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COUNTY OF KAUAI
DEPARTMENT OF WATER

ENVIRONMENTAL IMPACT ASSESSMENT
AND
NEGATIVE DECLARATION
FOR
* DRILL AND TEST PUHI WELL NO. 4
JOB NO. 91-4 *

AT
PUHI, KAUAI
STATE OF HAWAII
TMK: 3-4-04:POR. 3

This Environmental Document was prepared pursuant to Chapter 343,
Hawaii Revised Statutes.

PROPOSING AGENCY: Department of Water
County of Kauai
P. O. Box 1706
Lihue, Kauai, Hawaii 96766

RESPONSIBLE OFFICIAL: Raymond H Sato 9-23-91
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September 18, 1991

ENVIRONMENTAL IMPACT ASSESSMENT

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I. INTRODUCTION

A. Project Description

The proposed project consists of drilling and testing an exploratory well for the Department of Water, County of Kauai. The well will include a 12-inch solid casing for the upper 100 feet, 12-inch screen casing to the bottom of 18-inch drilled hole (depth to be determined in the field) and an open hole, with the depth to be determined in the field.

Should development of the well prove feasible, it will provide additional source capacity when connected to the County's Puhi Water System.

B. Project Location

The project is located in the Puhi District of Kauai approximately 3 miles west of Lihue. The project site is mauka of Kaunualii Highway within an agricultural area presently cultivated with sugar cane. EXHIBIT 1: VICINITY MAP and EXHIBIT 2: LOCATION MAP show the project site and location.

II. DESCRIPTION OF PROPOSED PROJECT

A. Background and Existing Conditions

The Puhi Water System is a municipal water system which services an area which includes the commercial, residential and public use districts in Puhi. The primary sources of the drinking water in the Puhi area are the County's Puhi Well 1 and Puhi Well 2. The pump at the Puhi Well 1 currently operates at approximately 200 gpm, while the Puhi Well 2 pump operates at approximately 100 gpm. The Puhi System is interconnected with the Lihue Water System. However, these systems are operated independently, and there are no interchange of flows under normal circumstances. The Puhi system also includes a 500,000 gallon concrete reservoir.

B. Proposed Improvements

The exploratory well will be drilled within existing Lihue Plantation sugar cane lands leased from Grove Farm Properties, Inc. The proposed well site is approximately 0.5 acres and is completely graded and in sugar cane cultivation. Ground elevation is approximately 440 feet at the exploratory well. Construction plans will require a bottom of well elevation of (+)140 or (-)60 feet with the 18-inch drilled well cased with a 12-inch solid and screen casing and cement grout. The well details is shown in EXHIBIT 3: PROPOSED WELL SECTION.

Site work is minimal in this project. The well location is within the levee sugar cane area maintained by the Lihue Plantation Co. (See EXHIBIT 2: LOCATION MAP). Access to the site will be via existing cane field roadways.

The well will be tested to determine yield, drawdown, recovery, and quality of water at various rates of pumping. There will be two tests done - one for high level water and one for basal water. Results of the tests will determine if the well will be developed for domestic water production.

C. Cost Estimate

The preliminary construction cost estimate for this project is \$450,000.00. Funding for this proposed project will be provided by the Board of Water Supply, County of Kauai.

III. RELATIONSHIP TO EXISTING LAND USE PLANS AND CONTROLS

A. State Land Use Plans

The State Land Use Commission designates properties in four categories: Agriculture, Rural, Urban, and Conservation. The proposed project lies within land designated as Agriculture. (See EXHIBIT 4: STATE LAND USE PLAN). The water well is permissible under the rules of practice and procedure, State Land Use District Regulations, Part III Section 3-3 paragraph 7 which reads as follows:

Public, private, and quasi-public utility lines, and roadways, transformer stations, solid waste transfer station, etc., and appurtenant small buildings such as booster pumping stations, but not including offices or yards for equipment, material, vehicle storage, repair or maintenance, treatment plants and major storage tanks not ancillary to agricultural practices, or corporation yards or other like structures.

B. County of Kauai General Plan

The General Plan for the County of Kauai, dated March 1970, provides information on the surrounding communities and land use designations. The project site is within lands designated Agriculture in General Plan. Also provided are generalized statements regarding transportation, sewer and water systems, storm drainage, etc.

The proposed project lies within land zoned as Agriculture District (See EXHIBIT 5: ZONING MAP). Under the provisions of the County Zoning Ordinance No. 164, public utilities and facilities are permissible uses in all zoning district.

C. Existing Land Use

The Puhi region was deeply associated with sugar cane cultivation. All arable land supported cane growth, sugar cane industries (Grove Farm) and plantation workers homesites.

Today, although still mainly in cane, Puhi includes the Kauai Community College, The Grove Farm Shopping Center, residential and industrial subdivisions. All improvements are located in the eastern section of Puhi adjacent to Lihue town.

IV. ENVIRONMENTAL SETTING

A. Topography

The project site is located approximately one mile northwest of Kauai Community College. Topographic information is available on the Lihue - Koloa Quadrangle Map published by the U.S. Geological Survey (See EXHIBIT 6: LIHUE-KOLOA QUADRANGLE MAP).

The ground slopes toward the south at approximately 4 percent. At approximately 100 feet west of the site the ground slopes into a gully.

B. Geology

The Island of Kauai is the oldest of the major islands in the Hawaiian chain. The Kauai Volcanic shield built itself off the ocean floor approximately two to four million years ago. Rock formations belonging to this original shield are part of the Waimea Canyon Volcanic Series, a major portion of which are the thin lava flows of the Napili formation which later covered the shield mass.

The Geological and Topographical Map of the Island of Kauai which is a supplement to Bulletin 13 "Geology and Ground-water Resources of the Island of Kauai," by G.A. MacDonald, D.A. Davis and D.C. Cox shows that the well site is underlain with basalt from lava flows of the Koloa Volcanic series. Lavas of the Koloa Volcanic series are for the most part poorly to moderately permeable. Basal water occurs in the rocks where they extend below sea level.

C. Climate

The climate of Kauai is comfortably uniform and is characterized by the northeast tradewinds generated by regions of high pressure to the north. These winds keep the average month temperatures near sea level within the range of 69° in February to 77° in August. The mean temperature decreases about 3° for every 1,000 foot increase in elevation.

The consistent approach of the tradewinds from the Northeast distinguishes the island into windward and leeward sides. Windward Kauai receives larger amounts of rainfall as the result of the condensation of water vapor as it is forced up into the atmosphere by the mountain mass. Mount Waialeale, for example, has a mean annual rainfall of 466 inches. Wainiha on the windward side of

Kauai received 80 to 90 inches per year. Rainfall at the project area averages between 50 and 75 inches per year.

D. Hydrology

The principal sources of ground water of the island of Kauai are from rocks of the Waimea Canyon volcanic series. These rocks are typically highly permeable and yield water readily to wells. The Koloa Volcanic series, in contrast, tend to be poor to moderately permeable and offer limited yield. In the Puhi area, which is within the Koloa Volcanic series, water is obtained primarily from wells which tap basal aquifers.

E. Biology

The site is cultivated for sugar cane by the Lihue Plantation Company. Natural vegetation at the site has been replaced by sugar cane. The adjacent gulch area includes introduced flora species such as guava, javaplum, eucalyptus, christmas berry, pangolagrass, California grass, and Hilo grass.

No threatened or endangered birds are known to inhabit the area. Common urban birds, such as mynahs, doves, cardinals, and sparrows are typical visitors at the project site. Wildlife inhabiting the area include stray cats and rats. This site is not adjacent to any residential area.

F. Air Quality

Although no information on air quality at the project site was obtained, it is generally assumed that the air is relatively clear and low in pollution. This is because of the distance from the major urban centers.

G. Noise

Noise levels were not measured at the project site. The noise levels are due to highway noises from passing trucks (Kaunualii Highway is 4000 feet away).

H. Archaeology

There are no identified historic or archaeologically significant locations at the site or immediate vicinity. The site has been cultivated for cane for more than 50 years. However, should any unanticipated sites, artifacts, or remains, such

as shell, bone or charcoal deposits, be discovered during construction, the work would be halted and the State Historic Preservation Office would be contacted.

I. Flood Hazard

Flood hazard data was not obtained for the project site. As the site is on higher grounds, flooding is not expected. The adjacent gully will transport all flood flows away from the project site.

V. SOCIO-ECONOMIC SETTING

The population of the island of Kauai as of 1990 was 51,000. The population of the Puhi census area (404,406) for this same date was 991. These statistics are from the State of Hawaii Data Book. Population projections for the year 2000 indicate that Kauai County will increase from the present population to approximately 88,200.

The following Table notes annual household income distribution for the island of Kauai as of 1979 from the Kauai Housing Master Plan Study, March 1985.

Kauai economy is primarily geared around agriculture and tourism as the most dynamic industries. The pineapple industry has essentially disappeared since 1960 while the sugar industry has reduced its work force by about one-fourth. However, the acreage and tonnage figure for sugar production have not appreciably declined, suggesting that the cutback on employment was caused by a rise in efficiency of labor rather than a decline in production. Lihue Plantation has recently announced a proposed reduction in cane land cultivation. Cultivation of lands north of Kealia River (Kawaihau District) will cease after the present crop.

In contrast to the decline in agricultural employment, employment in the services sector (dominated by tourism) grew from 9 to 28 percent of total employment since 1960. Other major sources of employment are wholesale and retail trade, 23%; government, 13%; agriculture, 7%, and manufacturing, 6%. The average unemployment rate was 6%.

VI. PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

A. Short Term Impacts

Short term impacts of the proposed project will be minimal. Daily traffic of the drill crew through the cane lands and the noise of the drill rig will be the extent of off-site construction impacts. There are no residences within a mile of the project site.

Noise from the drill rig will approximate that of an internal combustion engine vehicle. The work will be restricted to daylight hours and the noise should blend in with the normal activities. Exhaust emissions will not affect any populated area.

Dust and erosion from the construction efforts will be insignificant considering the volume of earth removed from the well. Conformance to the County's Grading and Ordinance should mitigate any adverse effects. Water discharged from the well during the testing period will be directed to the existing gully.

B. Long Term Impacts

If the project results are favorable, the land necessary for the development of the well site would be removed from sugar production. The major long term impact resulting from the proposed project will be the development of a potable well facility and the improved reliability of the Puhi Water System. The well will not influence rezoning of lands to higher uses in consideration of its limited production and the availability of existing urban zoned lands. The improved water system may be a factor in encouraging further development of the region, however the extent of future development is more likely to be influenced and directed by County zoning actions.

Drilling, testing and evaluating the exploratory well will involve the commitment of County funds, energy, and materials.

VII. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED

The traffic, noise and dust associated with this project are compatible with the agricultural activities of the surrounding lands. There appears to be no adverse impacts attributed to this project.

VIII. ALTERNATIVES TO THE PROPOSED ACTION

A. Alternative Site

The selection of the proposed well site was based on investigations by the State DLNR and resultant indications of favorable hydrogeologic conditions. Other locations in the vicinity were considered and the project site selected in consideration of hydrogeologic conditions, access roads, available power and ground conditions.

B. No Action

The no action alternative is not satisfactory because water demand in the Puhi area will soon surpass source capacity, resulting in possible shortages and inconveniences. Requests for additional water service connections from existing residential and commercial zoned lands in the Puhi area will be held up pending additional source development.

IX. RELATIONSHIP BETWEEN LOCAL SHORT TERM USES AND MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY

The short term use of the project site is the same as its long term use - supplying water for domestic consumption. The type of project does not affect the existing beneficial uses of the surrounding lands. Long term productivity should not be affected as this well, if successful, can co-exist with cane cultivation of the surrounding lands.

X. MITIGATING MEASURES TO MINIMIZE ADVERSE IMPACTS

The short term impacts occurring during the construction work will have no adverse impacts provided that current construction techniques are adhered to. Construction activity impacts (noise, dust and traffic) will be compatible with the surrounding agricultural activities.

XI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The construction of the proposed project would involve the commitment of certain natural and fiscal resources. The commitment of construction materials, manpower, and energy are mostly unrenowable and irretrievable. The impacts of using these resources should, however, be weighed against the benefits to the residents of the County when additional sources are required.

XII. DETERMINATION

Based on the preceding paragraphs, the proposed action will result in no significant adverse impacts other than those described in this assessment. The proposed project will not have any significant effect in the context of Chapter 243, Hawaii Revised Statutes and Section 11-200-12 of the State Administrative Rules. Consequently, a Negative Declaration is recommended and therefore, an Environmental Impact Statement would not be required.

XIII. REASONS SUPPORTING RECOMMENDED DETERMINATION

In considering the significance of potential environmental effects, the applicant has considered the sum of effects on the quality of the environment and evaluated the overall cumulative effects of the proposed action. The applicant has considered every phase of the proposed action, the expected consequences, both primary and secondary and the cumulative as well as the short- and long-term effects of the proposed action. As a result of these considerations, the applicant has determined that:

- A. The proposed action does not involve an irrevocable commitment or loss of or destruction of any natural cultural resource;

There are no natural or cultural resources associated with the project site. The site is presently cultivated with sugar cane.

- B. The proposed action does not curtail the range of beneficial uses of the environment:

The proposed project is consistent with the County's General Plan and the Board of Water Supply policies and would not curtail beneficial uses of the environment in the area.

- C. The proposed action will not affect the state's long-term environmental policies, goals and guidelines as expressed in Chapter 343, HRS, and any revisions and amendments thereto, court decisions and executive orders:

The proposed project will not affect the State Land Use Plan which is in concert with all applicable policies, goals and guidelines. No long-term environmental conflicts are foreseen.

- D. The Proposed action does not substantially affect the economic or social welfare of the community or state:

The economic impact will be affected by the short-term, construction related activities. Upon completion of the project, economic conditions should return to the existing situation since this is an exploratory project.

- E. The proposed action does not involve substantial secondary impacts, such as population changes or effects on public facilities:

The proposed project will not result in an increase of population in the area as construction is limited to drilling and testing an exploratory well. If successful, the well will serve to meet the Department of Water's need for additional source capacity. The additional source will serve lands presently zoned for development. Normal population growth should not be affected.

- F. The proposed action does not substantially affect public health:

Construction activities will be regulated to minimize noise, dust and erosion concerns. The project includes water quality testing to determine if the source is suitable for domestic purposes.

- G. The proposed action does not involve a substantial degradation of environmental quality:

The existing physical aspects of the surrounding area will be maintained.

- H. The proposed action is individually limited and cumulatively, does not have a considerable effect upon the environment or involve a commitment for larger actions:

The proposed project is part of the cumulative development of water sources. Use is regulated by the County of Kauai, Board of Water Supply. Approval of the project does not involve a commitment for any larger action.

- I. The proposed action does not substantially affect rare, threatened or endangered species or habitats:

There are no known rare, threatened or endangered species or habitat associated with the project site.

- J. The proposed action does not detrimentally affect air or water quality or ambient noise levels:

Development of the site will not increase ambient noise levels as it conforms to existing activities.

Short-term impacts on air and water quality, as well as noise, will occur during the construction period, but will be mitigated by normal construction practices and will be regulated by the project plans and specifications.

- K. The proposed action does not affect an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary or coastal waters.

The proposed project is not located adjacent to the shoreline and is outside of the tsunami inundation line.

Flooding or erosion problems are not anticipated.

XIV. LIST OF NECESSARY APPROVALS

- A. County of Kauai: A use permit is required for all utility installations in agricultural and open space zoned land. These requirements are stipulated in the revised ordinances of the County of Kauai, Section 8-7.3 and Section 8-8.3.
- B. Department of Health: If successful, approval is required when a new source of water supply is added to a public system per Chapter 20 of Title II "Potable Water Systems" of the Public Health Regulations.

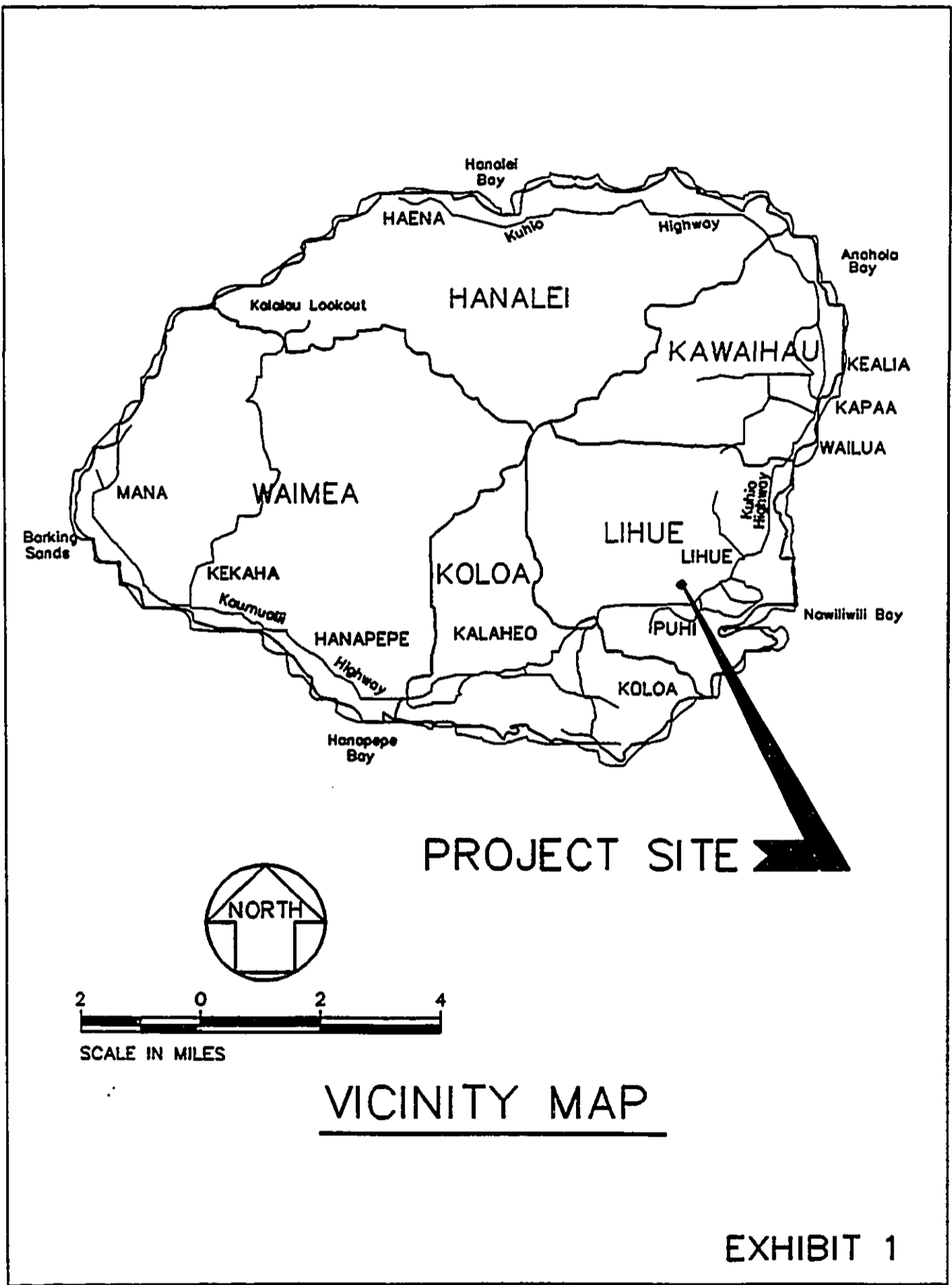
XV. ORGANIZATIONS AND PERSONS CONTACTED

The following agencies provided information in the preparation of the Environmental Impact Assessment on the subject project.

- A. Department of Planning
County of Kauai
4280 A Rice Street
Lihue, Hawaii 96766
- B. Department of Business and Economic Development
State of Hawaii
250 South King Street
Honolulu, Hawaii 96813
- C. Department of Land and Natural Resources
State of Hawaii
1151 Punchbowl Street
Honolulu, Hawaii 96813
- D. Grove Farm Properties, Inc.
P.O. Box 2069
Puhi Rural Branch
Lihue, Hawaii 96766
- E. Lihue Plantation Co., Ltd.
2970 Kele Street
Lihue, Kauai 96766

XVI. BIBLIOGRAPHY

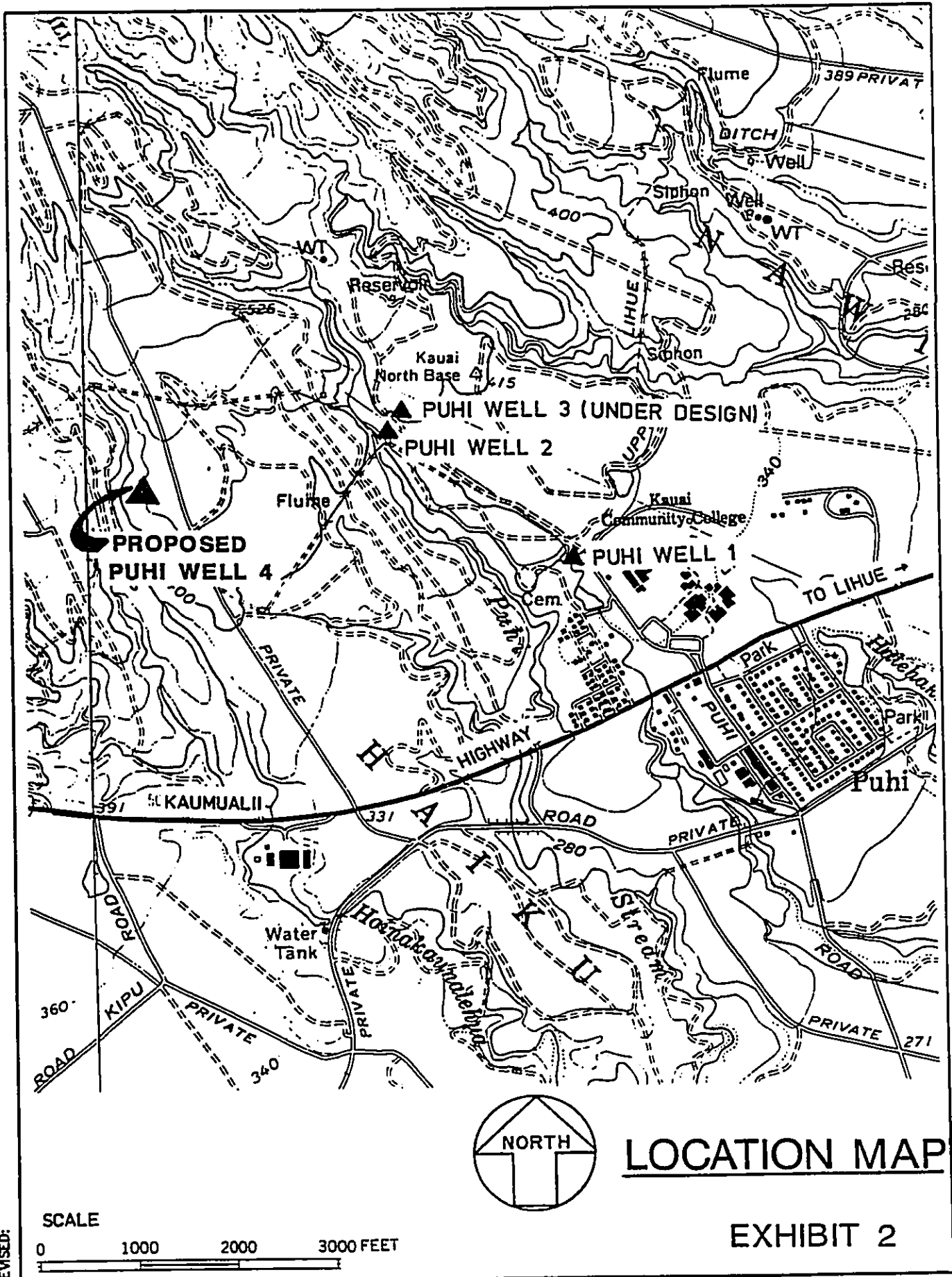
1. County of Kauai, Department of Water, A General Plan for Domestic Water/Island of Kauai, (Division of Water and Land Development, Department of Land and Natural Resources, State of Hawaii), Honolulu, February 1972.
2. County of Kauai, A General Plan for the Island of Kauai, (Eckbo, Dean, Austin & William, Inc. and Muroda, Tanaka & Itagaki, Inc.), March, 1970.
3. County of Kauai, Revised Ordinances of Kauai, 1976 and 1978 Cumulative Supplement.
4. Mac Donald, Gordon A., Dan A. Davis and Coak C. Cox, Geology and Ground-Water Resources of the Island of Kauai, Hawaii, Hawaii Division of Hydrography Bulletin 13, 1960.
5. State of Hawaii, Department of Planning and Economic Development, State of Hawaii Data Book, 1990: A Statistical Abstract, Honolulu, 1990.
6. State of Hawaii, State Land Use Commission, Rules of Practice and Procedure, October, 1975.



NO. 1099
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EXHIBIT 1

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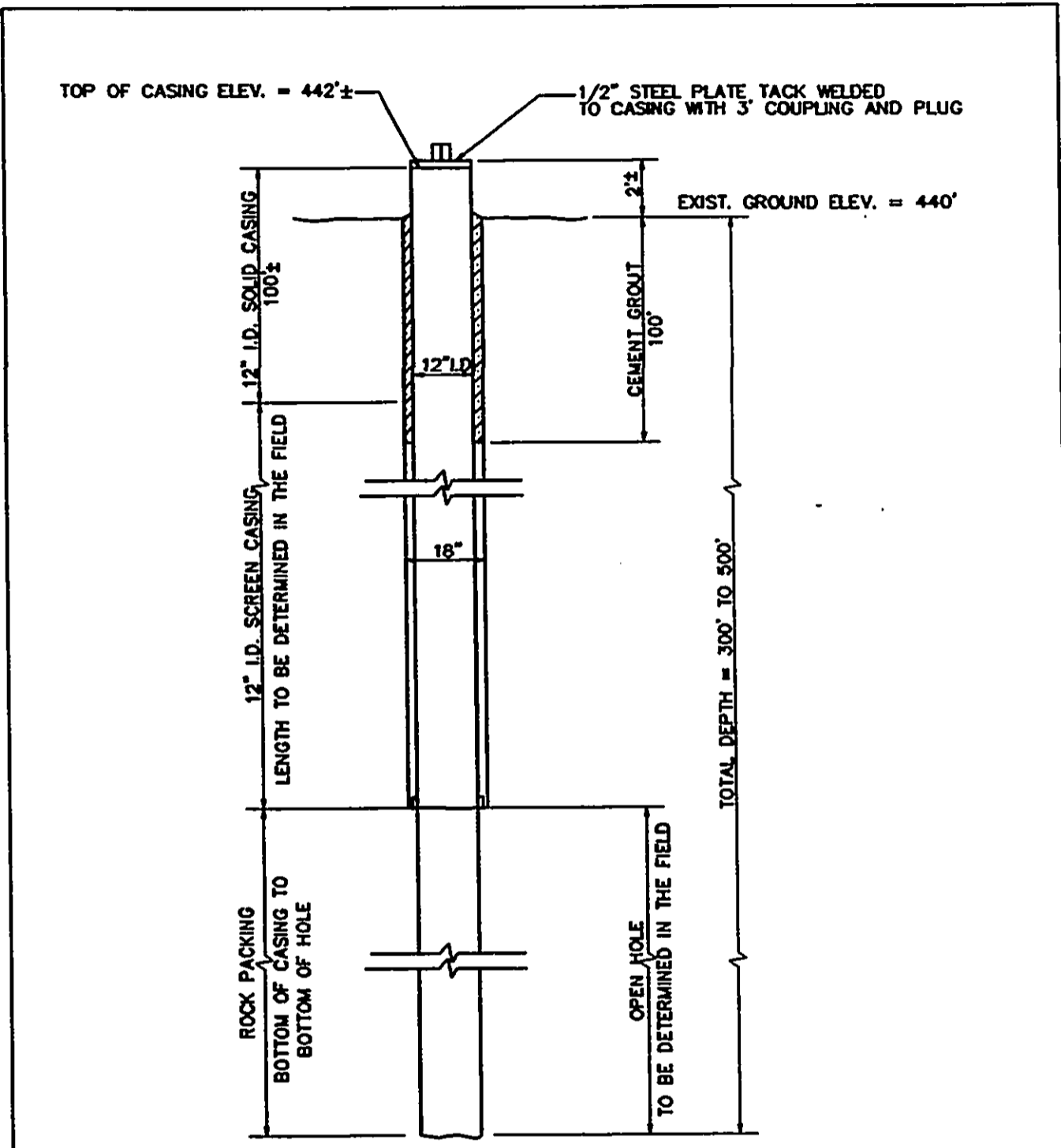
LOCATION MAP

EXHIBIT 2

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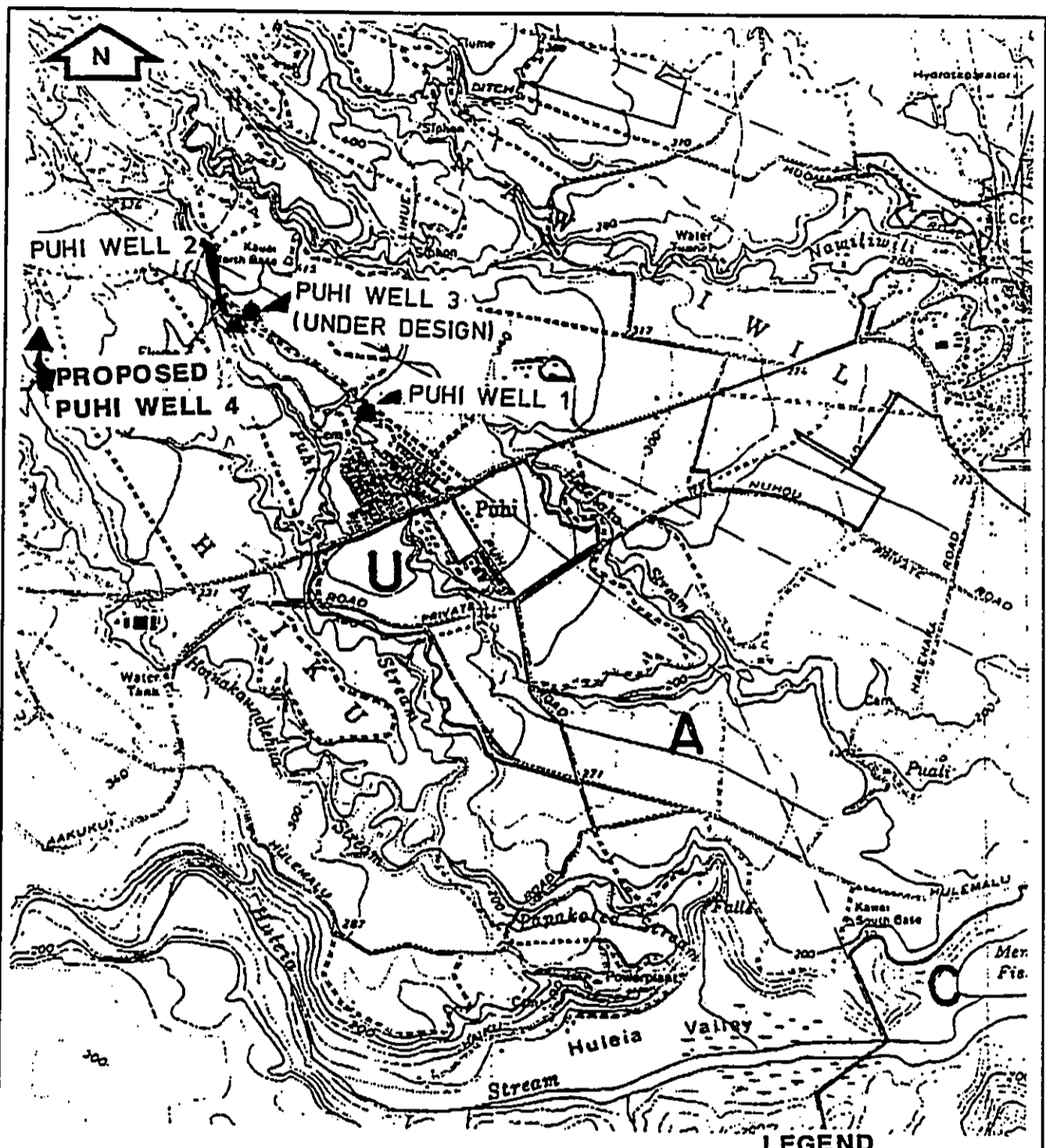
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OPERATOR: SMQ
REVISED:



PROPOSED WELL SECTION

EXHIBIT 3
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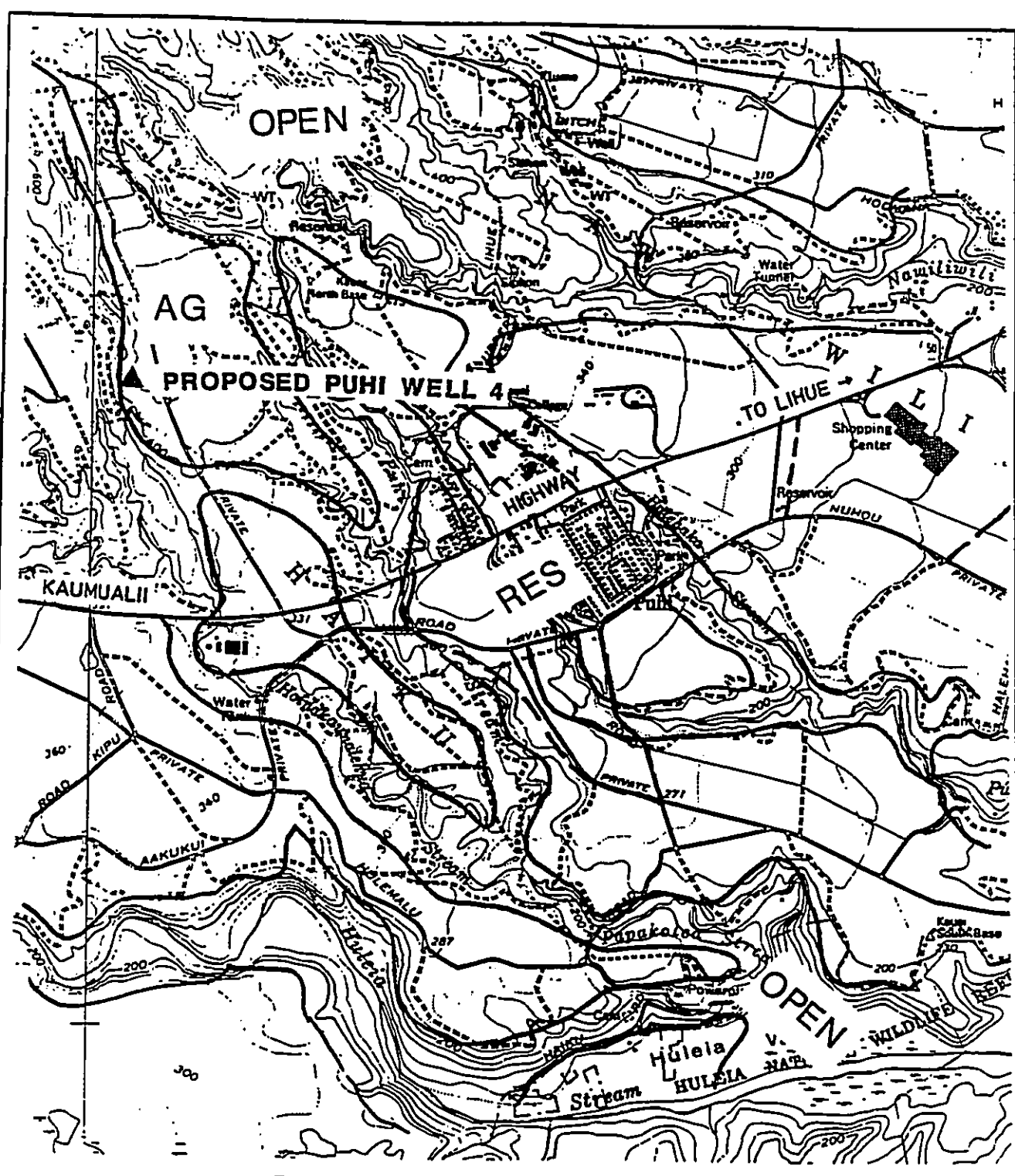
LEGEND
 U - URBAN
 A - AGRICULTURE
 C - CONSERVATION

STATE LAND USE DISTRICTS

EXHIBIT 4

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COUNTY ZONING MAP

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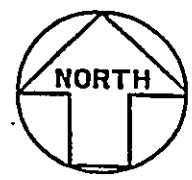
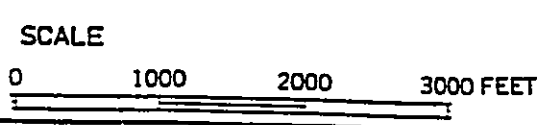
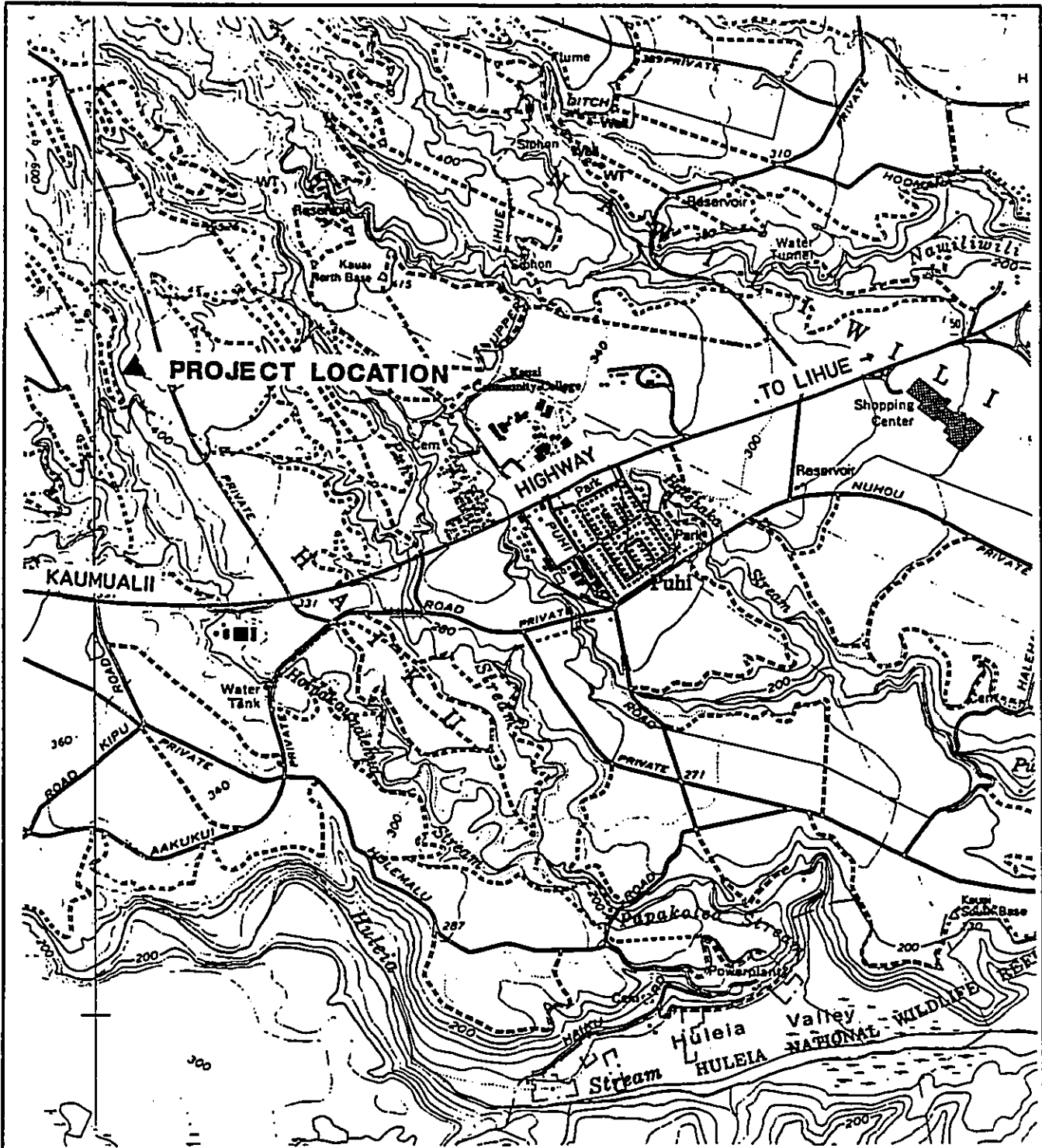


EXHIBIT 5

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LIHUE-KOLOA QUADRANGLE MAP

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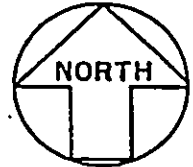


EXHIBIT 6