JOHN WAIHEE
GOVERNOR OF HAWAII

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

WILLIAM W. PATY
CHAIRPERSON

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GUY K. FUJIMURA

MANABU TAGOMORI
DEPUTY

REF:WRM-BM

'91 JUL 16 P3:30

OFC. OF ENVIRONMENTAL QUALITY CONTROL

JUL 15 1991

MEMORANDUM

TO: The Honorable Brian J.J. Choy, Director
Office of Environmental Quality Control

FROM: William W. Paty, Chairperson
Commission on Water Resource Management.

SUBJECT: Document for Publication in the OEQC Bulletin - Environmental Assessment for Pump Installation Permit in Conservation District, Well No. 6-4806-48, Kuhiwa Well, Nahiku, Maui; TMK 1-2-04:03.

The Department has reviewed the environmental assessment for a pump installation permit at Kuhiwa Well, Well No. 6-4806-48, in conservation district, at TMK 1-2-04:03 in Nahiku, Maui. This is the same environmental assessment as was submitted previously to the Board of Land and Natural Resources for the same project, and considered by OEQC, for Conservation District Use Application MA-4/9/90-2376. A negative declaration for all non-water aspects of the project was published in OEQC Bulletin Volume VII, No. 10, dated May 23, 1990.

We have determined that a negative declaration is appropriate for water-related matters based upon the environmental assessment, the application for a pump installation permit filed with the Commission on Water Resource Management, and the evidence and testimony presented at contested case hearing MA-CC-91-1 before the Commission on May 30 and June 19, 1990.[1] The application for a pump installation permit and the evidence and transcripts of testimony from the contested case hearing are available for review at the Division of Water Resource Management, 1151 Punchbowl St., Room 227.

On the basis of competing expert witnesses' testimony, it is not possible at this time to conclude that the proposed well pumping may have a significant impact on streams in the vicinity of the well. This could only be determined by allowing the project to proceed and by monitoring for impacts. This approach is supported by the Commission staff and all parties to the contested case.

A negative declaration is warranted for three reasons:

1) There is no evidence to conclude at this time that the project may have a detectable or significant impact on streams in the area.

2) An Environmental Impact Statement prepared at this time would be unable to conclude whether the project may have a significant impact on streams in the area.

3) If a pump installation permit is issued by the Commission, it would contain conditions which require a program to monitor for impacts on streams in the area, and require pumping to cease if impacts are detected. These conditions are necessary to comply with the interim instream flow standards of the State Water Code. In the event that impacts are detected, they would be short-lived and not significant because the pumping would be stopped at that time.

Please call me or Manabu Tagomori of our Division of Water Resource Management, at 548-7533, if you have any questions.

Enclosure

1991-07-23-MA-FEA - Kuhiwa Well Pumping Station Hana

V. ENVIRONMENTAL ASSESSMENT

1. APPLICANT:

Maui Pineapple Company, Limited
870 Haliimaile Road
Makawao, Maui, Hawaii 96787

2. APPROVING AGENCY:

State of Hawaii
Department of Land and Natural Resources
Post Office Box 621
Honolulu, Hawaii 96809

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3. CONSULTING AGENCIES:

None

4. GENERAL DESCRIPTION OF THE TECHNICAL, ECONOMIC, SOCIAL AND ENVIRONMENTAL CHARACTERISTICS OF THIS PROJECT:

A. EXISTING WELL

The existing well was drilled and cased in 1947 and is located approximately 3,500 feet uphill of the Hana Highway near Nahiku, Maui, within Tax Key 1-2-04-03. The location is shown in Exhibit A attached.

This well is located at an elevation of 1,400 feet. It was drilled to a depth of 1,255 feet. The well casing is 14 inches outside diameter and is installed to a depth of 917 feet.

A test pumping of this well in 1977 with rates as high as 750 gpm indicated that water can be withdrawn from this high level ground water body without affecting the nearest major stream, Hanawi. There was a drawdown of 358 feet when pumping at 650 gpm. It is economical to pump this water into the ditch system, which is at the 1400 foot elevation level, for irrigation use elsewhere. Pumping at one million gallons per day is insignificant compared to the estimated recharge of over 25 million gallons per day per mile of shoreline.

B. PROPOSED INSTALLATION:

(1) PUMP:

It is proposed to install a pump of up to 700 gallons per minute capacity (one million gallons per day) with an electric motor of up to 250 hp in the existing well (see photos 1 & 2). A small building will be constructed over the pump and well for shelter from the weather.

(2) PIPELINE:

An eight inch plastic pipeline will be installed from the pump to the existing Koolau Ditch tunnel, a distance of about 125 feet. This pipeline will be installed on top of the ground, as the area is nearly solid rock, and digging a trench to bury the pipeline would be very difficult and disruptive to the area. The ground is fairly level and thickly covered with ferns and grasses (see photo 3). A minimal amount of grass clearing needs to be done in order to install the pipeline. If allowed to do so, the grass will quickly regrow and completely cover the pipeline in a very short period of time. The water from the pipeline will empty into the Koolau Ditch tunnel, which carries the water under Makapipi gulch (see photos 4 & 5). A small support is needed to carry the pipe over the small gulch known as East Makapipi and into the tunnel under the stream (see Exhibit I and photo 4).

(3) POWER LINE:

A power line will be installed from an existing pump station located on the downhill side of the Hana Highway at Hanawi Stream (see photo 6), extending uphill along the existing Hanawi Pipeline (see photos 7 & 8) to the Koolau Ditch (see photo 9), then along the Koolau Ditch and road (see photos 10 & 11) to the well, a distance of approximately 7,100 feet. This would be a 23,000 volt power line with a transformer at the well location. Approximately 30 poles are estimated to be required along the existing pipeline and ditch (see Exhibits G & H). Pole tower structures may be required on either side of the span across Hanawi Stream and again on either side of the span across Makapipi Stream near the well (see photos 12 & 13). About 800 feet of this powerline, near the pump end, is along a footpath (see photo 14), which will probably require a helecopter to install the poles (3). Trees and other vegetation in this area are short and will require minimal trimming in order to clear the power line. These trees are mostly ohia and eucalyptus. The powerline will not be visible from the Hana Highway, except for the first span at the existing Hanawi Pump.

(4) DRAINAGE:

The present drainage pattern of the natural area remains unchanged as only existing roads will be used for access for construction purposes.

(5) LANDSCAPING:

The natural forest cover, primarily guava, ohia, ginger, fern, eucalyptus and grasses, will remain throughout the area. An area of less than one acre at the well site will be cleared. Trees along the power line will be selectively removed or trimmed. No introduced landscaping will be used.

(6) ACCESS:

Access to the well site is by an existing unused jeep road from the Hana Highway, a distance of about 1 1/2 miles. This road is presently overgrown with grass (see photo 15), and some clearing of the grass and minor repair work will be required in order to make the access safer.

Access to the powerline route is by existing road from the Hana Highway, a distance of about 1/4 mile, and along the existing Koolau Ditch. This road is in good condition and will require minimal repair work, if any (see photos 10 & 11).

(7) CONSTRUCTION SCHEDULE:

Ordering of the pump and motor, and installation of the pumping equipment, discharge pipe and power line will follow approval of the Conservation Use Application by the Department of Land and Natural Resources. It is estimated that the project can be completed in 6 to 9 months following approval.

C. GROUND WATER

(1) RAINFALL:

At the site, rainfall averages approximately 200 inches per year. In the watershed, as you go to higher elevations, the rainfall increases, up to a maximum of approximately 300 inches per year at elevation 2,000.

(2) GEOLOGY:

East Maui is a shield shaped dome of olivine basalts. The area at Kuhiwa is composed of Hana volcanic series rock, which is generally highly permeable.

(3) HYDROLOGY:

A detailed study of the Nahiku ground water situation is reported in Geology and Ground Water Resources of the Island of Maui, Hawaii, by H. T. Stearns and G. A. MacDonald, 1942. The situation is extremely complex.

The Hawaii Water Resources Regional Study Preliminary Surface and Ground Water Resources study report of April, 1975, reports "there is an abundant supply of ground water available for development." The average supply in Area IV, which includes the Nahiku area, is 925 mgd from an average of 144" rainfall per year. The ground water recharge is estimated at 470 mgd or over 25 mgd per mile of shoreline.

D. PUMPING PROGRAM AND UTILIZATION OF WATER

(1) PROGRAM: Pumping will be intermittent depending on rainfall and irrigation requirements for the pineapple fields in the Haiku, Makawao and Kula areas. The pump will operate to replace water

withdrawn from East Maui Irrigation Company (EMI) ditches in the Haiku area and from Hawaiian Commercial and Sugar Company (HC&S) ditches in the Makawao and Kula areas. It is anticipated that the pump could operate as much as 300 days a year in a dry year, but probably averaging 200 days a year in more normal years.

(2) WATER UTILIZATION: The water will be placed in the Koolau Ditch to replace water withdrawn elsewhere from the ditch system owned by EMI and HC&S. The water will be withdrawn for the irrigation of pineapple by Maui Pineapple Company, Limited in Haiku, Makawao and Kula.

E. SOCIAL AND ECONOMIC EFFECTS:

The long term water agreement between the Hawaiian Commercial and Sugar Company and Maui Pineapple Company, Limited has expired this year. Negotiations for a new agreement include development of new irrigation water to replace irrigation water used by Maui Pine from the HC&S ditch system. Maui Pine needs this water in order to keep the Kula fields economically productive and to meet the production commitments to their customers.

5. DESCRIPTION OF AFFECTED ENVIRONMENT:

A. GROUND WATER:

Pumping at rates of up to 700 gallons per minute or one million gallons per day will have little effect on the ground water conditions at Nahiku, where it is estimated that the recharge is more than 25 million gallons per day per mile of coastline. No other pumps are taking water from this aquifer at Kuhiwa.

During test pumping of this well in 1977 at rates up to 750 gpm, there was no effect on the springs at Hanawi Stream, the deep gulch approximately a mile to the east. Drawdown at the pump will be substantial as the well is in fairly impermeable lavas. During the test pumping, at a rate of 650 gpm, the drawdown was measured to be 358 feet. The water table at that time was 740 feet above sea level.

B. FOREST COVER:

There will be no change in the typical East Maui watershed forest cover except for the few Ohia and Eucalyptus trees removed or trimmed to install the electric power line.

C. WILDLIFE:

There will be no change in wildlife, including birds, as the ground cover remains the same.

D. DRAINAGE:

There will be no changes in the drainage patterns in the watershed area.

E. ARCHAEOLOGICAL:

There are no significant archaeological remains in the area as surveyed by Xamanek Researches, Walter M. Fredericksen, Jr. and Demaris L. Fredericksen, reported in a memorandum dated July 17, 1978, and updated on April 4, 1990 (attached).

F. CONSTRUCTION IMPACT:

Short term effects of construction noise and dust will be minor as controlled by existing laws and ordinances. There are no homes within 1 1/2 miles of the site. The ground is usually damp from the high rainfall and dust is not a problem. What areas are cleared at the pump site and for the electric power line will grow over rapidly when the job is completed. Some repair and maintenance will be required of the existing jeep roads in order to make the access safer.

6. IDENTIFICATION AND SUMMARY OF MAJOR IMPACTS:

The production of one million gallons of water for the irrigation of pineapple in Haiku, Makawao and Kula is vital and necessary for the continued economic health of Maui Pineapple Company, Limited. There is capacity available in the ditch systems of EMI and HC&S to carry this water from Kuhiwa to the pineapple growing areas without any impact on the environment.

Only a minor amount of clearing is required, around the pump site and along the pipeline route, and some tree trimming will be required along the powerline route (see photos). The trees affected by this trimming are mostly ohia and eucalyptus. The resulting effect on the ground cover, animal and bird population will be insignificant. The only long range effect will be the withdrawal of up to one million gallons per day from the presently unused major ground water body in the Kuhiwa area, where the recharge rate is estimated to be over 25 million gallons per day per mile of shoreline.

All alternatives considered require the drilling of a new well. The impact on the environment from this drilling operation would be more severe than the use of this existing well. During the 1930's and again in the 1940's, extensive testing in this area was conducted to determine the location and extent of high level ground water bodies. This existing well was drilled as a result of these tests and monitored by EMI, the HSPA Experiment Station, and the United States Geologic Survey. Use of the existing well is preferred over the drilling of a new well.

7. PROPOSED MITIGATION MEASURES:

Any tree trimmings and removed ground vegetation will be composted in areas discretely selected so as not to become eyesores or interfere with the natural drainage of the area. The small amount of soil removed from the holes for the power poles will be discretely spread in the surrounding grasses and ferns. The building over the well will be kept small and unobtrusive, and will not be visible from the Hana Highway. No other mitigation measures are required.

8. DETERMINATION:

The expiration of the old water agreement between HC&S and Maui Pine, the present economy, and the increased needs for irrigation water for pineapple make this project feasible and necessary at this time. The environmental effects will be negligible, and the project will utilize a small portion of the sustainable yield of the high level ground water body at Kuhiwa. There are no known locations along the ditch system which will provide additional supplies with lower pumping costs. There will be minimal clearing or trimming of forest cover, and there will be no effect on other surface or ground water diversions. This project should be allowed to proceed during the summer of 1990.

VI. SUMMARY OF PROPOSED USE:

The use consists of the installation of a new pump and electric motor in the existing Kuhiwa well, and an 8" plastic pipe from the well to the Koolau Ditch tunnel, to provide up to one mgd for the irrigation of pineapple in Haiku, Makawao and Kula. Also included is the installation of an electric power line along the existing Hanawi pipeline and Koolau Ditch to the well site.

INFORMATION REQUIRED FOR ALL USES

I. DESCRIPTION OF PARCEL:

A. EXISTING STRUCTURES:

The Kuhiwa Well is on an existing site about 3,500 feet above the Hana Highway, on the east side of Makapipi Stream, at elevation 1,400 feet, about 125 feet from the Koolau ditch, and on Tax Key parcel 1-2-04-03. There is an existing concrete platform, derrick footings, and a 14 inch well casing stubbed out above the ground. This well is presently unused and overgrown with grass.

The Koolau Ditch tunnel goes under this site and continues on under Makapipi Stream heading west. The tunnel then opens up into an open ditch until it gets to Hanawi Stream, which it crosses as a tunnel, then it goes on to the central valley area of Maui as a combination of open ditch and tunnel. This ditch carries water for the irrigation of sugar cane and pineapple, and it also carries drinking water for the County of Maui.

At the Hana Highway, along the west side of Hanawi Stream, there is an electric power line and pump known as the Hanawi Pump. From this pump there is a pipeline up to the Koolau Ditch. This pump and pipeline lift about 1/2 mgd of water from Hanawi Stream up to the Koolau Ditch for the irrigation of pineapple, when the water is available.

The location of these structures is shown on Exhibit A attached.

B. EXISTING UTILITIES:

Electric power, 23,000 volts, is available at the Hanawi Pump, as shown on Exhibit A.

C. EXISTING ACCESS:

There are two existing jeep roads about 10 feet wide into the site as shown on Exhibits A and B.

D. VEGETATION:

The vegetation is typical of windward East Maui, which is subject to high rainfall. Some of the vegetation found in the area are: guava, ohia, ginger, various types of fern, grass, eucalyptus, etc. No rare native plants have been identified in the area.

E. TOPOGRAPHY:

Exhibit A, which is an enlarged portion of a U.S. Geological Survey Topographic Map, is enclosed. The area is moderately steep, rolling terrain with deep gulches, slopes 15 to 25%.

F. IF SHORELINE AREA, DESCRIBE SHORELINE:

Does not apply to this application.

G. EXISTING COVENANTS, EASEMENTS, RESTRICTIONS:

There are no existing covenants, easements, or restrictions regarding the use of this area.

H. HISTORIC SITES AFFECTED:

Memorandum from Xamanek Researches, by Walter M. Fredericksen, Jr. and Demaris L. Fredericksen, dated July 17, 1978, and updated April 4, 1990, attached, indicate no evidence of significant archeological remains.

II. DESCRIPTION OF PROPOSED USE:

It is proposed to install a deep well pump of up to 700 gallons per minute (gpm), electric driven by a motor of up to 250 hp, as indicated on Exhibits A through I. Access to the pump will be by existing unpaved service road. Access for construction of the electric power line will be by existing unpaved jeep road, except for the about 800 feet along the footpath, which will be accessed by foot and helicopter. Exhibit G shows the approximate power pole locations. This pump will be used to pump up to 700 gpm of water from an existing deep well to East Maui Irrigation Company's Koolau Ditch for transport to Haiku, Makawao and Kula for the irrigation of Pineapple by Maui Pineapple Company, Limited. Pumping will be intermittent, depending upon the rainfall and irrigation needs of the pineapple fields.

III. COMMENCEMENT AND COMPLETION DATES:

The project will commence as soon as approved, and should be complete 6 to 9 months afterward. It is hoped to begin this project the summer of 1990.

IV. TYPE OF USE REQUESTED: Conditional Use; Subzone P & R.

Area of Proposed Use: Less than 1 acre will be used for the pump building and pipeline route to the ditch. This is all in P subzone. About 7,100 feet of overhead powerline will be installed along the existing Hanawi pipeline and Koolau ditch, requiring about 30 poles. The powerline will start out in R subzone, go along the boundary between the P and R subzone, then finish up with about 2,000 feet in the P subzone at the pump end. See Exhibit F.

Nearest Town: The area known as Nahiku is about 1 1/2 miles away.

Conservation District Subzone: M-14, Nahiku.

INFORMATION REQUIRED FOR CONDITIONAL USE ONLY

I. PLANS:

A. Area Plan:

Exhibit B, a portion of Tax Map Number 1-2-04 and Exhibit D, an Area Plan, identify existing ditch facilities, roadways, pipelines, and the Kuhiwa Well. Less than 1 acre of this 1,359.18 acre parcel is involved in this application. The two abutting properties which lie nearest to the proposed conditional use application are owned by the State of Hawaii (TK:1-2-04-2 and 7).

B. Site Plan:

Exhibit E represents the site plan identifying existing features in relation to the proposed conditional use application. Dimensions and shape of lot, metes and bounds description of the property are not shown because of the large size of the property. There are no existing easements and utilities in this area. There is vegetation along the proposed electric transmission line but the area surrounding the Kuhiwa Well is reasonably clear due to the clearing which took place in 1947 before the drilling of the well.

C. Construction Plan:

Construction plans include the electric transmission line and a small building to house the pumping equipment. The building will be placed on the existing concrete platform. The route for the power line will require some trimming and possibly removal of some ohia and eucalyptus trees in order to clear the lines. The pipeline route from the well to the ditch facilities will require very little clearing or grading. A support across the gulch into the tunnel will be required (see Exhibit I).

D. Maintenance Plans:

Maui Electric Co. maintenance plan for power transmission line consists of an annual inspection for tree trimming requirements. Routine periodic maintenance inspections of the pump and associated electrical gear by Maui Pine will also be made.

E. Management Plans:

The pump will be used to pump up to one million gallons per day into the Koolau Ditch for transfer to Haiku, Makawao and Kula where it will be removed by Maui Pineapple Company, Limited for the irrigation of Pineapple. The pump will be operated only during periods when it is dry in these pineapple growing areas. It is estimated that this requirement could be as high as 300 days in a dry year, but normally around 200 days per year.

F. Historic or Archaeological Site Plan:

Memorandum from Xamanek Researches, dated July 17, 1978, and updated April 4, 1990, attached, indicate no evidence of significant archeological remains.

II. SUBZONE OBJECTIVES:

The P and R subzone objectives as stated in DLNR Title 13, Chapter 2, designate the area for protection of the watershed. This project will remove a small amount of the available groundwater for the irrigation of pineapple without any contamination of the groundwater supply. There will be no significant disruption to the rainforest or surface runoff waters. There is no effect on any archeological or historic sites, known or unknown, as all construction work is kept within the proximity of existing disturbed areas such as pipelines, ditches, roads and wellheads.

The project will have no effect on the natural ecosystem of plants, fish and wildlife. There will be no effect on the future development of any parklands, growing and harvesting of timber, or any outdoor recreation such as hunting, fishing, hiking, camping and picnicking.

The powerlines and electric power used to pump this water are a clean, environmentally acceptable way of achieving the desired result of providing the needed irrigation water for the pineapple fields in Haiku, Makawao and Kula. The building used to shelter the pumping equipment and associated electrical gear will be small and unobtrusive. This project will utilize an unused, existing well, built many years ago, to provide clean irrigation water urgently needed by Maui Pine for their fields in order to maintain their productivity and profitability.

The installation of the pump, powerlines, and the pumping of this water for irrigation purposes is consistent with the objective of these Conservation District Subzones.

XAMANEK RESEARCHES
BEHAVIORAL/OCEAN SCIENCE STUDIES
P. O. BOX 131
PUKALANI, MAUI, HAWAII 96768

July 17, 1978

SUBJECT: Archaeological survey in a Conservation District in upper Nahiku, Eastern Maui, Hawaii, July 14, 1978.

DESCRIPTION: The survey was undertaken at the request of Mr. P. Scott, East Maui Irrigation Co. The Kuhiwa Well Site, Nahiku, Maui, is to be put into service, requiring the installation of electrical power lines for pump operation.

The survey was undertaken on Friday, July 14, 1978. The map used for our survey was the Maui Electric Plan for the Kuhiwa Well site (drawn May 8, 1978). This map keys into existing topographic maps of Maui and the site area in particular, and also includes the locations of all sites for power poles and their guy systems. These power pole sites were the areas subject to our survey, since these are the sites that will be disturbed by the construction.

The site location extends mauka of the Hana Highway in the Nahiku area. The pole sites follow an existing EMI access road into the area. Along this road there are six (6) pole sites, consecutively numbered from the access road turnoff, E4 through E9 (refer to map cited above). The method of survey was to walk the area, testing the pole sites for possible archaeological material. Following our survey of this area, we proceeded by EMI jeep trail to the site of the existing Kuhiwa Well. The well site lies across the small valley (gulch) which serves as the run for Kuhiwa and Makapipi streams. This valley will be spanned by the power lines a distance of about 1300 feet. Proceeding from the well site there are three (3) pole sites, consecutively numbered (from the well to the edge of the cliff which drops from there to the valley floor), E12 to E10. We were unable to locate the site of E11. The survey method was the same as before.

In all cases we were unable to find evidence of significant archaeological remains. This probably results from the following reasons: 1) the area is considerable disturbed from the existing road and other work which has been done there; 2) rain forest undergrowth and water saturated soil make recognition of archaeological features extremely difficult; 3) the rain forest environment would contribute to the rapid deterioration of

artifacts other than stone, etc.; 4) geographically, the area is not a typical area used by prehistoric Hawaiians, certainly not for habitation purposes requiring architecture.

On the makai valley slopes of the site area there are evidences of former taro patches and these evidences increase as one approaches the ocean. The sites lie well below the survey area.

The valley itself was not surveyed and assuming that no disturbance of the valley is necessary in the construction, no survey would be necessary. If, however, the valley will be disturbed during the construction, we would recommend an additional survey.

Finally, if any suspected artifacts or features should appear during the construction, we recommend that we be immediately notified so we may undertake on-site inspection.

Our sincere thanks to Phil Scott, for asking us to undertake the project, and to Steven Cabral, who served as guide par excellance!

Respectfully submitted,

Walter M. Fredericksen

Walter M. Fredericksen, jr.

Demaris L. Fredericksen

Demaris L. Fredericksen

XAMANEK RESEARCHES
P.O. Box 131
Pukalani, Maui, Hawaii
96788

SUBJECT: An up-dated discussion of an "Archaeological Survey in a Conservation District in Upper Nahiku, Eastern Maui, Hawaii", performed during July, 1978.

Mr. William Pyle, on behalf of Maui Land and Pineapple Company, asked us about the validity of our 1978 survey at the present date.

The original survey included land nearby the present area addressed by the Maui Land and Pineapple Company. It was concerned with the potential disturbances of the land resulting from the placement of a number of power poles and the spanning of a gorge with power lines necessary for a proposed project for diversion of water from the area. An archaeological survey was required for the proposed pole sites.

As indicated in the original survey report, findings were negative. The project itself was never undertaken, and the area has remained undisturbed from what it was in 1978 (personal communication, William Pyle, April, 1990).

We have discussed the project with Historic Sites Section, DLNR, State of Hawaii, and they concur with our recommendations outlined below (telephone communication, Ms. A. Griffin, April 3, 1990).

1. Given that no disturbance has occurred in the area since the 1978 survey, the conclusions and recommendations as stated remain valid, regarding the findings of the archaeological survey.

2. Although the original survey was not specifically undertaken of the presently proposed site area, it is in the immediate vicinity and is probably representative of the general archaeology of the area.

3. The proposed site area is already disturbed by access road clearing and the construction of the existing well. The proposal calls for a surface water pipe from the Kuhiwa well to the Koolau Ditch (see map). They will also clear the existing access road and place a power line from the Hanawi outlet to the Kuhiwa well.

4. Our recommendation is that if any earth moving or excavating and/or major land clearing activities of undisturbed land are required during the course of the new proposed project, that we be

notified and undertake an additional survey.

5. During land activities on the proposed project, should any artifacts or indications of historic or archaeological architecture or features be discovered, that we be immediately notified for an evaluation of such finds.

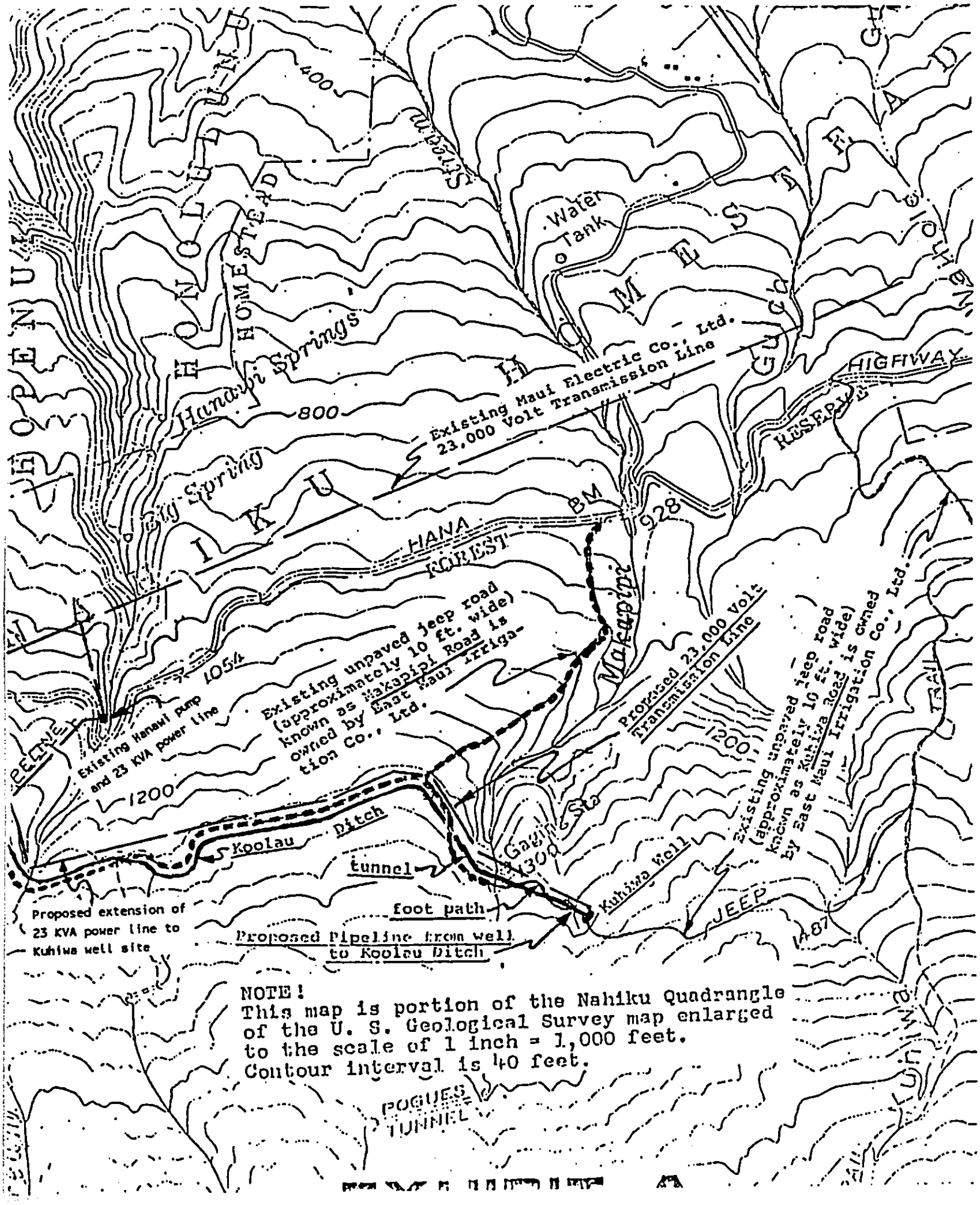
Demaris L. Fredericksen

Demaris L. Fredericksen

Walter M. Fredericksen

Walter M. Fredericksen

April 4,1990



NOTE!
This map is portion of the Nahiku Quadrangle of the U. S. Geological Survey map enlarged to the scale of 1 inch = 1,000 feet.
Contour interval is 40 feet.

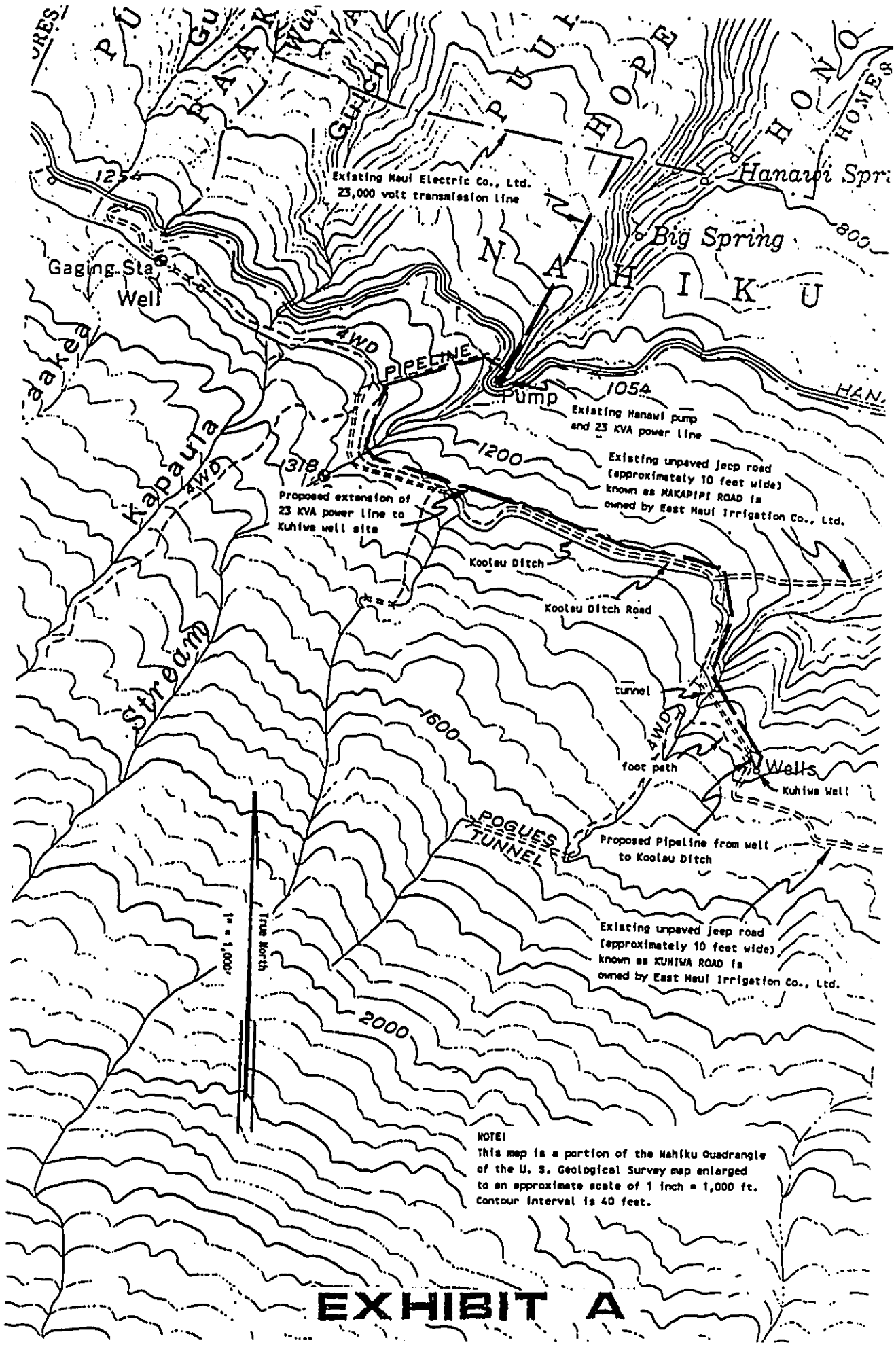
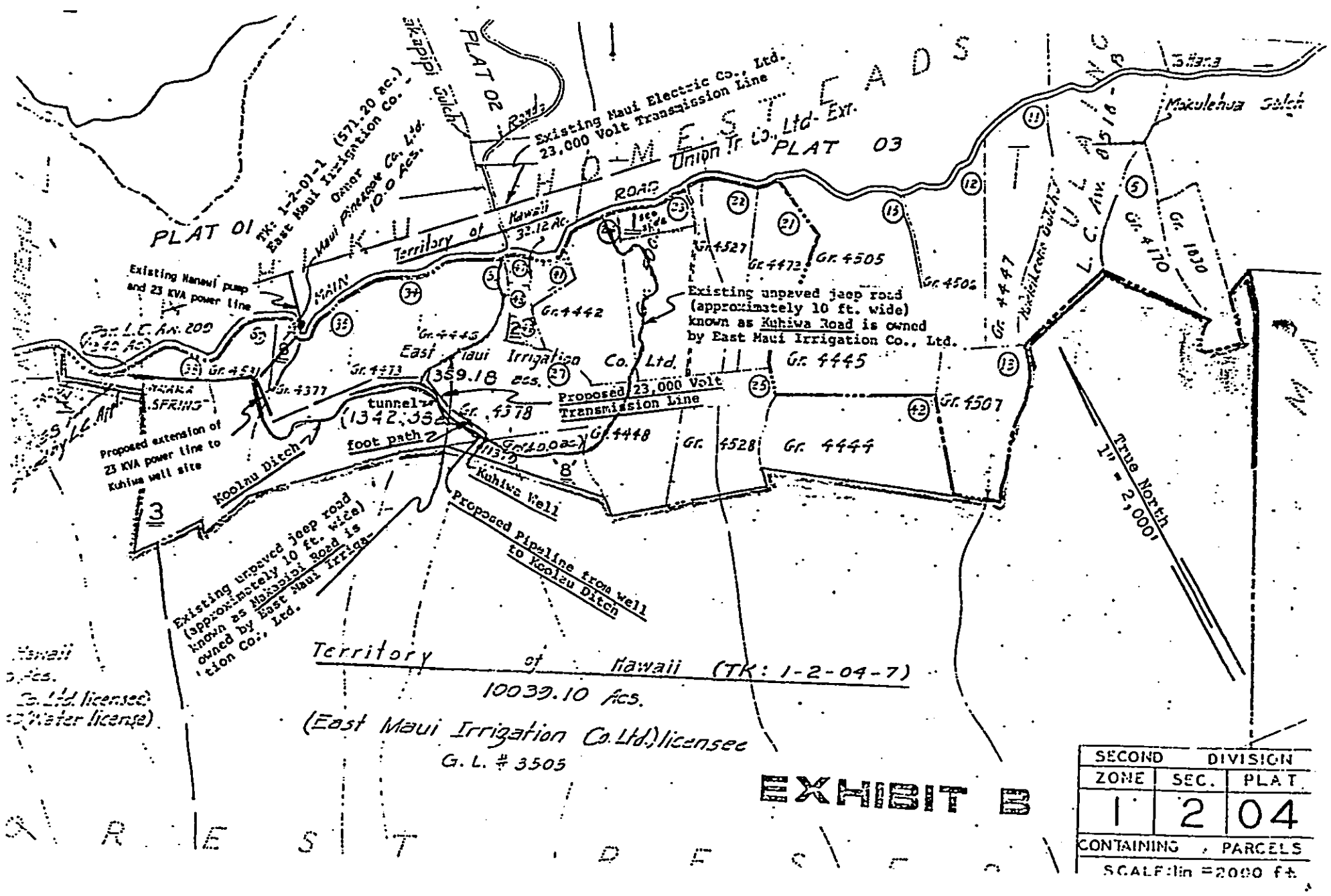


EXHIBIT A



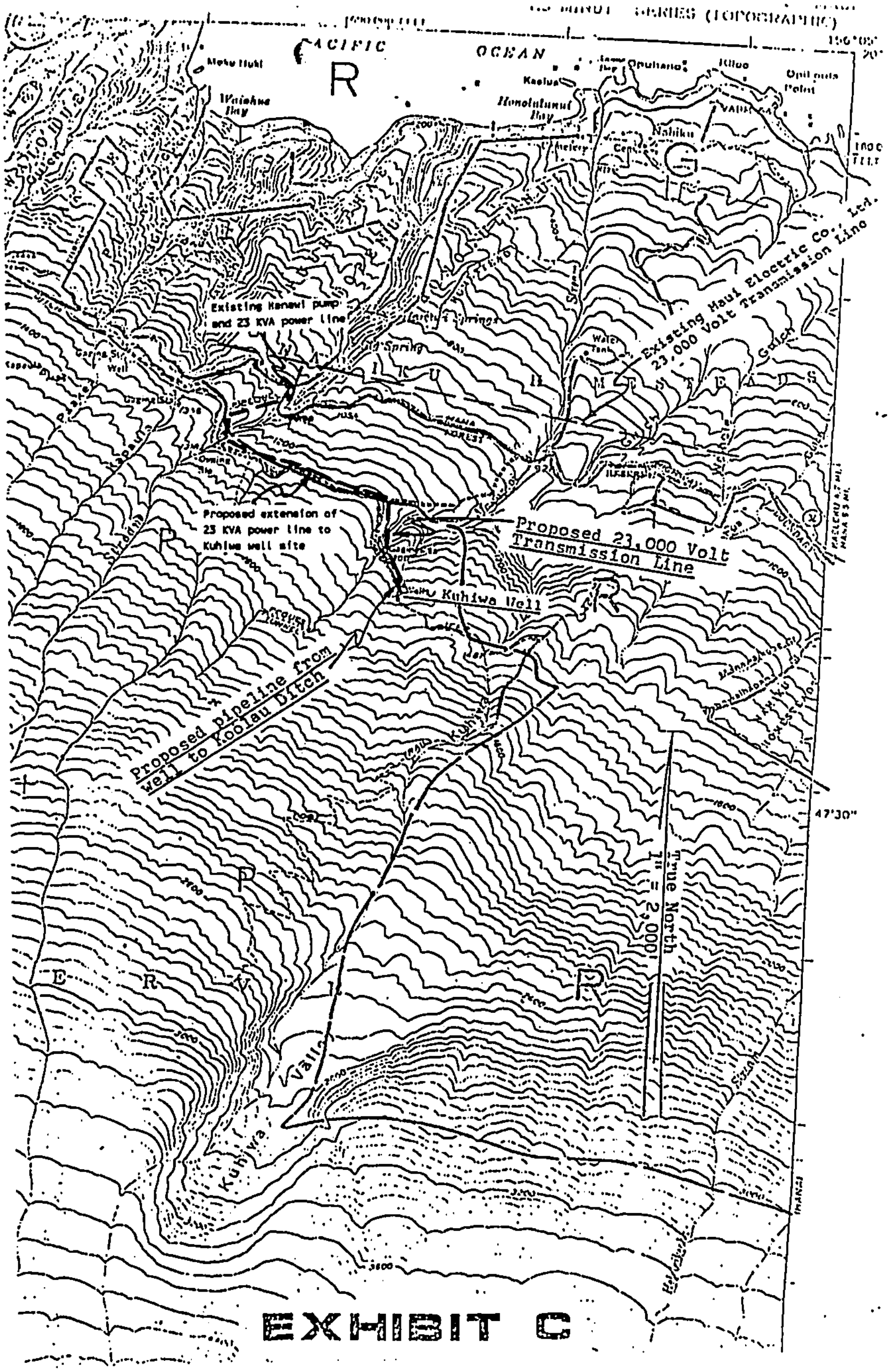


EXHIBIT C

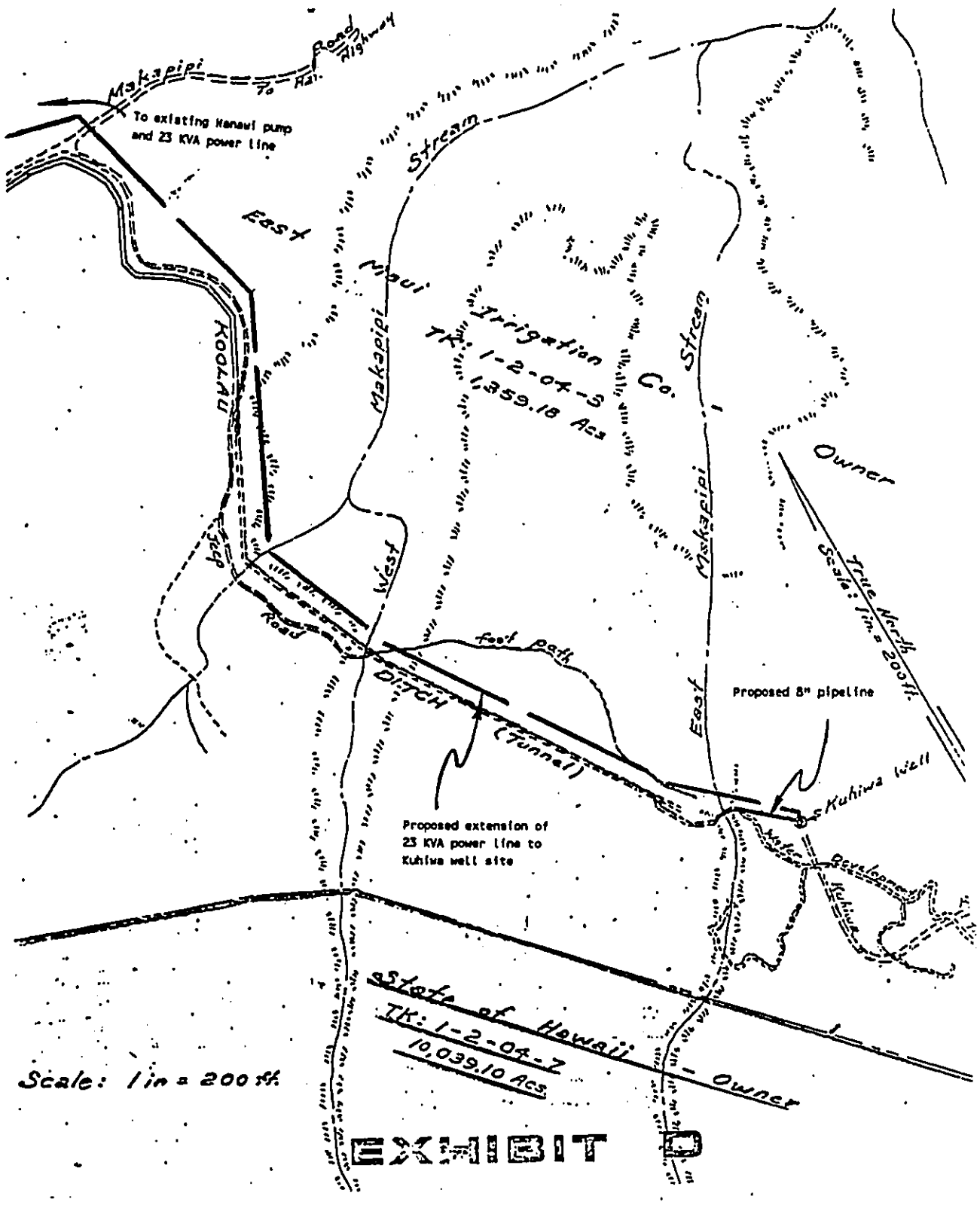


EXHIBIT D

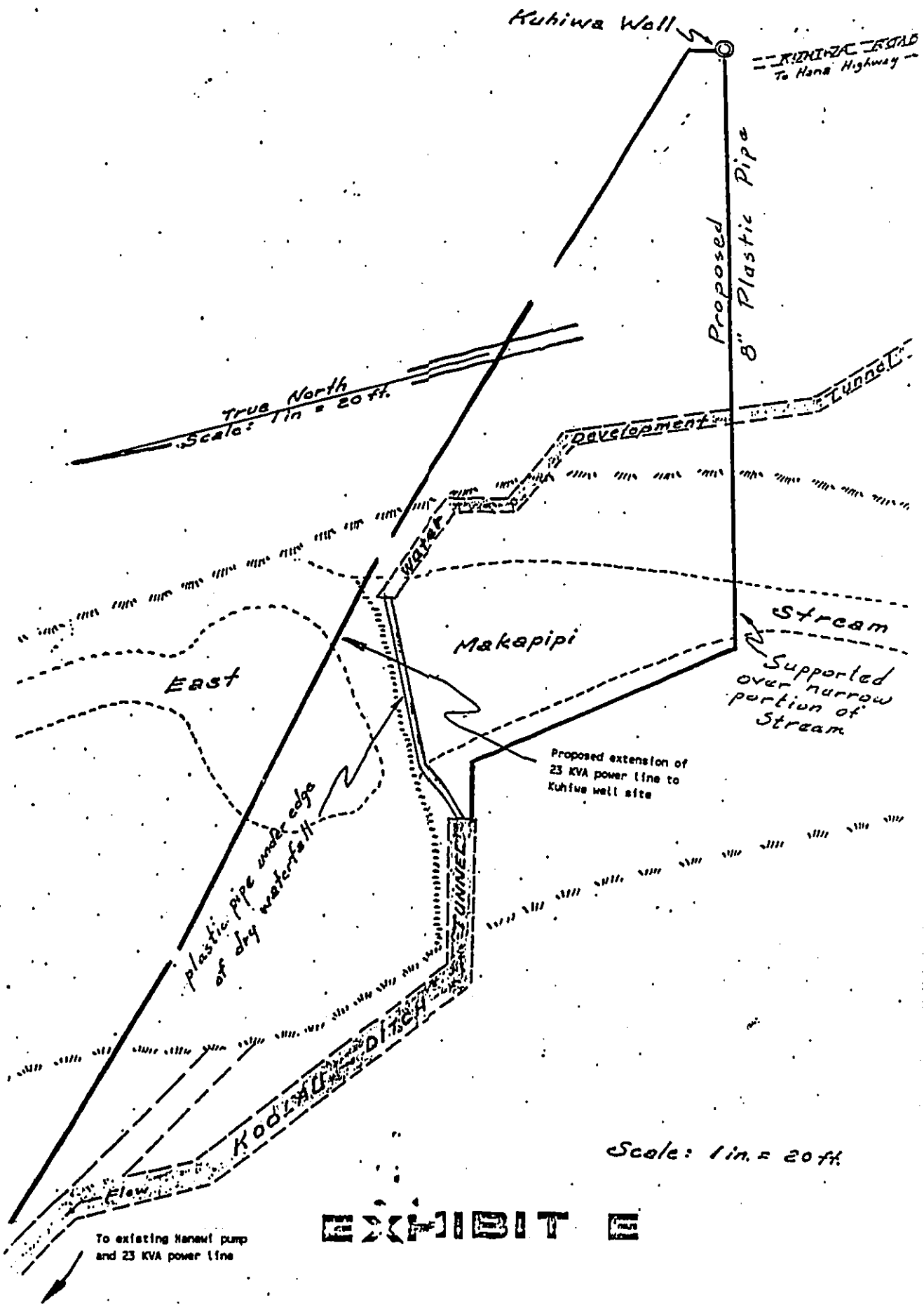
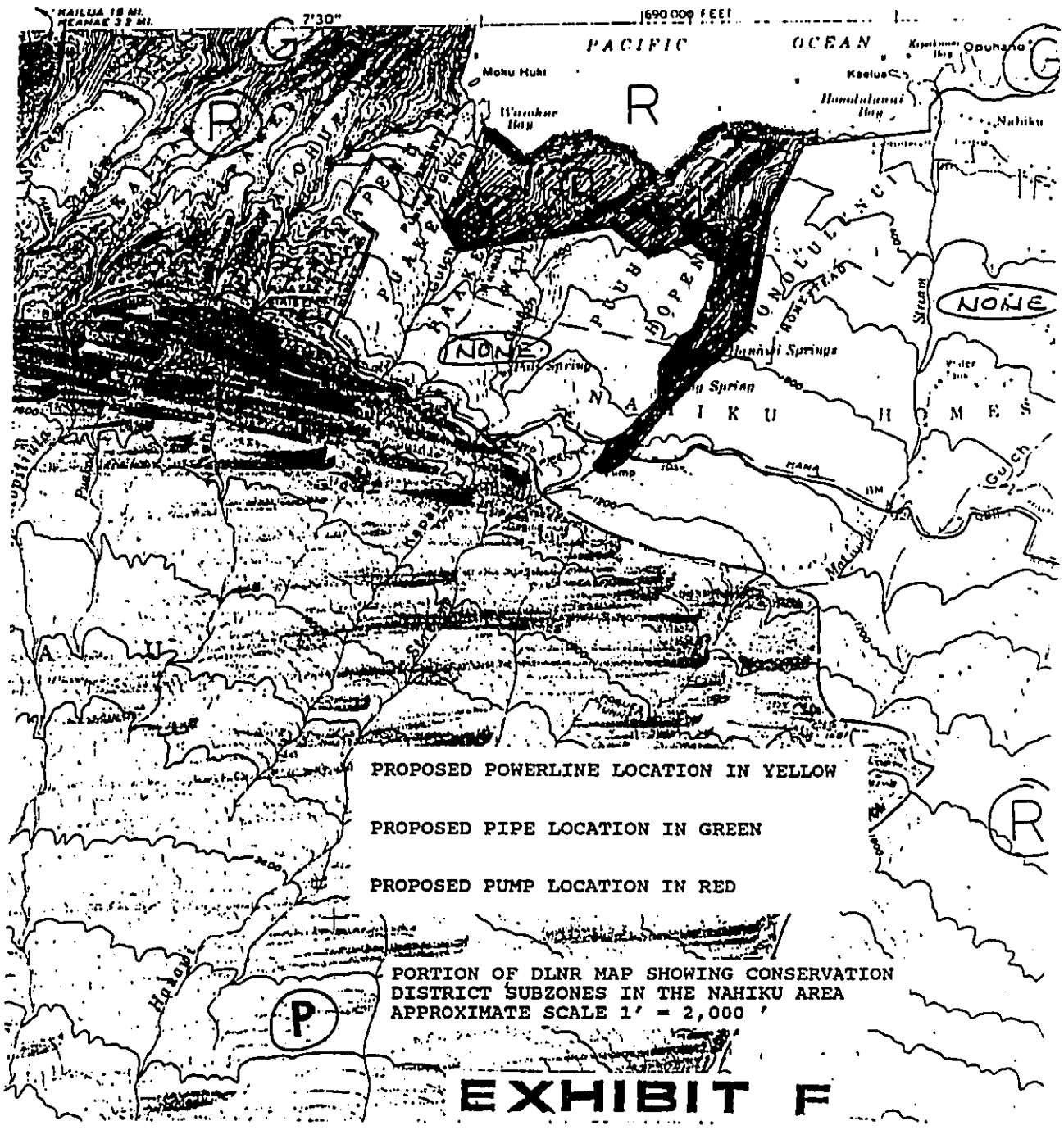


EXHIBIT E

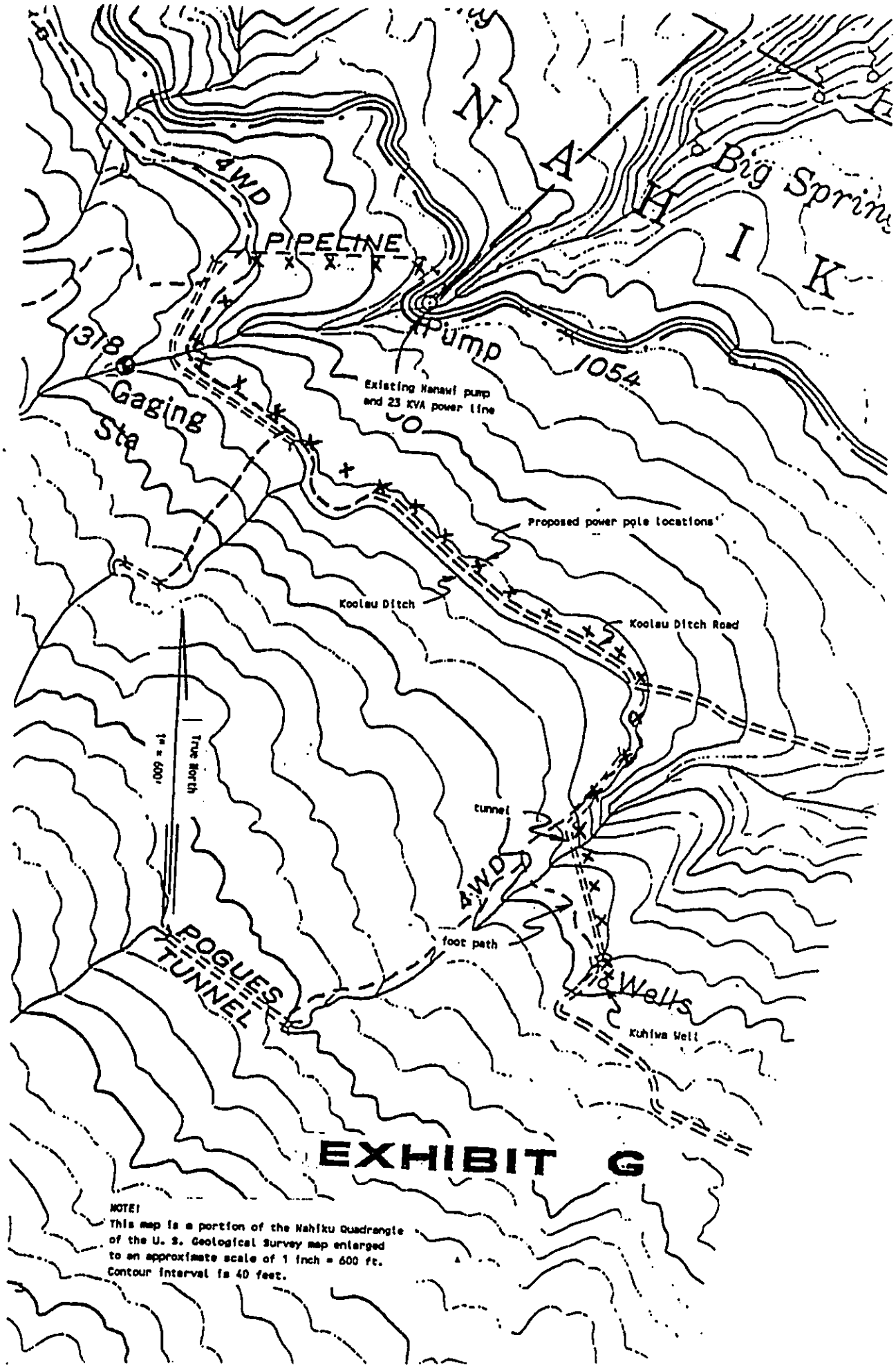
B BROWN (LIMITED)
G YELLOW (GENERAL)
R ORANGE (RESOURCES)
P GREEN (PROTECTIVE)

NAHIKU QU
HAWAII—M
ISLAND (
7.5 MINUTE SERIE

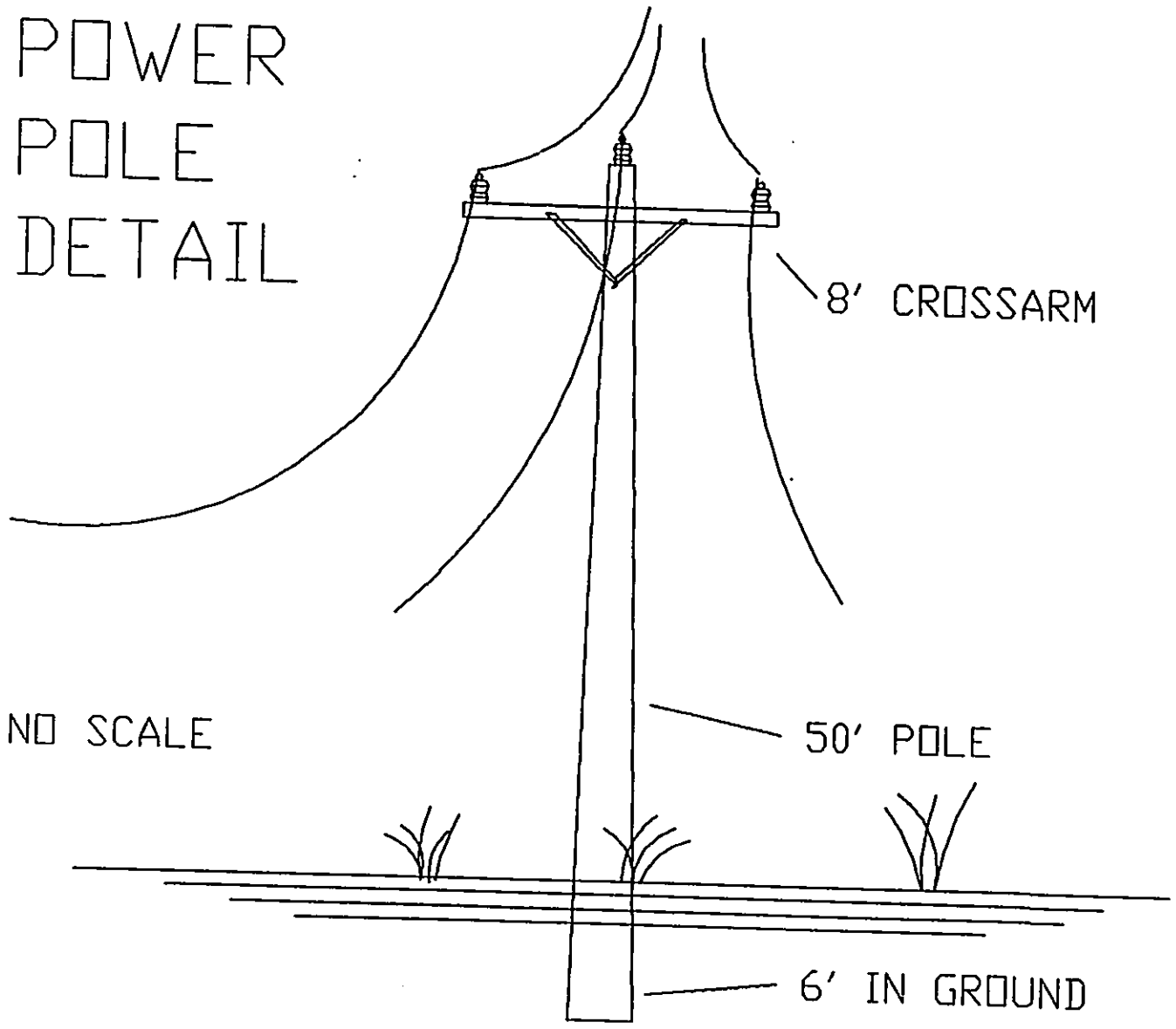


PORTION OF DLNR MAP SHOWING CONSERVATION DISTRICT SUBZONES IN THE NAHIKU AREA
APPROXIMATE SCALE 1' = 2,000 '

EXHIBIT F



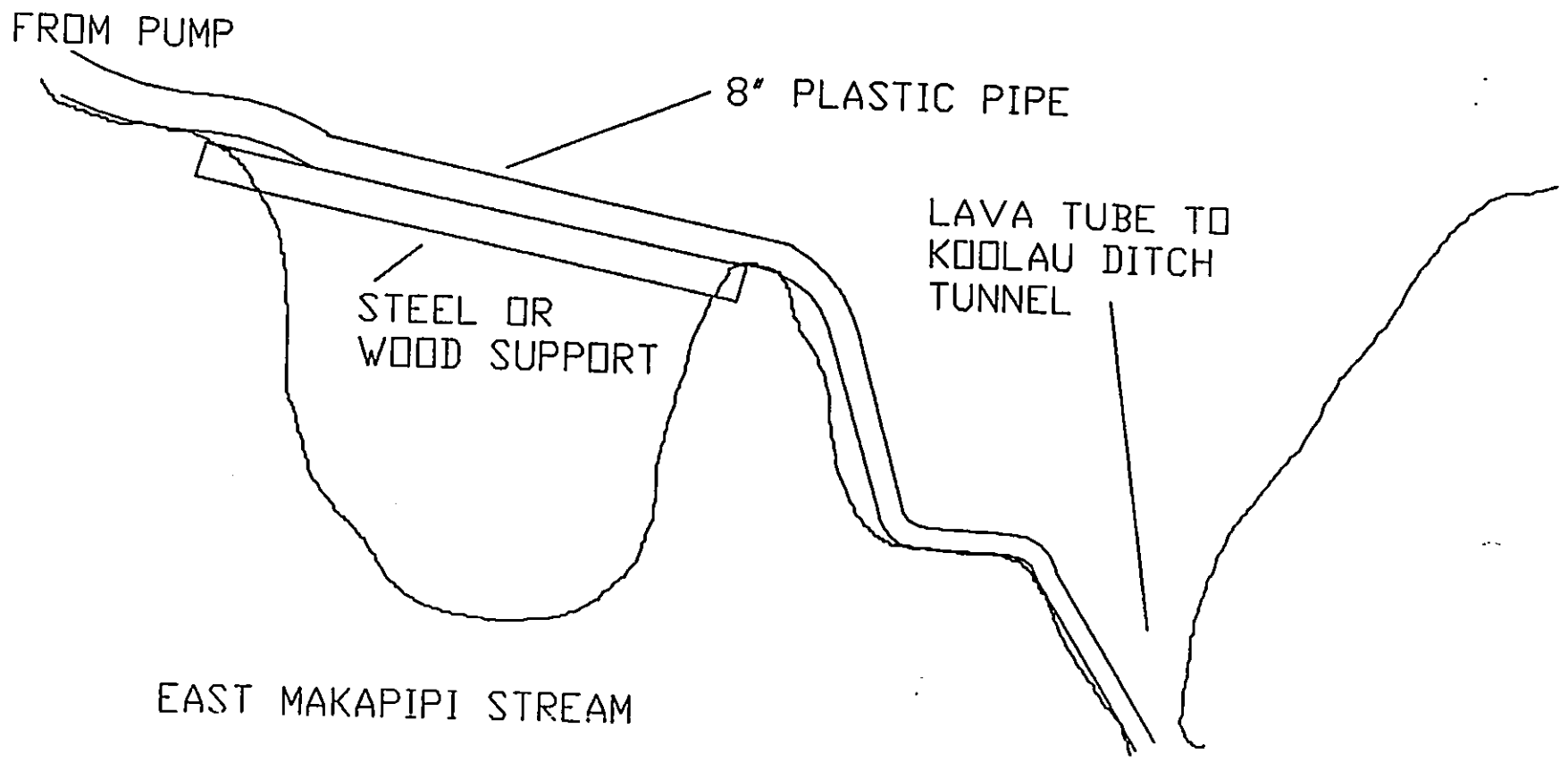
POWER
POLE
DETAIL



NO SCALE

EXHIBIT H

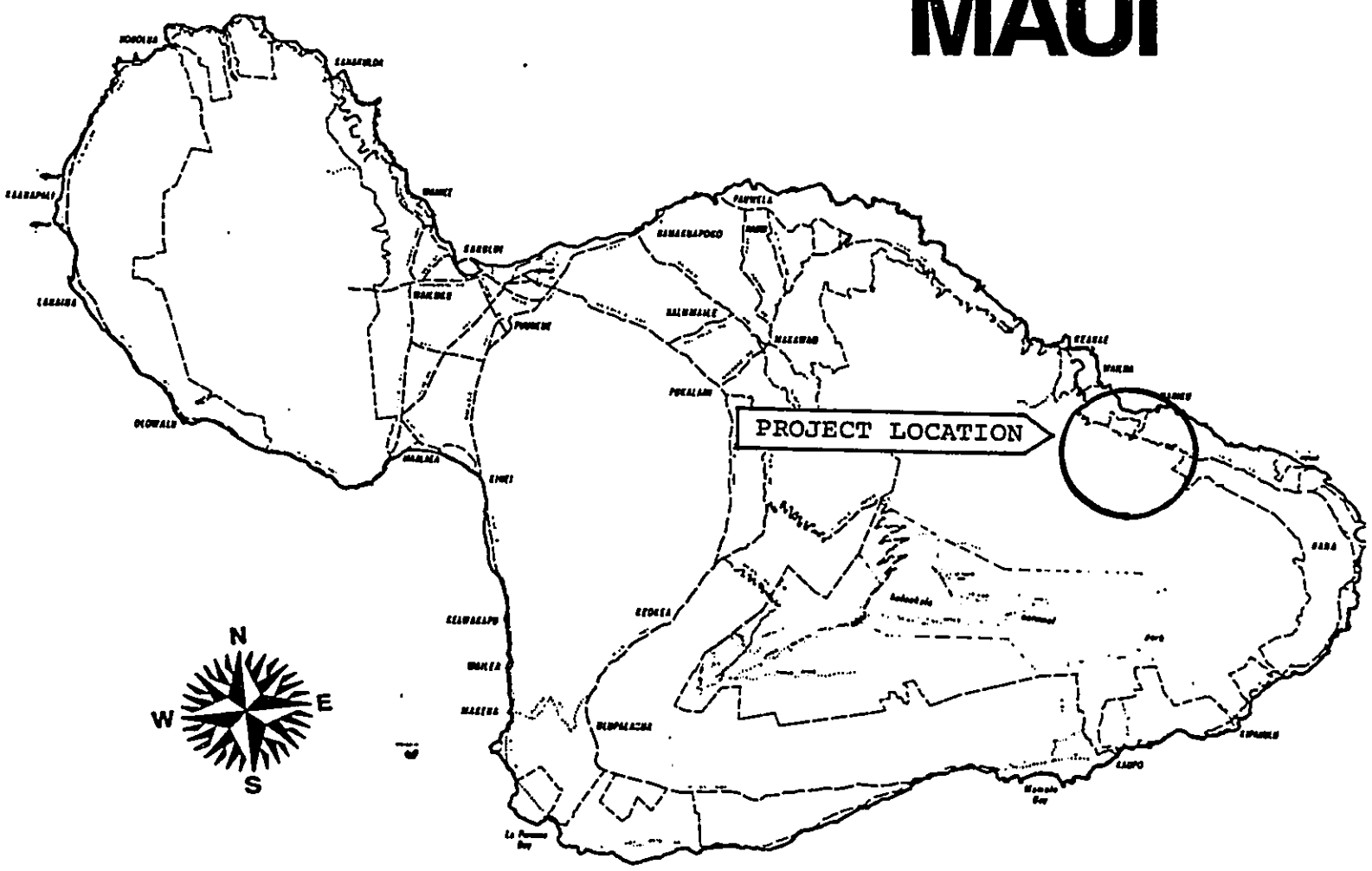
PIPE DETAIL
STREAM CROSSING

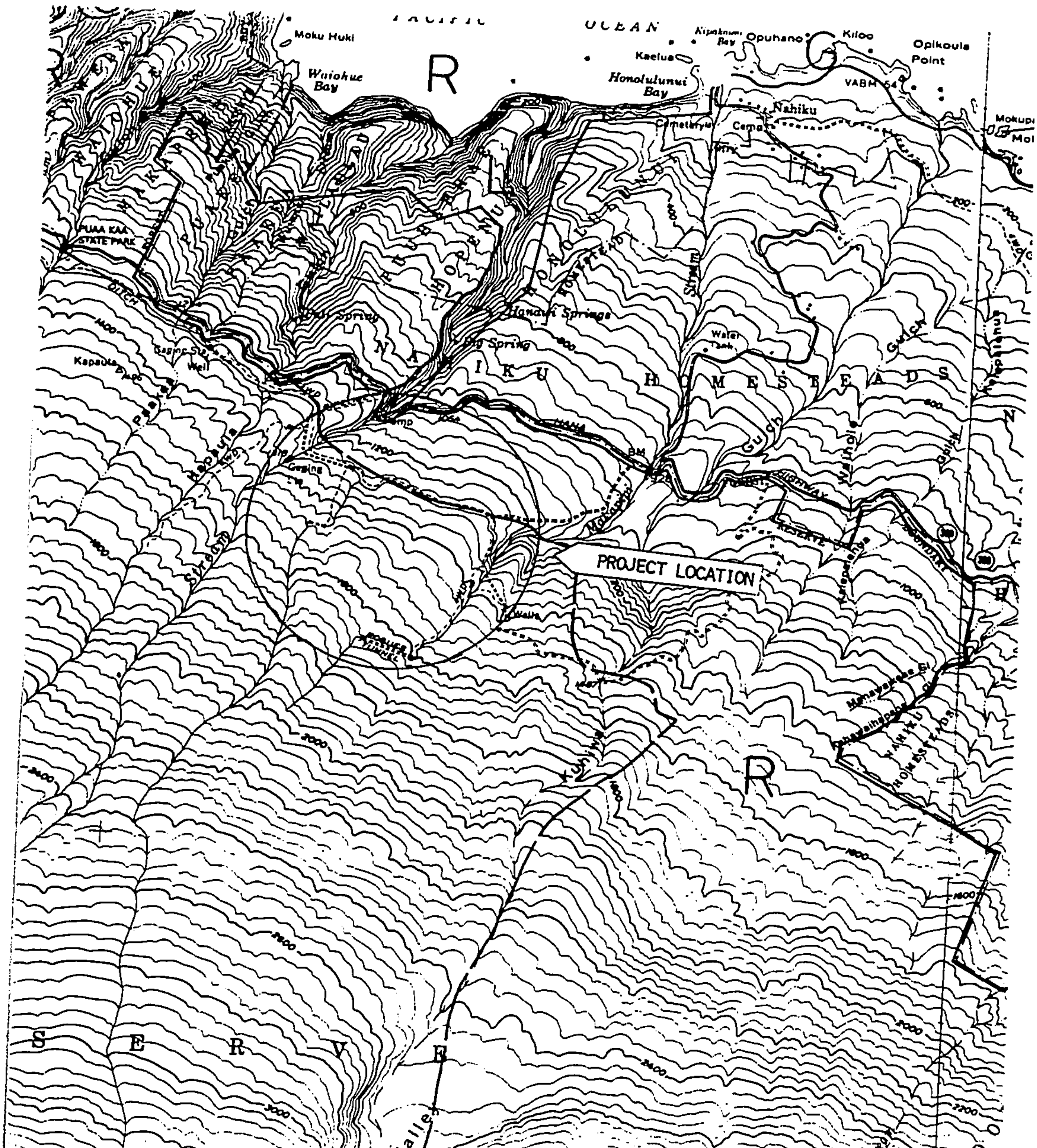


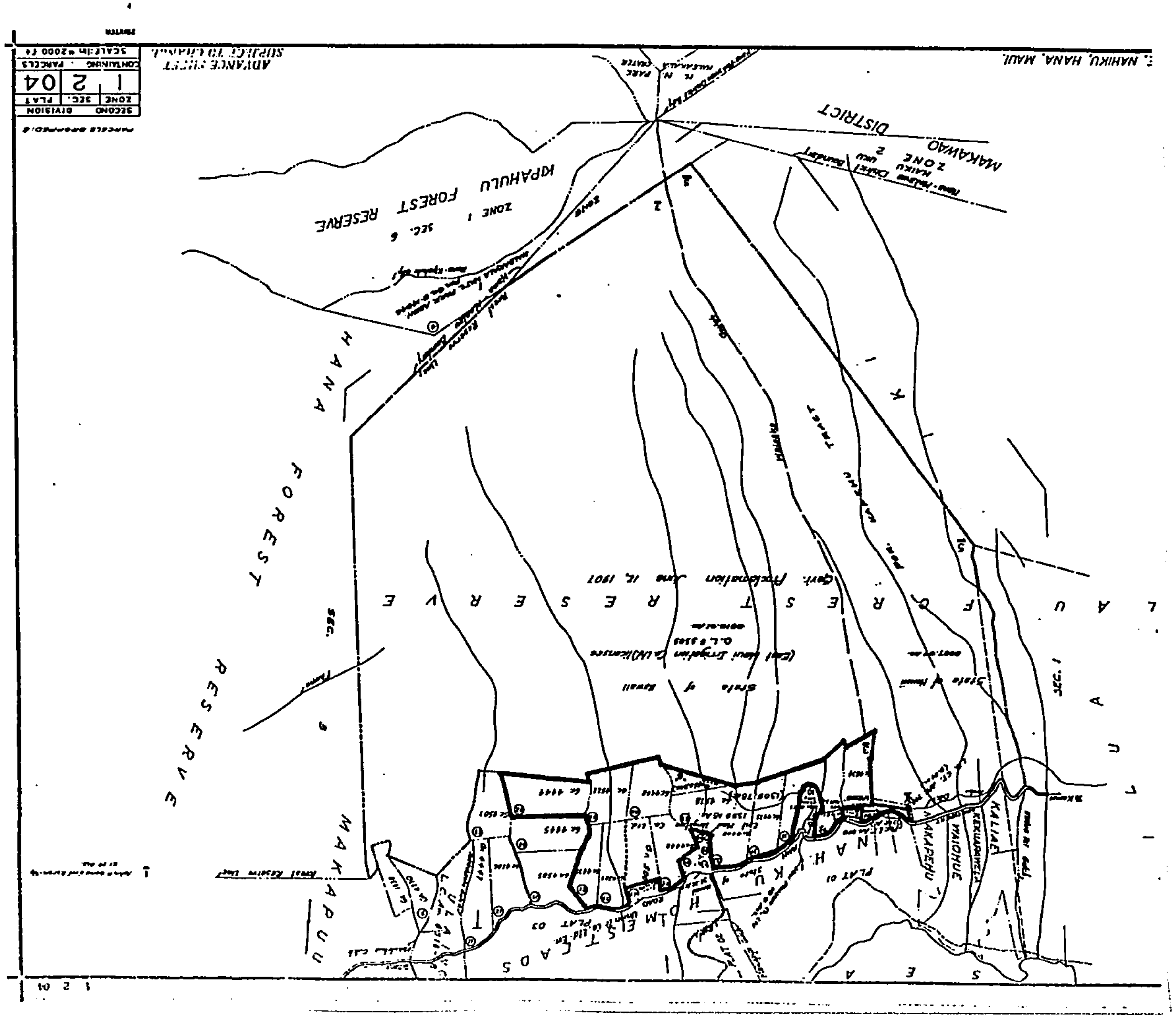
NO SCALE

EXHIBIT I

MAUI







SUPPLEMENTAL INFORMATION
FOR
ENVIRONMENTAL ASSESSMENT

Additional information pertaining to the assessment of water-related impacts on streams in the Nahiku area from the proposed pumping of the Kuhiwa well is available from the evidence and transcript of contested case hearing MA-CC-91-1, held before the Commission on Water Resource Management on May 30, 1990 and June 19, 1990.[1] The central issue of the contested case was the kind of monitoring needed to judge the effect of the well on the flow of streams in the region.

Parties to the contested case were:

1) Maui Pineapple Company (Applicant for pump installation permit at Kuhiwa well);

2) Hana Community Association (Petitioner); represented by Sierra Club Legal Defence Fund;

3) Ned Iliahi Goodness (Intervenor).

Expert witnesses included William Meyer (U.S. Geological Survey), Andrew Yuen (U.S. Fish and Wildlife Service), and Doak Cox (retired, former Director of Water Resource Research Center and Director of Environmental Center, University of Hawaii).

The duration of the hearing was approximately ten hours. The transcript of the hearing is approximately 290 pages in length, exclusive of exhibits and written direct testimony of witnesses.

The evidence, direct testimony, and transcript of the hearing are available for review in Honolulu at the Division of Water Resource Management, 1151 Punchbowl Street, Room 227.