespread during and after World War II. Standards limiting human exposure have been in effect, in the United States, since 1953 when the U.S. Navy set a limit for its personnel. A standard for occupational exposure entitled *American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 300 GHz*, was issued by the American National Standard Institute (ANSI) in 1977 and updated in 1982. This standard has been adopted by the Army, Navy, Air Force, Bell Telephone and others.

The Federal Communications Commission (FCC), as required by the National Environmental Policy Act of 1969 (NEPA), approved an amendment to its rules in 1985 requiring that certain facilities regulated by the FCC limit human exposure to radiofrequency radiation. The FCC stated that it would prefer to defer to the expert federal health and safety agencies, but since they had not set any standards, it was adopting the ANSI standard.

The Environmental Protection Agency (EPA) studied radiofrequency radiation for several years and issued four draft standards (including the ANSI standard) for comments, however they concluded their study in 1988 without issuing a standard. Thus the ANSI standard, as enforced by the FCC, has become the de facto national standard.

3. ANSI C95.1-1982 STANDARD

The ANSI standard is a exposure standard, not an emission standard. It is of no concern what levels of radiofrequency radiation exist, as long as humans are not exposed to levels above the standard. The ANSI standards "are believed to result in energy deposition averaged over the entire body mass for any 0.1 hour period of about 144 joules per kilogram or less"¹. The ANSI standard only considers gross thermal effects of radiofrequency radiation. The radio frequency protection guides that ANSI suggests are:

1. American National Standards Institute, Inc., American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz, 1982, p 10.

Table 1
Radio Frequency Protection Guides

1	2	3	4
Frequency Range (MHz)	E^2 (V^2/m^2)	H^2 (A^2/m^2)	Power Density (mW/cm^2)
0.3 - 3	400000	2.5	100
3 - 30	$4000(900/f^2)$	0.025	$900/f^2$
30 - 300	4000	0.025	1.0
300 - 1500	$4000(f/300)$	0.025	$f/300$
1500 - 100000	20000	0.125	5.0

Note: f = frequency(MHz)

The American National Standards Institute is currently reviewing this standard and it is assumed that they are considering revising the limits to include non-thermal effects. However, there have been no official statements.

4. OTHER STANDARDS

Several local governments, including the City and County of Honolulu, have enacted radiofrequency radiation standards. These standards vary but all have reduced the allowable radiation below the ANSI standard. The City and County of Honolulu standard is 0.1 of the ANSI standard. A bill (HB-2250) in the Hawaii State Legislature last year would have the State Health Department set standards for human exposure to radiofrequency radiation, however this bill did not become law.

5. STANDARDS USED FOR THIS STUDY

Since it is expected that ANSI will lower their standard and several local governments have already done so, we will assume a allowable Radiofrequency level of 0.1 of the ANSI standard for this study.

6. CALCULATION OF RADIATION RADIATION

The calculation of the expected radiation from the proposed CyberTel site is easily done. The method used is that suggested by the Federal Communications Commission². The basic equation is:

$$S = \frac{EIRP}{4\pi D^2} \quad (1)$$

Where:

S = power density in milliwatts / cm^2

2. OST Bulletin No. 65 - *Evaluating Compliance With FCC-Specified Guidelines For Human Exposure to Radiofrequency Radiation* pp 7-9

EIRP = equivalent isotropic radiated power in milliwatts
D = distance in centimeters

For a truly worst-case approximation, 100% ground reflection should be assumed, resulting in a potential doubling of predicted field strength and a four-fold increase in power density. the equation then becomes:

$$S = \frac{EIRP}{\pi D^2} \quad (2)$$

7. CYBERTEL SITE AT Princeville

7.1 Microwave Transmitter

CyberTel is proposing to operate two systems at this site. One is a microwave transmitter operating on 2.175 GHZ with a transmitter power output of 25.6 dbm (0.36 watt) and a EIRP of 51.7 dbm (148 watts). The ANSI standard for this frequency is 5.0 milliwatts/cm². We will assume a limit of 0.1 of that or 0.5 milliwatts/cm². This antenna is mounted 50 feet (1525 cm) above ground level. Using these numbers, then the power density at ground level is:

$$S = \frac{148000}{\pi(1524.5)^2} \quad (3)$$

$$S = 0.020 \text{ milliwatts / cm}^2$$

As you can see, the power density is far below the allowable limit. The other factor to consider is that this microwave uses a very directional antenna pointed at the horizon. All of the power we have been discussing is in a very tight beam, the power aimed at the ground is a small fraction of this power.

7.2 Cellular Transmitter

The other system proposed for this site is a cellular transmitter operating in the 860-890 MHZ range with a EIRP of 163 watts. Unlike the microwave system, this transmitter uses omni directional antennas. At this frequency, the ANSI limit is 2.9 milliwatts/cm². We will use 0.1 of this or 0.29 mw. At 100 feet the power density would be:

$$S = \frac{163000}{\pi(1829.4)^2} \quad (4)$$

$$S = 0.0155 \text{ milliwatts / cm}^2$$

As you can see, the power density is well below the allowable limit. At a distance of 20 feet (610 cm) the radiation is:

$$S = \frac{163000}{\pi(610)^2} \quad (5)$$

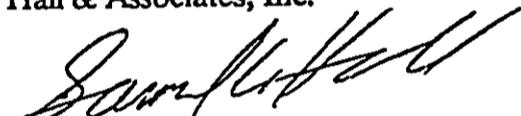
$$S = 0.14 \text{ milliwatts / cm}^2$$

This is still below the limit of 0.2.

& CONCLUSION

The radiofrequency radiation that will be produced by the proposed CyberTel installation at Princeville, Kauai at ground level is far below the current ANSI standard and any known proposed standard. The method used to predict the levels of RF radiation is very conservative and the actual levels should be even lower than predicted. The only possible danger points would be directly in front of the microwave antenna at less than 40 feet or less than 15 feet from the cellular antennas. Since the antennas are 50 feet above ground, there should be no danger if the tower is secured. It is our conclusion that the installation will not be a danger to human health due to radiofrequency radiation.

Hall & Associates, Inc.



Samuel L. Hall

OSHIMA CHUN FONG & CHUNG
ATTORNEYS AT LAW

SUITE 400
DAVIES PACIFIC CENTER
841 BISHOP STREET
HONOLULU, HAWAII 96813

January 31, 1995

TELEPHONE
(808) 528-4200
TELECOPIER
(808) 531-6466

Mr. Glenn M. Okimoto
Acting Director of Transportation
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

Re: KA-2754-Cybertel Corporation, dba Ameritech Cellular Services
("Ameritech")

Dear Mr. Okimoto:

I am in receipt of a copy of your December 27, 1994 comments to the Department of Land and Natural Resources regarding Ameritech's Conservation District Use Application for the Princeville site. At the outset, I wish to thank you for your favorable comments regarding Ameritech's proposed facility.

With respect to your recommendation that Ameritech file a Notice of Proposed Construction or Alteration (Form 7460-1) with the FAA, please be advised that Ameritech's technical consultants in Los Angeles intend to file such notice with the FAA's Western-Pacific Regional Office shortly. We do not anticipate any problem in obtaining the FAA's approval since I understand the FAA previously approved a similar request by my client in late 1992 or early 1993 for this site.

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

Very truly yours,



Michael H. Lau

MHL:kclh

cc Mr. Hollis Crozier
Department of Land and Natural Resources
Ms. Darice Young (FAA)

MHL/CYBERTELL/TRGMO DOC

OSHIMA CHUN FONG & CHUNG
ATTORNEYS AT LAW

January 31, 1995

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Ms. Dee M. Crowell
Planning Director
County of Kauai Planning Department
4444 Rice Street, Suite 473
Lihue, Kauai, HI 96766

Re: Conservation District Use Application-KA-2754 for Cybertel Corporation
dba Ameritech Cellular Services ("Ameritech")

Dear Ms. Crowell:

I am in receipt of a copy of your December 15, 1994 letter to the Department of Land and Natural Resources commenting on Ameritech's proposed cell site at Princeville. At the outset, thank you for confirming that the proposed site is outside the SMA. Since two "action" items were noted in your letter, I will address each of them.

Comment (b) indicates that Ameritech's building, standby generator, and above-ground fuel storage tank may be visible and, therefore, should be screened. In designing this site, Ameritech has been extremely sensitive to ensuring that, from an aesthetics point of view, the facility not be a visual eyesore. Utilizing a more expensive "tree" monopole is a prime example. Further, Ameritech's building, standby generator and fuel storage tank are "low-profile" improvements. Notwithstanding the "low-profile" improvements, Ameritech will be taking further measures to screen the facility. Because the proposed site is already surrounded by mature foliage, much effort will be made to "blend" the site with the existing foliage. Additional landscaping will be added, if necessary, to further minimize the visual impact of the facility.

Comment (c) recommends that the community be informed about the project and input be obtained to obtain their perspective. While Ameritech has not run any advertisements to notify the public about this site, many community businesses and individuals have been informed or are aware of Ameritech's plans to construct this cell site. The overwhelming consensus is that much needed communications on the North Shore area (Kilauea, Princeville and Hanalei) will be enhanced with this site. I should point out that Ameritech's location for the proposed site is virtually identical to the site which was brought before the County Planning Commission in late 1992/early 1993. At that time, other than a comment from the State Historic Preservation Office concerning the possible encroachment of the site to the Pooku Heiau (which has been fully addressed in this proceeding), no community opposition was raised.

Ms. Dee M. Crowell
January 31, 1995
Page 2

I would also note that Ameritech's competitor, GTE Mobilnet of Hawaii, Incorporated, constructed a 120-plus foot tower behind the Princeville Shopping Center. While I am not aware whether there was community opposition to GTE Mobilnet's tower, it would be safe to presume that because Ameritech's tower will be substantially lower (and more aesthetically pleasing), Ameritech's facility will be far less intrusive and, therefore, will have less of a visual impact than the GTE Mobilnet facility.

If you have any questions regarding this matter, please feel free to contact me.

Very truly yours,



Michael H. Lau

MHL:kelh

cc Mr. Hollis Crozier
Department of Land and Natural Resources

NRL/CYBERTELA/TRDMC.DOC

OSHIMA CHUN FONG & CHUNG
ATTORNEYS AT LAW

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January 31, 1995

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Mr. Eugene S. Imai
Director of Finance
State of Hawaii
Department of Budget and Finance
P.O. Box 150
Honolulu, HI 96810-0150

RE: Conservation District Use Application--KA-2754 for CyberTel Corporation dba Ameritech Cellular Services ("Ameritech")

Dear Mr. Imai:

I am in receipt of a copy of your comments dated November 30, 1994 to the Department of Land and Natural Resources concerning Ameritech's proposed cell site at Princeville. In order to protect the telecommunications systems of the state and the University of Hawaii, you have recommended that certain language be included in the Conservation District Use Permit issued to Ameritech. In particular, you requested that if Ameritech's facility causes interference with any existing telecommunication or radio system, Ameritech should immediately cease its operations and be held responsible for resolving interference problems at no cost to the State or other existing users.

At the outset, Ameritech recognizes that interference is always a concern and, therefore, makes every effort in its network engineering and design to minimize the likelihood of any harmful interference. While Ameritech is agreeable to resolving interference problems caused by its facility, Ameritech suggests certain minor changes to the proposed language. Under your proposed recommendation, it would appear that Ameritech would be responsible for all interference problems, including those affecting future telecommunications users. Ameritech agrees that it will not interfere with any telecommunication or radio system existing as of the date that Ameritech's facility is installed and becomes operational. Any interference to future users would be handled in accordance with procedures and guidelines established by the FCC.

In addition, in the event of interference, because of public safety concerns which may arise if Ameritech is required to immediately cease its entire operations, we are somewhat concerned with this requirement. Instead, we suggest that upon notification of an interference problem, Ameritech will immediately take action to diagnose the problem and, if necessary, cease the interference problem. The following language is proposed to address the overall interference issue.

Mr. Eugene S. Imai
January 31, 1995
Page 2

"Should CyberTel Corporation's proposed cellular telecommunication facility cause harmful interference with any telecommunication or radio system which existed as of the date CyberTel Corporation's facility is activated, upon written notice from the State of Hawaii or other affected user detailing the nature of the interference, CyberTel Corporation shall take immediate action to diagnose the problem and, if necessary, cease the interfering equipment until such time that the interference problem is corrected. In that situation, CyberTel Corporation, in conjunction with the affected user, shall at its sole cost and expense, take cooperative steps to correct the interference problem."

I believe the proposed language adequately addresses the concerns raised in your letter, while at the same time, protecting my client's interest. If you have any questions regarding this matter, please feel free to contact me.

Very truly yours,



Michael H. Lau

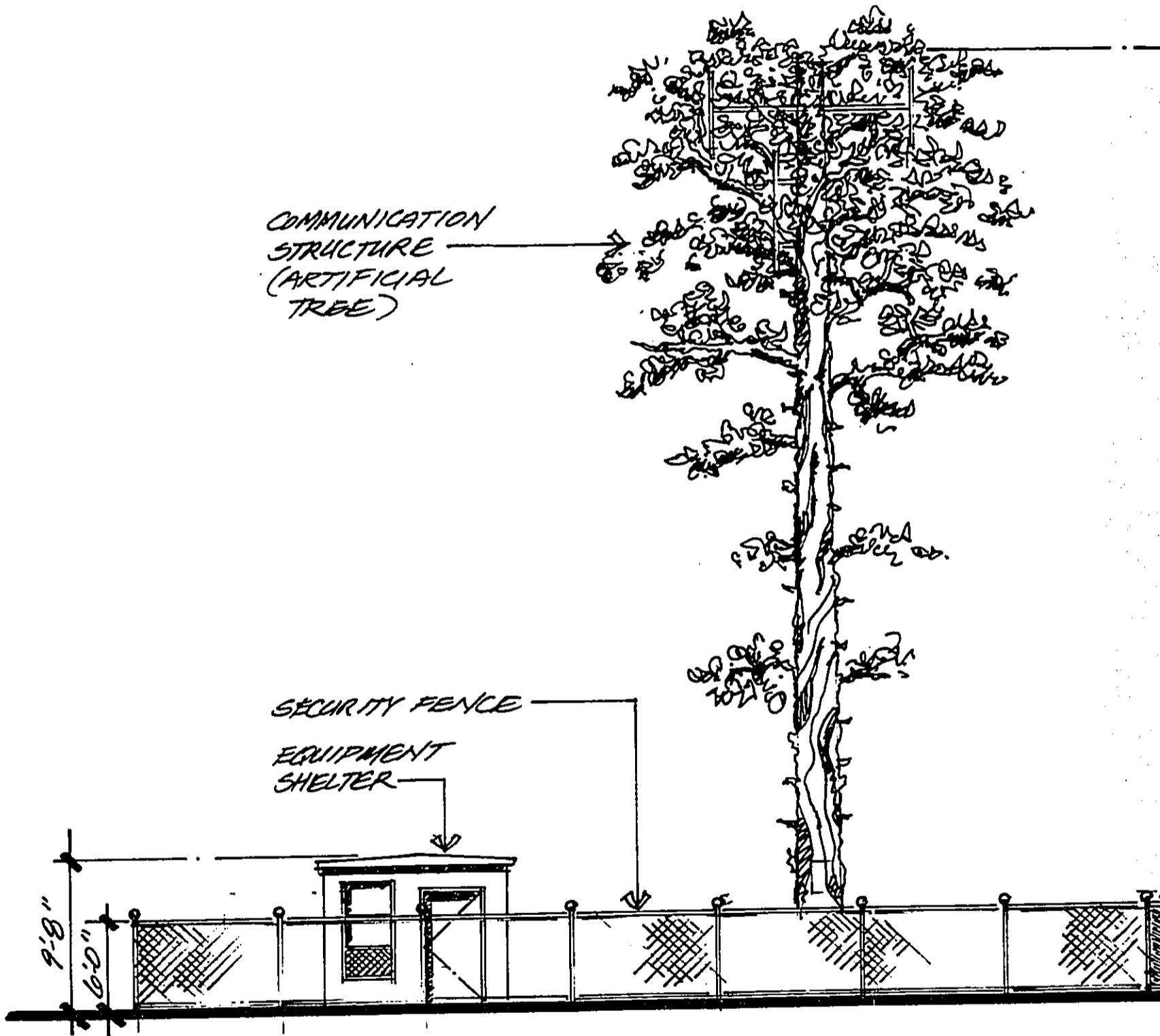
MHL:kclh

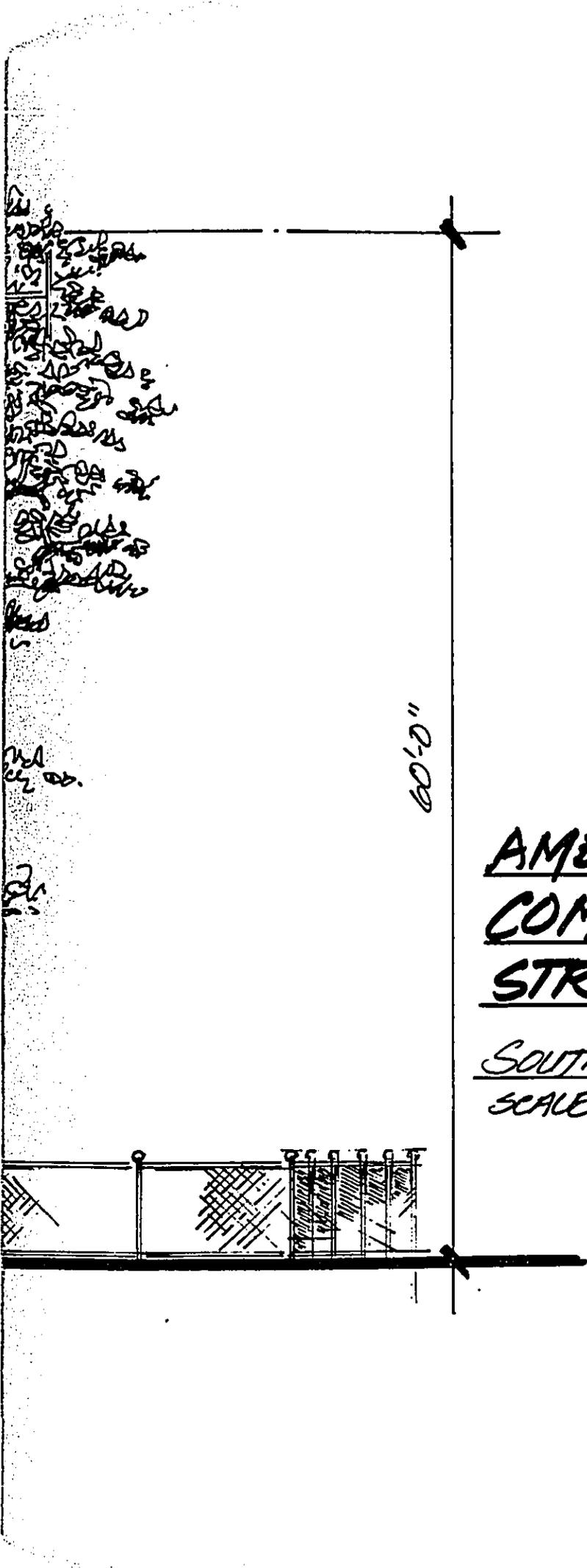
cc Mr. Hollis Crozier
Department of Land and Natural Resources

\\HL\CYBERTEL\TR-EIS.DOC

COMMUNICATION
STRUCTURE
(ARTIFICIAL
TREE)

SECURITY FENCE
EQUIPMENT
SHELTER





AMERITECH
COMMUNICATION
STRUCTURE

SOUTHWEST ELEVATION
SCALE: 1/8" = 1'-0"

544



U.S. Department
of Transportation
Federal Aviation
Administration

Western-Pacific Region
P. O. Box 50109
Honolulu, Hawaii 96850-4983

January 24, 1995

Mr. Michael D. Wilson
Chairperson, Board of Land
and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

S
J

DLNR
OCEA

95 JAN 31 PM 1:37

RECEIVED

Dear Mr. Wilson:

Your letter of November 17, 1994, forwarded Conservation District Use Application No. KA-2754 for our review. We were advised by our Spectrum Management Office that all radio transmitting facilities need to undergo a frequency interference (airspace) evaluation as required under Part 77 of the Federal Aviation Regulations.

By earlier correspondence we have obtained some information from the attorney for the applicant, Mr. Michael H. Lau of Oshima, Chun Fong, and Chung. By copy of this letter, we will ask Mr. Lau to have the CyberTel Corporation dba Ameritech Cellular Services to submit the appropriate information for an airspace evaluation of its proposed facility. We will advise you of the results of the evaluation when available.

We appreciate this opportunity to comment on this proposed facility. Please contact me at 541-1236, if there are any questions.

Sincerely,

Darice B. N. Young
Darice B. N. Young
Realty Contracting Officer, AHNL-56

cc: Mr. Michael Lau
Oshima, Chun, Fong, and Chung
Davies Pacific Center, Suite 400
841 Bishop Street
Honolulu, Hawaii 96813

2728

34 DEC 19 P 2: 38

DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

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

DIRECTOR OF HEALTH

In reply, please refer to:

December 8, 1994

94-262/800

To: The Honorable Keith W. Ahue, Chairperson
Department of Land & Natural Resources

From: Peter A. Sybinsky, Ph.D. *PK*
Director of Health

Subject: Conservation District Use Application

DLNR
OCEA

DEC 20 AM 9:43

RECEIVED

Applicant: Cybertel Corporation dba Cybertel Cellular
File No. : KA-2754
Request : Cellular Communications Facility
Location : Hanalei, Kauai
TMK : 5-3-1: Por. 16

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

The Department of Health needs more information than was provided in the application document to determine if there is any risk from the transmitting signals of the microwave disk.

The cellular antenna pole is proposed to be situated in the Princeville Nursery, which has a perimeter fence around it. Therefore, the general public will not be at risk. However, nursery workers and birds might be at risk.

The Department needs to know the transmitting frequency and the Effective Radiated Power of the microwave disk.

A nurseryman working sufficiently near the antenna for as little as a half hour might be at risk, if the transmissions are at a high enough energy. The safe distance for a nursery worker can be calculated, if we get the necessary information.

Cybertel is offering to spend extra money to get a transmitter pole that resembles a pine tree. That's nice for aesthetic reasons, however, that would make it more attractive for birds to roost there and get cooked.

400'

Ken

MARYANNE W. KUSAKA
~~XXXXXXXXXXXXXXXXXXXX~~
MAYOR

RECEIVED

'95 JAN 4 PM 12:52



DEE M. CROWELL
PLANNING DIRECTOR
NEIL L. AALAND
DEPUTY PLANNING DIRECTOR
TELEPHONE (808) 241-6677
FAX (808) 241-6699

DLNR
OCEA

COUNTY OF KAUAI
PLANNING DEPARTMENT
4444 RICE STREET, SUITE 471
LIHUE, KAUAI, HAWAII 96766

December 15, 1994

Keith W. Ahue, Chairperson
Dept. of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

SV

DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

94 DEC 30 P 1:01

RECEIVED

SUBJECT: CONSERVATION DISTRICT USE APPLICATION
Cellular Communications Facility at Hanalei, Kauai,
Hawaii, TMK: 5-3-01: 16 por.

Our comments regarding the subject application are:

- a. The subject site is outside of the County of Kauai's Special Management Area (SMA).
- b. There will be a 160 square foot building, a standby generator, and an above-ground fuel storage tank next to the 60 foot high antenna. These facilities may be visible, therefore the applicant should screen them.
- c. We support the installation of such facilities since we realize the importance of communication, particularly during emergencies. However, we anticipate that the community may still have concerns about the project's visual impacts. Therefore we recommend that the community be informed about the project and input be obtained in order to obtain their perspective.
- d. At this point, we are not sure whether outfitting the antenna to resemble a pine tree will enable it to blend in better or further increase its visibility. We recommend that this matter be studied.

Thank you for allowing this opportunity to comment and should you have any questions, please contact Keith Nitta at 241-6677.

DEE M. CROWELL
Planning Director

AN EQUAL OPPORTUNITY EMPLOYER

2018

EMPLOYEES' RETIREMENT SYSTEM
HAWAII INC
HAWAII PUBLIC EMPLOYEES HEALTH FUND
HOUSING FINANCE AND DEVELOPMENT
CORPORATION
OFFICE OF THE PUBLIC DEFENDER
PUBLIC UTILITIES COMMISSION
RENTAL HOUSING TRUST FUND COMMISSION

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE

P.O. BOX 180
HONOLULU, HAWAII 96810-0180

November 30, 1994

'94 DEC 6 AM 9:31

CELIA L. JACOBY
DEPUTY DIRECTOR

ADMINISTRATIVE AND RESEARCH OFFICE
BUDGET, PROGRAM PLANNING AND
MANAGEMENT DIVISION
FINANCIAL ADMINISTRATION DIVISION
INFORMATION AND COMMUNICATION
SERVICES DIVISION

DLNR
OCEA

TO: The Honorable Keith Ahue, Chairperson
Board of Land and Natural Resources

FROM: Eugene S. Imai *Eugene S. Imai*
Director of Finance

SUBJECT: Comments to Conservation District Use Application (CDUA)
KA-2754 for Cybertel Corporation, Installation of
Cellular Radio Transmitter Site and Antenna, Hanalei,
Kauai, TMK 5-3-1:16 (por.)

SL

We have reviewed Cybertel Corporation's CDUA dated November 21, 1994 for the installation of a radio telecommunications facility and antenna atop Hanalei, Kauai.

To protect the telecommunication systems of the State and the University of Hawaii, we recommend inclusion of the following conditional language in the CDUA:

"Should the proposed Cybertel Corporation's broadcast facility cause interference with any existing telecommunication or radio system, Cybertel Corporation shall immediately cease its operation at that easement site and be held responsible for resolving the interference problem at no cost to the State or other existing users."

Thank you for the opportunity to comment on this CDUA. Should you have questions, please contact Mr. Tom Yamashiro at extension 6-1910.

Attachments

RECEIVED
94 DEC 6 AM 9:09
DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

NETADM287