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93:DEV/1249

March 16, 1993

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

FROM: *Joe Conant*
Joseph K. Conant, Executive Director
Housing Finance and Development Corporation

SUBJECT: Negative Declaration for the Ikena Avenue Relocation
Subdivision Project, Tax Map Key: 4-6-18: portion of 3

The Housing Finance and Development Corporation (HFDC) has reviewed the comments received during the 30-day public comment period which began on December 8, 1992. The HFDC has determined that this project will not have significant environmental effect and has issued a negative declaration. Please publish this notice in the April 8, 1993, OEQC Bulletin.

We have enclosed a completed OEQC Bulletin Publication Form and four (4) copies of the final EA.

Please contact Neal Wu, Project Coordinator, at 587-0538 if you have any questions.

Enclosures



43

1993-04-08-MAA-PEA-Ikena Avenue Relocation Subdivision

APR 8 1993

**ENVIRONMENTAL ASSESSMENT
FOR
RELOCATION OF IKENA AVENUE RESIDENCES
Lahaina, Maui, Hawaii**

DEVELOPER:

**HOUSING FINANCE & DEVELOPMENT CORPORATION
Honolulu, Hawaii**

Prepared By:

**Warren S. Unemori Engineering, Inc.
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November, 1992

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APPLICANT:

Housing Finance and Development Corporation
677 Queen Street, Suite 300
Honolulu, Hawaii 96813

Mr. Joseph Conant
Executive Director

LAND OWNER:

Bishop Estate

AGENCIES CONSULTED IN
MAKING REPORT:

County of Maui
Planning Department
Department of Public Works
Department of Human Services
Department of Water Supply
Department of Parks and Recreation

State of Hawaii
Department of Transportation
Department of Health
Department of Land and Natural Resources
Department of Agriculture

Federal Agencies
U. S. Soil Conservation Service

Private Agencies
Pioneer Mill Company
Bishop Estate

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1 - 2
II. BACKGROUND INFORMATION	
A. Location	2
B. Owner	2
C. Description of Project	2
III. LAND USE DESIGNATION	
A. State Land Use Classification	3
B. Lahaina Community Plan	3
C. County Zoning	3
D. Current Land Use	3
E. Adjacent Land Use	3
IV. PHYSICAL FEATURES	
A. Topography	4
B. Views	4
C. SCS Soil Survey	4 - 5
D. Flood Hazard	5
E. Rainfall and Climate	5
V. INFRASTRUCTURE	
A. Water System	5 - 6
B. Sanitary Sewer System	6 - 7
C. Drainage	7 - 8
D. Roadway System	8 - 9
E. Electrical and Communication Systems	10
F. Solid Waste Disposal	10

TABLE OF CONTENTS

	<u>Page</u>
VI. IMPACT STUDIES	
A. Flora	10
B. Fauna	11
C. Historical, Archeological or Cultural	11
D. Air Quality	11
E. Water Quality	11 - 12
F. Noise	12
G. View Corridors and Vistas	12
H. Traffic	12
I. Agricultural Impacts	13
J. Impact in Existing Public Facilities	13
K. Economic and Employment Consideration	14
VII. SUMMARY	14

EXHIBITS

- 1 Location Map
- 2 Map of Existing Water Source and Storage
- 3 General Plan (in pouch)
- 4 File Plan (in pouch)

APPENDICES

- A Soil Investigation
- B Drainage and Soil Erosion Control Report
- C Traffic Assessment
- D Agricultural Impact Study
- E Copies of Correspondences

**Environmental Assessment
for
Relocation of Ikena Avenue Residences**

I. INTRODUCTION AND BACKGROUND

The Housing Finance and Development Corporation (HFDC) of the State of Hawaii is developing the master-planned residential community referred to as the "Villages of Leiali'i" at Wahikuli, Lahaina, Maui, on approximately 1,120 acres of land mauka of the Lahaina Civic Center. An integral part of the project is the Lahaina Bypass Highway that bisects the master-planned community. Traffic projection studies indicate that completion of this Bypass Highway is essential to the orderly and continuous development of the master-planned residential community. The State Land Use Commission also imposed a condition that lands mauka of the proposed Lahaina Bypass Highway in the master-planned community cannot be developed until construction of the Bypass Highway is substantially under way.

In the vicinity of Lahainaluna Road, Alignment "B", the recommended route for the Lahaina Bypass Highway, runs along Ikena Avenue in Kelaweia Mauka Subdivision No. III. Due to the wider right-of-way required for the bypass highway, approximately 18 existing residences located on the mauka side of Ikena Avenue will be displaced by Alignment "B". Construction of the Lahaina Bypass Highway cannot be started until these residents are relocated.

The affected residents were initially offered the opportunity to relocate to Village I Phase I of the master-planned residential community near the Lahaina Civic Center now referred to the Villages of Leiali'i. However, the residents strongly objected because of the limited ocean view, smaller lots and warmer

climate at the village. As an alternative they strongly recommended the area southeast of Lahainaluna Road above the proposed Lahaina Bypass Highway and across from Kelaweia Mauka III Subdivision.

II. BACKGROUND INFORMATION

A. LOCATION

The project is situated on the southeasterly side of Lahainaluna Road across from Kuialua Street in Kelaweia Mauka III Subdivision, TMK: 4-6-18 portion of 3 at Lahaina, Maui, Hawaii. See Exhibit 1.

B. OWNER/DEVELOPER

Owner of the project site is Bishop Estate. The land is presently being leased to Pioneer Mill Company. The State Department of Transportation intends to acquire the project site from Bishop Estate.

The Housing Finance and Development Corporation will be the Developer of this turn-key project.

C. DESCRIPTION OF PROJECT (hereinafter called "the Project"):

The Project contains 24 single family residential lots ranging in size from 8,600 square feet to 13,600 square feet. The total land area involves approximately 8.07 acres. Improvements include mass grading; installation of underground electrical and communication systems; water, sewer and drainage systems; curbs; gutters; sidewalks; fencing along the perimeter of the project site; widening of Lahainaluna Road; and planting of street trees.

III. LAND USE DESIGNATION

A. STATE LAND USE CLASSIFICATION

The project is located within the Agricultural District as designated by the Land Use Commission of the State of Hawaii.

B. LAHAINA COMMUNITY PLAN

The project is located within an area designated agriculture in the Lahaina Community Plan.

C. COUNTY ZONING

The project site is not specifically zoned by County Ordinance. Consequently it follows the State Land Use Agricultural District designation.

D. CURRENT LAND USE

The entire site is presently being used for sugar cane cultivation by Pioneer Mill Company.

E. ADJACENT LAND USE

Except for the northwesterly boundary abutting Lahainaluna Road, the project site is presently surrounded by cane fields. The Kelaweia Mauka III residential subdivision is located across Lahainaluna Road from the project site.

IV. PHYSICAL FEATURES

A. TOPOGRAPHY

Elevation on the site ranges from approximately 250 feet above mean sea level to 350 feet. Cross slope in the mauka-makai direction ranges between 8 and 10 percent. In general the land slopes away from Lahainaluna Road in a north to south direction toward a shallow gully located beyond the southerly boundary of the site.

B. VIEWS

The project site, being situated on average of 300 feet above sea level at a distance of 6,500 feet from the ocean, enjoys a panoramic view of the ocean, Lahaina town, and surrounding agricultural fields.

C. SCS SOIL SURVEY

According to a 1972 soil survey report prepared by the U.S. Department of Agriculture Soil Conservation Service the predominant soil type at the Project Site is the Wainee very stony silty clay series (WxC). Stones cover as much as 3 percent of the surface of soils in this series. Bedrock can be expected at a depth of about 36 inches. Permeability is moderately rapid. Runoff is slow to medium and erosion hazard slight to moderate.

There is a small pocket of stony alluvial land designated as (rSM) at the upper easterly corner of the Project Site. Stony alluvial land (rSM) consists of stones, boulders and soil deposits by streams along the bottoms of gulches and on alluvial fans.

According to the soil investigation conducted for HFDC in March 1992 by Ernest Hirata and Associates the existing soils at the site can support the housing project proposed. See Appendix A for full text of report.

D. FLOOD HAZARD

According to the Flood Insurance Rate Map for the County of Maui (CPN 150003-0161B) dated June 1, 1981, the Project Site is located in Zone "C", which is defined as areas of minimal flooding but not within any flood hazard district.

E. RAINFALL AND CLIMATE

Lahaina is located within the extremely dry district of leeward West Maui. It receives only about 12 inches of rain per year. Much of this precipitation occurs during the winter months and is usually accompanied by southerly winds. Lahaina is affected by trade winds only about 10 percent of the time. Therefore it is much hotter than windward communities on Maui that are more frequently exposed to trade winds. Relative humidity generally ranges between 60 and 90 percent.

V. INFRASTRUCTURE

A. WATER SYSTEM (See Exhibit 2)

Water for Kelawea Mauka Subdivision and residences along Ikena Street presently comes from well sources near Lahainaluna High School and a surface source from Kahana Valley.

A 500,000 reinforced concrete reservoir at elevation 456 feet provides storage for all of Kelawea Mauka Subdivision, including residences along Ikena Street by means of a 12-inch transmission line on Lahainaluna Road.

A new 8-inch distribution system will be installed for the project and connected to the existing 12-inch line on Lahainaluna Road. The new distribution system will be looped back and connected to the 12-inch line at both cul-de-sacs by means of a 4-inch line to ensure continuous circulation as required by the Department of Water Supply. Fire hydrants will also be installed at 300 foot intervals on site for fire protection.

Since the proposed project will be replacing existing residences being displaced by the Lahaina Bypass Highway no additional demands will be imposed on the existing water source, storage and distribution system. The existing system will be able to fulfill the requirements of the replacement project.

B. SANITARY SEWER SYSTEM

Presently wastewater from the residences in Kelawea Mauka Subdivision and along Lahainaluna Road feed into a gravity collection system in Lahaina town to a pump station located near Mala Wharf. From there a series of force mains, gravity lines and pump stations convey it to the Lahaina Wastewater Treatment Facility north of Kaanapali for processing and disposal. There is an existing 10-inch branch sewer line on Lahainaluna Road near the northwest corner of the Project Site.

An 8-inch gravity collection system will be installed on site for the project. This system will be connected to the existing 10-inch branch sewer line on Lahainaluna Road mentioned above. (See Exhibit 3).

As stated previously, since this is a replacement project, the net effect of the project on existing facilities will remain unchanged. The existing facilities will be able to accommodate the project.

C. DRAINAGE

It is estimated that the present runoff from the 8.0 acre site for a 10-year recurrence interval storm is about 7.9 cfs (see Appendix B for calculations). All of this sheet flows toward a shallow gully located along the southerly boundary of the Project Site. There is a catch basin on the north side of Lahainaluna Road across the northwest corner of the Project Site. This catch basin is tied-in to a storm drain system in Kelawea Mauka Subdivision. A second catch basin is located on the north side of Lahainaluna Road below the Department of Water Supply's 1.0 MG storage reservoir site above Ikena Street intersection. This catch basin feeds into an 18-inch storm drainage system on Ikena Street. The drain line on Ikena Street terminates 1250 feet north of Lahainaluna Road and discharges into an open ditch that conveys the flow to Kahoma Stream.

Runoff after development is expected to total 17.3 cfs. However the onsite drainage area will be divided into 3 sub-areas. Runoff from drainage areas 1 and 2, immediately south of Lahainaluna Road, with a total flow of 9.7 cfs will be picked up by catch basins on the subdivision streets and directed into the existing catch basin on Lahainaluna Road near

the Ikena Street intersection through a 24-inch line. Runoff from drainage area 3 south of the two cul-de-sac streets in the subdivision, which is estimated to be 7.6 cfs will be allowed to sheet flow toward the existing gully as it is presently doing.

A new storm drainage system will have to be installed for the Ikena Street portion of the Lahaina Bypass since the new highway profile will be depressed through this section. The new drain line can be readily up-sized to accommodate the runoff from drainage areas 1 and 2 at that time. In the interim directing the additional 9.7 cfs of flow into the existing storm drainage system will not adversely affect the residences along Ikena Street.

Regarding the flow from drainage area 3 of the development, the quantity projected to be released into the existing gully will be about 0.3 cfs less than under present conditions. Therefore no adverse effect on downstream properties is expected. See Appendix B for Drainage and Soil Erosion Control Report.

D. ROADWAY SYSTEM

Lahainaluna Road is the main collector road that links Kelaweā Mauka, Lahaina Intermediate School and Lahainaluna High School to Honoapiilani Highway. It is a two lane County-maintained road with a right-of-way that appears to vary between 40 to 42 feet in width. The posted speed is 20 mph at the base of the hill near Honoapiilani Highway and 30 mph in the vicinity of Kelaweā Mauka and the Project Site.

County right-of-way standards for limited-access major collector roads is 60 feet. This width is increased to 70 feet at intersections where

separate turning lanes are required. Right-of-way for single access streets into subdivisions is 56 feet. All minor streets require a right-of-way of 44 feet.

In keeping with County requirements the right-of-way for Lahainaluna Road along the project frontage will be increased to a minimum width of 60 feet. Left turn storage lanes will be provided into Kuialua Street and the proposed project. The curvature on Lahainaluna Road mauka of Kuialua Street intersection will be flattened along the mauka bound lane to provide the necessary sight distance for vehicles exiting the Project site. The approaches to Lahainaluna Road from Kuialua Street and the project will be provided with shared left-through lane and separate right turn lane as recommended in the Traffic Assessment conducted by Parsons Brinckerhoff Quade and Douglas. See Appendix C for full report.

The single access road into the Project site will have a 56 foot right-of-way and provided with a cul-de-sac at the south boundary.

The two cul-de-sac streets, being minor streets, will be designed with a minimum right-of-way of 44 feet.

Concrete curbs and gutters and a 4-foot sidewalk will be provided on Lahainaluna Road along the project frontage. All interior subdivision streets will have concrete curbs, gutters and sidewalks on both sides.

The replacement units will not be adding new traffic on Lahainaluna Road. Status quo will be maintained until the new Lahaina Bypass Highway is completed. At that time traffic movement on Lahainaluna Road below the Bypass and Honoapiilani Highway through Lahaina town can be expected to improve significantly.

E. ELECTRICAL AND COMMUNICATION SYSTEMS

There are overhead electrical, telephone and CATV lines on the north side of Lahainaluna Road. Most of these poles are also mounted with street lights.

Underground electrical, telephone and CATV cables will be extended across Lahainaluna Road into the subdivision from the existing overhead poles. The distribution system onsite will be installed entirely underground.

As with all other utilities, the proposed relocation project will not adversely impact existing electrical, telephone and CATV facilities.

F. SOLID WASTE DISPOSAL

Solid waste generated by detached single family residences will be collected by the County and disposed of at its landfill at Camp 5, Puunene, in Central Maui.

The County of Maui currently is promoting the recycling of waste products. As part of this recycling effort, the contractor employed by HFDC to construct the subdivision improvements will be required -- by the terms of the construction contract -- to recycle waste material generated during construction.

VI. IMPACT STUDIES

A. FLORA

The entire project site is presently in cane cultivation. There is no evidence of endangered plant species on the site.

B. FAUNA

There appear to be no rare or endangered species on the subject property or in the general vicinity of the proposed project.

C. HISTORICAL, ARCHEOLOGICAL OR CULTURAL

As stated on page 3, the proposed project site has been in cane cultivation for a number of years. It is highly unlikely that significant historic sites are present due to extensive ground disturbance resulting from this activity. Numerous large mounds of rocks collected from field clearing are evidence of the extent of ground alteration. Furthermore, previous archaeological studies conducted in the cane fields of Lahaina have identified no historic sites (Hommon 1982. An Archaeological Reconnaissance Survey of an Area Near Waine'e Village, West Maui and Jensen 1989. Archaeological Inventory Survey, Lahaina Master Planned Project Site).

D. AIR QUALITY

No major long term impacts on air quality are anticipated. There will, however, be a slight effect on air quality during the construction phase primarily dust due construction activities. This however will be readily mitigated by appropriate construction methods.

E. WATER QUALITY

Since the project site is located 6,500 feet inland of the shoreline it is unlikely that the project will adversely impact the coastal waters. Nevertheless runoff from the project during and after construction will be

closely monitored in accordance with the provisions of Title 11 Chapter 55 of the Rules and Regulations of the State Department of Health pertaining to storm water runoff.

F. NOISE

No major impacts are anticipated other than temporarily during construction. These construction related impacts however will be limited to normal daylight working hours.

G. VIEW CORRIDORS AND VISTAS

Being that the project site is located on the southeasterly side of Lahainaluna Road and lower than existing houses in Kelawea Mauka III Subdivision mauka of the road, it is unlikely that the view corridors of these homes will be adversely impacted. Travelers on Lahainaluna Road will continue to enjoy the present coastal vista from the road above the Project.

H. TRAFFIC

As stated earlier a traffic study was conducted by the traffic engineering division of parsons Brinckerhoff Quade and Douglas in May 1992. The study concluded that with minor modifications the existing unsignalized intersection at Kuialua Street and Lahainaluna Road will be able to accommodate traffic generated by the proposed project. Modifications include providing left turn storage lanes on Lahainaluna Road and providing two outbound lanes on Kuialua Street at both approaches to Lahainaluna Road.

I. AGRICULTURAL IMPACTS

The 8.07 acres of cane land that will be withdrawn from cultivation to develop the project represents only about 0.11% of the total 6,900 acres currently in cane cultivation. Withdrawal of this additional 8.0 acres as part of the Villages of Leiali'i Project is not expected to adversely affect Pioneer Mill's sugar operation in West Maui. A detailed discussion of the agricultural impact associated with development of the Lahaina Master Planned Community may be found in the study contained in Appendix D of this report.¹

Pioneer Mill has been kept fully informed of the State's development plans, and construction of the subdivision has been scheduled so as to prevent Pioneer Mill incurring losses from crop damage. The current crop of sugarcane in the area has been already harvested, and Pioneer Mill has decided not to replant the area that will be affected by the proposed development.

J. IMPACT ON EXISTING PUBLIC FACILITIES

Since the primary purpose of the project is to provide replacement housing for existing residents being displaced by the Lahaina Bypass Highway Project through Ikena Avenue, there will not be additional burdens placed on existing public facilities such as schools, parks, police and fire protection agencies in Lahaina.

¹*Lahaina Master Plan: Impact on Agriculture*, prepared for the State of Hawaii Housing Finance and Development Corporation by Decision Analysts Hawaii, Inc., November 1989; included as Appendix D in the *Lahaina Master Planned Project Final Environmental Impact Statement*, prepared for the State of Hawaii Housing Finance and Development Corporation by PBR Hawaii, February 1990.

K. ECONOMIC AND EMPLOYMENT CONSIDERATIONS

The proposed project is expected to generate a number of short term construction employment. More importantly it will provide residents of Ikena Avenue the opportunity to relocate to an area close to their present neighborhood and community. Completion of the Ikena Avenue Relocation Project will enable the State Department of Transportation to proceed with the Lahaina Bypass Highway Project. Both projects will generate much needed revenues for the State and County governments as well as employment opportunities for the work force on Maui.

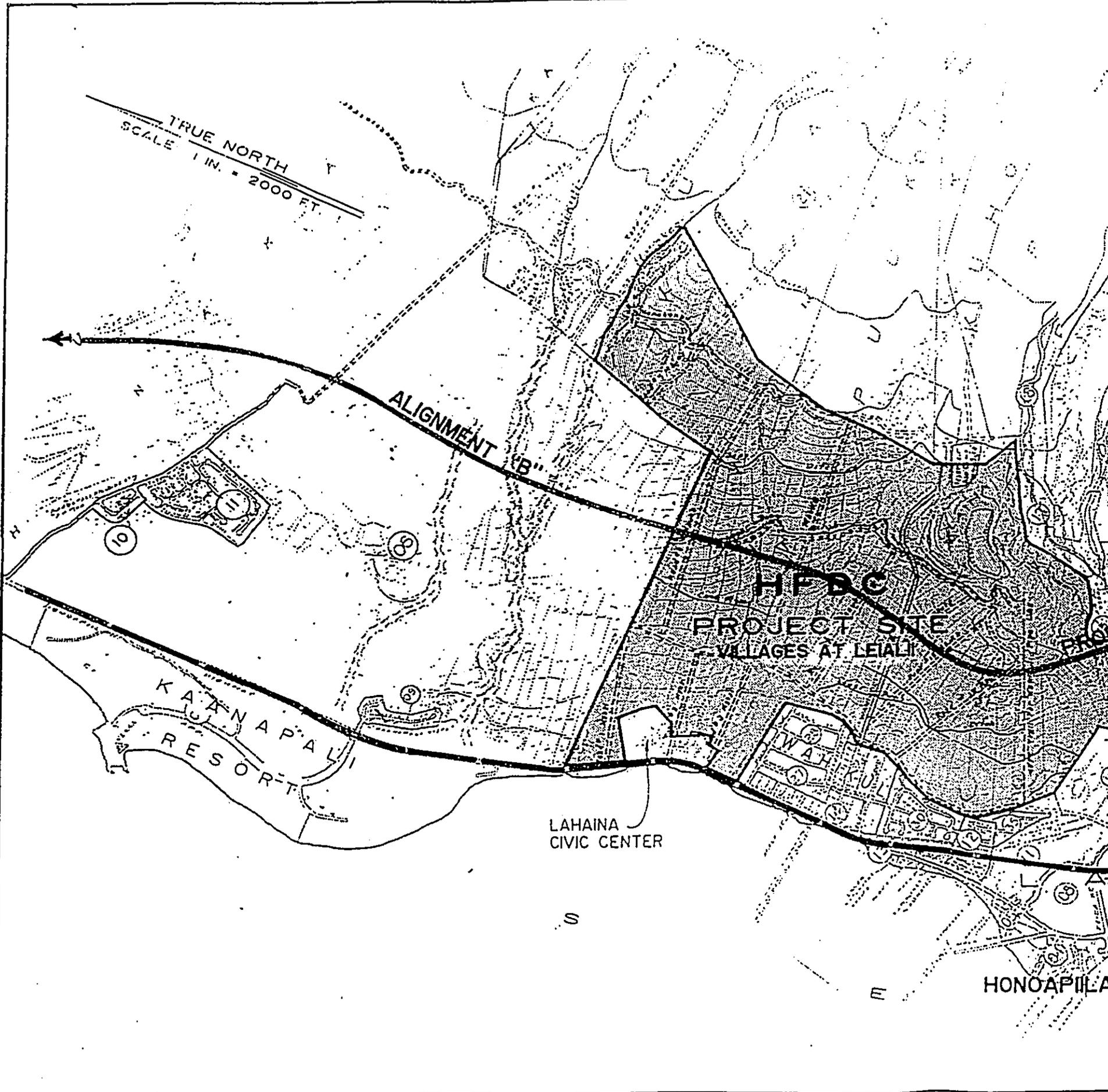
VII. SUMMARY

Based on the foregoing it is reasonable to conclude that the proposed replacement project will not have significant effects on the environment.

EXHIBITS

- 1 Location Map**
- 2 Map of Existing Water Source and Storage**
- 3 General Plan (in pouch)**
- 4 File Plan (in pouch)**

TRUE NORTH
SCALE 1 IN. = 2000 FT.



ALIGNMENT "B"

HFD
PROJECT SITE
VILLAGES AT LEIALI

KAUNAPALI
RESORT

LAHAINA
CIVIC CENTER

HONOAPIILA

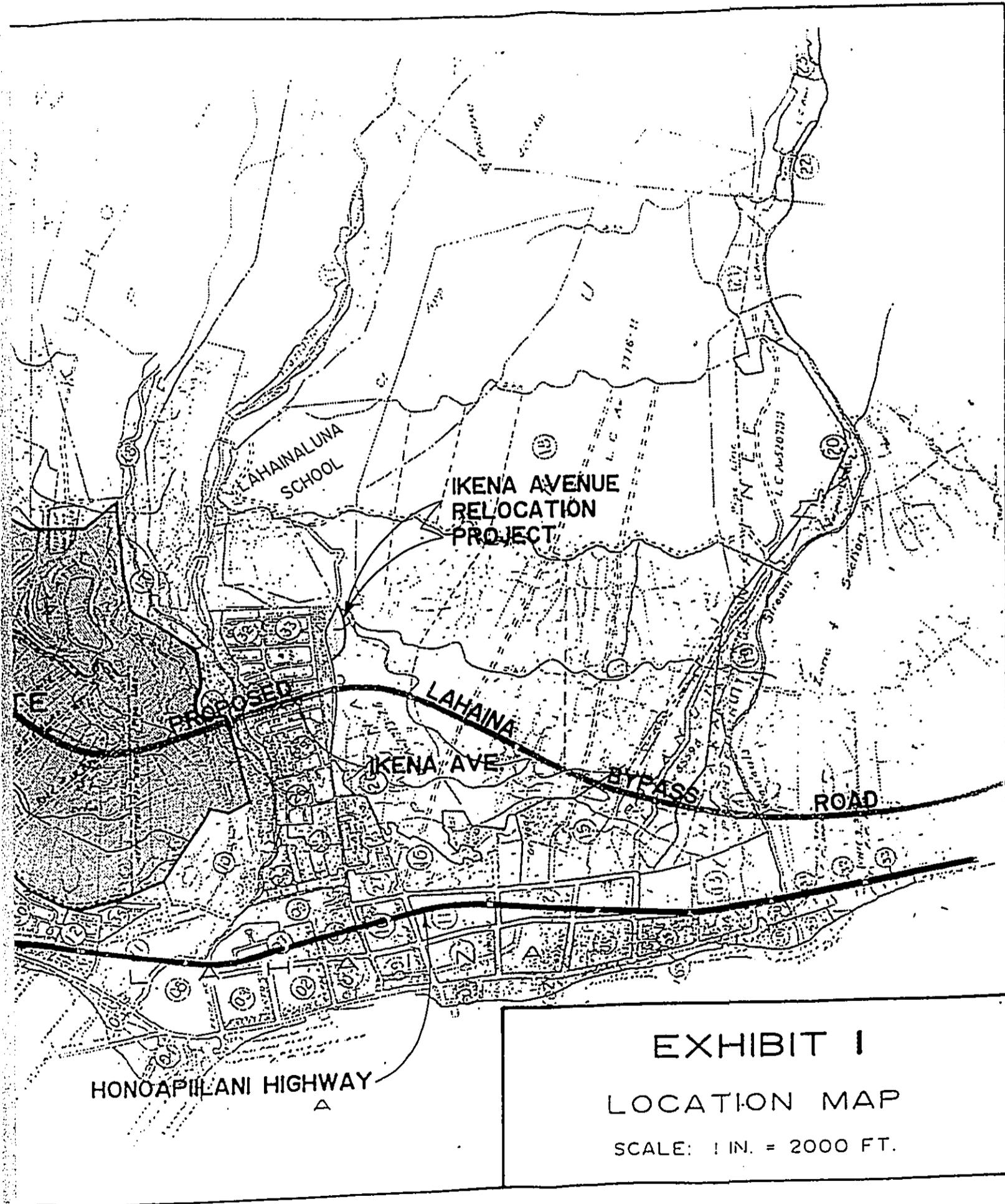
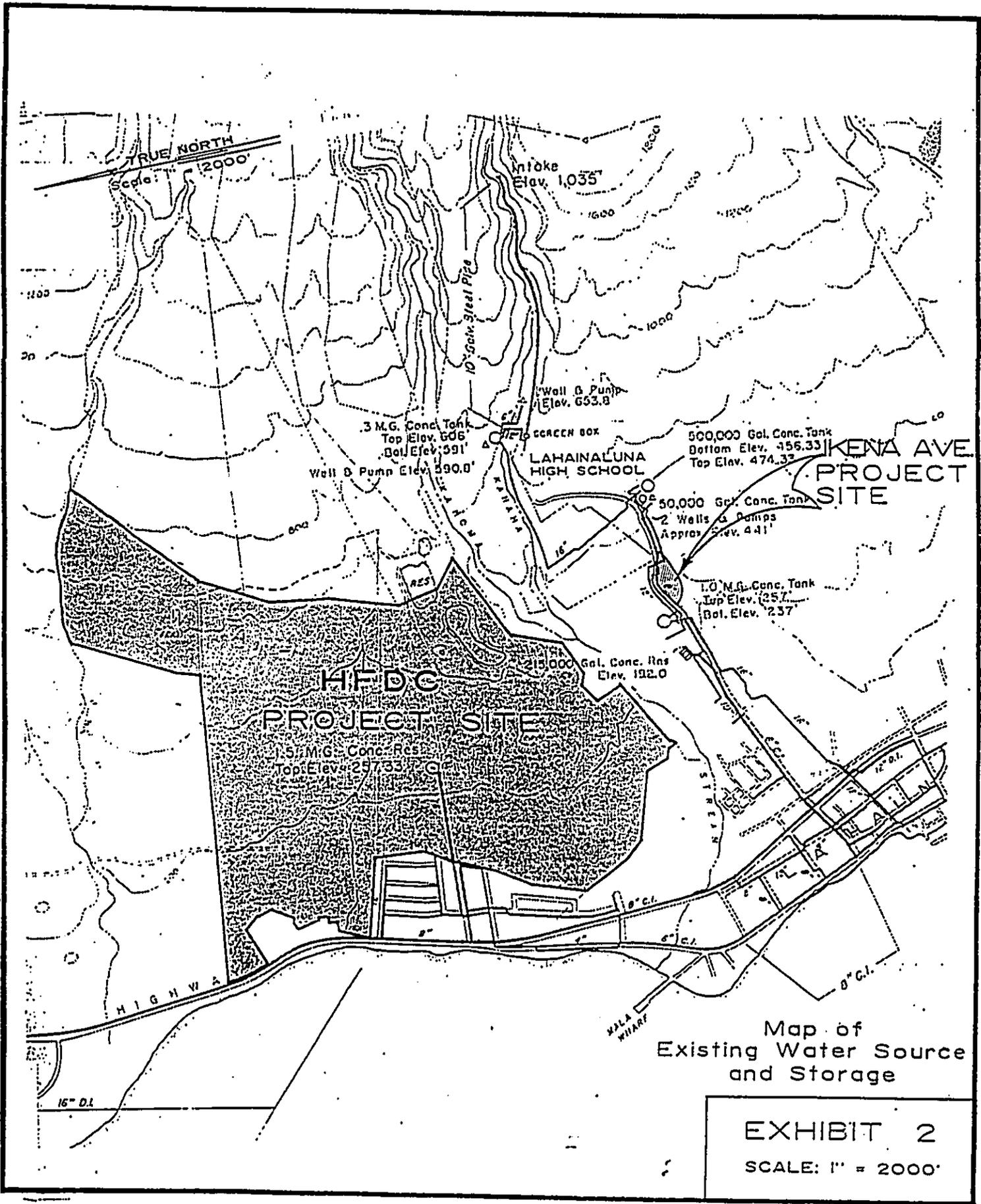


EXHIBIT I
LOCATION MAP
SCALE: 1 IN. = 2000 FT.



a 3 inch O.D. thin-walled split tube sampler with a 140 pound hammer from a height of 30 inches. The blow counts required for 12 inches of penetration are shown at the appropriate depths on the enclosed Boring Logs. Core samples were obtained by drilling with an NX core barrel having an inside diameter of 2.5 inches. Recovery percentages for each core run are also shown on the enclosed Boring Logs.

Rock quality designations (RQD) are also shown on the Boring Logs. This is a modified core recovery procedure which takes into account the number of fractures observed in the core samples. Only pieces 4 inches in length or longer are included in determining the core recovery. Breaks caused by handling are ignored. The following is a general correlation between RQD percentages and rock quality.

<u>RQD (%)</u>	<u>Description of Rock Quality</u>
0 - 25	Very Poor
25 - 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

Reference: Tunnel Engineering Handbook, Bickel/Kuesel

SOIL CONDITIONS

The surface soil covering the site consisted of reddish brown silty clay mixed with sand, gravel, and cobbles. The silty clay was in a stiff condition, and ranged from 1 to 9 feet in thickness. Laboratory testing on the silty clay indicated a slight expansion potential.

Underlying the surface soil was dense, mottled grayish brown completely weathered rock. Completely weathered rock is defined as rock which has decomposed to soil, but with its fabric and structure preserved. The completely weathered rock extended to the maximum depth drilled at Boring B1.

Borings B2, B3, B4 and B5 encountered gray basalt at depths ranging from 5 to 19 feet, the basalt was in a hard but highly fractured condition, and extended to the maximum depths drilled.

Groundwater was not encountered in any of our borings down to the maximum depths drilled.

CONCLUSIONS AND RECOMMENDATIONS

I. Expansive Soils

Expansion tests were conducted on representative and remolded samples of the onsite silty clay. The expansion tests indicated only a slight expansion potential, and CBR tests confirmed these results. Consequently, special precautionary measures will not be required for building foundations and slabs on grade. Footings may be founded directly on the onsite soils, and slabs on grade will require only the standard 4 inch gravel cushion.

II. Groundwater

Neither groundwater nor seepage conditions were encountered in our exploratory borings down to the maximum depths drilled. As a result, we believe that groundwater will not impact the proposed development. However, subdrains should be placed in natural drainage ways which will be filled.

III. Site Grading

A. Site Preparation

The project site should be cleared of all vegetation and other deleterious material. Soft or loose material at the bottom of drainage/irrigation ditches should be removed prior to placement of fill.

Prior to placement of fill, the existing ground should first be scarified to a depth of six inches and compacted to a minimum 90 percent compaction as determined by ASTM D 1557-78.

B. Fill Material

The onsite silty clay may be reused in compacted fills provided all rock fragments larger than six inches in maximum dimension are removed.

Any imported structural fill should consist of well-graded, non-expansive granular material. Specifications for imported structural fill should state that not more than 20 percent of soil by weight shall pass the #200 sieve. In addition, the P.I. of that portion of the soil passing the #40 sieve shall not be greater than 10. Yard fill necessary for landscaping need not adhere to these specifications.

C. Fill Placement

Compacted fill should be placed in horizontal lifts restricted to eight inches in loose thickness and compacted to a minimum of 90 percent compaction as determined by ASTM D 1557-78. Fill placed in areas which slope steeper than 5:1 (horizontal to vertical), should be continually benched as the fill is brought up in lifts.

D. Slope Stability

Both cut and fill slopes should be stable at gradients of 2:1 (horizontal to vertical) or flatter. Slopes exceeding 15 feet in height should include benches at least 8 feet in width. The benches should be constructed at intervals not exceeding 15 feet in vertical height. All slopes should be planted as soon as practical to minimize the effects of erosion and weathering.

E. Rippability

Excavations into the surface silty clay can be made with conventional earth moving equipment. Large bulldozers equipped with rippers may be able to excavate portions of the underlying completely weathered rock and basalt stratum; however, excavations into the harder and less fractured sections of basalt may require pneumatic equipment.

F. Embankment Shrinkage

The average relative compaction of the near surface soil is slightly higher than 80 percent. We anticipate a shrinkage factor of approximately 10 to 15 percent due to compaction of the soil. In addition, the upper 12 inches of surface soil may be lost during grubbing operations.

G. Transition Areas

Although grading plans were not available at the time of this report, we assume that building pads will be located in transition areas between cut and fill. To minimize the potential for differential settlement of structures and to provide more uniform support, we recommend that building sites in transition areas be overcut to a depth equal to the maximum thickness of fill, or to a maximum of two feet. The overexcavated soils should then be recompacted to the compaction requirements indicated above.

IV. Building Foundations

Conventional spread footings or thickened slab type foundations founded on either the undisturbed silty clay or compacted fill may be used to support the structures. Foundations founded on the undisturbed silty clay may be designed for a bearing value of 3000 pounds per square foot. Foundations bearing on compacted fill may be designed for a bearing value of 2000 pounds per square foot.

Depending on finish grades, foundation excavations in some areas may also expose the underlying completely weathered rock stratum. Footings founded on the completely weathered rock may be designed for a bearing value of 4000 pounds per square foot.

All footings supporting a building should be founded on the same soil type and designed for the same allowable bearing pressure. (See recommendations for "Transition Areas" in the Site Grading section of this report.)

All footings should be a minimum 16 inches in width, and thickened slabs at least 12 inches wide. Footings for two story structures should be embedded at least 18 inches below finish adjacent grade.

The bottom of all footing excavations should be cleaned of loose material and thoroughly tamped prior to placement of reinforcing steel and concrete.

Footings located on, or near the top of slopes, should be embedded such that a minimum horizontal distance of 5 feet is maintained between the bottom edge of footing and slope face.

V. Lateral Design

The bearing values indicated above are for the total of dead and frequently applied live loads, and may be increased by one-third for short duration loading which includes the effect of wind and seismic forces. Resistance to lateral loading may be provided by friction acting at the base of foundations and by passive earth pressure acting on the buried portions of foundations.

An allowable coefficient of friction of 0.4 may be used with the dead load forces. Passive earth pressure may be computed as an equivalent fluid having a density of 300 pounds per cubic foot with a maximum earth pressure of 3000 pounds per square foot. Unless covered by pavement or concrete slabs, the upper 12 inches of soil should not be considered in computing lateral resistance.

For active earth pressure considerations, equivalent fluid pressures of 40 and 55 pounds per cubic foot per foot of depth may be used for freestanding and restrained conditions, respectively.

To prevent buildup of hydrostatic pressures, weepholes or subdrains should be included in the design of all retaining structures.

VI. Settlement Due to Fill Placement and Foundation

Settlement due to fill placement will vary depending on fill heights and the depth to weathered rock or basalt. Analyses were performed to provide an estimate of the settlements expected due to fill placement. Assuming 5 to 10 feet of fill placement, and about 5 feet of silty clay overlying the weathered rock or basalt, settlements on the order of $\frac{1}{2}$ to $\frac{3}{4}$ inch were computed.

Building loads were not available at the time of this report. However, relatively light

structural loads are anticipated, and excessive settlement of foundations is not expected.

VII. Floor Slabs

To provide uniform support and a capillary break, all slabs on grade should be underlain by a four inch cushion of clean gravel, such as #3 Fine (ASTM Size 67). All building slabs should also be protected by a plastic moisture barrier placed between the slab and cushion material. A thin layer of sand should also be placed between the slab and moisture barrier to aid the curing process.

VIII. Pavement Design

Laboratory CBR tests performed on the onsite silty clay resulted in CBR values of 56 and 19 percent, and expansion potentials of 0.2 and 0.8 percent. Based on our test results, the following section may be used in the design of flexible pavements for roads. The subgrade and base course should be compacted to a minimum 95 percent compaction as determined by ASTM D 1557-78.

2.0"	Asphaltic Concrete
6.0"	Base Course
8.0"	Total Thickness

XII. Additional Services

We recommend that we be retained to perform a general review of the final design plans and specifications. This will allow us to verify that the earthwork recommendations have been properly interpreted and implemented in the design plans and construction specifications.

For continuity, we also recommend that we be retained to provide observation and monitoring services of structural fill placement during construction. The preparation of all footing excavations for placement of reinforcing steel and concrete should also be monitored by an engineer from our staff. This service will allow us to verify that our recommendations are properly interpreted and included in construction, and to make necessary modifications to those recommendations, thereby reducing construction delays in the event subsurface conditions differ from those anticipated.

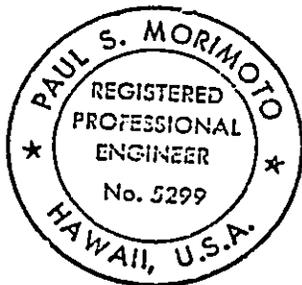
XIII. Limitations

The boring logs indicate the approximate subsurface soil conditions encountered only at those times and locations where our borings were made, and may not represent conditions at other times and locations.

During construction, should subsurface conditions differ from those encountered in our borings, we should be advised immediately in order to re-evaluate our

recommendations, and to revise or verify them in writing before proceeding with construction.

Our recommendations and conclusions are based upon the site materials observed, the preliminary design information made available, the data obtained from our site exploration, our engineering analyses, and our experience and engineering judgement. The conclusions and recommendations are professional opinions which we have strived to develop in a manner consistent with that level of care, skill, and competence ordinarily exercised by members of the profession in good standing, currently practicing under similar conditions. No other warranty is expressed or implied.



Respectfully submitted,

Ernest K. Hirata & Associates, Inc.

Paul S. Morimoto

Paul S. Morimoto, P.E.

This work was prepared by
me or under my supervision.

PSM:CCT:2044-4.rpt

APPENDIX OF LABORATORY TESTING

Classification

Field classification is verified in the laboratory, also in accordance with the Unified Soil Classification System. Laboratory classification is determined by both visual examination and Atterberg Limit tests performed in general accordance with ASTM D423 and D424. The following is a summary of our Atterberg Test results. The final classification is shown at the appropriate locations on the Boring Logs, Plates A1 through A5.

<u>Sample</u>	<u>Liquid Limit</u>	<u>Plasticity Index</u>
B1 @ Surface	42	17
B5 @ Surface	43	18

Moisture-Density

The field moisture content and dry unit weight are determined for each of the representative samples. The information is useful in providing a gross picture of the soil consistency between borings and any local variations. The dry unit weight is determined in pounds per cubic foot while the moisture content is determined as a percentage of the dry unit weight. Samples are obtained from a 3 inch O.D. split tube sampler. Test results are shown at the appropriate depths on the Boring Logs, Plates A1 through A5.

Consolidation

Settlement predictions of the soil's behavior under load are made on the basis of consolidation test results. Loads are applied in several increments in a geometric progression, and the resulting deformations are recorded at selected time intervals. Porous stones are placed in contact with the top and bottom of each specimen, having an inside diameter of 2.40 inches and a height of 1 inch, to permit addition and release of pore fluid. Results of tests performed on representative samples are plotted on the Consolidation Test Reports, Plates B1 and B2.

Shear Tests

Shear tests are performed in the Direct Shear Machine which is of the strain control type. The rate of deformation is approximately 0.02 inches per minute. Each sample is sheared under varying confining loads in order to determine the Coulomb shear strength parameters, cohesion and angle of internal friction. Eighty percent of the maximum value is taken to determine the shear strength parameters. Test results are presented on Plates C1 and C2.

Swell Tests

Swell tests are performed to determine the relative expansiveness of the onsite soils. The tests are performed on representative and remolded soil samples by placing a 90 PSF surcharge load on one inch high specimens. The sample is inundated with water, and total expansion is recorded after a period of at least 24 hours. Test results are indicated as a

percentage of original height. The following is a summary of our test results.

<u>Sample</u>	<u>Sample Type</u>	<u>Recorded Expansion</u>
B1 at Ground Surface	Remolded	Negligible
B1 at 3'	Undisturbed	3.9%
B1 at 5'	Undisturbed	Negligible
B5 at Ground Surface	Remolded	1.5%

Proctor Tests

Proctor tests are performed on bulk samples to determine the optimum moisture content at which each soil type compacts to 100 percent density. The tests are performed in general accordance with ASTM D 1557-78, and results are shown on Plates D1 and D2.

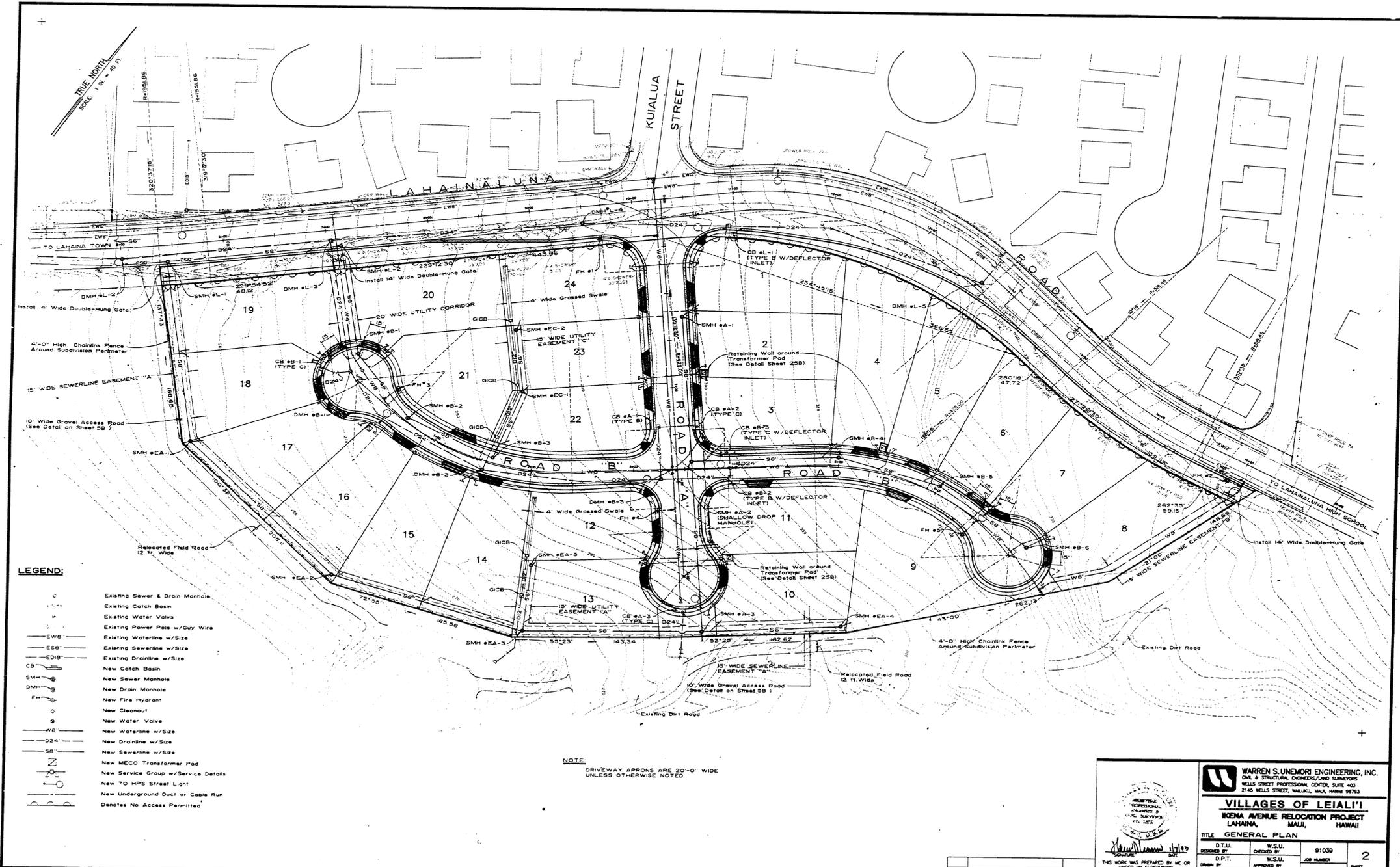
California Bearing Ratio Tests

CBR tests are performed on bulk samples to evaluate the relative quality of subgrade soils to be used in the design of flexible pavements. The tests are performed in general accordance with ASTM D 1883-73, and results are shown on Plates D1 and D2.

**OVERSIZED
DRAWING/MAP**

**PLEASE SEE
35MM ROLL**

0084



LEGEND:

- Existing Sewer & Drain Manhole
- Existing Catch Basin
- Existing Water Valve
- Existing Power Pole w/Guy Wire
- EWB— Existing Waterline w/Size
- ESB— Existing Sewerline w/Size
- EDB— Existing Drainline w/Size
- CB New Catch Basin
- SMH New Sewer Manhole
- DMH New Drain Manhole
- FH New Fire Hydrant
- New Cleanout
- New Water Valve
- WB— New Waterline w/Size
- D24— New Drainline w/Size
- SB— New Sewerline w/Size
- Z— New MECO Transformer Pad
- New Service Group w/Service Details
- New 70 HPS Street Light
- New Underground Duct or Cable Run
- Denotes No Access Permitted

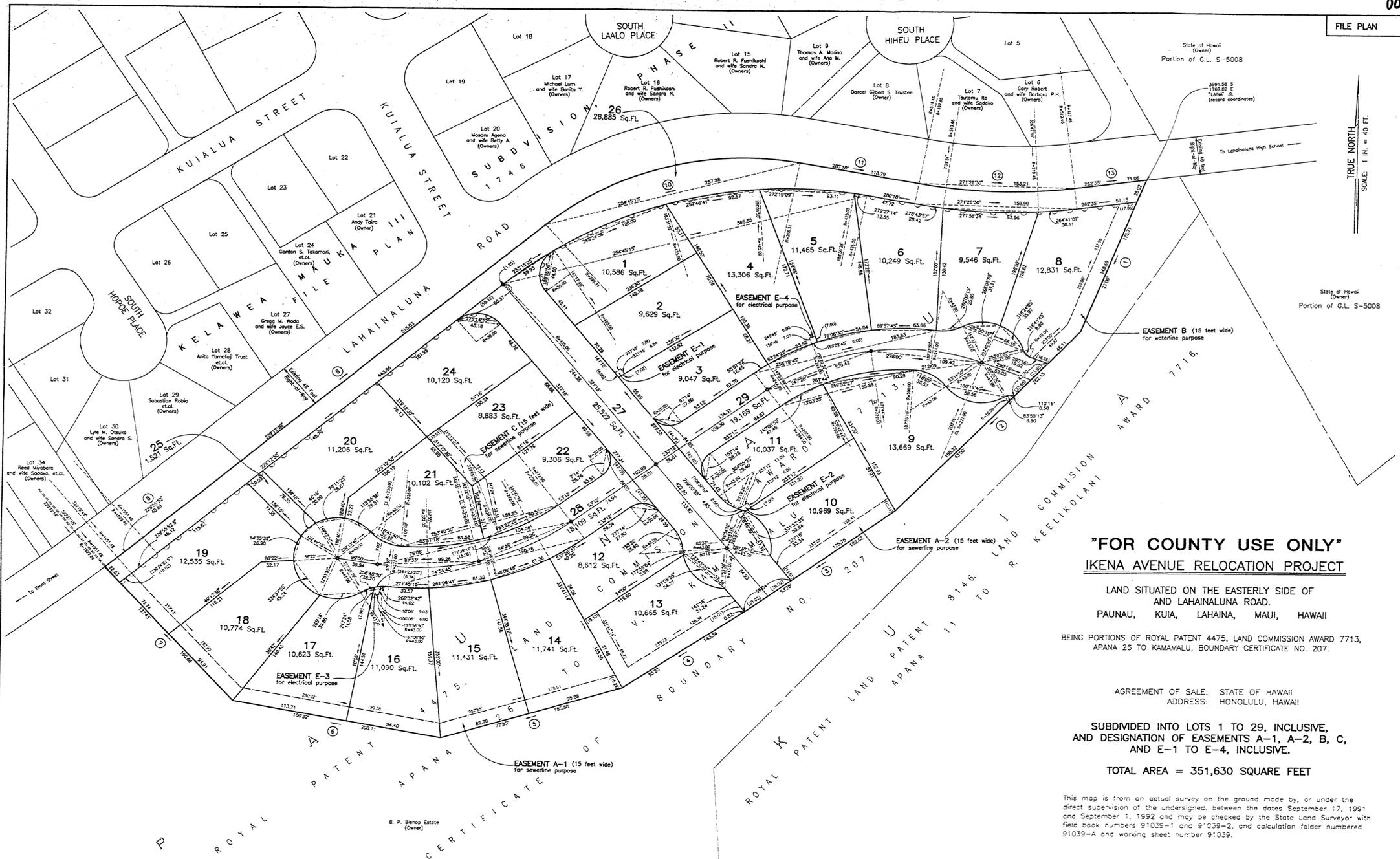
NOTE:
DRIVEWAY APRONS ARE 20'-0" WIDE UNLESS OTHERWISE NOTED.

		WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS 2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793	
		VILLAGES OF LEIALI'I KAMA AVENUE RELOCATION PROJECT LAHAINA, MAUI, HAWAII	
TITLE: GENERAL PLAN			
D.T.U. DESIGNED BY	W.S.U. CHECKED BY	91039 JOB NUMBER	2 SHEET
D.P.T. DRAWN BY	W.S.U. APPROVED BY	DATE	DATE
SCALE: 1 IN. = 40 FT.			

**OVERSIZED
DRAWING/MAP**

**PLEASE SEE
35MM ROLL**

0084 A



"FOR COUNTY USE ONLY"
IKENA AVENUE RELOCATION PROJECT

LAND SITUATED ON THE EASTERLY SIDE OF
 AND LAHAINALUNA ROAD.
 PAUNAU, KUIA, LAHAINA, MAUI, HAWAII

BEING PORTIONS OF ROYAL PATENT 4475, LAND COMMISSION AWARD 7713,
 APANA 26 TO KAMAMALU, BOUNDARY CERTIFICATE NO. 207.

AGREEMENT OF SALE: STATE OF HAWAII
 ADDRESS: HONOLULU, HAWAII

SUBDIVIDED INTO LOTS 1 TO 29, INCLUSIVE,
 AND DESIGNATION OF EASEMENTS A-1, A-2, B, C,
 AND E-1 TO E-4, INCLUSIVE.

TOTAL AREA = 351,630 SQUARE FEET

This map is from an actual survey on the ground made by, or under the
 direct supervision of the undersigned, between the dates September 17, 1991
 and September 1, 1992 and may be checked by the State Land Surveyor with
 field book numbers 91039-1 and 91039-2, and calculation folder numbered
 91039-A and working sheet number 91039.

AREA OF EASEMENTS:

- Easement A-1, (15 feet wide) is for sewerline purpose, affecting Lots 13 to 19, inclusive = 11,417 Sq.Ft.
- Easement A-2, (15 feet wide) is for sewerline purpose, affecting Lot 10 = 1,906 Sq.Ft.
- Easement B, (15 feet wide) is for waterline purpose, affecting Lot 8 = 2,864 Sq.Ft.
- Easement C, (15 feet wide) is for sewerline purpose, affecting Lots 22 and 23 = 1,933 Sq.Ft.
- Easement E-1, is for electrical purpose, affecting Lot 2 = 44 Sq.Ft.
- Easement E-2, is for electrical purpose, affecting Lot 11 = 54 Sq.Ft.
- Easement E-3, is for electrical purpose, affecting Lot 16 = 49 Sq.Ft.
- Easement E-4, is for electrical purpose, affecting Lot 4 = 42 Sq.Ft.

NOTES:

1. Figures shown thus (3) indicates course number in description.
2. Owners of adjoining lands, as shown on plan, are from records filed in the Tax Maps Branch.
3. All azimuths and record coordinates, refers to Government Survey Triangulation Station "LAHA".
4. All boundary corners, are marked with 3/4" pipes, unless otherwise noted.
5. (Symbol) denotes no vehicle access permitted.
6. (Symbol) indicates centerline street survey monument.
7. Street names, as shown on plan, were approved by the Street Naming Commission on _____.
8. Easements A-1, A-2 and C, are for sewerline purposes, to be in favor of the County of Maui.
9. Easement B, is for waterline purpose, in favor of the County of Maui.
10. Easements E-1 to E-4, inclusive, are for electrical purposes, to be in favor of Maui Electric Co., Ltd.

2145 Wells Street - Suite 403
 Wailuku, Maui, Hawaii
 September 25, 1992

WARREN S. UNEMORI - ENGINEERING, INC.

By: _____
 Registered Professional Land Surveyor
 Certificate Number 1569

I hereby certify that the description of survey, and map here on has been examined and checked as to form and mathematical correctness, but not on the ground and the same is approved in accordance with Section 502-17, 118 and 19, of the Hawaii Revised Statutes.
 Honolulu, Hawaii

State of Hawaii
 Office of
 Bureau of Conveyances
 Received for filing this _____ day of _____ at _____ and filed in File No. _____
 Registrar of Conveyances

Metes and Bounds description recorded in Liber _____ on Page _____

T.M.K.: 4-6-18 : PORTION OF 03

30' x 36" = 7.5 Sq.Ft.

APPENDICES

- A Soil Investigation**
- B Drainage and Soil Erosion Control Report**
- C Traffic Assessment**
- D Agricultural Impact Study**
- E Copies of Correspondences**

APPENDIX A
Soil Investigation

SOILS INVESTIGATION
ALTERNATIVE RELOCATION HOUSING SITE
FOR IKENA STREET RESIDENTS

LAHAINA, MAUI

TMK: 4-6-18: Por. of 3

for

HOUSING FINANCE & DEVELOPMENT CORPORATION

W.O. 91-2044.4
March 16, 1992

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering



ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering

ERNEST K. HIRATA P.E.
PAUL S. MORIMOTO P.E.
DAVID M. KITAMURA P.E.
JUNG K. KIM P.E.

99-1433 Koaha Place • Aiea, Hawaii 96701-3279
Phone (808)486-0787 • FAX (808) 486-0870

March 16, 1992
W.O. 91-2044.4

Housing Finance & Development Corporation
Seven Waterfront Plaza
500 Ala Moana Boulevard, Suite 300
Honolulu, Hawaii 96813

Attention: Mr. Neal Wu

Gentlemen:

Our report, "Soils Investigation, Alternate Relocation Housing Site for Ikena Street Residents, Lahaina, Maui, TMK: 4-6-18: Por. of 3," dated March 16, 1992, our Work Order 91-2044.4 is enclosed. This investigation was conducted in general conformance with the scope of work presented in our proposal dated August 1, 1991.

The onsite soils consisted of reddish brown silty clays at the surface, underlain by completely weathered rock and hard, gray basalt. Conventional spread footings or thickened slab type foundations may be used to support the structures. Foundations may be founded on either the undisturbed silty clay or compacted fill. All footings supporting a structure should be founded on the same soil and designed for the same allowable bearing pressure.

The following is a summary of our geotechnical recommendations. This summary is not intended to be a substitute for our report which includes more detailed explanations of our recommendations, as well as additional requirements.

- Allowable bearing value = 3000 PSF and 2000 PSF for foundations founded on undisturbed silty clay and compacted fill, respectively.
- Coefficient of friction = 0.4
- Passive earth pressure = 300 PCF
- Active earth pressure = 40 PCF for level backfill conditions
Active earth pressure = 55 PCF for restrained conditions

Additional geotechnical recommendations for development of the site are presented in this report.

We appreciate this opportunity to be of service. Should you have any questions concerning this report, please feel free to call on us.

Very truly yours,

Ernest K. Hirata & Associates, Inc.



Ernest K. Hirata

President

EKH:ph

TABLE OF CONTENTS

	<u>Page No.</u>
INTRODUCTION	1
PROJECT CONSIDERATIONS	2
SITE CONDITIONS	3
FIELD EXPLORATION	3
SOIL CONDITIONS	5
CONCLUSIONS AND RECOMMENDATIONS	
Expansive Soils	6
Groundwater	6
Site Grading	6
Building Foundations	9
Lateral Design	10
Settlement	11
Floor Slabs	12
Pavement Design	12
Additional Services	13
Limitations	13

APPENDIX

Appendix of Laboratory Testing Pages 1 through 3
Boring Logs Plates A1 through A5
Consolidation Test Reports Plates B1 and B2
Direct Shear Test Results Plates C1 and C2
CBR Stress Penetration Curve Plates D1 and D2
Location Map Plate 1
Boring Location Plan Plate 2

SOILS INVESTIGATION
ALTERNATIVE RELOCATION HOUSING SITE
FOR IKENA STREET RESIDENTS
LAHAINA, MAUI
TMK: 4-6-18: Por. of 3

INTRODUCTION

This report presents the results of our soils investigation performed for the proposed alternative relocation housing site in Lahaina, Maui. Our work scope for the soils investigation study included the following:

- A visual reconnaissance of the site and its vicinity, to observe existing conditions which may affect the project. The general location of the project site is shown on the enclosed Location Map, Plate 1.
- A review of available soils information pertinent to the site and the proposed project.
- Drilling and sampling 5 exploratory borings to depths ranging from 14 to 24.5 feet to determine the subsurface soil conditions. The approximate exploratory boring locations are shown on the Boring Location Plan, Plate 2. The soils encountered are logged on the Boring Logs, Plates A1 through A5.
- Laboratory testing of selected soil samples to determine classification and engineering properties. Laboratory testing procedures are presented in the Appendix, Pages 1 through 3. Laboratory test results are presented in the Appendix of Laboratory Testing, on the Boring Logs, on Plates B1, B2, C1, C2, D1, and D2.
- Engineering analyses of the field and laboratory data.

- Preparation of a report presenting geotechnical recommendations for the design of foundations, resistance to lateral pressures, floor slabs, flexible pavement, and site grading.

PROJECT CONSIDERATIONS

Information concerning the proposed project was furnished by personnel from Warren S. Unemori Engineering, Inc., Civil Engineers.

The proposed project consists of a new subdivision to relocate the landowners affected by the Honoapiilani Highway, Project No. 30AB-01-87, Puamana to Honokowai.

The subdivision will have a total of 24 single family residential lots. We assume that the residences will be one and two story structures, utilizing wood frame construction, and either conventional slabs on grade or a post and beam system to support floors. Relatively light building loads are expected.

Grading for the project was not available at the time of this report. However, based on discussions with the civil engineer, we understand that cuts will be limited to approximately 3 feet. Maximum fill heights will be on the order of 5 to 10 feet.

The project will also include new roadways to service the subdivision.

SITE CONDITIONS

The project site encompasses about 6 acres of land in Lahaina, Maui. The site is located on the east side of Lahainaluna Road, about 600 feet northeast of the existing Ikena Street.

The project site generally slopes in a southwesterly direction with a total relief of about 95 feet. Except for the northeast portion, the site is presently used to cultivate sugar cane. The northeast portion of the site is covered by moderate vegetation and stockpiled soil. Cobbles and boulders were observed at ground surface. Unpaved cane haul roads bisect the site in general northwest-southeast, and east-west directions.

FIELD EXPLORATION

The site was explored on October 10 and 11, 1991, by drilling 5 exploratory test borings with a truck mounted drilling machine. The borings varied in depth from 14 to 24.5 feet. The soils were logged by our field engineer and classified by visual examination in accordance with the Unified Soil Classification System. The approximate boring locations are shown on Plate 2, and the soils encountered are logged on Plates A1 through A5.

Representative soil samples and core samples of rock were recovered from the borings for selected laboratory testing and analyses. Representative samples were obtained by driving

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering

BORING LOG

W.O. 91-2044.4

BORING NO. B1 DRIVING WT. 140 lb. DATE OF DRILLING 10-10-91
SURFACE ELEV. 335.2* DROP 30 in. WATER LEVEL None

DEPTH	GRAPH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	CLASSIFICATION
0			50/3"	88	16	Silty CLAY (ML-CL) - Reddish brown, moist, stiff, with sand, gravel, and cobbles. Boulder at 6.5 feet.
			82	105	14	
5			37	79	16	
10			39/6" 50/1"	85	27	COMPLETELY WEATHERED ROCK - Mottled gray and orange, moist, dense, vesicular.
15			50/3"	85	23	
20			50/1"	Tip Recovery		
25			50/5"	Tip Recovery		
30						End boring at 24.5 feet.

* Elevations based on Topographic Map provided by Warren S. Unemori Engineering, Inc.

Plate A1

BORING LOG

W.O. 91-2044.4

BORING NO. B2 DRIVING WT. 140 lb. DATE OF DRILLING 10-10-91
SURFACE ELEV. 315± DROP 30 in. WATER LEVEL None

DEPTH	GRAVEL	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	CLASSIFICATION
0						
			44	83	19	Silty CLAY (ML-CL) - Reddish brown, slightly moist, stiff with sand, gravel, and cobbles.
5			50/3"	71	27	COMPLETELY WEATHERED ROCK - Mottled grayish brown, moist, dense, vesicular.
10			20/6" 50/2"	69	33	
15			50/5"	68	47	
20			50/5"	Tip Recovery		BASALT - Gray, hard, highly fractured. Begin NX Coring from 19.5 feet. 88% Recovery from 19.5 to 24 feet. RQD - 36%
25						End boring at 24.5 feet.
30						

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering

BORING LOG

W.O. 91-2044.4

BORING NO. B3 DRIVING WT. 140 lb. DATE OF DRILLING 10-10-91
 SURFACE ELEV. 280± DROP 30 in. WATER LEVEL None

DEPTH	GRAIT	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	CLASSIFICATION
0						Silty CLAY (ML-CL) - Reddish brown. moist. stiff. with sand and gravel.
			50/2"	No Recovery		COMPLETELY WEATHERED ROCK - Mottled grayish brown. slightly moist. dense to medium hard.
5			39/6" 50/No	114 Penetration	15	
10						BASALT - Gray. hard. highly fractured. Begin NX Coring from 9 feet. 100% Recovery form 9 to 14 feet. RQD - 24%
15						End boring at 14 feet.
20						
25						
30						

Plate A3

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering

BORING LOG

W.D. 91-2044.4

BORING NO. B4 DRIVING WT. 140 lb. DATE OF DRILLING 10-11-91
SURFACE ELEV. 260± DROP 30 in. WATER LEVEL None

DEPTH 0	GRAIN S	SAMPLE E	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	CLASSIFICATION
0			50/No Penetration			Silty CLAY (ML-CL) - Reddish brown, slightly moist, stiff, with sand and gravel.
5			18	92	26	COMPLETELY WEATHERED ROCK - Mottled gray, slightly moist to moist, vesicular.
10			50/No Penetration			
15			38	79	15	
20			50/No Penetration			BASALT - Gray, hard, vesicular. Begin NX Coring from 19 feet. 94% Recovery from 19 to 24 feet. ROD = 77%
25						End boring at 24 feet.
30						

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering

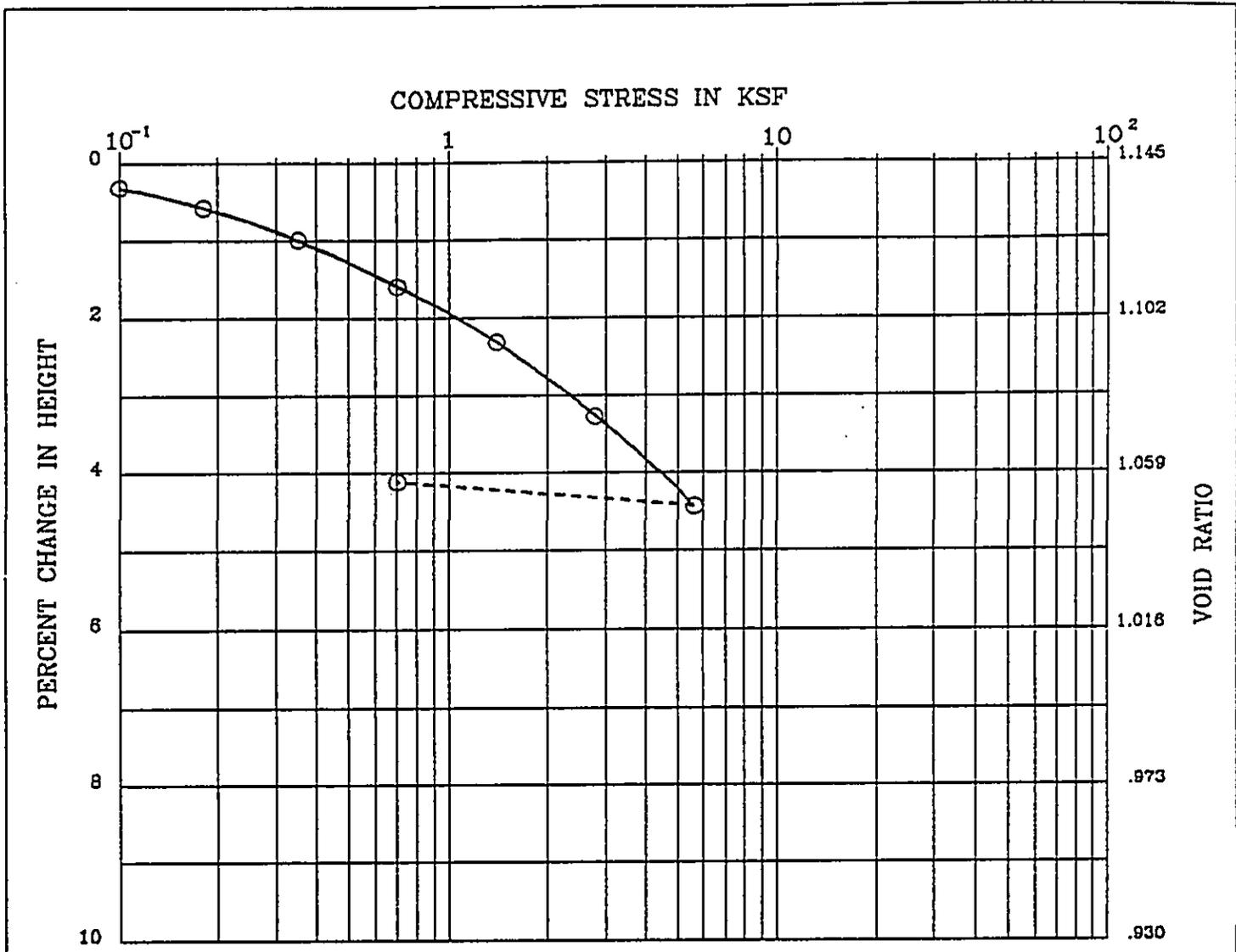
BORING LOG

W.O. 91-2044.4

BORING NO. B5 DRIVING WT. 140 lb. DATE OF DRILLING 10-11-91
SURFACE ELEV. 255± DROP 30 in. WATER LEVEL None

DEPTH	GRAPH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	CLASSIFICATION
0						Silty CLAY (ML-CL) - Reddish brown. moist. stiff. with gravel.
			50/5"	83	30	COMPLETELY WEATHERED ROCK - Mottled gray. dense to medium hard.
			50/No Penetration			
5			50/No Penetration			BASALT - Gray. medium hard. Begin NX Coring from 5 feet. 80% Recovery from 5 to 9 feet. ROD - 28% Grading hard from 8 feet. 87% Recovery from 9 to 14 feet. ROD - 72%
10						
15						
20						End boring at 14 feet.
25						
30						

Plate A5



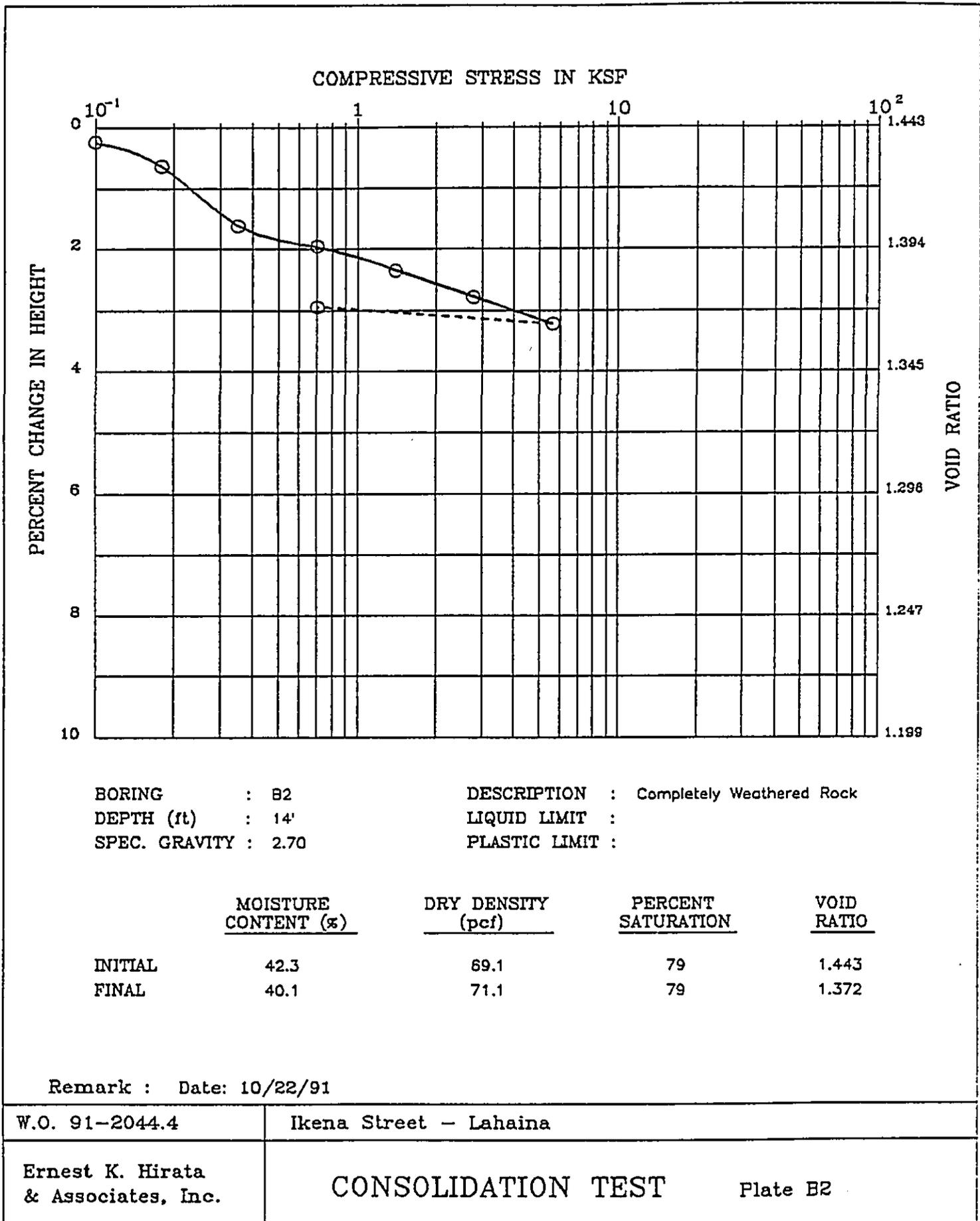
BORING : B2
 DEPTH (ft) : 2'
 SPEC. GRAVITY : 2.70

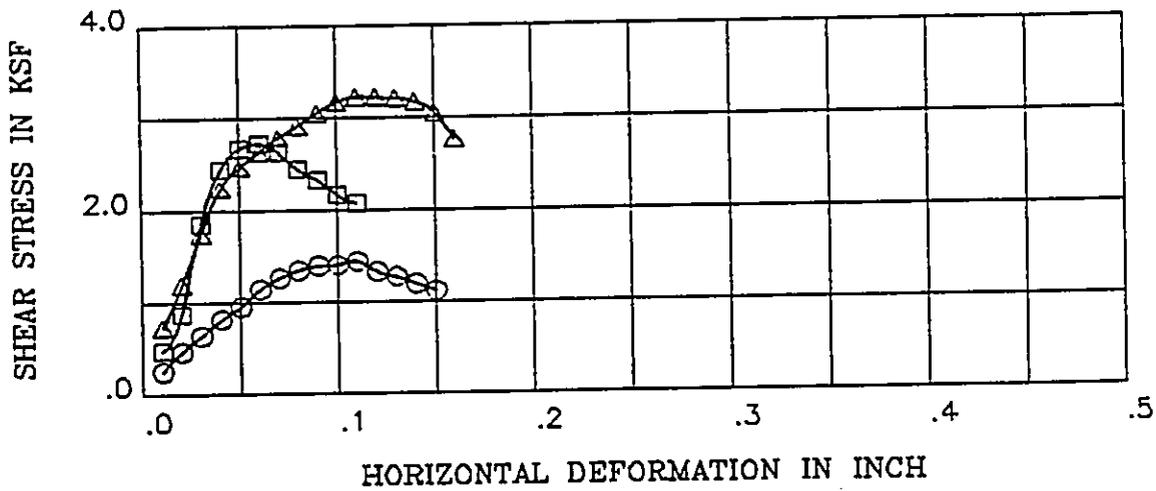
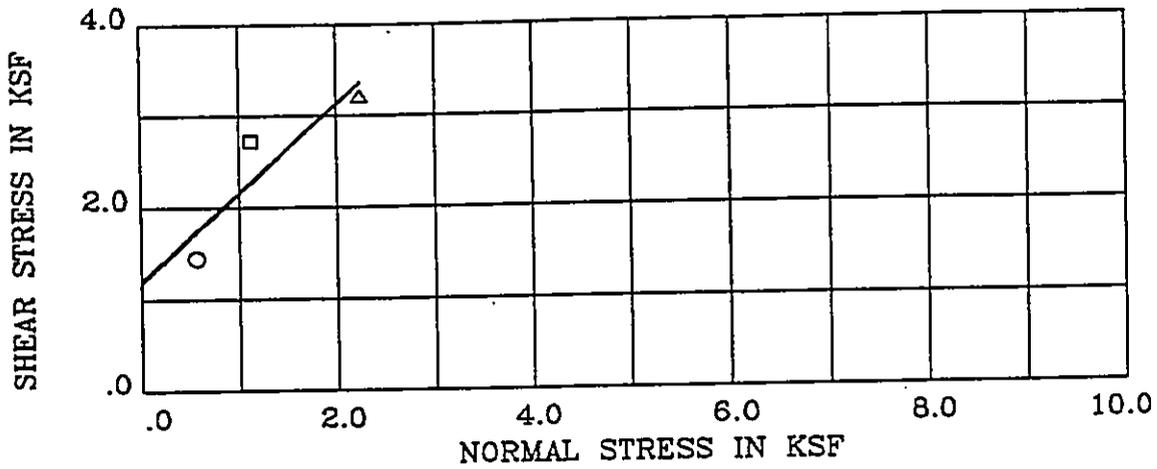
DESCRIPTION : Reddish Brown Silty Clay
 LIQUID LIMIT :
 PLASTIC LIMIT :

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	20.3	78.7	48	1.145
FINAL	18.8	82.0	48	1.057

Remark : Date: 11/14/91

W.O. 91-2044.4	Ikena Street - Lahaina	
Ernest K. Hirata & Associates, Inc.	CONSOLIDATION TEST	Plate B1



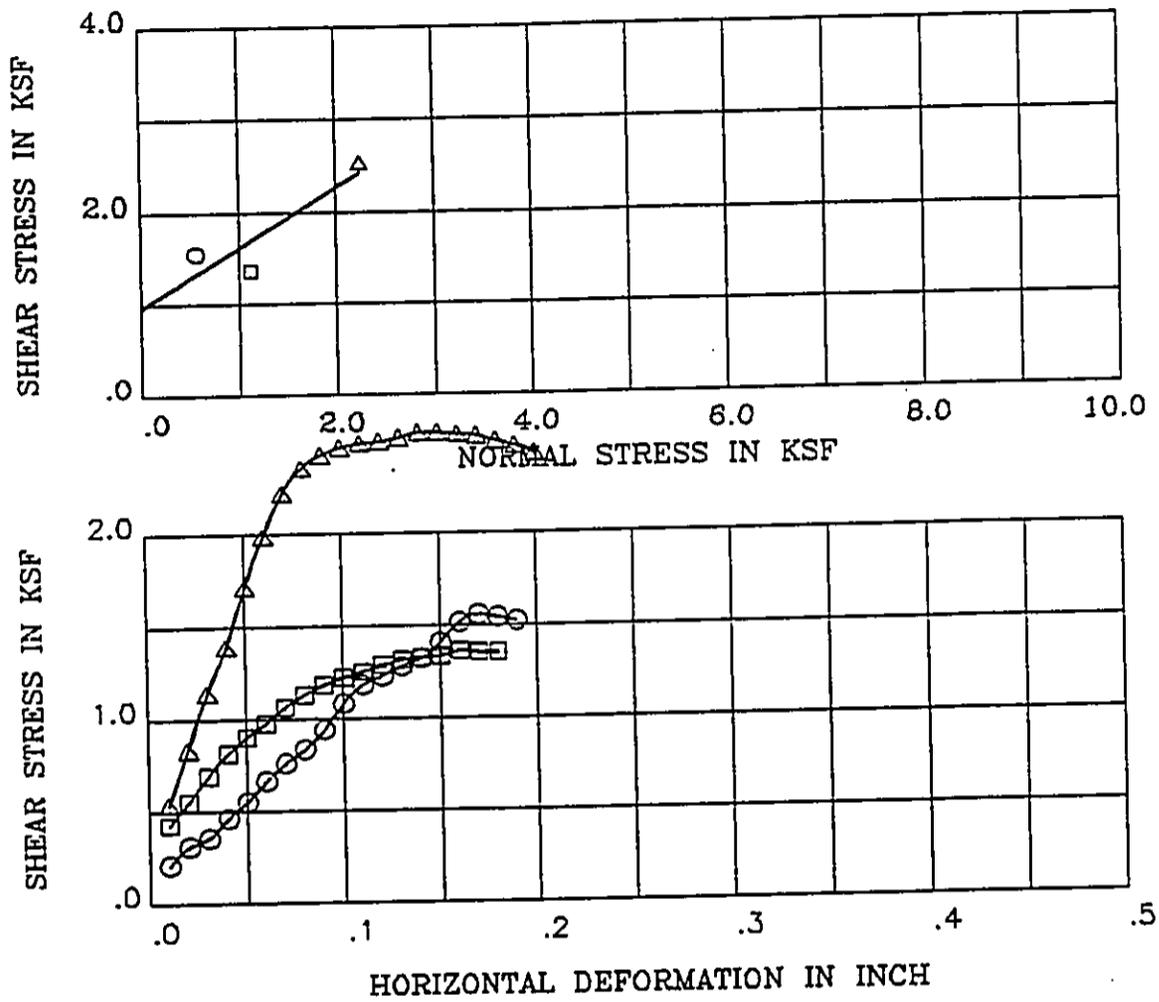


BORING/SAMPLE : B1 DEPTH (ft) : 3
 DESCRIPTION : Reddish Brown Silty Clay
 STRENGTH INTERCEPT (C) : 1.197 KSF (PEAK STRENGTH)
 FRICTION ANGLE (PHI) : 44.1 DEG (PEAK STRENGTH)

SYMBOL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	NORMAL STRESS (ksf)	PEAK SHEAR (ksf)	RESIDUAL SHEAR (ksf)
○	16.3	102.7	.641	.56	1.45	1.12
□	16.3	102.7	.641	1.12	2.72	2.06
△	16.3	102.7	.641	2.24	3.22	2.76

Remark : Date: 10/18/91

W.O. 91-2044.4	Ikena Street - Lahaina
Ernest K. Hirata & Associates, Inc.	DIRECT SHEAR TEST Plate C1

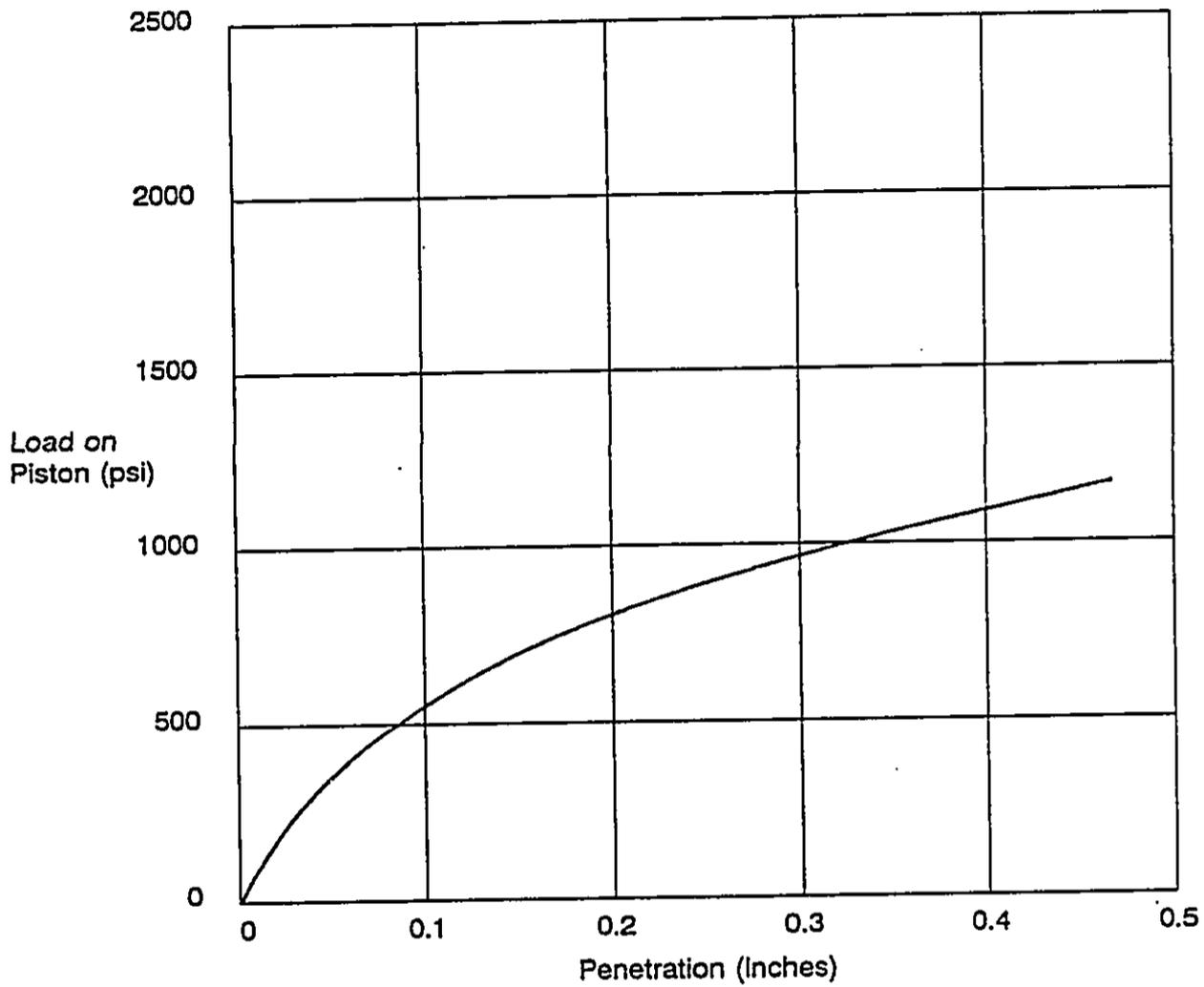


BORING/SAMPLE : B5 DEPTH (ft) : 1
 DESCRIPTION : Completely Weathered Rock
 STRENGTH INTERCEPT (C) : .964 KSF (PEAK STRENGTH)
 FRICTION ANGLE (PHI) : 33.2 DEG (PEAK STRENGTH)

SYMBOL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	NORMAL STRESS (ksf)	PEAK SHEAR (ksf)	RESIDUAL SHEAR (ksf)
○	29.5	82.9	1.033	.56	1.55	1.52
□	29.5	82.9	1.033	1.12	1.36	1.35
△	29.5	82.9	1.033	2.24	2.54	2.43

Remark : Date: 10/18/91

W.O. 91-2044.4	Ikena Street - Lahaina
Ernest K. Hirata & Associates, Inc.	DIRECT SHEAR TEST Plate C2



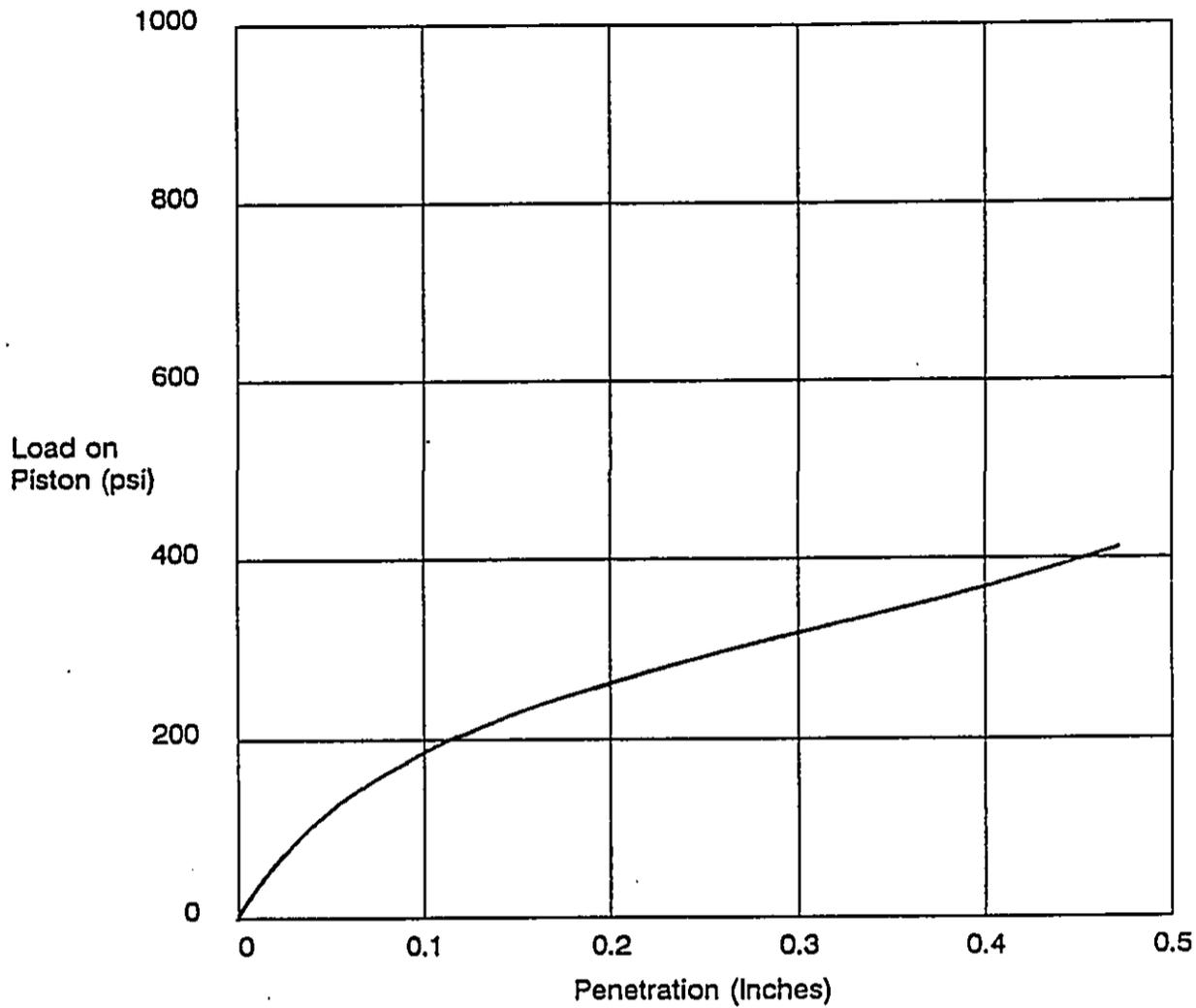
Soil Data

Location: Boring B1 @ Surface
 Description: Reddish Brown Silty Clay
 Maximum Density: 114.0 PCF
 Optimum Moisture: 18.0%

Test Results

CBR Value: 56% Expansion: 0.2%

W.O. 91-2044.4	Ikena Street - Lahaina
ERNEST K. HIRATA & ASSOCIATES, INC.	CBR STRESS PENETRATION CURVE Plate D1



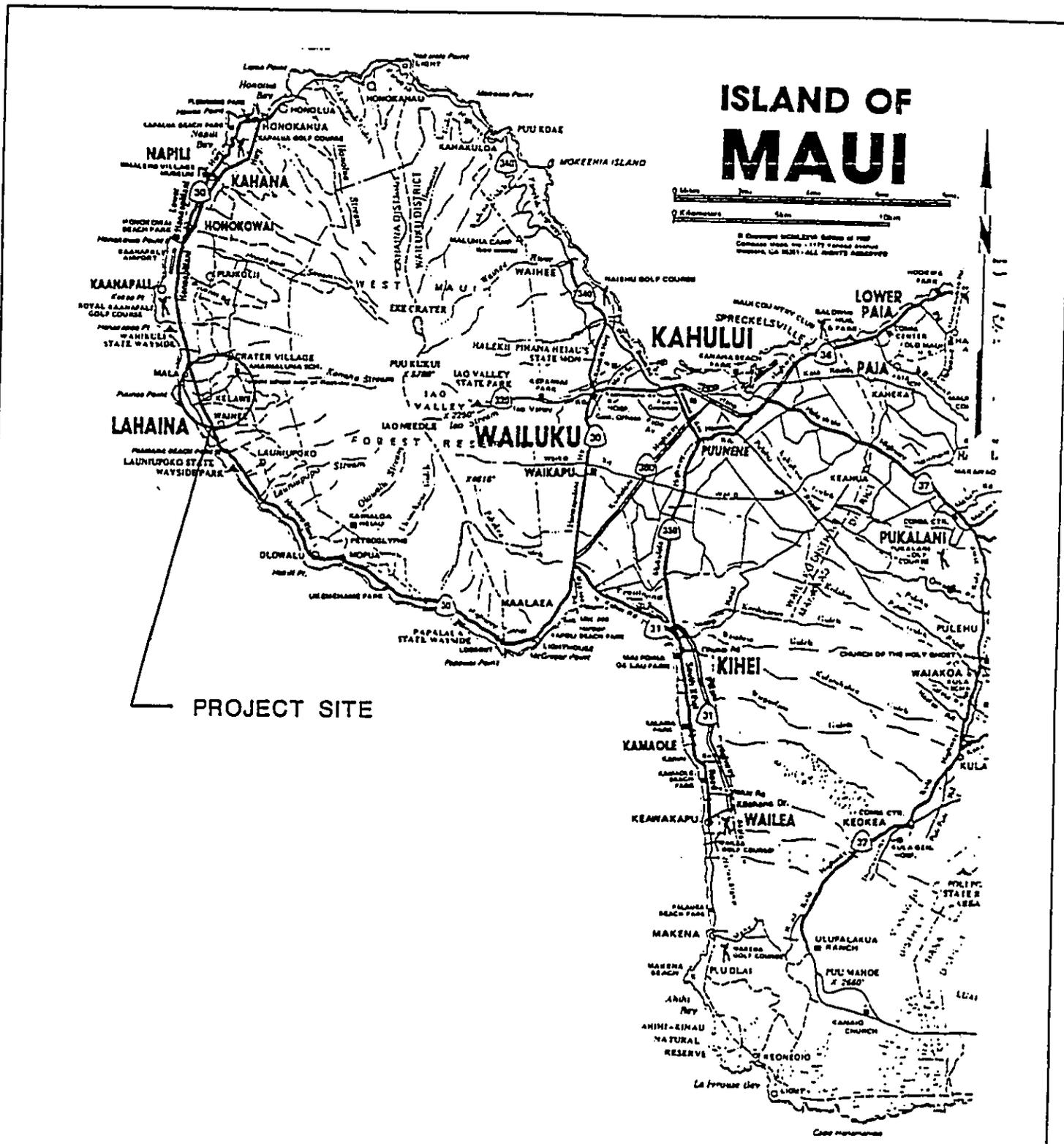
Soil Data

Location: Boring B5 @ Surface
 Description: Reddish Brown Silty Clay
 Maximum Density: 107.5 PCF
 Optimum Moisture: 21.5%

Test Results

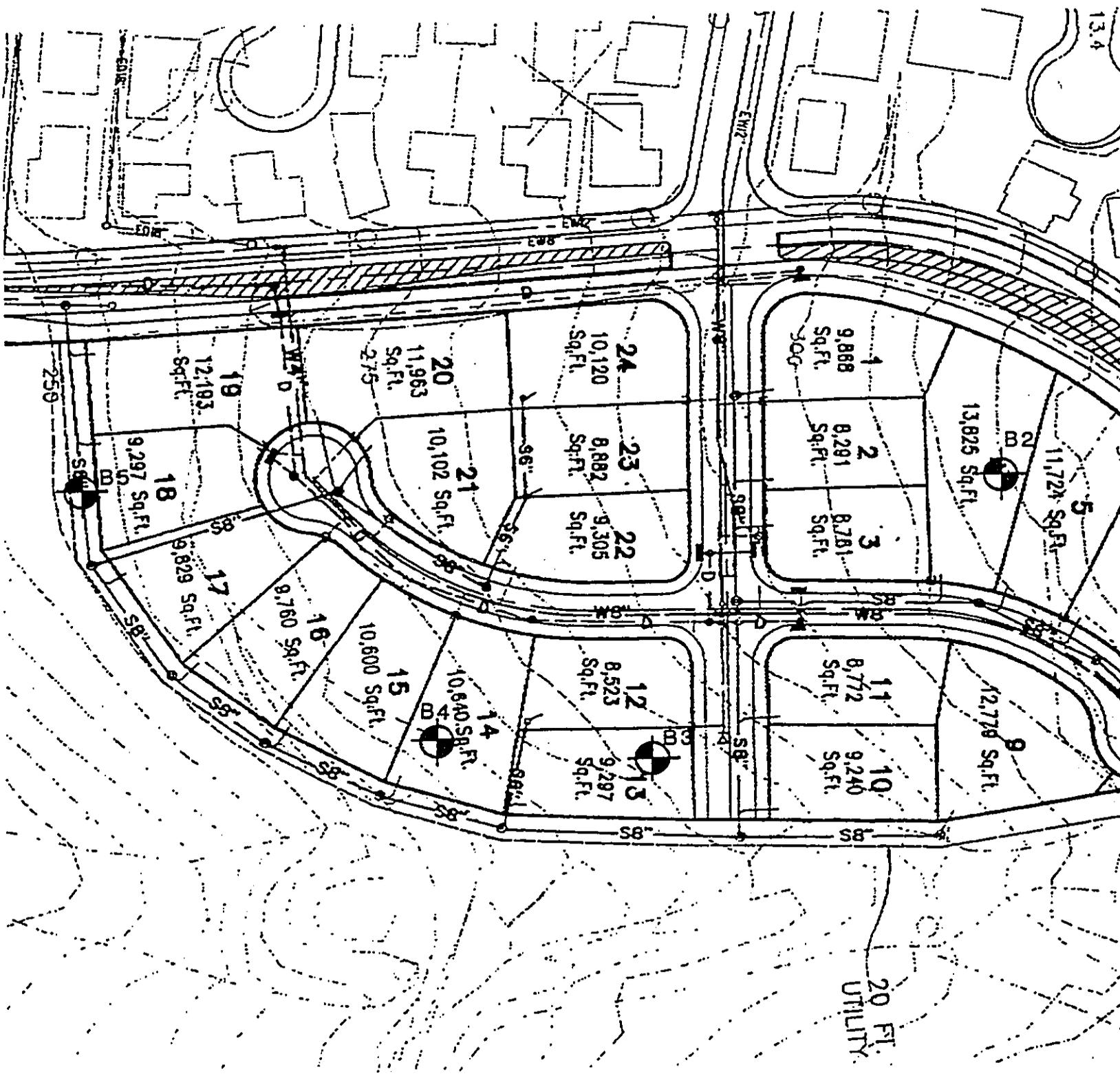
CBR Value: 19% Expansion: 0.8%

W.O. 91-2044.4	Ikena Street - Lahaina	
ERNEST K. HIRATA & ASSOCIATES, INC.	CBR STRESS PENETRATION CURVE	Plate D2



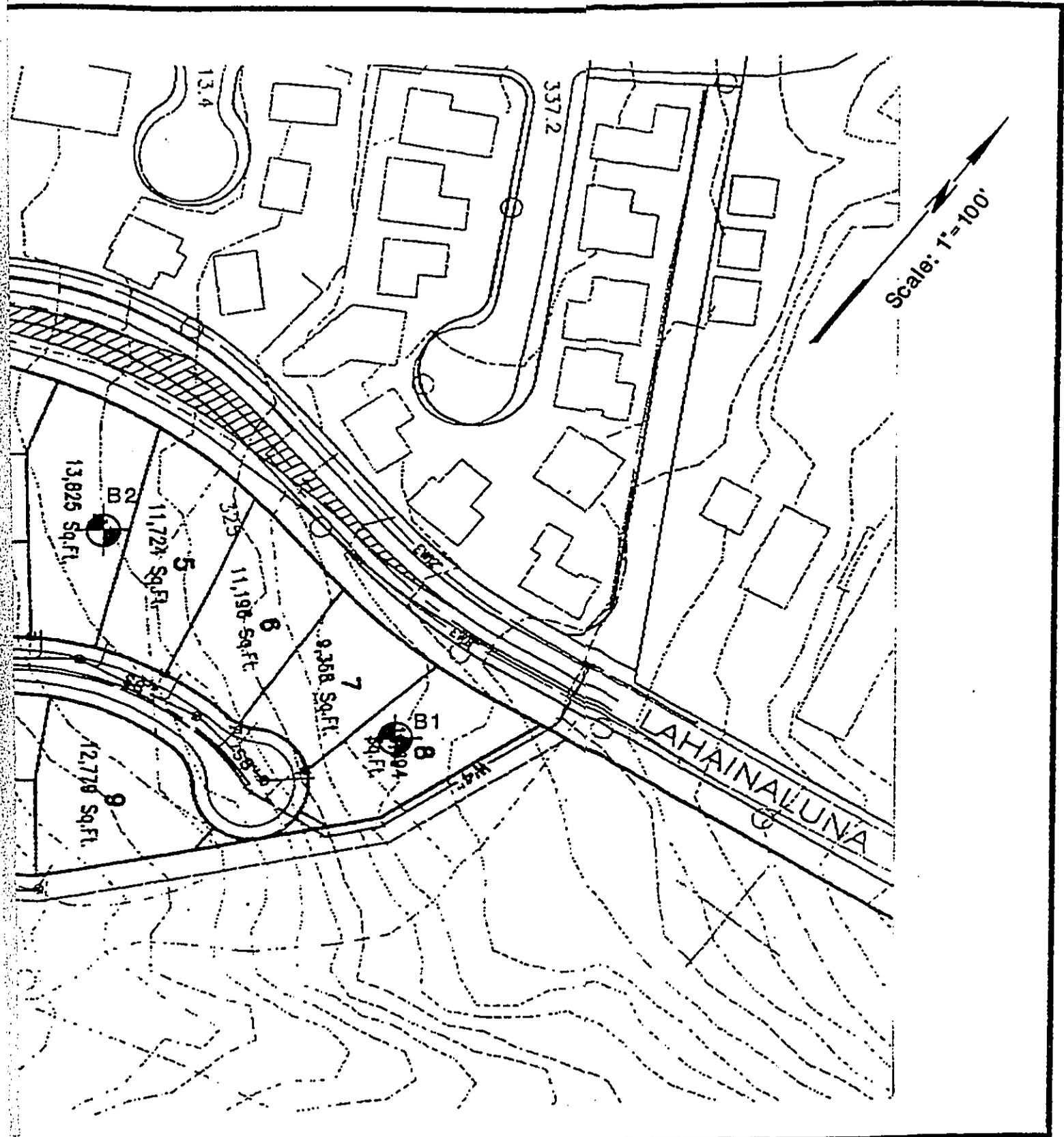
Reference: Compass Maps

W.O. 91-2044.4	Alternative Relocation Site for Ikena St. Residents
ERNEST K. HIRATA & ASSOCIATES, INC.	<p style="text-align: center; font-size: 24pt; font-weight: bold;">LOCATION MAP</p> <p style="text-align: right;">Plate 1</p>

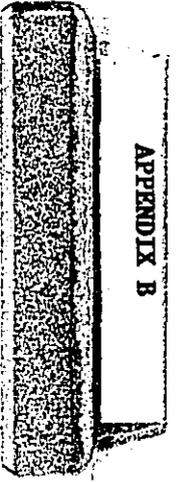


 Approximate Location of Borings

W.O. 91-204
 Ernest K. Hir
 & Associates,



W.O. 91-2044.4	Ikena Street - Lahaina	
Ernest K. Hirata & Associates, Inc.	BORING LOCATION PLAN	Plate 2



APPENDIX B

Drainage and Soil Erosion Control Report

DRAINAGE AND SOIL EROSION CONTROL REPORT

FOR THE

VILLAGES AT LEIALI'I

IKENA AVENUE RELOCATION PROJECT

Lahaina, Maui, Hawaii

DEVELOPER:

**Housing Finance and Development Corporation
Honolulu, Hawaii**

Prepared by:

**Warren S. Unemori Engineering, Inc.
Civil and Structural Engineers - Land Surveyors
Wells Street Professional Center
2145 Wells Street, Suite 403
Wailuku, Maui, Hawaii 96793**

September 1992

CONTENTS

- I. PURPOSE
 - II. PROPOSED PROJECT
 - A. Site Location
 - B. Project Description
 - III. EXISTING CONDITIONS
 - A. Flood and Tsunami Hazard
 - B. Topography and Soil Conditions
 - C. Drainage
 - IV. DRAINAGE PLAN
 - A. Description
 - B. Impact
 - V. SOIL EROSION CONTROL PLAN
- APPENDIX A - Hydrologic Calculations
- A-1 10-year Runoff Before Development
 - A-2 10-year Runoff After Development
- APPENDIX B - Storm Sewer System Design Calculations
- APPENDIX C - Universal Soil Loss Equation Calculations

Drainage and Soil Erosion Control Report
for the
Villages at Leialii
Ikena Avenue Relocation Project

I. PURPOSE

This report examines both the existing drainage conditions and the proposed drainage plan for the Ikena Avenue Relocation Project Subdivision in Lahaina, Maui. This report also evaluates the potential for movement of soil off of the project site by storm runoff, and proposes practical measures to control soil erosion during construction in accordance with the ordinances contained in Chapter 20 of the Maui County Code.

II. PROPOSED PROJECT

A. Site Location

The 8.1 acre project site is located along Lahainaluna Road on the mountainside above Lahaina town, approximately 1 mile east of Honoapiilani Highway. It sits on the southern side of the Lahainaluna Road / Kuialua Street intersection, opposite the existing Kelaweia Mauka III Subdivision. The site is bordered by Lahainaluna Road to the north, and by sugarcane fields belonging to Pioneer Mill Co. to the east, west, and south.

B. Project Description

The Ikena Avenue Relocation Project will consist of an 8.1 acre subdivision containing 24 single-family residential lots between 8,600 and 13,600 square feet in size. Lahainaluna Road will be widened to provide new left- and right-turn lanes at the Kuialua Street intersection that will allow safe and convenient access into the proposed subdivision. Other improvements will include: two new County-standard roads with concrete sidewalks, curbs and gutters; a modern storm drainage system; sewer, water, and underground electrical, telephone and cable television service to every lot; and street trees along Lahainaluna Road and all of the roads within the subdivision.

III. EXISTING CONDITIONS

A. Flood and Tsunami Hazard

The project site is located some 6500 feet inland from the ocean and elevated approximately 300 feet above Mean Sea Level. The Flood Insurance Rate Map places it in Zone C -- indicating that the site lies well beyond the tsunami inundation limits and is subject to only a minimal risk of flooding.¹

B. Topography and Soil Conditions

The project site encompasses approximately 8.1 acres of land now being used by Pioneer Mill Co. to grow sugarcane. The existing terrain slopes evenly across the site at a grade of about 8 to 10 percent; a natural gully lies just to the south of the site and runs roughly parallel to Lahainaluna Road. The soil found at the project site is a Wainee Series stony silty clay -- a well drained but rather rocky soil generally suitable for pasture, sugarcane or homesites.²

C. Existing Drainage Conditions

The existing, undeveloped site will generate approximately 7.9 cfs of runoff during a 10-year storm. Runoff from the undeveloped site now sheet flows to the southwest, into an existing gully which conveys the runoff to the ocean.³

¹Federal Emergency Management Agency, "National Flood Insurance Program; Flood Insurance Rate Map; Maui County, Hawaii," June 1, 1981, Community Panel Number 150003 0151B, Panel 151 of 400.

²United States Department of Agriculture, Soil Conservation Service, Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii (Washington D.C.: U.S. Government Printing Office, August 1972), pp. 120, 134, 166, 200, Map Sheet 94.

³Pre-development runoff calculations and a map showing the existing drainage pattern may be found in Appendix A-1.

IV. DRAINAGE PLAN

A. Description

An underground storm sewer system will be constructed to capture storm runoff generated on the project site. Runoff will be captured in catch basins located within the subdivision and piped to a new 24-inch diameter drainline located along Lahainaluna Road which will convey the flow down toward Ikena Avenue. When the Ikena Avenue section of the Lahaina Bypass Highway is constructed, the storm drain from the Relocation Project Subdivision will be extended along the highway to the northwest so that it can discharge directly into the Kahoma Stream Drainageway. In the meantime -- until construction of the Bypass actually begins -- the 24-inch drainline from the Relocation Project Subdivision will be temporarily connected to one of the existing storm drain manholes on Lahainaluna Road so that the storm runoff from the subdivision can drain into Kahoma Stream through the existing drainage system serving the Kelaweia Mauka III Subdivision.

B. Impact

Development of the project site is expected to increase the amount of surface runoff generated on site from 7.9 to 17.3 cfs -- a net increase of 9.4 cfs.⁴ Of the total 17.3 cfs generated by the project site after development, 9.7 cfs will be captured on-site by the subdivision's drainage system and disposed of safely in the Kahoma Stream Drainageway. The remaining 7.6 cfs will be allowed to sheet flow into the existing gully just south of the subdivision. 7.9 cfs now flows into the same gully under existing conditions; therefore, the 7.6 cfs that will continue to flow into the gully after development should not appreciably change drainage conditions downstream. Consequently, construction of the proposed subdivision is not expected to have an adverse impact on drainage conditions in the area. (A summary of the runoff volumes before and after development is presented in Exhibit A, on the following page.)

⁴Post-development runoff calculations and a map showing the drainage pattern after development may be found in Appendix A-2.

ON-SITE RUNOFF BEFORE AND AFTER DEVELOPMENT

<u>Description</u>	<u>Before Development</u>	<u>After Development</u>	<u>Net Increase/ Decrease</u>
Flow Into Existing Gully	7.9 cfs	7.6 cfs	- 0.3 cfs
Flow Into Kahoma Stream	0.0 cfs	9.7 cfs	+ 9.7 cfs
Total	<hr/> 7.9 cfs	<hr/> 17.3 cfs	<hr/> + 9.4 cfs

EXHIBIT A

V. SOIL EROSION CONTROL PLAN

The following measures will be taken to control erosion during the site development period (estimated at 12 months):

1. Construction time will be minimized.
2. No more than fifteen (15) acres will be opened at any one time. (Required by ordinance.)
3. Existing ground cover will be retained until the latest date not interfering with the scheduled end of construction.
4. Drainage control features will be constructed early.
5. Temporary area sprinklers will be used in nonactive construction areas where the ground cover has been removed.
6. Water truck(s) will be stationed on the construction site to provide immediate sprinkling when needed in active construction zones. (Weekends and holidays included)
7. Temporary berms and cutoff ditches will be used where needed to control erosion.
8. Graded areas will be thoroughly watered at the end of every workday (weekends included).
9. All cut and fill slopes will be sodded or planted immediately after grading work has been completed.

Our calculations indicate that the sedimentation hazard to coastal waters and downstream properties for the proposed development is minimal. Both the soil losses per unit area and the severity rating computed for the proposed development are well within allowable limits.⁵ Consequently, erosion control measures beyond those listed above will not be required.

⁵Supporting calculations may be found in Appendix C.

APPENDIX A

Hydrologic Calculations

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Background

The storm runoff values contained in this report were determined using the hydrologic analysis methods described in the Drainage Master Plan for the County of Maui⁶ and the Honolulu Storm Drainage Standards⁷. Runoff values were computed using the Rational Formula:

$$Q = C \cdot I \cdot A$$

where Q = Flow rate in cubic feet per second (cfs)

C = Runoff coefficient

I = Rainfall intensity in inches per hour

A = Drainage area in acres

and a 10-year 1-hour rainfall intensity of 2.2 inches.⁸

⁶R. M. Towill Corporation, Drainage Master Plan for the County of Maui, October 1971, pp. 108-109, 120-121.

⁷Department of Public Works, City and County of Honolulu, Storm Drainage Standards, March 1986, pp. 2-3.

⁸U.S. Weather Bureau, U.S. Department of Commerce, Rainfall Frequency Atlas of the Hawaiian Islands, Washington D.C.: U.S. Government Printing Office, 1962, p. 19.

APPENDIX A-1

Calculation of 10-Year Runoff Before Development

Pre-Development Runoff Calculation

10 yr. 1 hr. Rainfall = 2.2 inches

Area of Project Site = 8.1 Acres

Runoff Coefficient:

Watershed Characteristics

Infiltration	0.07	Medium
Relief	0.03	Rolling Terrain (5 - 15% Slopes)
Vegetal Cover	0.03	Good (10 - 50%)
Development Type	0.15	Agricultural

Runoff Coefficient, C = 0.28

Length of Flow Path, L = 850 ft.

Average Slope of Terrain = 9%

Time of Concentration, Tc = 21 min.

Rainfall Intensity, I = 3.5 inches / hour

Pre-Development Flow, Q = C · I · A = 7.9 cfs

EXHIBIT B

**OVERSIZED
DRAWING/MAP**

**PLEASE SEE
35MM ROLL**

0084 B

APPENDIX A-2

Calculation of 10-Year Runoff After Development

Post-Development Runoff Calculations

10 yr. 1 hr. Rainfall = 2.2 inches

Runoff Coefficient for Paved Areas = 0.90

Runoff Coefficient for Unpaved Areas = 0.50

Drainage Area	Basin Area (Acres)			Weighted Runoff Coefficient, C	Length of Flow Path, L (ft.)	Average Slope, S	Time of Conc. Tc (minutes)	Rainfall Intensity, I (in./hr.)	Discharge, Q (cfs)
	Paved	Unpaved	Total, A						
A	0.9	3.6	4.5	0.58	700	9%	19	3.7	9.7
B	0.5	3.1	3.6	0.56	360	10%	17	3.8	7.6
			<u>8.1 Ac.</u>						<u>Total Post-Development Flow 17.3 cfs</u>

EXHIBIT D

**OVERSIZED
DRAWING/MAP**

**PLEASE SEE
35MM ROLL**

0084 C

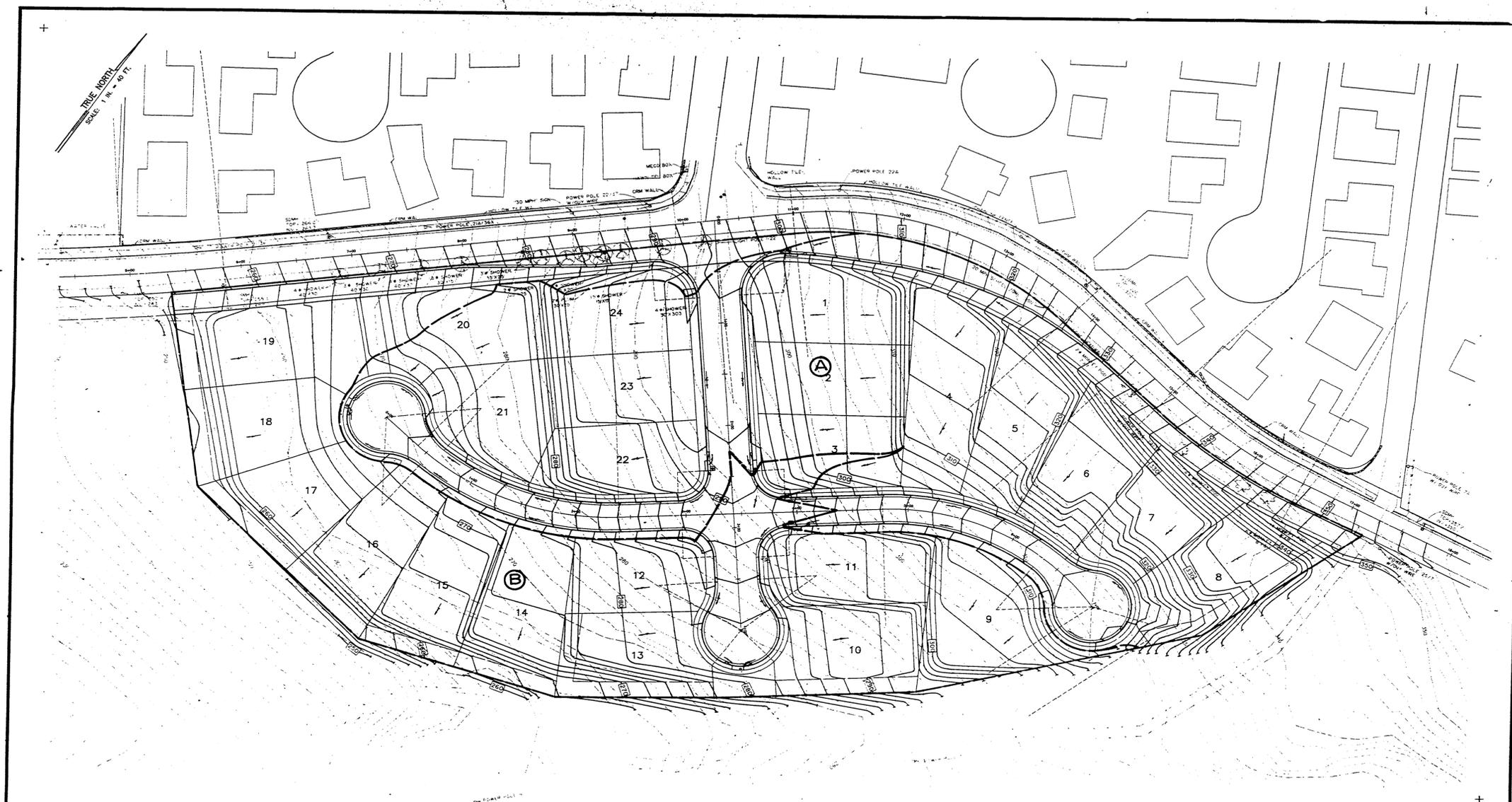


EXHIBIT E

POST - DEVELOPMENT DRAINAGE AREAS

LEGEND:
 --- Existing Grade
 --- Finish Grade

 WARREN S. UNEMORI ENGINEERING, INC. CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS 2145 WELLS STREET, HONOLULU, HAWAII 96823			
VILLAGES OF LEIALII IKENA AVENUE RELOCATION PROJECT LAHAUNA, MAUI, HAWAII			
TITLE:		91039	
DESIGNED BY:	W.S.U.	CHECKED BY:	JOB NUMBER:
DRAWN BY:	W.S.U.	APPROVED BY:	SHEET:
SIGNATURE: _____ DATE: _____		SCALE: 1 IN. = 40 FT. DATE: _____ OF _____ SHEETS	
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION			

0084 C

Catch Basin Intake Calculations

10 yr. 1 hr. Rainfall = 2.2 inches

Runoff Coefficient for Paved Areas = 0.90

Runoff Coefficient for Unpaved Areas = 0.50

Drainage Area	Flow Into Catch Basin	Basin Area (Acres)		Weighted Runoff Coefficient, C	Length of Flow Path, L (ft.)	Average Slope, S	Time of Conc. Tc (minutes)	Rainfall Intensity, I (in./hr.)	Discharge, Q (cfs)
		Paved	Unpaved						
1	B-1	0.31	1.18	0.58	340	8%	16	3.9	3.4
2	A-1	0.09	0.03	0.80	190	1%	6	5.4	0.5
3	A-2	0.14	0.72	0.57	280	9%	14	4.1	2.0
4	A-3	0.24	0.67	0.61	290	9%	15	4.0	2.2
5	B-3	0.19	1.33	0.55	700	9%	19	3.7	3.1
6	B-2	0.14	0.05	0.79	340	6%	5	5.6	0.8
7	L-1	0.50	0.23	0.77	580	9%	19	3.7	2.1
8	Ext'g CB	0.16	0.04	0.82	410	8%	5	5.6	0.9

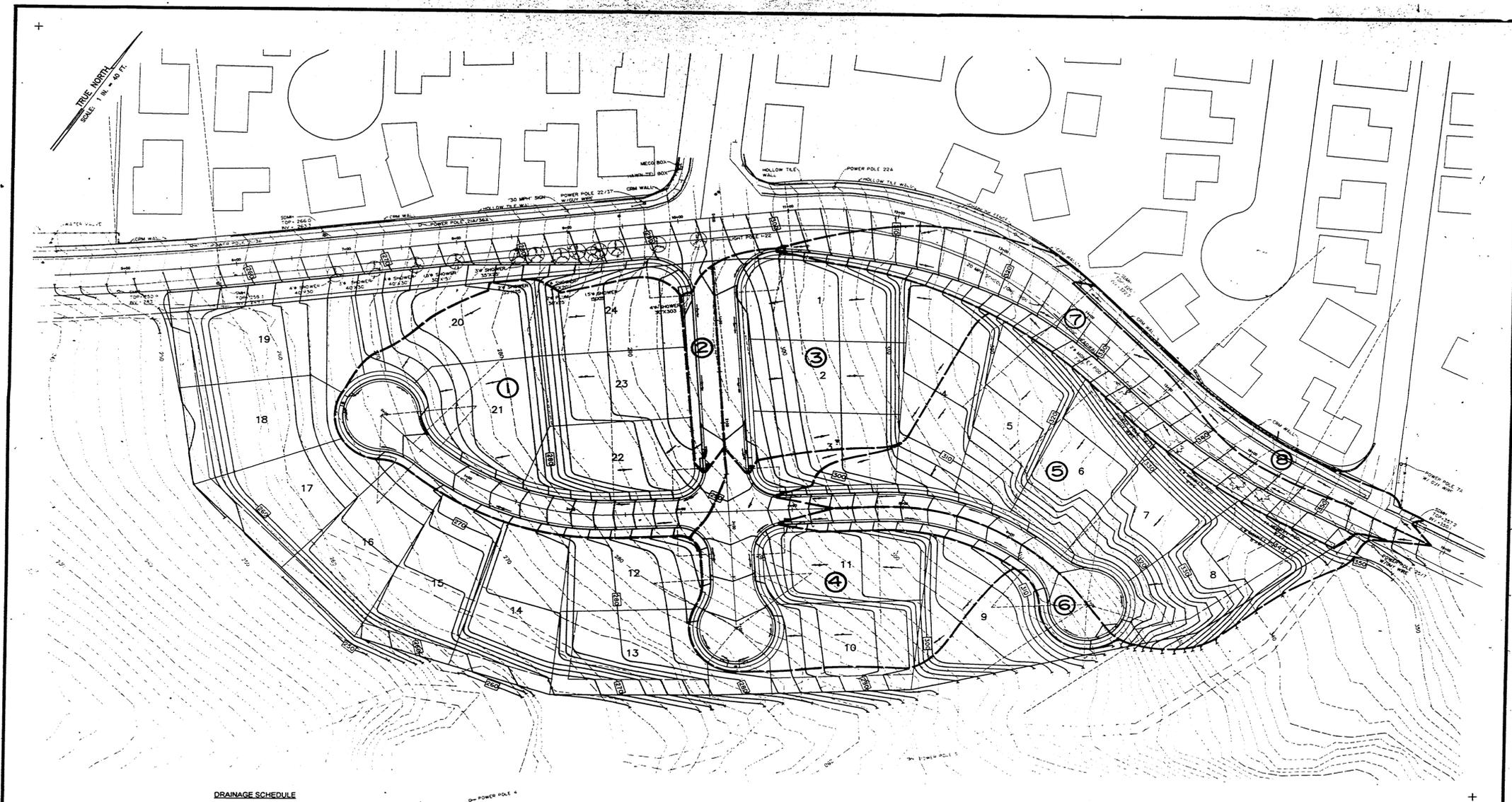
Total Flow Through Storm Sewer System 15.0 cfs

EXHIBIT F

**OVERSIZED
DRAWING/MAP**

**PLEASE SEE
35MM ROLL**

0084 D



DRAINAGE SCHEDULE

10 yr. 1 hr. Rainfall = 2.2 inches

Drainage Area	Flow Into Catch Basin	Area, A (Acres)	Runoff Coeff., C	Average Slope	Rainfall Intensity, I (in/hr)	Design Flow, Q (cfs)
1	B-1	1.49	0.58	8%	3.9	3.4
2	A-1	0.12	0.80	1%	5.4	0.5
3	A-2	0.86	0.57	9%	4.1	2.0
4	A-3	0.91	0.61	9%	4.0	2.2
5	B-3	1.52	0.55	9%	3.7	3.1
6	B-2	0.19	0.79	6%	5.6	0.8
7	L-1	0.73	0.77	9%	3.7	2.1
8	Exfg CB	0.20	0.82	6%	5.6	0.9

EXHIBIT G

LEGEND:

- 280 Existing Grade
- 282 Finish Grade

WARREN S. UNEMORI ENGINEERING, INC.
 CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
 2145 WELLS STREET, PROFESSIONAL CENTER, SUITE 403
 WAILUKU, MAUI, HAWAII 96793

VILLAGES OF LEIALI'I
IKENA AVENUE RELOCATION PROJECT
LAHAINA, MAUI, HAWAII

TITLE PLAN OF CATCH BASIN DRAINAGE AREAS

DESIGNED BY	W.S.U.	CHECKED BY	91039
DRAWN BY	D.P.T.	APPROVED BY	W.S.U.

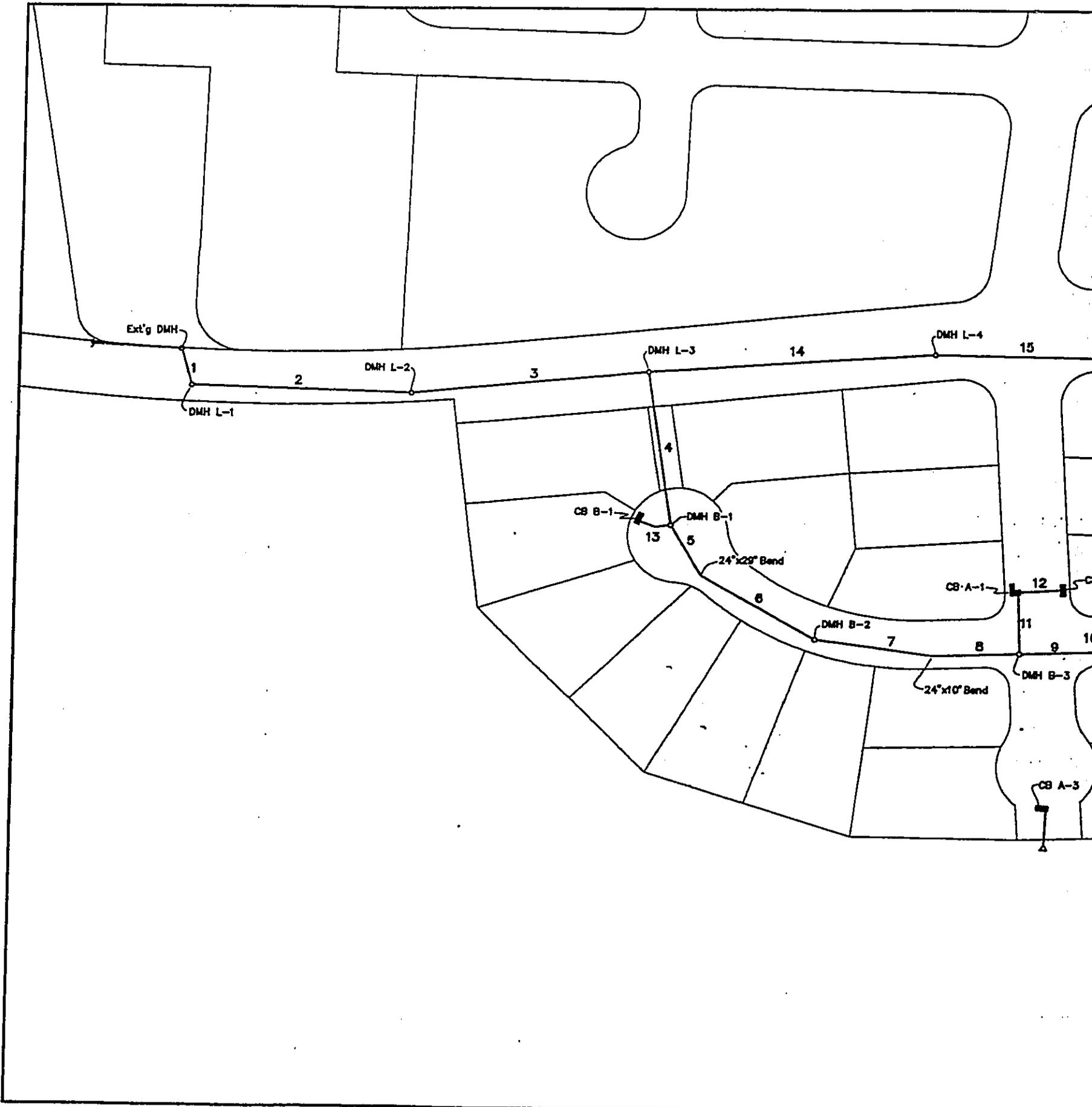
SCALE: 1 IN. = 40 FT.

DATE: _____

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE: _____ DATE: _____

OF SHEETS: **4**



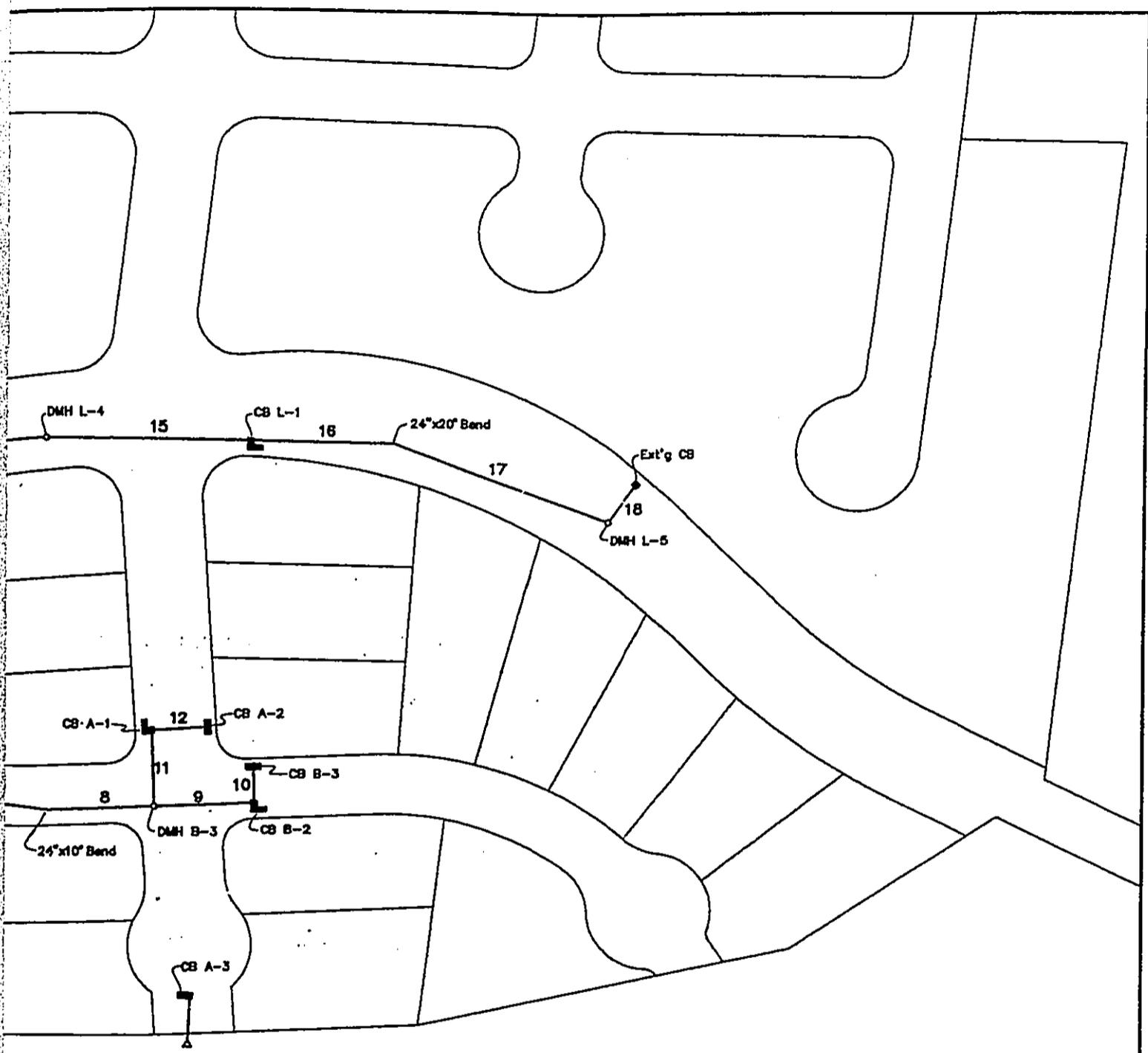


EXHIBIT H
Storm Sewer System

EXHIBIT I

Backwater Calculations

STORM SEWER TABULATION

DATA FILE: c:91039005.ST3
 RAINFALL FILE: Your_Cty.RN3
 PRINTED: 09-18-1992

10 YEAR DESIGN STORM

Q = CIA

I = 73.441 / (Tc + 14.250) ^ 0.788

PAGE 1 OF 2

LINE No.	INC AREA (AC)	RNOFF COEFF (C)	INC C*A	SUM C*A	TIME CONC (MIN)	RREAL INT I (IPH)	TOTAL FLOW Q=CA*I, DP (CFS)	PIPE CAP (CFS)	PIPE SIZE (IN)	PIPE LBN (FT)	PIPE SLOPE (%)	HYD GRD SLOPE (%)	VBL UP/DN (PPS)	HYD GRD UP/DN (FT)	INVERT UP/DN (FT)	COMMENTS/ DOWNSTREAM LINE #
10	0.0	0.00	0.0	0.0	0.0	0.00	3.10	24.2	24	25	1.960	1.058	3.71	284.68	283.89	CB B-2 - CB B-3
							0.00	3.1	24				1.92	284.42	283.40	9
9	0.0	0.00	0.0	0.0	0.1	0.00	3.90	30.0	24	69	3.014	1.077	3.99	284.10	283.40	DMH B-3 - CB B-2
							0.00	0.8	24				1.24	283.36	281.32	8
8	0.0	0.00	0.0	0.0	0.5	0.00	6.40	33.5	24	75	3.760	3.760	7.81	281.93	281.32	10' Bend - DMH B-3
							0.00	0.0	24				7.81	279.11	278.50	7
7	0.0	0.00	0.0	0.0	0.9	0.00	6.40	54.3	24	99	9.848	9.848	11.01	278.98	278.50	DMH B-2 - 10' Bend
							0.00	0.0	24				11.01	269.23	268.75	6
6	0.0	0.00	0.0	0.0	1.5	0.00	6.40	24.9	24	118	2.068	2.039	4.70	266.90	266.00	29' Bend - DMH B-2
							0.00	0.0	24				4.47	264.49	263.56	5
5	0.0	0.00	0.0	0.0	2.1	0.00	6.40	24.5	24	53	2.000	0.277	4.70	264.46	263.56	DMH B-1 - 29' Bend
							0.00	0.0	24				2.14	264.31	262.50	4
4	0.0	0.00	0.0	0.0	2.4	0.00	9.80	24.5	24	141	2.000	1.273	5.48	263.61	262.50	DMH L-3 - DMH B-1
							0.00	0.0	24				3.12	261.81	259.68	3
3	0.0	0.00	0.0	0.0	3.8	0.00	12.80	44.8	24	204	6.706	6.536	6.10	260.95	259.68	DMH L-2 - DMH L-3
							0.00	0.0	24				4.71	247.61	246.00	2
2	0.0	0.00	0.0	0.0	4.9	0.00	12.80	50.7	24	273	8.608	8.385	6.10	247.27	246.00	DMH L-1 - DMH L-2
							0.00	0.0	24				4.18	224.38	222.50	1
1	0.0	0.00	0.0	0.0	6.4	0.00	12.80	37.0	24	35	4.571	0.126	5.27	223.94	222.50	EDMH to DMH L-1
							0.00	0.0	24				4.08	223.90	220.90	OUTFALL
12	0.0	0.00	0.0	0.0	0.0	0.00	2.00	24.6	24	36	2.028	0.121	2.33	283.43	282.73	CB A-1 - CB A-2
							0.00	2.0	24				0.86	283.39	282.00	11
11	0.0	0.00	0.0	0.0	0.2	0.00	2.50	19.1	24	56	1.214	0.017	1.09	283.37	282.00	DMH B-3 - CB A-1
							0.00	0.5	24				0.80	283.36	281.32	8
13	0.0	0.00	0.0	0.0	0.0	0.00	3.40	24.7	24	27	2.037	0.133	1.64	264.34	263.05	DMH B-1 - CB B-1
							0.00	3.4	24				1.14	264.31	262.50	4
18	0.0	0.00	0.0	0.0	0.0	0.00	0.90	4.6	18	35	0.286	0.766	1.79	322.73	322.20	DMH L-5 - Extg CB
							0.00	0.9	18				2.74	322.46	322.10	17

STORM SEWER TABULATION (continued)

DATA FILE: c:91039005.ST3

RAINFALL FILE: Your_Cty.RN3

PRINTED: 09-18-1992

10 YEAR DESIGN STORM

Q = CIA

I = 73.441 / (Tc + 14.250) ^ 0.788

PAGE 2 OF 2

LINE No.	INC AREA (AC)	RNOFF COEFF (C)	INC C*A	SUM C*A	TIME CONC (MIN)	RNFAL INT I (IPH)	TOTAL FLOW Q=CA*I, DPQ (CFS)	PIPE CAP (CFS)	PIPE SIZE (IN)	PIPE LEN (FT)	PIPE SLOPE (X)	HYD GRD SLOPE (X)	VBL UP/DN (FPS)	HYD GRD UP/DOWN (FT)	INVERT UP/DOWN (FT)	COMMENTS/ DOWNSTREAM LINE #
17	0.0	0.00	0.0	0.0	0.2	0.00	0.90	54.0	24	159	9.748	9.748	5.98	320.19	320.00	20' Bend - DMH L-5
							0.00	0.0	24				5.98	304.69	304.50	16
16	0.0	0.00	0.0	0.0	1.1	0.00	0.90	54.1	24	97	9.794	9.794	5.98	304.69	304.50	CB L-1 - 20' Bend
							0.00	0.0	24				5.98	295.19	295.00	15
15	0.0	0.00	0.0	0.0	1.6	0.00	3.00	42.7	24	143	6.084	5.938	3.67	292.11	291.50	DMH L-4 - CB L-1
							0.00	2.1	24				2.46	283.62	282.80	14
14	0.0	0.00	0.0	0.0	2.4	0.00	3.00	52.9	24	247	9.360	8.745	3.67	283.41	282.80	DMH L-3 - DMH L-4
							0.00	0.0	24				0.96	261.81	259.68	3

APPENDIX B

Storm Sewer Design Calculations

Background

The storm sewer system for the Ikena Avenue Relocation Project was designed to accommodate 10-year storm flows and meet the performance criteria outlined in the Honolulu Storm Drainage Standards⁹. The flow intercepted by each catch basin was determined by applying the Rational Formula to the drainage area served by each catch basin inlet. (See Exhibits F and G) The flow values obtained in this manner were then used to perform a backwater analysis in order to verify the hydraulic performance of the proposed storm sewer system.

The backwater calculations for subdivision were carried out with the aid of hydraulic engineering software capable of storm sewer design and analysis. The analysis was performed using a variation of the Standard Step method in which the drainage system was first broken down into a series of pipe runs with a manhole, catch basin, or some other type of junction or fitting at each end; invert elevations, roughness values, and junction loss factors were then assigned to each run; finally, the actual backwater analysis was performed by computing the energy losses through the storm sewer system, beginning at the outfall and gradually moving upstream. Exhibit H is a schematic plan of the subdivision's drainage system which shows how the various pipe segments comprising the storm sewer system were identified and numbered. Exhibit I contains the printed results of the backwater analysis. The hydraulic grade lines (HGL) determined by the analysis are shown on Construction Plan Sheets 7 through 10.

⁹Department of Public Works, City and County of Honolulu, Storm Drainage Standards, March 1986.

APPENDIX C

Universal Soil Loss Equation Calculations

H.E.S.L. Report Page 1 of 3
W.S. UNEMORI ENGINEERING, INC.
2145 Wells Street Suite 403
Wailuku, Maui, Hawaii 96793

BY: D. Unemori
DATE: September 8, 1992

H . E . S . L .
FOR
IKENA AVENUE RELOCATION PROJECT

Lahaina, Maui, Hawaii

1. HESL EQUATION: $E = R * K * LS * C * P$

WHERE: E = Soil Loss (tons/acre/year)
R = Average Annual Rainfall Factor for Erosion
K = Soil Erodibility Factor
L = Horizontal Slope Length (feet)
S = Average Slope (%)
LS = Slope Factor (function of L and S)
C = Cover and Management Factor
P = Erosion Control Practice Factor

R = 190.0 tons/acre/year
(Soil Erosion & Sediment Control Guide for Hawaii;
Appendix A: Average Annual Values of Rainfall Factor)

K = 0.17 Soil Series: Wainee
(Soil Survey of Islands of Kauai, Oahu, Maui, Molokai,
and Lanai, State of Hawaii; Soil Type Plates & Table 4;
Soil Properties Related to Erosion & Sedimentation)

L = 300.0 feet
 δ = 30.0 feet
(Soil Erosion & Sediment Control Guide for Hawaii;
Table 16)

S = (δ/L)
= 10.0 %

LS = 2.372

BY: D. Unemori
DATE: September 8, 1992

IKENA AVENUE RELOCATION PROJECT
[Continued]

C = 1.00
(Soil Erosion & Sediment Control Guide for Hawaii
Tables 17-22, Pages 59-61; C=1.00 for Bare Soil)

P = 1.00
(Soil Erosion & Sediment Control Guide for Hawaii;
the Universal Soil Loss Equation in Hawaii)

E = R*K*LS*C*P
= 76.6 tons/acre/year

2. SEVERITY RATING NUMBER EQUATION: $H = [(2 * F * T) + (3 * D)] * A * E$

WHERE:

- H = Severity rating number
- T = Duration of land-disturbing activity (years)
- A = Area subject to disturbance (acres)
- E = Rate of soil loss under disturbed conditions (tons/acre/year)
- F = Downslope-downstream rating factor (rating points/ton)
- D = Coastal water rating factor (rating points/ton)

T = 1.00 years

A = 8.10 acres

E = R*K*LS*C*P
= 76.6 tons/acre/year

F = 4 (Downslope-downstream detriment: Major)

D = 2 (Coastal water rating factor: Class A)

H = $[(2 * F * T) + (3 * D)] * A * E$
= 8,689.8

Standard severity rating (allowable): $50,000 \geq 8,689.8 \Rightarrow \text{OK}$

H.E.S.L. Report Page 3 of 3
W.S. UNEMORI ENGINEERING, INC.
2145 Wells Street Suite 403
Wailuku, Maui, Hawaii 96793

BY: D. Unemori
DATE: September 8, 1992

IKENA AVENUE RELOCATION PROJECT
[Continued]

3. MAXIMUM ALLOWABLE SOIL LOSS: $E_{max} = H_{max}/(2FT+3D)A$

$$\begin{aligned} E_{max} &= H_{max}/(2FT+3D)A, \quad H_{max} = 50,000 \\ &= 440.9 \text{ tons/acre/year} \geq 76.6 \text{ tons/acre/year} \Rightarrow \text{OK} \end{aligned}$$

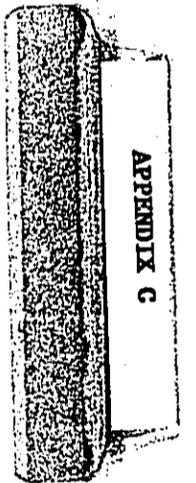
Coastal Hazard: Class A waters are approximately 6,500 feet from the site.

CONCLUSION: Sedimentation hazard to coastal waters and downstream properties is minimal. Erosion rate computed for this project site is well within the tolerable limits and additional control measures are not required.

4. REFERENCES:

1. Soil Conservation Service (USDA); 'Guidelines For Use of the Universal Soil Loss Equation in Hawaii,' Technical Notes, March 1975. (Revised Draft)
2. County of Maui; (Ord No. 816), 'Chapter 24, Soil Erosion and Sedimentation Control,' June 13, 1975.
3. Soil Conservation Service (USDA); 'Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai; State of Hawaii, August 1972.
4. Hawaii Environmental Simulation Laboratory; 'Guidelines for Data Preparation, Part 1: Universal Soil Loss Equation; Undated (Draft).

APPENDIX C
Traffic Assessment



**IKENA AVENUE RELOCATION
TRAFFIC ASSESSMENT**

**DRAFT
May 1992**

INTRODUCTION

The Lahaina Bypass Road is presently proposed on the existing alignment of Ikena Avenue. Ikena Avenue is a local roadway that provides access to a residential subdivision located in Lahaina on the island of Maui. The Bypass Road would involve a grade-separated roadway with restricted access requiring the closure of Ikena Avenue and relocation of residential dwelling units along Ikena Avenue. The proposed Ikena Avenue relocation would close Ikena Avenue and relocate 24 single family dwelling units to a site on the southern side of Lahainaluna Road to accommodate the Bypass Road alignment. This study assesses the potential traffic impacts of the relocation.

EXISTING ROADWAY NETWORK

Lahainaluna Road is a two-lane roadway that is generally aligned in the north-south (mauka-makai) direction intersecting Honoapiilani Highway on its southern end. Lahainaluna Road provides the only access to Lahainaluna High School and Lahainaluna Intermediate School which are located near its eastern terminus. The Princess Nahienaena Elementary School is also located off of Lahainaluna Road on Niheu Street. The posted speed limit on Lahainaluna Road is generally 30 miles per hour. The speed limit reduces to 20 mph in the vicinity of Ikena Avenue. Figure 1 displays the existing roadway system in the vicinity of Ikena Avenue.

Ikena Avenue and Kualua Street are residential two-lane roadways that provide access to an existing residential subdivision. The two roadways intersect Lahainaluna Road from the north forming stop sign controlled stems of T-intersections. All approaches at the two intersections consist of a single shared traffic lanes.

EXISTING CONDITIONS

The description of existing conditions are based on manual turn movement counts and field observations taken on consecutive weekdays in April 1992 at the Lahainaluna Road/Ikena Avenue intersection and the Lahainaluna Road/Kuialua Street intersection. The three schools in the area were in session on the dates of the traffic counts. The count data, attached as Appendix A, indicates that the a.m. (morning) peak hour was from 7:00 a.m. to 8:00 a.m. while the afternoon peak hour was from 1:45 p.m. to 2:45 p.m. Figure 2 shows the existing peak hour traffic volumes.

The highest traffic volumes were observed to occur during short periods of 15 to 20 minutes or less during the peak periods which coincided with the start and end of the school session. Traffic volumes dropped significantly after the school traffic peaks ended. The peak hour factors (PHF) at the intersections of Lahainaluna Road with Kuialua Street and Ikena Avenue ranged in value from 0.54 to 0.78. Further investigation of the traffic count data revealed that the observed peak hours contain single 15-minute intervals with significantly higher volumes which are reflected by the relatively low peak hour factors at each intersection.

The peak hour factor is defined as the ratio of the total hourly volume to the maximum 15-minute rate of flow within the hour. The PHF reflects the fluctuation of traffic flow during the peak hour. A peak hour factor of 1.00 represents equal traffic flow during all 15-minute intervals in the peak hour. Lower PHF values (less than 1.00) represent higher fluctuations in traffic during the peak hour.

To account for the observed school traffic peak that occurs over the 15 to 20-minute period within the peak hours, all subsequent intersection analyses in this study were factored to account for peak 15-minute flow rates. An analyses based on peak 15-minute flow rates assumes peak flow rates over the entire hour and produces more conservative results than peak hour analyses when PHF values are lower than 1.00.

Intersection capacities usually control overall roadway capacities; therefore, the intersections in this study were evaluated using the Unsignalized Intersection Methodology outlined in the 1985 Highway Capacity Manual¹. Operating conditions at an intersection are expressed as letter designations ranging from A through F, with Level-of-Service (LOS) A representing the best

operating conditions and LOS F representing the worst operating conditions. Level-of-Service criteria for unsignalized intersections are described in Appendix B.

The analyses of the Lahainaluna Road/Ikena Avenue intersection indicates that the left-turn movement on Lahainaluna Avenue operates at LOS A during both peak hours. The Ikena Avenue shared lane approach operates at LOS C during the a.m. peak hour and LOS B during the p.m. peak hour.

Analyses of the Lahainaluna Road/Kuialua Street intersection revealed that the left-turn movement on Lahainaluna Road experiences LOS A conditions during both peak hours. Delays on the Kuialua Street shared lane approach are longer as LOS E and LOS C conditions prevail during the a.m. and p.m. peak hours, respectively. The field observations generally confirmed the results of the intersection analyses at both intersections.

FUTURE WITHOUT RELOCATION

The proposed relocation is estimated to be completed by year 1995. Growth of the student population at the three schools in the area is anticipated to be the major cause of traffic volume increases on Lahainaluna Road; there are no major developments planned in the vicinity of Ikena Avenue within the 1995 time-frame. The Lahaina Master Planned Project - Traffic Impact Study² estimates an average annual growth rate on Lahainaluna Road of approximately 5 percent per year. Through traffic volumes on Lahainaluna Road were factored by this growth rate to obtain the base year 1995 traffic assignment shown in Figure 3.

The analyses of the Lahainaluna Road/Ikena Avenue intersection indicates that the left-turn movement on Lahainaluna Road would continue to operate at LOS A during both peak hours. Conditions would also remain unchanged on the Ikena Avenue shared lane approach as LOS C and LOS B conditions prevail during the a.m. and p.m. peak hours, respectively.

Analyses of the Lahainaluna Road/Kuialua Street intersection revealed that the left-turn movement on Lahainaluna Road would continue to operate at LOS A during both peak hours. The shared lane approach on Kuialua Street would remain at LOS E during the a.m. peak hour and increase to LOS D during the p.m. peak hour.

FUTURE WITH RELOCATION

Construction of the proposed Lahaina Bypass Road would result in the closure of Ikena Avenue and relocation of 24 single family dwelling units to the area directly across Kuialua Street. The access road for the new subdivision would transform the existing Lahainaluna Road/Kuialua Street intersection from a T-intersection to a cross-intersection. Access to the existing subdivision and new subdivision would be provided by this intersection.

Since the new subdivision would accommodate residents relocated from Ikena Avenue, it is not expected to generate additional traffic. The closure of an Ikena Avenue and the relocation of single family dwelling units to the opposite side of Lahainaluna Road would only cause traffic to divert to Kuialua Street.

Trip Generation

The estimate of traffic generated by the relocated 24 single family dwelling units was based on trip rates in Trip Generation, Fifth Edition³. The trip generation estimate of relocated traffic is shown in Table 1.

TABLE 1
TRIP GENERATION

<u>Single Family</u>	<u>Trip Rate (per unit)</u>	<u>Vehicular Trips (per unit)</u>
AM Peak Hour	0.76	19
Enter	26%	5
Exit	74%	14
PM Peak Hour	1.02	25
Enter	64%	17
Exit	36%	8

Trip Distribution/Traffic Assignment

Traffic generated by the relocated single family dwelling units was assigned to the northbound or new Kuialua Street approach at the Lahainaluna Road/Kuialua Street intersection. The existing peak hour traffic volumes at Ikena Avenue were reduced to account for the removal of 24 single family dwelling units and the remaining traffic was re-assigned to the Lahainaluna Road/Kuialua Street intersection. Existing traffic count information was used to estimate the trip distribution for all re-assigned traffic.

Project Impacts

The traffic assignment for base year 1995 with relocation is shown in Figure 4. The results of the analyses indicates that the left-turn movements on Lahainaluna Road would operate at LOS A during both peak hours. The northbound Kuialua Street approach would operate at LOS E during both peak hours. The existing or southbound Kuialua Street approach would exceed the capacity of a single shared lane during the a.m. peak hour (LOS F) while LOS E conditions would prevail during the p.m. peak hour.

Mitigation Measures

The addition of separate right-turn lanes on both Kuialua Street approaches would improve operations and capacities at the Lahainaluna Road/Kuialua Street intersection. Modifying each approach to provide a shared lane for left-turn and through movements and a separate right-turn lane would prevent blockage of right-turn movements by queued vehicles waiting to turn left or cross Lahainaluna Road. Capacities would improve as the right-turn movement on the existing Kuialua Street approach would experience LOS B conditions during both peak hours while the shared left-through lane on this approach would improve to LOS E during both peak hours. The right-turn movement on the new Kuialua Street approach would improve to LOS A during both peak hours while the shared left-through lane on this approach would experience LOS E conditions during both peak hours.

CONCLUSIONS AND RECOMMENDATIONS

The Lahaina Bypass Road will result in relocation of single family dwelling units from the north side of Lahainaluna Road to the south side and the closure of Ikena Avenue. The generation of additional traffic is not expected since the new subdivision would accommodate residents relocated from Ikena Avenue. Thus, the net traffic impacts of the Lahaina Bypass Road to the surrounding roadway system would be the redistribution of traffic to the Lahainaluna Road/Kuialua Street intersection.

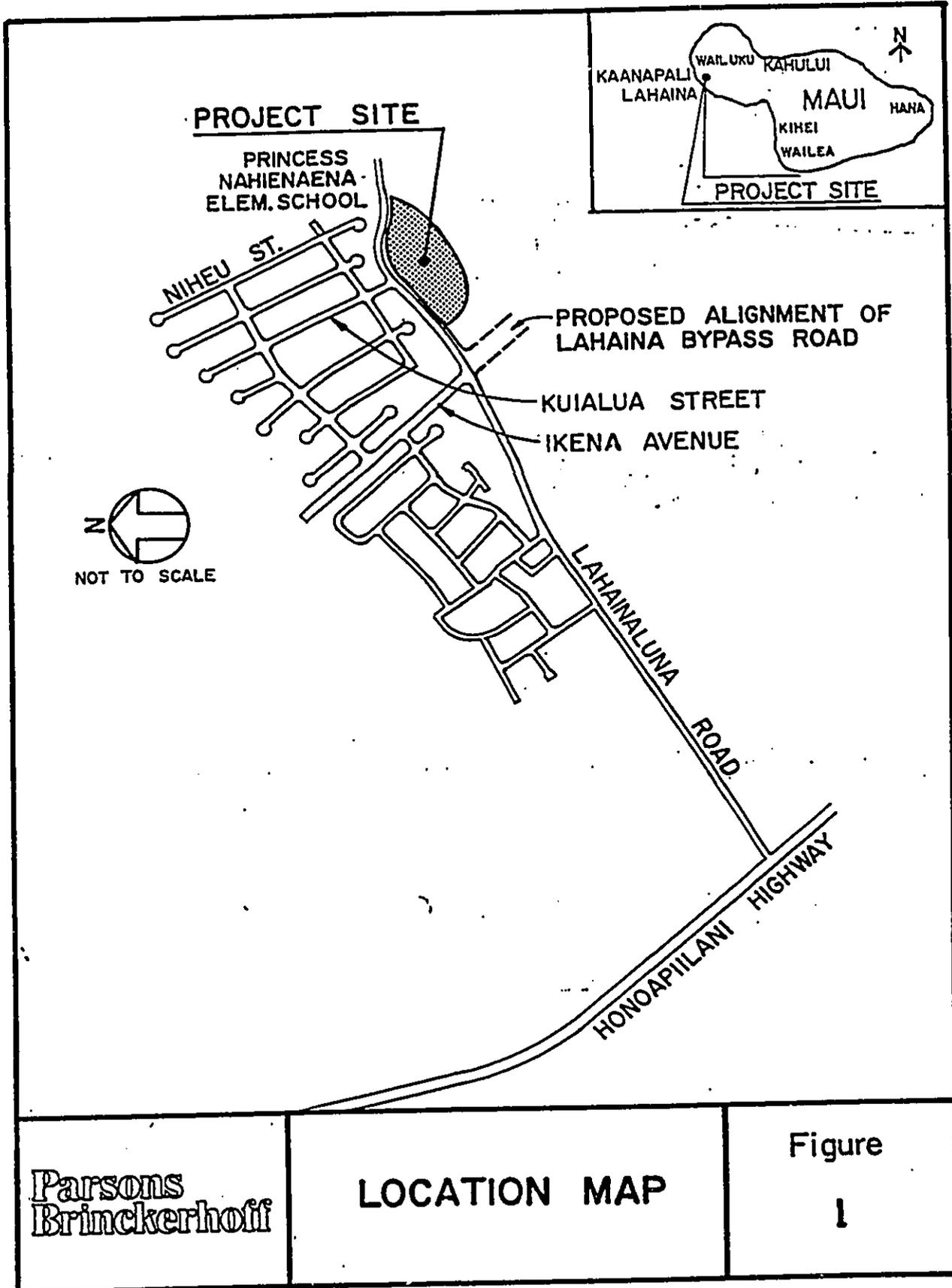
The most significant impact of the project would be the closure of the Ikena Avenue access to the existing subdivision. Kuialua Street would become the only access for the existing subdivision. However, the Lahainaluna Road/Kuialua Street intersection would have adequate capacity to serve the anticipated future traffic demand as an unsignalized intersection. Furthermore, the traffic analyses presented in this study are conservative since peak 15-minute flow rates were evaluated to account for the 15 to 20-minute school traffic peak. Evaluation of peak hour volumes indicate that unsignalized capacities are significantly higher over the entire peak hour as shown in Table 1.

The following improvements are recommended at the Lahainaluna Road/Kuialua Street intersection to minimize project related impacts:

1. Install a stop sign on the new Kuialua Street approach for control of traffic.
2. Provide a shared left-through lane and a separate right turn lane on both Kuialua Street approaches.
3. Provide separate left turn lanes on both Lahainaluna Road approaches. The northbound left-turn lane should have at least ~~100~~²²⁵ feet of storage length while the southbound left-turn lane should provide at least ~~100~~²²⁵ feet of storage length.

REFERENCES

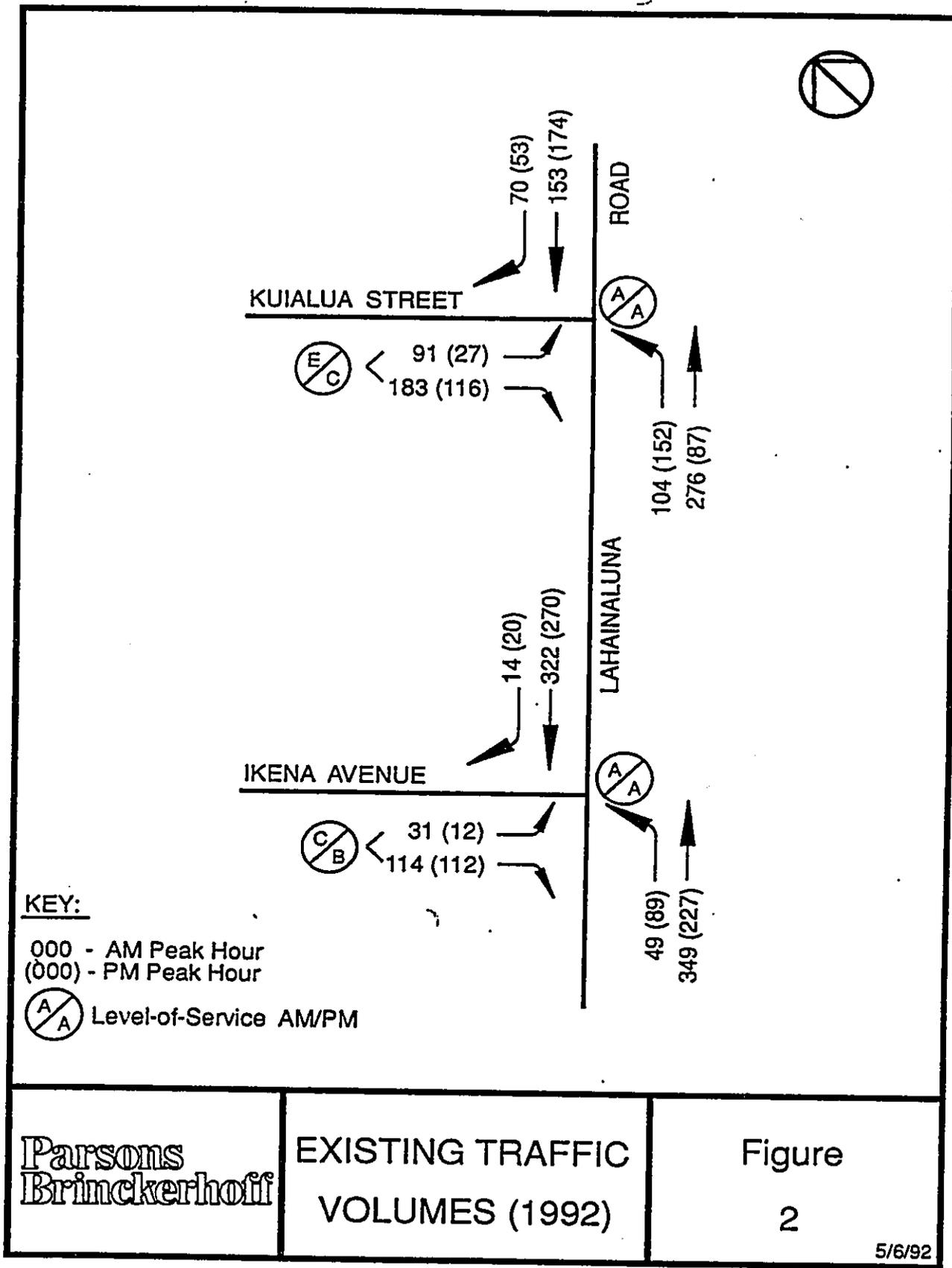
- 1) National Research Council, Transportation Research Board, Special Report 209, Highway Capacity Manual, Washington, D.C., 1985.
- 2) Parsons Brinckerhoff Quade & Douglas, Inc., Pre-Final - Lahaina Master Planned Project - Traffic Impact Study, September 1991.
- 3) Institute of Transportation Engineers, Trip Generation, Fifth Edition, Washington, D.C., 1990.



Parsons
 Brinckerhoff

LOCATION MAP

Figure
 1

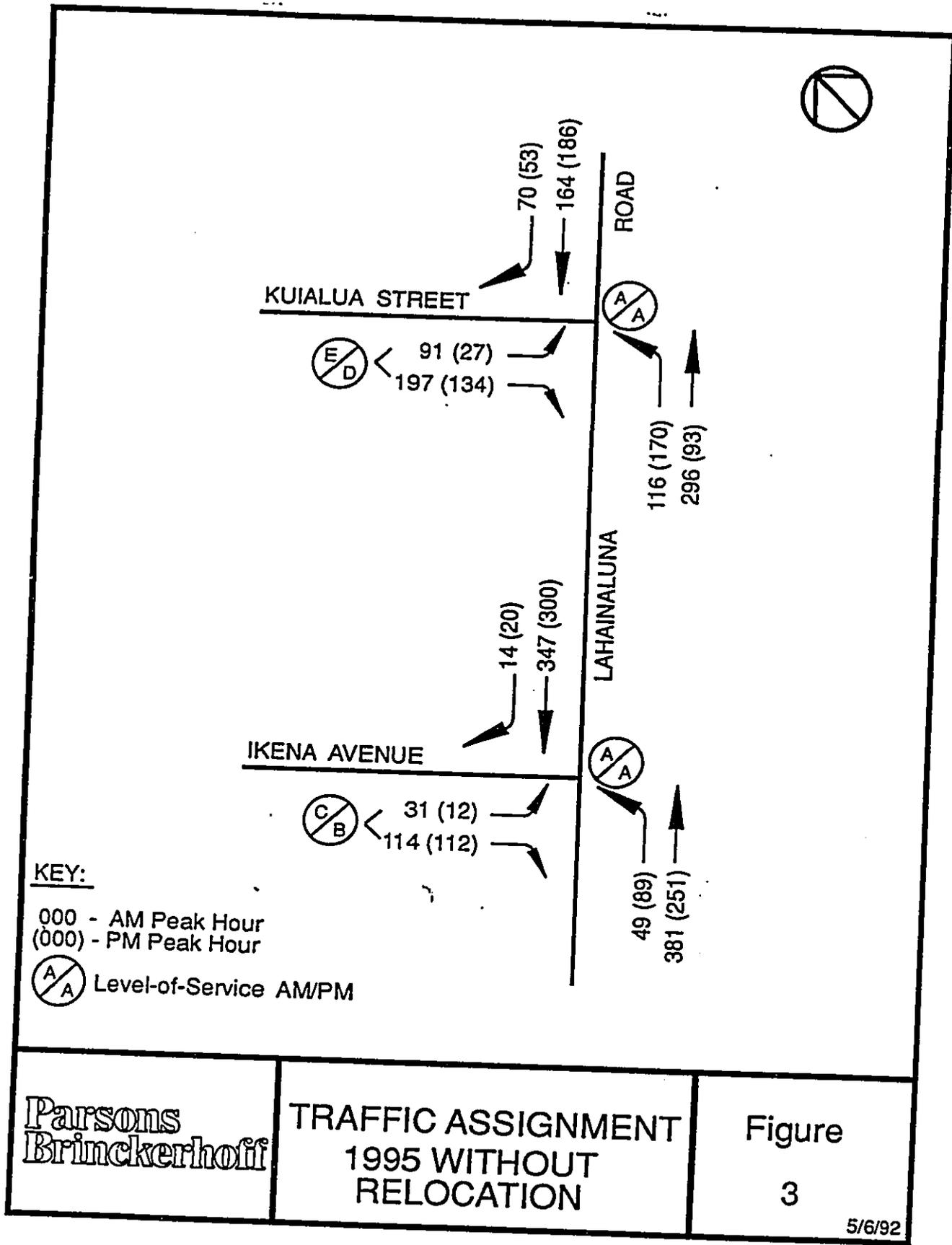


Parsons
Brinckerhoff

EXISTING TRAFFIC
VOLUMES (1992)

Figure
2

5/6/92

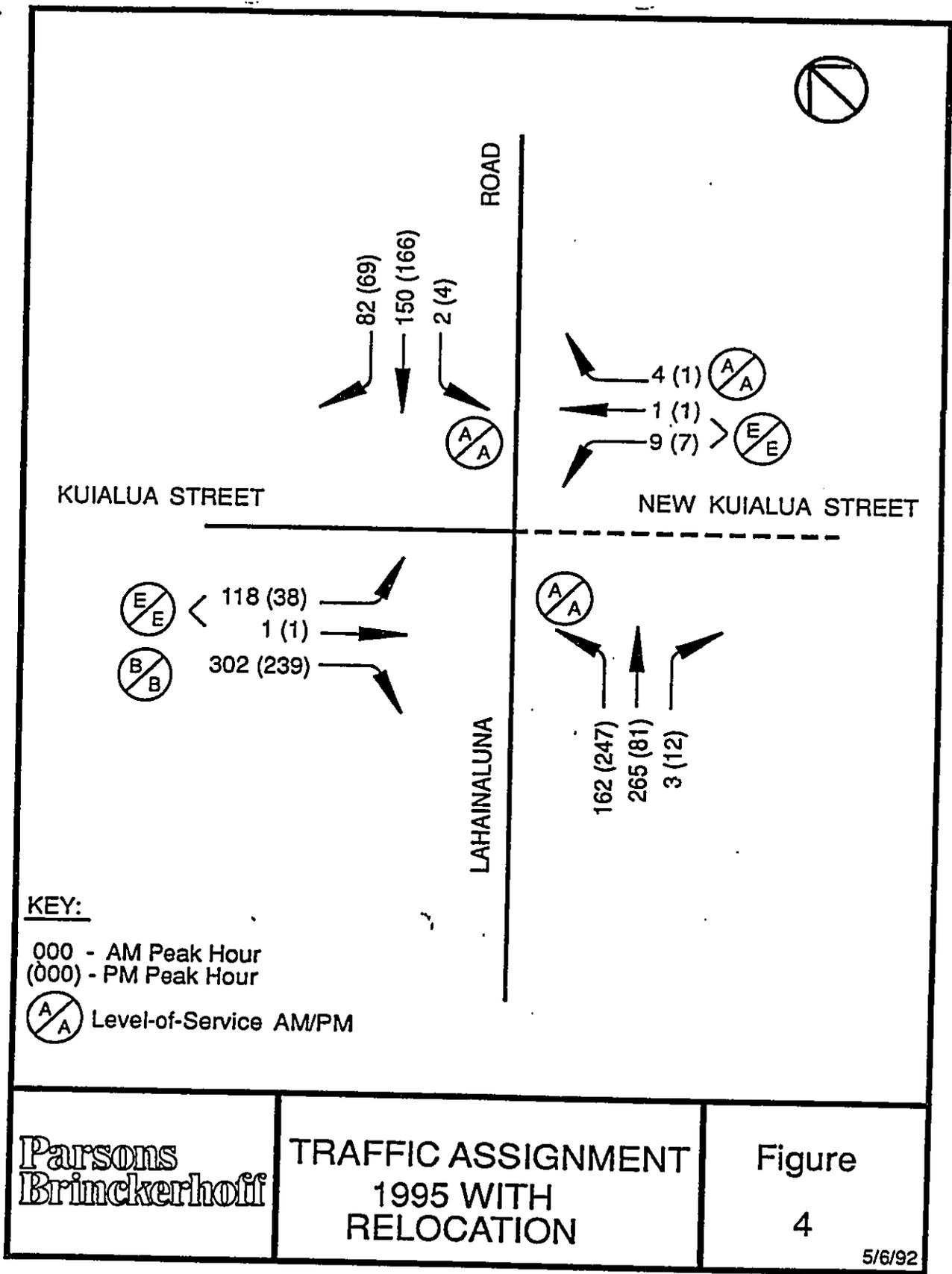


Parsons
Brinckerhoff

TRAFFIC ASSIGNMENT
1995 WITHOUT
RELOCATION

Figure
3

5/6/92



Parsons
Brinckerhoff

TRAFFIC ASSIGNMENT
1995 WITH
RELOCATION

Figure
4

5/6/92

TABLE 1

INTERSECTION EVALUATION
(PEAK 15-MINUTE ANALYSES)

Unsignalized Intersection	EXISTING		1995 W/O RELOCATION		1995 WITH RELOCATION	
	AM	PM	AM	PM	AM	PM
Lahainaluna Rd/Ikena Ave						
Lahainaluna LT	A	A	A	A	-	-
Ikena shared lane	C	B	C	B	-	-
Lahainaluna Rd/Kuialua St						
Lahainaluna NB LT	A	A	A	A	A	A
Lahainaluna SB LT	-	-	-	-	A	A
Kuialua EB shared	E	C	E	D	-	-
Kuialua EB RT	-	-	-	-	B	B
Kuialua EB shared LT-TH	-	-	-	-	E	E
Kuialua WB RT	-	-	-	-	A	A
Kuialua WB shared LT-TH	-	-	-	-	E	E

INTERSECTION EVALUATION
(PEAK HOUR ANALYSES)

Unsignalized Intersection	EXISTING		1995 W/O RELOCATION		1995 WITH RELOCATION	
	AM	PM	AM	PM	AM	PM
Lahainaluna Rd/Ikena Ave						
Lahainaluna LT	A	A	A	A	-	-
Ikena shared lane	A	A	A	A	-	-
Lahainaluna Rd/Kuialua St						
Lahainaluna NB LT	A	A	A	A	A	A
Lahainaluna SB LT	-	-	-	-	A	A
Kuialua EB shared	B	B	B	A	D	A
Kuialua WB shared	-	-	-	-	C	C

APPENDIX D
Agricultural Impact Study

APPENDIX D



LAHAINA MASTER PLAN:
Impact on Agriculture

LAHAINA MASTER PLAN:
Impact on Agriculture

PREPARED FOR:
Hawaii Finance and Development Corporation

PREPARED BY:
Decision Analysts Hawaii, Inc.

November 1989

CONTENTS

	<u>Page</u>
LIST OF TABLES.....	iii
EXECUTIVE SUMMARY.....	iv
BACKGROUND.....	1
SOIL QUALITY OF AFFECTED SUGARCANE ACREAGE.....	1
IMPACT ON PMCo.....	4
Background Information.....	4
Aimfac Plans for PMCo.....	5
Outlook for Sugar Prices.....	6
Urbanization Pressures on PMCo.....	7
Direct Impacts of the Lahaina Master Plan on PMCo.....	8
Outlook for PMCo.....	8
Economic Impact of Closing PMCo Operations.....	9
IMPACT ON GROWTH OF DIVERSIFIED AGRICULTURE.....	10
Suitability for Diversified Agriculture.....	10
Demand for Prime Agricultural Land.....	11
Supply of Prime Agricultural Land.....	16
Availability of Land to Small-Scale Farmers.....	18
Outlook for Diversified Agriculture.....	18
Consistency with Overseas Long-Term Trends.....	19
CONSISTENCY WITH LAHAINA COMMUNITY PLAN AND STATE PLAN.....	20
REFERENCES.....	26

TABLES

<u>Table</u>	<u>Page</u>
1. Lahaina Master Plan Soil Types, Agricultural Uses, and LESA and SCS Ratings.....	2
2. LESA Agricultural Acreage Requirements, State of Hawaii: 1983 and 1995.....	12
3. LESA Agricultural Acreage Requirements, County of Maui: 1983 and 1995.....	14
4. Selected State and County Objectives, Policies, and Guidelines Related to Agricultural Lands.....	21

EXECUTIVE SUMMARY

In recent years, PMCo has been a break-even operation even though the plantation enjoys favorable growing conditions. Its high cost of production is due partially to its small size. A further reduction in the size of the plantation could increase the difficulty of maintaining "break-even" profitability. Nevertheless, in 1986, Amfac announced that PMCo would be reduced to about 4,000 acres which could be irrigated entirely with ditch water with no expensive pumping of groundwater required. These plans have since been revised in favor of a 6,000-acre plantation.

Provided that losses by PMCo can be avoided or can be kept at a relatively modest level, it is expected that Amfac will continue the PMCo operation because the lush greenery provided by the sugar fields is regarded as a major asset to West Maui and, in particular, to Amfac's Kaanapali Resort and property sales. Nevertheless, the IFDC project would increase the difficulty of managing a shrinking plantation.

In the longer term, the future of PMCo becomes increasingly uncertain given the outlook for flat or declining sugar prices and costs for labor, materials and supplies which characteristically increase with inflation. Furthermore, continued development of the West Maui visitor industry will increase the pressures to urbanize additional PMCo lands in order to meet the demand for housing. When, and if, PMCo closes—due to low sugar prices and/or because the plantation becomes too small for profitable operations—the economic loss would be equivalent to that of a small 230-room hotel, with some sugarcane workers suffering social disruption, but nearly all workers being able to eventually find other employment within the growing West Maui economy. An additional concern would be the problem of providing an attractive green backdrop to West Maui. Candidate land uses would include housing having a strong emphasis on greenery, golf courses, pineapple cultivation for some of the land, possibly diversified agriculture for some land, and pastureland for the remainder.

IMPACT ON THE GROWTH OF DIVERSIFIED AGRICULTURE

The development of the Lahaina Master Plan on sugarcane acreage would not change the amount of land currently available for diversified agriculture; but it would preclude the future use of the affected lands for diversified agriculture. However, it is extremely doubtful that the project would adversely affect the statewide growth of diversified agriculture. There are four reasons for this assessment: (1) an extensive amount of agricultural land and water in the State has been freed from sugar and pineapple production due to past plantation closings and reductions in operations—over 100,000 acres including announced reduction plans—and most of this land has favorable soil ratings and remains available for diversified-agriculture activities; (2) given the existence of unprofitable sugar operations, a very real possibility exists that additional

EXECUTIVE SUMMARY

The implementation of the Lahaina Master Plan would result in the urbanization of approximately 1,120 acres of sugarcane lands which are currently under cultivation by Pioneer Mill Company, Ltd. (PMCo), a subsidiary of Amfac/IMB Hawaii (Amfac).

IMPACT ON PMCO

The 1,120-acre IFDC project would affect about 16.2 percent of PMCo sugarcane land. However, about 45 acres of land containing infrastructure that is critical to PMCo would remain undeveloped. Assuming that PMCo operations will be affected in proportion to the 16.2 percent reduction in its sugarcane land, then its decrease in production would amount to an estimated 7,700 tons of raw sugar, nearly 2,600 tons of molasses, and about 1.2 million kWh of electricity. Furthermore, export earnings could drop by about \$3 million, and employment could (but is not expected to) drop by about 50 jobs. Also, water requirements would decrease by about 16.5 mgd. Actual impacts, however, could deviate from the above. In particular, it is unlikely that employment would be impacted in direct proportion to the reduction in acreage since many specialized mill and field jobs would have to remain.

The IFDC project would decrease PMCo's acreage from 6,922 acres in 1987, to about 5,800 acres. If other projects which have been proposed in the past resurface and eventually gain approval, then the size of the plantation could be reduced to less than 5,000 acres. Assuming that U.S. sugar prices will continue to be high enough to justify continued sugar operations in Hawaii, an important question is whether the Lahaina Master Plan—combined with other planned and proposed projects—would eventually cause the closing of PMCo by reducing sugarcane acreage sufficiently to reduce economies of scale and/or by contributing to a scattered, and therefore inefficient, plantation rather than a more compact and efficient one. The issue is of particular concern because PMCo is already Hawaii's smallest sugar operation, and the proposed development would result in the withdrawal of considerable acreage near the center of the plantation. The small size of the plantation reflects not only limited land and past urbanization of PMCo lands, but also a limited water supply which precludes a large plantation.

land and water will be freed from sugar production; (3) some—if not most—of the sugar operations would make their lands available for profitable replacement crops to the extent that such crops are available; and (4) when compared to the available supply, a very small amount of land and water is required to grow proven and promising diversified-agriculture crops in order to achieve a realistic level of Statewide food and animal-feed self-sufficiency, and to increase exports. In other words, the limiting factor is not the *land supply*, but rather the *market demand* for those crops that can be *grown profitably* in Hawaii. The proposed Lahaina Maui Plan involves far too little land to affect this conclusion.

Although the HFDC project would not adversely affect the Statewide growth of diversified agriculture, it could affect the growth of diversified agriculture in West Maui if the lands were made available for diversified agriculture. However, it should be noted that: (1) none of the crops that are suited to the climatic conditions of West Maui require locational characteristics unique to West Maui; (2) farmers in West Maui are at a competitive disadvantage compared to farmers elsewhere in the state because of high land and labor costs in West Maui and long trucking distance to shipping terminals; (3) limited water supplies preclude the development of freshwater aquaculture; (4) proximity to homes and resort activities preclude livestock operations because of odors, dust, and fly problems; and (5) to date, Amfac has been unsuccessful in its search for a profitable replacement crop for sugar in West Maui.

In addition to having to compete against other farmers throughout the State, farmers in West Maui would have to compete against other activities for the limited supply of land, water, and labor. Strong demands exist for these limited resources, and market prices are high. From the perspective of a farm operation, high costs for land, water, and labor make it difficult to achieve and maintain profitability. From the broader societal and economic perspective, high prices for urban land indicate that at least some land in low-value agricultural uses should be re-allocated to high-value urban uses, such as housing. Furthermore, any marginal amount of West Maui land which may be freed from sugar production is too valuable to place in a low-value use such as most (but not all) diversified agriculture crops. Thus the conversion of a small amount of sugarcane land to diversified agriculture would be justified only if the new crop were of high value and could be grown only in West Maui. Otherwise, the limited conversion of sugarcane acreage in diversified agriculture would represent a misallocation of the valuable and scarce land and water resources, thereby contributing to higher housing costs which would more than negate any economic benefit derived from putting the land in a low-value use such as most diversified agricultural crops.

CONSISTENCY WITH STATE PLAN AND LAHAINA COMMUNITY PLAN

In certain regards, the HFDC project would be inconsistent with State and County agricultural policies: potentially with respect to the continued viability of the sugar industry in West Maui, and with respect to protecting prime agricultural lands from development and encouraging the growth of diversified agriculture in West Maui. On the other hand, the project would not adversely affect any existing diversified agricultural activities, nor would it adversely affect the Statewide growth of diversified agriculture.

To a limited extent, the project would conform to the Lahaina Community Plan, which calls for urbanization to the east and north of the civic center complex, and around Crater Reservoir. However, the project would urbanize some lands which the Lahaina Community Plan would leave in agriculture.

From a broader perspective, it should be noted that West Maui enjoys a very healthy economy which is driven by the visitor industry, and any risk that the HFDC project may pose to agriculture would translate into a very small risk to the economy as a whole. Also, State and County policies that support affordable housing conflict with those policies which support agriculture and, given the severity of the housing situation in West Maui and the economic health of the region, the State and County policies regarding affordable housing would appear to override the agricultural policies.

The soils within the Master Plan area have been rated in terms of four classification systems commonly used in Hawaii: (1) Land Capability Grouping, (2) Agricultural Lands of Importance to the State of Hawaii, (3) Overall Productivity Rating, and (4) Proposed Land Evaluation and Site Assessment. These classification systems are discussed below.

(1) *Land Capability Grouping by the United States Department of Agriculture Soil Conservation Service (SCS).*

This classification system rates soils according to eight levels, ranging from the highest classification level, I, to the lowest level, VIII. Assuming that the land is irrigated for all soil types except rRk and rRs (which are rocky and stony), these ratings are shown in Table I. Soil types LaB and WcB—which cover about 23 percent of the proposed project—have land capability ratings of IIe. The II indicates that the soil has moderate limitations that reduce the choice of plants that can be grown successfully, or indicates that moderate conservation practices are required. The subclassification "e" indicates a risk of erosion. Soil types LaC and WcC comprise about 42 percent of the Master Plan area, and have land capability ratings of IIIe, which indicates that the soils have severe limitations that reduce the options on

LAHAINA MASTER PLAN: IMPACT ON AGRICULTURE

BACKGROUND

The Lahaina Master Plan encompasses an area of approximately 1,120 acres of land in West Maui. The property, which would be used primarily for housing, is adjacent to Lahaina, mauka of the Lahaina Civic Center and Wahikuli subdivision area, and north of the existing Kelawea Subdivision and Lahaina Luna High School. The goal of the Lahaina Master Plan is to create a well-planned residential community having a high level of amenities and services that would be available to residents of all income levels.

Currently, the land is in sugarcane under cultivation by Pioneer Mill Company, Ltd. (PMCo), a subsidiary of Amfac/JMB (Amfac). The impacts of the HFDC project on PMCo operations and on the potential growth of diversified agriculture are summarized in this report.

D-5

SOIL QUALITY OF AFFECTED SUGARCANE ACREAGE

The affected acreage consists primarily of eight soil types:

LaB	Lahaina silty clay, 3 to 7 percent slope.
LaC	Lahaina silty clay, 7 to 15 percent slope.
LaD	Lahaina silty clay, 15 to 25 percent slope.
rRk	Rock land.
rRs	Rough broken and stony land.
WcB	Wahikuli stony silty clay, 3 to 7 percent slope.
WcC	Wahikuli stony silty clay, 7 to 15 percent slope.
WcB	Wahikuli very stony silty clay, 3 to 7 percent slope.

For each soil type, Table I shows the approximate acreage, possible agricultural uses, and two soil ratings (explained below). The predominant soil types—LaC, WcB, WcC, and WcB—comprise about 88 percent of the Master Plan area. Suitable agricultural activities associated with most of the affected soil types are primarily sugarcane, with about 19 percent of the land suitable for pineapple and truck crops (soil types LaB and LaC).

Table I.—LAHAINA MASTER PLAN
SOIL TYPES, AGRICULTURAL USES, AND LESA AND SCS RATINGS

Soil Type	Acreage	Agricultural Uses	SCS Rating ¹	LESA Rating
LaB	39	Sugar, Pineapple, Truck Crops, Pasture	IIe	90
LaC	177	Sugar, Pineapple, Truck Crops, Pasture	IIIe	82
LaD	19	Sugar	IVe	66
rRk	11	Pasture	VIIe	18
rRs	61	Pasture	VIIe	18
WcB	222	Sugar	IIIe	82
WcC	290	Sugar	IIIe	74
WcB	302	Sugar	IVs	51

1. Assuming all soils are irrigated except rRk and rRs which are not irrigated.
Sources: U.S. Department of Agriculture, Soil Conservation Service, *Soil Survey of Maui of Maui, Oahu, Molokai, and Lanai, State of Hawaii, August 1972.*

IMPACT ON PMCO¹

Background Information

Production and Export Earnings

PMCo, which was founded in 1861, is the smallest sugar operation in the State. In 1987, PMCo produced 47,621 tons of raw sugar and 15,984 tons of molasses, earning the plantation about \$16.4 million. In addition, it sold 7.6 million kWh of electric power to Maui Electric Co.

The 1987 production of 47,621 tons of sugar compares with 41,256 tons in 1981 when the plantation had considerably more land under cultivation (see the next subsection).

Land Area, Ownership and Property Taxes

In 1987, PMCo cultivated 6,922 acres of sugarcane lands, on which it paid \$88,100 in property taxes. A portion of the land farmed by PMCo is owned in fee by Amfac, and a portion is leased, principally from the State of Hawaii and Bishop Estate. The leases expire in 1994 and 2000, respectively. The land area encompassed by the Lahaina Master Plan is State-owned land.

The size of the plantation in 1987 was 1,464 acres less than its 1981 size of 8,386 acres. The reduction reflects loss of land to urbanization as well as requirements to compensate for loss of water to other activities (see the next subsection).

Water

Because of its location on the hot leeward side of West Maui, PMCo uses considerable water for the drip irrigation of its fields, while some fields near the mill are watered with furrow irrigation using mill tailwaters. In 1987, PMCo used an average of 64 million gallons per day (mgd) of groundwater and 38 mgd of ditch water for a total of 102 mgd of water use, and an average of 14,735 gallons per day per acre. For comparison, domestic water provided by the Maui Department of Water Supply averaged only 22 mgd in 1987², and per-acre usage for single-family homes (at 5 units per acre) averages about 2,130 gallons per day.

The availability of water has been a major problem at PMCo due to its history of having its high-elevation ditch water diverted for resort and other urban uses in West Maui. These diversions have been made by Amfac for the Kaanapali Beach Resort, Maui Land and Pineapple (ML&P) for its Kapalua development, and the County of Maui. The water diverted by Amfac has since been returned to PMCo after new wells were developed. High-elevation ditch water is valued because it does not require expensive pumping and, after being used to irrigate fields, it percolates down to mix with and reduce the salinity of the groundwater. During droughts,

1. Unless otherwise noted, the material in this section has been provided by Amfac.
2. Department of Business and Economic Development, *Data Book*, 1987, p. 155.

plants, require special conservation practices, or both. Soil types IAD and WII have land capability ratings of IVe and IVs, respectively, which indicates that the soils have very severe limitations that reduce the choice of plants, require very careful management practices, or both. The "s" represents problems of stoniness. Soil types IRk and IRS, which cover about 6 percent of the project area, are rated VII, which indicates that the soils and landforms have limitations that preclude their use for commercial plant production.

(2) *Agricultural Lands of Importance in the State of Hawaii (ALISII)*, by the SCS, University of Hawaii (UH) College of Tropical Agriculture and Human Resources, and the State of Hawaii, Department of Agriculture.

This system classifies lands into three categories: (a) prime agricultural land which is land that is best-suited for the production of crops because of its ability to sustain high yields with relatively little input and with the least damage to the environment; (b) unique agricultural land which is non-prime agricultural land that is currently used for the production of specific high-value crops; and (c) other agricultural land which is non-prime and non-unique agricultural land that is of importance to the production of crops. Approximately 68 percent of the lands in the proposed development area are rated as "prime" agricultural lands, and 26 percent of the lands are rated as important to the production of crops.

(3) *Overall Productivity Rating*, by the UH Land Study Bureau (LSB).

This classification rates soils according to five levels, with "A" representing the class of highest productivity and "E" the lowest. About 16 percent of the Master Plan lands have soils rated "A," 40 percent rated "B," 33 percent rated "C," and 11 percent rated "E." None of the soils are rated "D."

(4) *Proposed Land Evaluation and Site Assessment (LESA) System*, by the State of Hawaii Land Evaluation and Site Assessment Commission

Based on soil quality, locational attributes, improvements, nearby activities, and land-use plans, this proposed classification system would designate a sufficient amount of the better agricultural lands to meet projected agricultural goals. If the LESA classification approach were applied to the proposed site, 94 percent of the designated lands (all but soil types IRk and IRS) would be termed "important agricultural lands" (IAL), which would include all lands having a rating of S1 or above, out of a possible total of IRI. The ratings for each soil type are shown in Table 1. However, the designation could be changed if an overriding public benefit were demonstrated.

Based on the various soils surveys, approximately two-thirds of the site is comprised of good soils.

the resulting water shortages and high salinity adversely affect PMCo yields. A reduction in the size of PMCo and a corresponding decrease in water requirements have reduced the water problems.

Employment

Field, mill, and management employment at PMCo in 1987 was 324 workers. Indirect employment dependent upon PMCo is estimated to be 166 jobs,³ for a total of 690 jobs, or about 1.5 percent of Maui County jobs. Payroll for PMCo totaled \$7.1 million.

The 1987 employment was 23 percent below the 1981 figure of 422 workers. The decrease reflects significant productivity increases and cost savings.

As with other agricultural activities on Maui, PMCo has had problems retaining workers because of the job opportunities provided by a large and growing visitor industry. This industry and its supporting activities offer many jobs having higher pay, greater security, greater career potential, and better working conditions than those offered by the sugar industry.

Growing Conditions and Yields

PMCo benefits from favorable conditions for growing sugarcane, including good soil quality, favorable terrain, and a leeward island location having many sunny days. In 1987, average sugar yields at PMCo were slightly higher than the average for the State: 12.68 tons per acre for PMCo, versus a Statewide average of 12.32 tons per acre.⁴ However, 1988 yields increased to 14.22 tons per acre.

These yields reflect a significant increase in productivity over that in 1981 when yields averaged only 9.99 tons per acre. The increase in yields reflect a better water balance, conversion to drip irrigation, improved varieties of cane, improved farming practices, etc.

Profitability

Even though PMCo benefits from favorable growing conditions and, in recent years, major improvements in yields and labor productivity, historically, the plantation has been a high-cost producer, and is currently breaking even. The problem is its small size and the corresponding lack of economies of scale.

Amfac Plans for PMCo

In 1986, Amfac announced that PMCo would be reduced in size to about 4,000 acres which could be irrigated entirely with ditch water with no expensive pumping of groundwater. In addition, the work force was to be reduced to 200 employees who would be trained to handle

3. Multiplier of 1.13, based on the State Economic Model.

4. Hawaiian Sugar Planters' Association, *Hawaiian Sugar Manual*, 1988.

different jobs in improve operating efficiencies. These plans have since been revised in favor of a 6,000-acre plantation.

Even though PMCo is only a break-even operation, Amfac has been willing to continue operations so long as any losses remain modest. This is because the lush greenery provided by PMCo is regarded as a major asset to West Maui and, in particular, to Amfac's Kaanapali Resort and property sales.

In the meantime, Amfac has been exploring a variety of crops which could profitably replace sugar and provide the desired greenery. Crops which have recently or are currently being explored included macadamia nuts, coffee, tea, and cocoa. However, a profitable replacement crop to sugar has yet to be identified for West Maui.

Outlook for Sugar Prices

The survival of PMCo will depend greatly on the price of sugar. In the world market, the average price of sugar is expected to remain well below the production costs for all countries, because most sugar is traded in controlled and/or subsidized markets, where surplus sugar is dumped onto the world market for sale at a loss. Dramatic price increases have occurred, however, following a 6- to 9-year cycle, with prices increasing when world production falls short of consumption. However, a number of fundamental developments have taken place in sugar and in related industries over the past two decades which appear to have altered the pattern of sugar prices, thereby reducing peak prices and extending the periods of low prices. These changes include: the decline or stagnation of sugar consumption in some developed countries; market inroads made by the liquid sweetener high-fructose corn syrup (HFCS); the availability of substantial sugar reserves in the form of sugarcane now devoted to ethanol production; major gains in sugarbeet production in several European countries which were traditionally cane sugar importers; and the appearance of the European Economic Community (EEC) as a major exporter of refined sugar.⁵

In the United States, Federal legislation protects sugar from the low world prices by imposing import quotas, tariffs, and import fees. However, U.S. sugar prices are managed so that they remain fairly low in order to prevent an acceleration in the growth of competing sweeteners, and to maintain public support for the program. Under the U.S. Food Security Act, which runs to late 1990, the target price for sugar is 18 cents per pound, with no adjustments for inflation.

The competing sweetener of major concern has been HFCS. It is as sweet, or sweeter, than regular sugar, costs less to produce, sets for less, is more profitable, is very similar to liquid sugar, can be substituted readily in many applications, and is easier and cheaper to

5. James H. Brown, *The International Sugar Industry, Development and Prospects*.

handle. It has experienced a rapid growth in sales at the expense of regular sugar sales. However, HFCS has captured nearly all of the liquid-sweetener market so that its continued growth will depend on the market acceptance of Crystar, the crystalline version of HFCS. In addition, the new low-calorie sweetener aspartame, sold under the brand name "Equal," is capturing market share and putting additional downward pressure on U.S. sugar prices.

Regarding the short-term outlook for sugar legislation, it should be noted that, because of the advent of HFCS, many corn states (HFCS is produced from corn) have joined the sugar and sweetener coalition, making it larger and stronger than in the past. The considered expectation among sugar experts and lobbyists is that sugar will continue to be included in the U.S. Food Security Act, but that the price-support level will remain unchanged with no adjustment for inflation. Even though this is expected, there is a risk that efforts by sugar users and consumer groups to exclude sugar from the U.S. Food Security Act, or to significantly reduce the support price, will be successful.

Another and more serious threat to U.S. sugar price supports is the negotiations on the General Agreement on Tariffs and Trade (GATT). A GATT panel has found that the U.S. limits on sugar imports violate international trade rules. In order to comply with GATT, the U.S. sugar program may require a major restructuring, allowing a higher volume of imports, and probably resulting in lower U.S. sugar prices. Furthermore, any GATT Agreement would be subject to an accept-or-reject decision by the U.S. Senate, without opportunity for modification. If accepted, GATT would supersede U.S. sugar legislation, with the 1991/1992 crop being the first one affected.

In the longer term, the major concern is the introduction of a number of new sweeteners for which the target market is that portion of the sweetener market still held by regular sugar. Included are such sweeteners as Crystar (crystalline HFCS), high-temperature aspartame, super aspartame, sucralose, alitame, talin, and stevioside. Some of the sweeteners have recently won approval for human consumption in the United States, and others are in the process of obtaining approvals. If at least one of these new sweeteners achieves significant market success, then the downward pressure on sugar prices will increase.

In order to survive decreasing sugar prices, PMCo will have to decrease its production costs accordingly.

Urbanization Pressures on PMCo

Because of its location abutting Lahaina and Kaanapali Resort, and its proximity to other resort development in West Maui, PMCo lands are subject to very strong urbanization pressure for housing and other urban uses. This pressure is indicated by the 1979-to-1987 reduction of PMCo's fields by 1,854 acres, most of which resulted from urbanization. This reduction reflects Amfac's expansion of Kaanapali and development of resort and employee housing, the

County's development of employee housing, and various other housing and commercial developments.

PMCo is experiencing further urban pressures from various plans to urbanize additional sugarcane lands. Amfac plans further expansion of Kaanapali, the development of employee housing at Wailea, and the eventual development of a residential community at Olowalu.

In 1978, the Bishop Estate solicited proposals for developing a housing project near Lahaina Luna School on 400 acres of Bishop Estate land which is leased to PMCo. The proposal was withdrawn, however, after opposition was expressed by the County government. Although the Bishop Estate has retained this plan for housing, the proposal is not being pursued.

Finally, the subject HFDC project would remove about 1,120 acres of sugarcane in order to meet community housing needs.

Direct Impacts of the Lahaina Master Plan on PMCo

The 1,120-acre HFDC project would affect about 16.2 percent of PMCo's sugarcane land. However, about 45 acres of land containing infrastructure that is critical to PMCo—a reservoir, an airstrip, and an irrigation ditch—would remain undeveloped. A proposed golf course would buffer homes from the noise and dust of trucks using a cane haul road which passes through the property.

Assuming that PMCo operations will be affected in proportion to the 16.2-percent reduction in its sugarcane land, then its decrease in production would amount to an estimated 7,700 tons of raw sugar, nearly 2,600 tons of molasses, and about 1.2 million kWh of electricity. Furthermore, export earnings could drop by about \$3 million, and employment could (but is not expected to) drop by about 50 jobs. Also, water requirements would decrease by about 16.5 mgd.

Actual impacts, however, could deviate from the above. In particular, it is unlikely that employment would be impacted in direct proportion to the reduction in acreage since many specialized mill and field jobs would have to remain.

Outlook For PMCo

The continued survival of PMCo will depend on a number of factors. One of the most important of which will be continued Federal price supports for sugar that are sufficiently high to justify continued operations, and continued success in reducing production costs. PMCo's success in increasing its yields and downsizing the plantation to compensate for lands lost to urbanization will also be important. The agricultural quality of the lands which remain, and the form of the plantation will also be a concern. In general, the preferred contraction in the plantation is from the periphery inward because this would result in a compact plantation and

high-quality lands: a more compact plantation reduces trucking and other costs, while higher-quality lands contribute to higher yields. Even though some PMCo lands are owned in fee, continued sugar operations also will depend on PMCo's success in negotiating favorable lease terms with the State in 1994, and Bishop Estate in 20XX.

The IFDC project would decrease PMCo's acreage from 6,922 acres in 1987, to about 5,800 acres. Based on additional urbanization envisioned in the Lahaina Community Plan, acreage could be reduced to about 5,500 acres by the year 20XX. And if other projects which have been proposed in the past resurface and eventually gain approval, then the size of the plantation could drop to less than 5,000 acres, which would result in a very small plantation. Furthermore, the proposed development would withdraw considerable acreage near the center of the plantation. This reduction in the size of the plantation could increase the difficulty of maintaining PMCo's "break-even" profitability.

As mentioned previously, however, it is expected that Amfac will continue its PMCo operation so long as losses by PMCo can be avoided or kept at a relatively low level. This is because the lush greenery provided by PMCo is regarded as a major asset to West Maui and, in particular, to Amfac's Kaanapali Resort and property sales.

In the longer term, the future of PMCo becomes increasingly uncertain given an outlook for flat or declining sugar prices, and costs for labor, materials and supplies which characteristically increase with inflation. Furthermore, continued development of the visitor industry in West Maui will increase the pressures to urbanize additional PMCo lands in order to provide needed housing.

Economic Impact of Closing PMCo Operations

When and if PMCo closes—due to low sugar prices and/or because the plantation becomes too small for profitable operations—the resulting loss of jobs would be less than 374 direct jobs and 370 indirect jobs, with the actual number depending upon the reduced employment made possible by continuing increases in productivity. This would be the economic equivalent of losing a small 200-room hotel, immediately following the mill closing, there would be considerable social disruption for a number of employees. But over the long term, most if not all sugar employees can be expected to find other employment if this should be required. However, some unskilled sugar workers and those having non-transferable skills may receive reduced pay when and if they are forced to find non-sugar jobs.

Following a plantation closing, considerable land would become available for other uses. The major problem, however, would become one of how to provide attractive greenery as a backdrop to West Maui. Candidate land uses would include residential developments having a strong emphasis on greenery, golf courses, pineapple cultivation for some of the land, possibly diversified agriculture for some land, and pastureland for the remainder.

IMPACT ON GROWTH OF DIVERSIFIED AGRICULTURE

Implementation of the Lahaina Master Plan would constitute a commitment of prime agricultural land to residential use. For the purposes of this discussion, prime agricultural land is loosely defined to mean any high-quality agricultural land capable of providing high yields for a variety of crops; it comprises about two-thirds of the lands currently cultivated land in the Master Plan area. Even though no existing diversified agricultural activities would be affected, this commitment raises the question of whether the IFDC project would hinder the future development of diversified agriculture. This issue is addressed below.

Suitability for Diversified Agriculture

West Maui enjoys year-round subtropical conditions which are excellent for cultivating those Hawaii crops which grow well in the warmer and drier areas of Hawaii. Such crops include: *alfalfa, avocados, cucumbers, dry and green onions, Chinese peas, green peppers, pumpkin, Italian squash, sweet potatoes, tomatoes, watermelon, snap beans, bitter melon, sweet corn, seed corn, eggplant, ginger root, papaya, parsley, radishes, Oriental squash, tangerines, flowers and nursery products, sorghum, and feed grain*. On the other hand, the area is unsuitable for crops which require cool and/or moist conditions commonly found at higher elevations, such as Kula, or on the wet windward side of the island.

Fresh-water aquaculture is another possibility for the area. However, after many attempts, fresh-water aquaculture has failed to produce a record of profitability. Furthermore, fresh-water aquaculture requires enormous amounts of water—about 36,000 gallons per acre per day. This compares to less than 15,000 gallons per acre per day for sugar. Given the limitations on PMCo's water supply, fresh-water aquaculture would constitute an irresponsible activity in the Lahaina area as long as PMCo is an operating sugar plantation. Finally, fresh-water aquaculture would not provide the attractive backdrop that sugar provides.

Brackish- and/or salt-water aquaculture are other possibilities which have a better record for profitability. However, seepage would risk damage to the fresh-water supply in the area, and would preclude future use of the land for growing many crops and plants. Also, the ponds would not produce an attractive green backdrop.

Most *livestock operations* (such as a cattle feed lot, dairy operations, piggyeries, and chicken operations) would be incompatible with the resort and housing areas near Lahaina, given odor, dust, fly and visual problems.

Although many of the above-listed crops and activities are agronomically suited to West Maui, none require locational characteristics unique to West Maui. Also, farmers in West Maui are at a competitive disadvantage compared to farmers elsewhere in the State because of high West Maui land and labor costs, and the long trucking distance to shipping terminals. As

a result of these disadvantages, few crops and activities are likely to be profitable, and those which may be profitable generally require relatively little land (see below). Of particular significance, Amfac has been unsuccessful in its search for a profitable replacement crop for sugar in West Maui.

In addition to having to compete against other farmers throughout the State, farmers in West Maui would have to compete against other activities for the limited supply of land, water, and labor. Strong demands exist for these limited resources, and market prices are high. From the perspective of a farm operation, high costs for land, water, and labor make it difficult to achieve and maintain profitability. From the broader societal and economic perspective, high prices for urban land indicate that at least some land in low-value agricultural uses should be reallocated to high-value urban uses, such as housing. Furthermore, any marginal amount of West Maui land which may be freed from sugar production is too valuable to place in a low-value use such as most (but not all) diversified agriculture crops. Thus the conversion of a small amount of sugarcane land to diversified agriculture would be justified only if the new crop were of high value and could be grown only in West Maui. Otherwise, the limited conversion of sugarcane acreage to diversified agriculture would represent a misallocation of the valuable and scarce land and water resources, thereby contributing to higher housing costs which would more than negate any economic benefit derived from putting the land in a low-value use such as most diversified agricultural crops.

In summary, diversified agriculture offers little promise of economic development for West Maui. Furthermore, as discussed below, the limited successes which may occur would require little land.

Demand for Prime Agricultural Land

From a broader perspective, the proposed development would involve two little land in affect the Statewide growth of diversified agriculture. The most optimistic projections known to the consultant for the growth of diversified agriculture are those prepared by the Land Evaluation and Site Assessment (LESA) Commission. These projections—which are shown in Tables 2 and 3 for the State and Maui, respectively—were prepared in 1985. The projections represent an attempt to quantify the amount of agricultural land that will be required to (1) accommodate resident-plus-visitor population growth, (2) increase food and animal-feed self-sufficiency, and (3) increase crop exports.

Table 2.—LESA AGRICULTURAL ACREAGE REQUIREMENTS STATE OF HAWAII: 1983 AND 1995

Crop or Activity	1983	1995	Increase
Crops and Activities which Generally Do Not Require Prime Agricultural Lands			
Heef/cattle ^{1,2}	765,450	365,090	..
Livestock:			
Dairy	1,000	1,182	182
Eggs/Poultry	281	515	234
Swine	688	1,050	462
Subtotal for Livestock	1,881	2,747	866
Unique Crops:			
Aquaculture	500	4,500	4,000
Coffee	2,000	5,700	3,700
Flowers/Nursery	1,786	3,040	1,254
Papaya	2,120	11,850	9,730
Taro	400	527	127
Subtotal for Unique Crops	6,806	25,617	18,811
Macadamia Nuts	15,800	27,000	11,200
Crops and Activities which Generally Do Require Prime Agricultural Lands			
Plantation:			
Sugarcane ^{2,3}	194,300	177,700	-16,600
Pineapple	36,000	36,000	..
Subtotal for Plantation	230,300	213,700	-16,600
Other:			
Guava	965	1,400	435
Seed Corn	730	1,000	270
Bananas	1,100	2,300	1,200
Feed/Forage ^{2,4}	8,705	12,405	3,700
Fruits	635	1,156	521
Vegetables/Melons ⁵	4,300	7,022	2,722
Subtotal for Other Crops	16,475	25,333	8,858
Contingency ⁶	..	29,500	29,500
TOTAL	1,016,712	689,016	..
TOTAL, Excluding Heef/Cattle	271,262	323,916	52,654

Table 2.— LESA AGRICULTURAL ACREAGE REQUIREMENTS
STATE OF HAWAII: 1983 AND 1995
(continued)

1. Includes marginal grazing and pasture lands. The 1983 figure includes arid zones and other areas having low carrying capacity, while the 1995 figure does not.
2. Often includes land in a holding operation awaiting discovery of profitable uses.
3. The decline in acreage primarily reflects the loss of Puna Sugar Co.
4. Includes some pastureland and 8,000 acres of guinea grass on Molokai.
5. Overstated in that the acreage figures are for harvested acres, rather than for the amount of land required (i.e., the acreage requirements for a crop harvested twice a year should be halved).
6. Based on 10% of all acreage other than that for beef/cattle. This contingency amounts to double counting in that the LESA projections are already high. Also, the contingency figure allows for an additional 17,770 acres for expansion of sugarcane, even though the sugar industry is expected to decline, not expand.

Table 3.— LESA AGRICULTURAL ACREAGE REQUIREMENTS,
COUNTY OF MAUI: 1983 AND 1995

Crop or Activity	1983	1995	Increase
Crops and Activities which Generally Do Not Require Prime Agricultural Lands			
Beef/cattle ^{1,2}	108,500	70,000	..
Livestock:			
Dairy	240	284	44
Eggs/Poultry	0	14	14
Swine	120	282	162
Subtotal for Livestock	360	580	220
Unique Crops:			
Aquaculture	15	120	105
Flowers/Nursery	274	440	166
Papaya	25	100	75
Taro/Watercress	0	39	39
Subtotal for Unique Crops	314	699	385
Macadamia Nuts	1,250	3,780	2,530
Crops and Activities which Generally Do Require Prime Agricultural Lands			
Plantation:			
Sugarcane ²	47,400	45,700	-1,700
Pineapple	8,649	9,449	800
Subtotal for Plantation	56,049	55,149	-900
Other:			
Guava	0	242	242
Seed Corn	0	100	100
Bananas	80	176	96
Feed/forage ^{2,3}	--	--	--
Fruits	25	44	19
Vegetables/Melons ⁴	1,850	2,265	415
Subtotal for Other Crops	1,955	2,827	872
Contingency ⁵	--	6,304	6,304
TOTAL	168,428	139,319	—
TOTAL, Excluding Beef/Cattle	59,928	69,119	9,191

Table 3. -- LESA AGRICULTURAL ACREAGE REQUIREMENTS,
COUNTY OF MAUI: 1983 AND 1995
(continued)

1. Includes marginal grazing and pasture lands. The 1983 figure includes acid zones and other areas having low carrying capacity, while the 1995 figure does not.
2. Often includes land in a holding operation awaiting discovery of profitable uses.
3. Includes some pasture.
4. Overstated in that the acreage figures are for harvested acres, rather than for the amount of land required (i.e., the acreage requirements for a crop harvested twice a year should be halved).
5. Based on 10% of all acreage other than that for beef/cattle. This contingency amounts to double counting in that the LESA projections are already high. Also, the contingency figure allows for an additional 4,570 acres for expansion of sugarcane, even though the sugar industry is expected to decline somewhat.

As indicated, the LESA Commission projected in 1985 that an estimated 52,684 additional acres of land would be required Statewide to accommodate the increase in production for the 1983-to-1995 period. The corresponding figure for Maui is 9,411 acres. The crops and acreage requirements are categorized according to those which generally do not require prime agricultural land (although some crops may be grown profitably on prime agricultural land), those which generally do require prime agricultural land, plus a contingency of 10 percent of all acreage used for purposes other than beef and cattle production.

The relevant figures from Tables 2 and 3 are not the total figures, but the increase in the amount of prime agricultural land required to accommodate diversified agriculture: the increase is 8,858 acres for the State, and 872 acres for Maui. These increased requirements for prime agricultural land are surprisingly small. Nevertheless, the projected land requirements, as small as they are, are high in that diversified agriculture is growing more slowly than the LESA Commission projections. A more realistic estimate for the amount of prime agricultural land required to accommodate Statewide growth of diversified agriculture over the next two decades is probably closer to 1,500 acres.⁶ Furthermore, land is being freed from plantation agriculture faster than it can be absorbed by other crops (discussed below).

If diversified agriculture is to require a large amount of prime agricultural land, then additional crops will have to be grown for the export market rather than for the small Hawaii market. However, the extreme difficulty of developing large export markets should be noted. For over a century, numerous and extensive crop searches and experiments have been conducted by many people and organizations, and have led to surprisingly few major long-term successes in Hawaii, thereby indicating the extreme difficulty in identifying new export crops and developing them into new and profitable industries. Furthermore, the difficulty in developing export markets is increasing because of increasing competition from other sugarcane-growing areas. Periodic low sugar prices have led nearly all sugarcane operators throughout the world to search for profitable replacement crops, particularly crops which can increase the level of earnings from exports. Thus far, few successes have materialized.

Supply of Prime Agricultural Land

Regarding the supply of land, an enormous and growing supply of prime agricultural land is available for diversified agriculture and other uses. Since 1968, over 90,000 acres of Hawaii's higher-quality agricultural land have been freed from sugar and pineapple production: over 63,000 acres of sugarcane and over 27,000 acres of pineapple have been freed from production.⁷ On the Big Island, Hamakua Sugar Co., Inc. has announced that it will sell

6. Masch, Bruce S., Peter Gamel, et. al., *An Economic Development Strategy and Implementation Program for Maui*.

7. Hawaiian Sugar Planters' Association, *Hawaiian Sugar Manual 1988*.

10,000 acres of land in order to reduce its debt, and Kau Agriculture has announced a 4,200-acre reduction in sugarcane acreage. Between 1979 and 1988, over 5,100 acres of land were taken out of sugar production on Maui, most of which was land used by Waialua Ag that was converted to pineapple fields and macadamia nut orchards. On the nearby island of Molokai, 16,600 acres have been freed from pineapple operations, most of which remains available for diversified agriculture.

In the State as a whole, some of the land freed from sugar and pineapple production has or will be converted to urban, diversified agriculture, and aquaculture uses. After making allowances for the various conversions, uncommitted acreage which remains available for diversified agriculture and aquaculture amounts to many tens of thousands of acres. Much of this land is fallow, in pasture, or in some other low-productivity use. However, land for diversified agriculture is not as available on Maui as it is on the other islands.

The Statewide supply of prime agricultural land probably will increase given the very real possibility of future sugar plantation closings. A number of Hawaii's sugar plantations are unprofitable but remain in operation today only because they have lease and/or energy contracts which make closing too expensive. However, these contracts eventually will end.

Furthermore, a portion of the sugarcane land is in holding awaiting a discovery of profitable replacement activities; this land forms part of the supply of prime agricultural land available to profitable diversified agriculture crops.

Many of the lands in the State which have been freed, are to be freed, or can be freed from sugar and pineapple production have excellent agricultural qualities and climatic conditions, and are well-suited for a variety of crops. Also, water is available for most of these lands, especially those lands freed from sugar production.

Additional lands which have been made available for diversified agriculture are in government-sponsored agricultural parks throughout the State. Also, lands for agricultural activities which do not require prime agricultural land include pasture land, land for livestock operations, and "unique" lands as classified by ALISH (see page 3). Unique lands are not prime agricultural lands, but are important lands for certain crops; the principal examples are the coffee lands in Kona, and certain lava lands in Puna that are particularly well-suited for growing papaya. The supply of unique lands is quite large and is distinct from the supply of prime agricultural lands.

8. Hawaii Agricultural Statistics Service, *Statistics of Hawaiian Agriculture 1987*.
9. Robert C. Schmitt, *Historical Statistics of Hawaii*.

Availability of Land to Small-Scale Farmers

Even though considerable agricultural land exists, small agricultural parcels are seldom available to small-scale farmers under long-term leases because land-use regulations and the political environment make it unprofitable and too risky to the landowner to lease out small farm parcels. Agricultural use constitutes a low-value use of the land and, correspondingly, farmers pay relatively low lease rents. At the same time, in order to rent to small-scale farmers, landowners are required to subdivide the property. Applicable County subdivision regulations (designed for rural estates) require expensive electrical power, paved rather than gravel roads, and buried rather than surface water lines. The combination of low rents and expensive subdivision requirements makes it unprofitable for the landowner to subdivide land into small farms.

For example, rather than developing the State agricultural park in Kahuku, it would have been—as surprising as it may seem—less expensive for the State to give each farmer in the park \$100,000¹⁰. In addition, there is the risk that when the leases expire, small-scale farmers will turn to the Legislature in an attempt to prevent landowners from raising lease rents, or to prevent landowners from evicting them in favor of a higher and more profitable use of the landowner's land—this often occurs in long-term leases for land on which small-scale farmers have built homes (e.g., Waialeale-Waikane, Kona, Waianae, Kalamo Valley). Such an economic environment favors leases to large-scale operators (including cooperatives consisting of many small-scale farmers), short-term and illegal leases of unsubdivided land, subdivision of the land into rural estates for sale to buyers who can afford the costs of the subdivision requirements, or leaving the land fallow.

In summary, the shortage of small parcels of land for farmers is a serious problem. Nevertheless, a vast Statewide supply of prime agricultural land does exist and is available for those profitable diversified agricultural activities that are large in scale, or for which the subdivision requirements are somehow circumvented.

Outlook for Diversified Agriculture

Based on the above analysis, ample prime agricultural land will be available to easily accommodate the Statewide requirements of diversified agriculture. This conclusion derives from the fact that a vast amount of prime agricultural land and water is available Statewide, having been freed from sugar and pineapple production in recent years; the very real possibility that additional sugarcane acreage and water will be freed, given the existence of unprofitable land; and the fact that the State has a vast supply of prime agricultural land. This is based on 275 usable acres divided into 24 lots, a land cost to the State of \$50 per acre per year, improvement costs of \$3.5 million for developing the farm plots (electric power, roads, etc.); rents received from farmers of \$100 per acre per year; an 8-percent discount rate based on State bonds; and a 30-year term for the land and the lease.

sugar operations; the fact that some, if not most, of the sugar operations would make their lands available for profitable replacement crops; and, in contrast, the fact that land requirements for diversified agriculture are surprisingly modest. In other words, the limiting factor is not the land supply, but rather the market demand for those crops that can be grown profitably in Hawaii. The proposed Lahaina Master Plan involves far too little land to affect this conclusion. Therefore, the Lahaina Master Plan would not affect adversely the Statewide growth of diversified agriculture.

However, the HIFDC project could affect where the growth of diversified agriculture occurs. For example, if the property were to be removed from sugar production and made available for diversified agriculture—but not for housing, commercial, or industrial use—and made available at rents which are heavily discounted from market rents, then some diversified agriculture could develop on the property. However, such development would be at the expense of diversified agriculture elsewhere in the State.

Consistency with Overseas Long-Term Trends

The increased availability of prime agricultural land in Hawaii compared to that of prior decades results from some very long-term and accelerating trends that are occurring throughout the United States, Europe, and many developed and developing market economies. For example, U.S. farmers are paid by the government not to farm their land. This has resulted in 30 million acres of agricultural land lying fallow in 1984.¹¹ In Europe, quotas are used to limit production. The principal agricultural problem has been overproduction, which has occurred as a result of the tremendous success of increasing yields, coupled with a slowing of the population growth rate. Because yields increase faster than population growth, resources must be freed from agriculture in order to restore balanced markets, and to increase income to the farmers who remain. Otherwise agricultural products glut the market; this is followed by low prices, a fall in farmers' income, and bankruptcies.

Furthermore, the export market has not been able to absorb the excess production, partly due to the agricultural successes achieved in many developing countries. For example, India once suffered from severe food shortages. With the introduction of modern agriculture, however, its farm industry has been transformed, making India self-sufficient and even an exporter of many foods it once had to import. Similar gains have been achieved throughout Asia and Central and South America.

Sugar is clearly part of this trend which, over the long term, shows supply increasing more quickly than demand. In fact, some of the newer sweeteners have the theoretical potential of causing the release of all the land in the world that is now planted in sugarcane and sugarbeets.

11. Norman E. Borlaug and Christopher R. Dowswell, "World Revolution in Agriculture."

The major agricultural problems facing the United States and many other economies, therefore, is how to make the reduction in production an orderly one so as to minimize social problems. This is a problem that arises from the tremendous successes in agriculture production, and contrasts sharply with, and invalidates, the 200-year old prediction of Thomas Malthus that population will increase faster than the food supply.

CONSISTENCY WITH LAHAINA COMMUNITY PLAN AND STATE PLAN

In certain regards, the HIFDC project would be inconsistent with State and County agricultural policies: potentially with respect to the continued viability of the sugar industry in West Maui, and with respect to protecting prime agricultural lands from development and encouraging the growth of diversified agriculture in West Maui (see Table 4). On the other hand, the project would not adversely affect any existing diversified agricultural activities, nor would it adversely affect the Statewide growth of diversified agriculture.

To a limited extent, the project would conform to the Lahaina Community Plan, which calls for urbanization to the east and north of the civic center complex, and around Crater Reservoir. However, the project would urbanize some lands which the Lahaina Community Plan would leave in agriculture.

From a broader perspective, it should be noted that West Maui enjoys a very healthy economy which is driven by the visitor industry, and any risk that the HIFDC project may pose to agriculture would translate into a very small risk to the economy as a whole. Also, State and County policies that support affordable housing conflict with those policies which support agriculture and, given the severity of the housing situation in West Maui and the economic health of the region, the State and County policies regarding affordable housing would appear to override the agricultural policies.

Table 4-- SELECTED STATE AND COUNTY OBJECTIVES, POLICIES, AND GUIDELINES RELATED TO AGRICULTURAL LANDS

HAWAII STATE PLAN (Chapter 226, Hawaii Revised Statutes, as amended):

Section 226-7 (Objectives and policies for the economy--agriculture.)

- (a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:
 - (1) Continued viability in Hawaii's sugar and pineapple industries.
 - (2) Continued growth and development of diversified agriculture throughout the State.
- (b) To achieve the agricultural objectives, it shall be the policy of the State to:
 - (6) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.

Section 226-103 Economic priority guidelines.

- (c) Priority guidelines to promote the continued viability of the sugar and pineapple industries:
 - (1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.
- (d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:
 - (1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.

Section 226-104 Population growth and land resources priority guidelines.

- (b) Priority guidelines for regional growth distribution and land resource utilization:
 - (2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

Table 4-- SELECTED STATE AND COUNTY OBJECTIVES, POLICIES, AND GUIDELINES RELATED TO AGRICULTURAL LANDS (continued)

STATE AGRICULTURAL FUNCTIONAL PLAN (June 1985)

(Functional plans are guidelines for implementing the State Plan, and are not adopted by the State Legislature.)

- U. Objective: Achievement of Productive Agricultural Use of Lands Most Suitable and Needed for Agriculture.
 - (5) Policy: Provide greater protection to agricultural lands in accordance with the Hawaii State Constitution.
 - (c) Implementing Action: Identify important agricultural lands to promote diversified agriculture, increased agricultural self-sufficiency, and assure the availability of agriculturally suitable lands.
 - (d) Implementing Action: Unify standards and criteria to conserve and protect important agricultural lands are enacted by the Legislature, important agricultural lands should be classified in the State Agricultural District and zoned for agricultural use, except where, by the preponderance of the evidence presented, injustice or inequity will result or overriding public interest exists to provide such lands for other objectives of the Hawaii State plan.

Table 4 -- SELECTED STATE AND COUNTY OBJECTIVES, POLICIES, AND GUIDELINES RELATED TO AGRICULTURAL LANDS (continued)

LAHAINA COMMUNITY PLAN, COUNTY OF MAUI (December 1983)

IV. MAJOR PROBLEMS & OPPORTUNITIES

A. Highest priority problems and issues:

- Viability of agricultural activities and preservation of the land resource base for a variety of agricultural activities, including sugar, pineapple, diversified agriculture, and aquaculture.

B. Second priority problems and issues:

- Water for domestic and agricultural uses.

V. PLANNING STANDARDS & PRINCIPLES

1. The Economic Base

Establishing a stable economic base capable of providing sustaining employment opportunities for present and future residents was a strong concern. The (Lahaina Citizens Advisory) committee felt that it would be necessary not only to strengthen the present economic base, but to broaden it as well. In addition to supporting present agriculture, . . . the committee felt it wise to encourage other economic pursuits compatible with community desires and the region's environment. Desirable economic activities included diversification of agricultural pursuits such as diversified agriculture and aquaculture, . . .

The following planning standards and principles reflect these committee choices.

2. Protection of the Agricultural Land Base

Plantation agriculture is an important economic activity which also provides much of the "green" backdrop important for the region's atmosphere and its marketability to visitors. Protection of these lands is considered critical to the viability of Lahaina's sugar industry and the livelihood of its employees.

VI. RECOMMENDATIONS

SOCIO-ECONOMIC ASPECTS

1. Economic Activity

- a. General. Promote a diversified economic base which offers long-term employment to Lahaina residents, and maintains overall stability in economic activity and growth. Such a program should include the following components:

- 6) Agriculture.

Table 4 -- SELECTED STATE AND COUNTY OBJECTIVES, POLICIES, AND GUIDELINES RELATED TO AGRICULTURAL LANDS (continued)

- b. Agriculture. Provide for the preservation and enhancement of important agricultural lands for a variety of agricultural activities, including sugar cane, pineapple, diversified agriculture, and aquaculture. The importance of agriculture to the region's economic base, identity, and lifestyle should be recognized through the following programs and policies.

- 1) Maintain the land acreage required to sustain economically viable agricultural operations.
- 2) Prevent urbanization of important sugar cane lands to the greatest extent possible.
- 3) Encourage maintenance and development of water sources for agricultural activities which do not conflict with water needed for domestic use.

2. Population

- d. Consistent with a policy of slow population growth, phase growth for the region with a limit of 23K additional units in the first phase. Subsequent phases should be considered only if it is found that earlier phases cannot accommodate actual population increases. Growth should be phased as follows:

- 1) Phase I: (Short-term; first 5 years):
 - Residential development around Crater Reservoir.
 - Residential development adjacent to the Lahaina Civic Center.
- 2) Phase II: (Medium-term; 10 year growth, if more accommodation is needed):
 - Contributions to the residential housing supply north of the Lahaina Civic Center.
- 3) Phase III: (Long-term; 20 year growth, if further accommodation is needed):
 - Continued residential expansion north of the Lahaina Civic Center.

This pattern of residential growth assists in accomplishing the following objectives:

- 1) Minimization of urban intrusion into important agricultural lands.

PHYSICAL ASPECTS

2. Land Use

The following land use recommendations are illustrated on the Land Use plan presented as Exhibit E, page 17.

- c. Revise State Urban District boundaries along the south and east edges of the civic center complex and north of the civic center complex for additional residential uses. These adjustments will allow for phased residential expansion.

- f. Create State Urban District boundaries for residential use . . . around Crater Reservoir. That action is consistent with the phased residential growth strategy outlined previously and will provide for the establishment of small-scale residential communities at historical plantation camp sites.

REFERENCES

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- Plasch, Bruce S., Peter Garrod, et. al., *An Economic Development Strategy and Implementation Program for Molokai*, Decision Analysis Hawaii, Inc., Honolulu, Hawaii, June 1985.
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- State of Hawaii, Office of State Planning, Office of the Governor, *The Hawaii State Plan, Chapter 226, Hawaii Revised Statutes*, Honolulu, Hawaii, 1988.
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LAIANA MASTER PLAN: IMPACT ON AGRICULTURE

27

U.S. Department of Agriculture, *Sugar and Sweetener Outlook & Situation*, Washington, D.C.,
December 1984.

University of Hawaii, Land Study Bureau, *Detailed Land Classification—Island of Maui, LISB*
Bulletin No. 7, May 1987.

APPENDIX E

Copies of Correspondence

APPENDIX E

1-19-92 WED 6:45 HFDC

P. 39

NO. CROCKETT LINGLE
Mayor

BRIAN W. MISKAE
Director

DR. J. K. KEKUNA, JR.
Deputy Director



JOHN E. MIN
Long Range Division
COLLEEN M. SUYAMA
Current Planning Division

RECEIVED
H.F.N.C.

JAN 28 1 55 PM '92

COUNTY OF MAUI
PLANNING DEPARTMENT
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

January 23, 1992

Honorable Joseph K. Conant
Executive Director
Housing Finance and Development Corporation
State of Hawaii
Seven Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI 96813

Attn: Mr. Neil Wu

Dear Mr. Wu:

Re: Ikena Street Relocation Site
THK:4-6-18: ptn.3

DEVELOPMENT
COPY

Thank you for your letter of January 14, 1992 advising of HFDC's role in the relocation of residents being displaced by the proposed Lahaina Bypass Highway Project.

It was our original understanding that these residents would be accommodated in the initial phase of the HFDC Master Planned Lahaina project. The site now chosen may be somewhat premature from a planning point of view in that no urbanization has been contemplated south of Lahainaluna Road. We are at present undertaking to review and update each of our nine community plans. The Lahaina Community Plan is scheduled for review this year.

A brief review of the project raises certain questions. Has the outer boundary been fixed arbitrarily to accommodate the 24 lots or is there some other reason such as topography that dictates the overall lot configuration? The 56' roadway providing future extension to the south appears to have no basis. Is there an overall master plan showing further extensions of this subdivision? If so, may we please see them. If not, why is this roadway extension shown? The productivity rating for the soil is "A". Will the removal of this site from Pioneer Mill's operation have any impact? Is the site being condemned? The order of magnitude estimate would indicate that servicing costs will run over \$72,000 per lot. Added to this land costs of at least \$50,000 per acre and the cost of home construction of conservatively \$65 per foot the "turn-key" package could run on average \$165,000 per unit without carrying costs. What credit did DOT allow for

SUSPENSE

Honorable Joseph K. Conant
January 23, 1992
Page 2

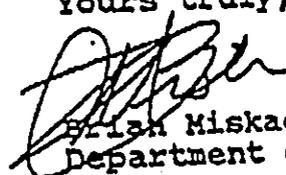
relocation expenses in their offer to the residents being displaced?

This office has no objection to efforts being made to accommodate the residents being displaced. The fact that this project may not meet the intent and purpose of 201E-210 is somewhat disturbing. We note that it is the intention to meet all Maui County subdivision requirements. Although it is not my department that would be required to review your construction plans and specifications it may be difficult for the Department of Public Works to meet the 30 day review period considering that this project is not really an "affordable housing project" being made available to the general public. I cannot speak for the Public Works department however.

In closing, we would reaffirm that we support efforts to relocate the residents being displaced by the Lahaina Bypass Project. We would however ask that you address in detail what impacts potential premature urbanization of lands lying south of Lahainaluna Road will have on the area. This should include traffic and agricultural impacts.

Thank you for this opportunity to comment.

Yours truly,


Brian Miskae, Director
Department of Planning

cc: C. Jencks
G. Haywood
File

lka:m.bm

May 5, 1992

The Honorable Brian Miskae, Director
Planning Department
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Miskae:

Re: Ikena Street Relocation Site

Thank you for your letter of January 23, 1992 regarding the subject project. The following are our responses to your comments and questions in your letter:

Comment:

It is our original understanding that these residents would be accommodated in the initial phase of the HFDC Master Planned Lahaina project. The site now chosen may be somewhat premature from a planning point of view in that now urbanization has been contemplated south of Lahainaluna Road. We are at present undertaking to review and update each of our nine community plans. The Lahaina Community Plan is scheduled for review this year.

Response:

Your original understanding that residents would be accommodated in the initial phase of the HFDC Master Planned Lahaina project is correct. However, the affected residents strongly objected to this initial location because of the limited ocean view, narrow size lots and warmer climate. As an alternative location to the HFDC's initial phase of the Lahaina project, the affected residents strongly recommended that the area south of

The Honorable Brian Miskae
May 5, 1992
Page 2

Lahainaluna Road be investigated. The conceptual layout of this subdivision was presented to the affected residents on April 2, 1992 and we are currently awaiting their input as to the final configuration, size and selection of lots. We wish to also request the County of Maui Planning Department to process an amendment to the Lahaina Community Plan to change the land use from agriculture to single family residential use.

Question:

A brief review of the project raises certain questions. Has the outer boundary been fixed arbitrarily to accommodate the 24 lots or is there some other reason such as topography that dictates the overall lot configuration?

Response:

The outer boundary was limited to an existing gully which also dictated the overall lot configuration and number. The number and size of lots were based on the existing number of affected residents and range of lot sizes.

Question:

The 56' roadway providing future extension to the south appears to have no basis. Is there an overall master plan showing future extensions of this subdivision?

Response:

The intent of the extension to the south was to allow for access by County maintenance or emergency fire vehicles. At the request of the Department of Public Works, a cul-de-sac has been provided at the south end of the 56' roadway. To our knowledge there are no overall master plans or future extensions of this subdivision contemplated at this time.

The Honorable Brian Miskae
May 5, 1992
Page 3

Question:

The productivity rating for the soil is "A". Will the removal of this site from Pioneer Mill's operations have any impact?

Response:

An environmental assessment will be prepared which will address the effect of the removal of this acreage from Pioneer Mill's operations.

Question:

Is the site being condemned?

Response:

In March 1992 the State Department of Transportation Right-of-Way Branch notified the land owner of the DOT's intent to acquire the subject site for the relocation of the affected Ikena Avenue residents under the State's authority of eminent domain.

Question:

The order of magnitude estimate would indicate that servicing costs will run over \$72,000 per lot. Added to this land costs of at least \$50,000 per acre and the cost of the home construction of conservatively \$65 per foot, the "turn-key" package could run on average \$165,000 per unit without carrying cost. What credit did DOT allow for relocation expenses in their offer to the residents being displaced?

Response:

According to the State DOT, the affected residents will be compensated for their existing land and improvements at a fair market value to be determined by appraisal. Only the development cost for the finished vacant lot excluding the land cost will be offered to the affected residents. The design, financing and construction of the houses will be the individual lot owner's responsibility. The final cost of the finished lot will be based on the lot's size.

The Honorable Brian Miskae
May 5, 1992
Page 4

Comment:

This office has no objection to efforts being made to accommodate the residents being displaced. The fact that this project may not meet the intent and purpose of 201E-210 is somewhat disturbing. We note that it is the intention to meet all Maui County subdivision requirements. Although it is not my department that would be required to review your construction plans and specifications it may be difficult for the Department of Public Works to meet the 30 day review period considering that this project is not really an "affordable housing project" being made available to the general public. I cannot speak for the Public Works Department however.

Response:

When the HFDC's Lahaina Master Planned project was approved by the State Land Use Commission in May 1990, the approval was subject to 21 conditions which govern the product, time schedule and quality of this master planned project. One of the conditions stated that "Petitioner shall not commence the construction of Villages 7 through 11 until the construction of the by-pass road through the Petition Area is substantially underway. Together with the major offsite infrastructure water, sewer, drainage and utility systems, the by-pass road is also a major offsite infrastructure component that will enable the project to be developed in a timely manner. The relocation of the affected residents of Ikena Avenue is a major component of the by-pass road project. Until the relocation of the affected residents is completed, and construction of the by-pass road is substantially underway, development of the mauka villages in the Lahaina Master Planned project cannot proceed. According to the DOT's Planning Branch, the construction of the by-pass road will be subject to the relocation of the affected residents to their new houses in this subdivision by early 1995. As such, it will be proper to request for the public agencies' review of the subdivision's construction plan through the Act 15 process like other major offsite infrastructure improvements required for the Lahaina Master Planned project.

DEV.22100.00

The Honorable Brian Miskae
May 5, 1992
Page 5

Your comment letter and this response will be appended to the environmental assessment. If you have any questions, please contact Neal Wu, Project Manager, at 587-0538.

Sincerely,

JOSEPH K. CONANT
Executive Director

NW:em

DEV.22100.00

SEP 9-92 WED 6:25 HFDC

P. 06

... AVENUE • PO BOX 398 • KAHULUI, MAUI, HI 96732-0398 • (808) 871-844

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FEB 12 12 16 PM '92



February 3, 1992

Mr. Joseph K. Conant, Executive Director
State of Hawaii
Department of Budget and Finance
Housing Finance and Development Corporation
Seven Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, HI 96813

Dear Mr. Conant:

Subject: Ikena Street Relocation Site
TMK: 4-6-18:portion 3

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

In reviewing the information transmitted and our records, we do not have enough data to determine the probable electrical usage. We encourage the developer's electrical consultant to meet with us as soon as practical to plan for the proposed project's electrical requirements. We do have electrical facilities fronting the project location along Wailea Alanui. Given the construction start date of August 1992, and the long lead times for electrical service equipment, we cannot emphasize enough the need to meet with the developer's electrical consultant as soon as possible to verify the project's electrical requirements so that service can be provided on a timely basis.

If you have any questions or concerns, please call David Park at 871-2372.

Sincerely,

A handwritten signature in cursive script, appearing to read "Edward L. Reinhardt".

Edward L. Reinhardt
Manager, Engineering

DP:rt

SEP- 9-92 WED 6:24 HFDC

P.05
LIT #417 MEEO

92:DEV/1732

587-0600

April 28, 1992

Mr. Edward L. Reinhardt, Manager
Engineering Division
Maui Electric Co. Ltd.
210 West Kamehameha Avenue
Kahului, Maui, Hawaii 96732

Dear Mr. Reinhardt:

Re: Ikena Street Relocation Site

Thank you for your February 3, 1992 letter and comments regarding the subject project.

We are directing our electrical consultant to contact your staff as soon as possible to plan for the proposed project's electrical requirements. We fully understand your concern that electrical service equipment are long-lead items which must be planned and ordered far in advance of the anticipated construction start date. As such, we will be re-evaluating the construction schedule in terms of Maui Electric Company (MECO) available electrical service and equipment requirements. Your comments and this response will be appended to the Environmental Assessment for this project.

If there are any other comments in this matter, please contact Neal Wu, Project Manager, at 587-0538.

Yours truly,

Joseph K. Conant
Executive Director

NW:em

cc: Warren Unemori

DEV.00200.00

SEP- 9-92 WED 6:33 HFDC

KAWAIAHAO PLAZA
567 South King Street
Suite 200
P.O. Box 3466
Honolulu, Hawaii 96801
Telephone (808) 523-6200
Fax (808) 537-4214

RECEIVED
H.F.D.C.

FEB 13 3 09 PM '92

KAMEHAMEHA SCHOOLS / BERNICE PAUHI BISHOP ESTATE

February 12, 1992

Mr. Joseph K. Conant, Executive Director
Housing Finance and Development Corporation
Seven Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Conant:

Preliminary Engineering Report for the Relocation of Ikena Street
Residences, Lease No. 24,878, TMK 246-018-003, Lahaina, Maui,
Hawaii

In keeping with your request for comments, our Engineering Department has reviewed Mr. Unemori's report. Based on this information, we would like clarification as to why a 20-foot easement is needed for the 8-inch sewer line. In addition, Pioneer Mill, as our lessee of record, needs to be given the opportunity to review this report. When I checked with Anne Lo-Shimazu on February 10, 1992, she had not seen the report. I will be sending our copy to her office, today, for review.

If you or your staff have any further questions, please feel free to call me at 523-6239.

Very truly yours,

Kapu C. Smith

Kapu C. Smith
Land Manager, Region II

kcs

cc: Anne Lo-Shimazu

**SUSPENSE
DEVELOPMENT**

92:DEV/1733

587-0600

April 28, 1992

Ms. Kapu Smith, Land Manager, Region II
Kamehameha Schools/Bernice Pauahi Bishop Estates
567 S. King Street
Honolulu, Hawaii 96813

Dear Ms. Smith:

Re: Ikena Street Relocation Site

Thank you for your February 12, 1992 letter, comments and questions regarding the subject project. The following is our response to your comments and questions:

Question: Why a 20-foot easement is needed for an 8-inch line?

Response: The County of Maui requires a minimum 15-foot easement for maintenance of the 8-inch sewer line. As a result of our discussion with your Chief Engineer, we have incorporated the sewer easement within each lot's boundary. To ensure that the easement area is accessible for possible maintenance and repair of the 8-inch sewer line and manholes, we plan to install gravel-surface paving in the easement area to accommodate County maintenance vehicles.

Comment: Pioneer Mill, as our lessee of record, needs to be given the opportunity to review this report. When I checked with Anne Lo-Shimazu on February 10, 1992, she had not seen the report. I will be sending our copy to your office, today, for review.

DEV.00200.00

6:34 HFDC

Ms. Kapu Smith
April 28, 1992
Page 2

Response:

Our files indicate that a copy of the report was transmitted to Pioneer Mill on January 14, 1992 and pursuant to your March 11, 1992 request for additional copies of the report, we transmitted two copies of the report to your office on March 13, 1992.

According to our staff's recent inquiry, the report is still being reviewed by Pioneer Mill officials. As soon as we receive and are able to address all of Pioneer Mill's comments, questions and concerns, we will commence the preparation of the Environmental Assessment for this project. Your comment letter and this response letter will also be appended to the Environmental Assessment.

If there are any questions regarding this matter, please call Neal Wu, Project Manager, at 587-0538.

Sincerely,

Joseph K. Conant
Executive Director

NW:em

PIONEER MILL COMPANY, LIMITED

Growers of sugar cane and producers of raw sugar

P. O. Box 727
Lahaina, Hawaii 96767
Fax (808) 661-0992

April 21, 1992

Mr. Joseph K. Conant
Executive Director
Housing Finance and
Development Corp.
Seven Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, Hawaii 96813

Subject: Ikena Street Residences Relocation Site

Dear Mr. Conant:

Thank you for allowing Pioneer Mill Company (PMCo) to review and provide comment on Warren Unemori Engineering, Inc.'s "Preliminary Engineering Report for the Relocation of Ikena Street Residences," and for providing us with other information regarding this project.

The project is located on Bishop Estate land currently under lease to PMCo for sugar cane cultivation. Our comments regarding the project are as follows:

- We are pleased to note the drainage design will allow for less storm water runoff off the site once the project is completed, than does the present situation. However, we would like to emphasize that interim drainage and erosion measures will have to be implemented to minimize the adverse impact of this project on PMCo while this project is being constructed. Further, allowing whatever reduced runoff to sheet flow off of the project onto our fields located below may not be sufficient. We would appreciate that a PMCo approved runoff collection and/or diversion scheme be included in the project's plan.
- Attached are copies of the field maps for PMCo's Fields 705 and 755. Highlighted in yellow is the approximate area that this project will impact. Please note that the project will impact the irrigation system in the 3.5 block of Field 755,



Mr. Joseph K. Conant
April 21, 1992
Page 2

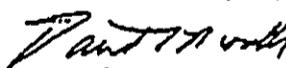
Section 1 and will cause it to become a remnant piece. Compensation to PMCo for irrigation adjustment and the resulting increased level of difficulty in farming the piece will be required. Also note that the field access road at Lahainaluna Road at the top of Field 755 is cut off by the project; access to the field will have to be restored - this access scheme should also be included in the plan.

Please note that Field 705 is presently scheduled to be harvested in October 1992, and Field 755 around March of 1993; crop damages will be incurred should PMCo not be allowed to take these crops or subsequent crops on these fields to full term. Unrecovered capital cost and facilities adjustment compensation will be required.

As you have noted in your letter, the project site belongs to the Bishop Estate, close coordination between the three parties involved will have to be exercised.

As per your current practice, we would expect that further design and other work on this project be coordinated and reviewed with PMCo. We appreciate your cooperation and your consideration of our comments. Should you desire further follow up information, please call Anne Lo-Shimazu at Amfac/JMB Hawaii, Inc. at 945-8363.

Very truly yours,
PIONEER MILL COMPANY, LIMITED

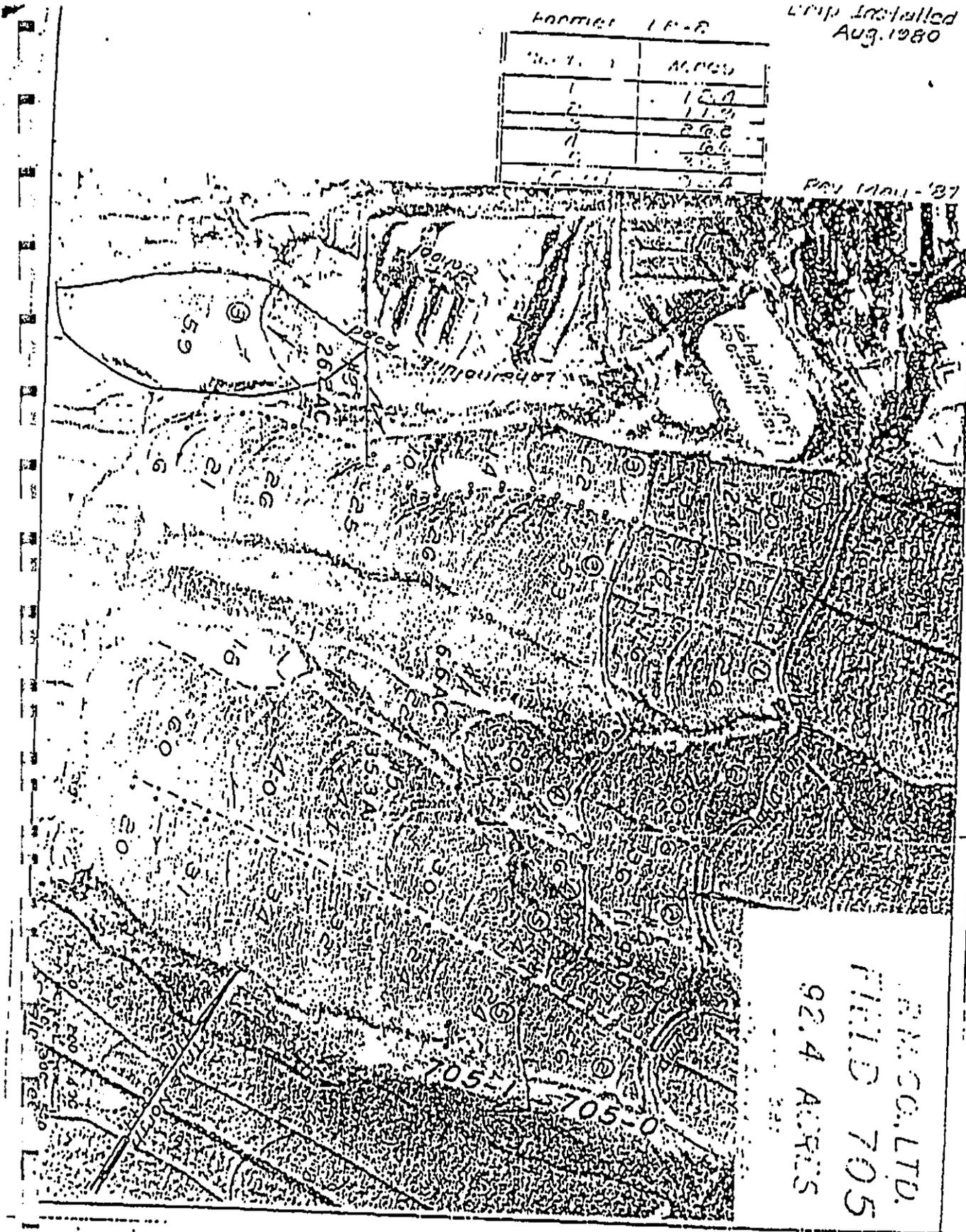

David L. Morrell
Vice President and Manager

DLM:ALS/KK

Attach.

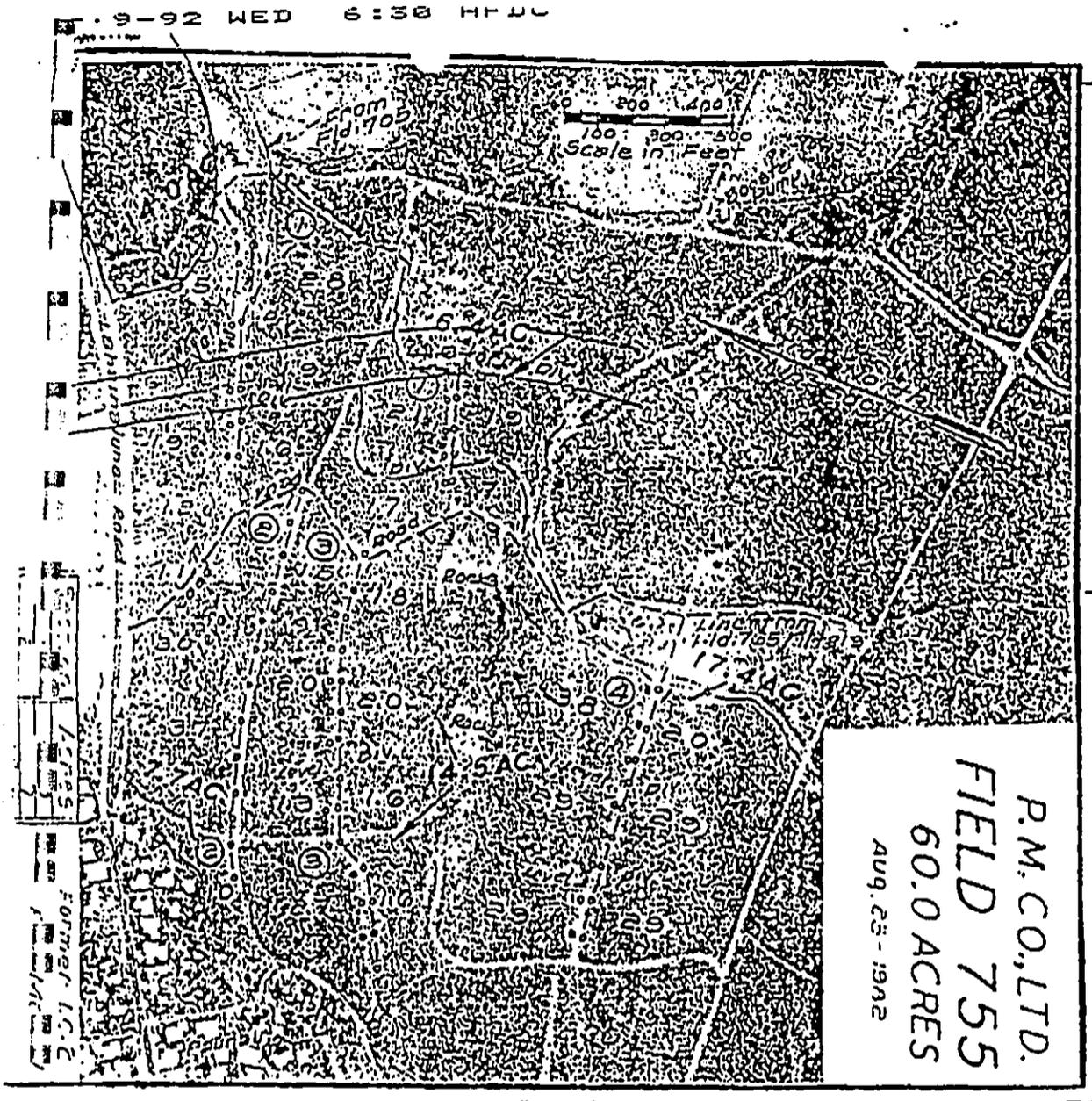
xc: A. Lo-Shimazu
K. Smith, Bishop Estate

DOCUMENT CAPTURED AS RECEIVED



ENSCO LTD.
FIELD 705
92.4 A.F.S.

DOCUMENT CAPTURED AS RECEIVED



92:DEV/1916

587-0600

May 12, 1992

Mr. David K. Morrell
Vice President and Manager
Pioneer Mill Co., Ltd.
P. O. Box 727
Lahaina, Hawaii 96797

Dear Mr. Morrell:

Subject: Ikena Street Relocation Site

Thank you for your letter of April 21, 1992 and your comments and concerns regarding the subject project. The following are our responses to your comments and concerns:

Comment: We are pleased to note that the drainage design will allow for less storm water runoff off the site once the project is completed, than does the present situation. However, we would like to emphasize that interim drainage and erosion measures will have to be implemented to minimize the adverse impact of this project on PMCO while this project is being constructed. Further, allowing whatever reduced runoff to sheet flow off the project on our fields located below may not be sufficient. We would appreciate that a PMCO approved runoff collection and/or diversion scheme be included in the project's plan..

Response: According to the preliminary engineering studies for the project, no additional runoff other than what PMCO fields are presently receiving are anticipated. If it is determined later that additional runoff may affect the PMCO fields, the project's design plans will include collection and/or diversion plans for the additional runoff. In any case, we will be happy to transmit a set of the preliminary and final drainage plans to your office for your review and approval in the future.

DEV.22100.00

Mr. David K. Morrell
 May 12, 1992
 Page 2

Comment: Attached are copies of the field maps for PMCO's Fields 705 and 755. Highlighted in yellow is the approximate area that this project will impact. Please note that the project will impact the irrigation system in the 3.5 block of Field 755, Section 1 and will cause it to become a remnant piece. Compensation for irrigation adjustment and the resulting increased level of difficulty in farming and piece will be required. Also note that the field access road at Lahainaluna road at the top of the Field 755 is cut off by the project; access to the field will have to be restored - this access scheme should also be included in the plan.

Response: We certainly would like very much to minimize any disruption to PMCO's operations and its existing infrastructure. The affected existing access road and irrigation system, will need to be relocated and the cost of such relocation will be included in the project's development cost. The relocation of the existing infrastructure will be submitted also for PMCO's review and approval.

Comment: Please note that Field 705 is presently scheduled to be harvested in October 1992, and Field 755 around March of 1993; crop damages will be incurred should PMCO not be allowed to take these crops or subsequent crops on these fields to full term. Unrecovered capital cost and facilities adjustment compensation will be required.

Response: We have revised the project's construction start to begin after the harvesting of Fields 705 and 755 to avoid any crop damage. We also request that the affected portions of these fields not be replanted after they have been harvested. As such, the cost of unrecovered capital and facilities and other compensation for PMCO must be agreed upon among all parties involved.

Comment: As you have noted in your letter, the project site belongs to the Bishop Estate, close coordination between the three parties involved will have to be exercised.

Response: Absolutely. We intend to work as diligently and expeditiously with the Bishop Estate and PMCO as well as all affected governmental agencies throughout the development of this project.

Mr. David K. Morrell
May 12, 1992
Page 3

Thank you kindly for your time and effort in addressing these important comments and concerns for this project. Your comments and this response letter will be appended to the Environmental Assessment. If there are any questions, please contact Neal Wu, Project Manager, at 587-0538.

sincerely,

JOSEPH K. CONANT
Executive Director

NW:ci

JOHN WAIHEE
GOVERNOR OF HAWAII

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H.F.D.C. 1

JAN 29 3 42 PM '92



STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
34 HIGH STREET
WAILUKU, MAUI, HAWAII 96793

JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

PAUL E. HOFFMAN, M.D., M.P.H.
DISTRICT HEALTH SERVICES ADMINISTRATOR (M.D.)

January 24, 1992

Mr. Joseph K. Conant
Executive Director
Housing Finance and Development Corporation
Department of Budget and Finance
Seven Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Conant:

Subject: Ikena Street Relocation Site
TMK: 4-6-18: portion 3

Thank you for the opportunity to review and comment on the subject project. We have no comments at this time.

Sincerely,

PAUL E. HOFFMAN, M.D., M.P.H.
District Health Services Administrator

DEVELOPMENT
COPY

92:DEV/1734

587-0600

April 28, 1992

TO: Dr. Paul E. Hoffman, M.D., M.P.H.
Administrator
Maui District Health Office

FROM: Joseph K. Conant, Executive Director
Housing Finance and Development Corporation

SUBJECT: IKENA STREET RELOCATION SITE

Thank you for your January 24, 1992 letter regarding the subject project. Your letter and this response will be appended to the Environmental Assessment for this project.

If there are any questions on this matter, please contact Neal Wu, Project Manager, at 587-0538.

cc: Warren Unemori



DEPARTMENT OF
HUMAN CONCERNS
COUNTY OF MAUI

RECEIVED
H.F.D.C.

LINDA CROCKETT LINGLE
Mayor
STEPHANIE AVEIRO
Director
HENRY OLIVA
Deputy Director

200 SOUTH HIGH STREET, WAILUKU, HAWAII 96793

FEB 6 3 38 PM '92

(808) 243-7805

February 4, 1992

Mr. Neal Wu
Project Coordinator
HFDC
Seven Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, HI 96813

Dear Mr. Wu:

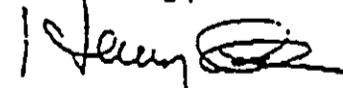
This is to confirm our telephone conversation regarding our questions on the above subject proposal. It is our understanding that:

1. The affected street name is Ikena Avenue and not Ikena Street.
2. The name of the existing subdivision located across Lahainaluna Road is Kelawea Mauka III and not Kilawea Mauka Subdivision;
3. The proposed project site was selected in consultation with the affected residents of Ikena Avenue and that they were supportive of the selected site;
4. The proposed lot sizes are equal to or larger than the lots of the affected Ikena Avenue residents;
5. The affected residents of Ikena Avenue were offered the opportunity to relocate to HFDC's Leialii Subdivision;
6. The selling prices for the improved lots in the above proposal will be based on cost recovery;
7. The improved lots would not be sold subject to a buy-back option and/or a shared appreciation provision; and finally,
8. The method to be used to determine the order in which the affected families will get to select a lot will be decided by the Department of Transportation.

Please send a written response confirming receipt of our understanding of our January 28th phone conversation. Thank you for allowing us to comment on this proposal.

**DEVELOPMENT
COPY**

Sincerely,


HENRY OLIVA
Deputy Director

Housing Division

Senior Services Division

Youth Services Division

Immigrant Services

Volunteer Action Division

Office on Aging

Printed on recycled paper



ED 6:34 HFDC

92:DEV/1730

587-0600

April 28, 1992

The Honorable Henry Oliva, Deputy Director
Department of Human Concerns
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Oliva:

Re: Ikena Street Relocation Site

Thank you for your February 4, 1992 letter and comments regarding the subject project. The following are our responses and confirmation of our staff's understanding to your comments and questions in your letter:

1. The affected street name is Ikena Avenue and the final engineering report will be corrected.
2. The name of the existing subdivision is Kelawea Mauka III and the final engineering report will be corrected.
3. The proposed project site was selected in consultation with affected residents of Ikena Avenue. A briefing on the status of this relocation project was presented to the affected residents on April 2, 1992. The proposed conceptual subdivision layout is currently being reviewed by the affected residents to determine how individuals will select their lots.
4. The proposed lot sizes are equal to or larger than the lots of affected residents' lots.

The Honorable Henry Oliva
April 28, 1992
Page 2

5. The affected residents were offered the opportunity to relocate to Housing Finance and Development Corporation (HFDC) Villages of Leiali'i project adjacent to the Lahaina Civic Center.
6. The selling prices for the improved lots in the proposed subdivision will be based on the actual development cost.
7. The improved lots will not be subject to a buy-back option and/or a shared-appreciation provision.
8. The method to be used to determine the order in which the affected families will get a lot will be determined by the Department of Transportation in consultation with the affected residents.

This response letter and your comments will be appended to the Environmental Assessment for the subject project.

If there are any questions, please contact Neal Wu, Project Manager, at 587-0538.

Sincerely,

Joseph K. Conant
Executive Director

NW:em

DEV.00200.00

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H.F.D.C.
JAN 31 1 34 PM



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1108
WAILUKU, MAUI, HAWAII 96793-7108

January 27, 1992

Mr. Joseph K. Conant, Executive Director
Housing Finance and Development Corporation
State of Hawaii
Seven Waterfront Plaza, Suite 303
500 Ala Moana Blvd.
Honolulu, Hawaii 96813

Dear Mr. Conant:

Re: IKENA STREET RELOCATION SITE
TMK 4-6-18:POR. 3, LAHAINA, MAUI

We have no comment on the preliminary engineering report for the
subject project.

Sincerely,

A handwritten signature in cursive script, appearing to read "D. Craddick".

David R. Craddick
Director

EK:ab

DEVELOPMENT
COPY

92:DEV/1731

587-0600

April 28, 1992

The Honorable David Craddick, Director
Department of Water Supply
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Craddick:

Re: Ikena Street Relocation Site

Thank you for your January 27, 1992 letter regarding the subject project. Your letter and this response will be appended to the Environmental Assessment for this project.

If there are any questions in this matter, please contact Neal Wu, Project Manager, at 587-0538.

Sincerely,

Joseph K. Conant
Executive Director

NW:em

cc: Warren Unemori

DEV.00200.00

WACKETT LINGLE
Mayor
MORGEN KAYA
Director
CHARLES JENCKS
Deputy Director
LLOYD P.C.W. LEE, P.E.
Chief Staff Engineer

RECEIVED
H.H.P. D.C.
FEB 26 1 49 PM '92



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS

200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

February 21, 1992

AARON SHINMOTO, P.E.
Land Use and Codes Administration
EASSIE MILLER, P.E.
Wastewater Reclamation Division
RALPH NAGAMINE, P.E.
Engineering Division
BRIAN HASHIRO, P.E.
Solid Waste Division
MELVIN HIPOLITO
Highways Division

Mr. Joseph K. Conant
Executive Director
Department of Budget and Finance
Housing Finance and Development Corporation
State of Hawaii
Seven Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI 96813

SUBJECT: IKENA STREET RELOCATION SITE
T.M.K. 4-6-18 POR 3

In response to your letter dated January 14, 1992 with attached PER, the following comments are provided:

1. The County will not except any sewer easements that traverse through private property.
2. Who will the 20' utility easement be in favor of?
3. Will there be equipment accessibility to the 20' utility easement once the subdivision is completed?

We apologize for responding so late. If you have further questions please call Tracy Takamine, at 243-7417.

Sincerely,

Eassie Miller

Eassie Miller, Chief
Wastewater Reclamation Division

SUSPENSE

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DEVELOPMENT
COPY

92:DEV/1744

587-0600

April 29, 1992

Mr. Eassie Miller, Chief
Wastewater Reclamation Division
Department of Public Works
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Miller:

Re: Ikena Street Relocation Site

Thank you for your February 21, 1992 letter regarding the subject project. The following are our responses to your comments and questions:

County Comments:

The County will not except any sewer easements that traverse through private property.

Response:

The 20' wide sewer easement has been reduced to 15-foot. At the request of the current land owner, the utility easement must be located within the future owner's lot boundary.

County Question:

Who will the 20' utility easement be in favor of?

Response:

This 15-foot easement will be in favor of the County of Maui.

County Question:

Will there be equipment accessibility to the 20' utility easement once the subdivision is completed?

Mr. Eassie Miller
April 29, 1992
Page 2

Response:

The easement area will be paved with gravel and fenced on the inside and will be accessible for maintenance vehicle and equipment after the subdivision is completed.

Your comment letter and this response letter will be appended to the Environmental Assessment for this project.

If there are any questions on this project, please contact Neal Wu, Project Manager, at 587-0538.

Sincerely,

Joseph K. Conant
Executive Director

NW:em

CHARLES JENCKS
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS

LAND USE AND CODES ADMINISTRATION

250 SOUTH HIGH STREET

WAILUKU, MAUI, HAWAII 96793

March 3, 1992

LOISIE MILLER, P.E.
Wastewater Reclamation Division
RALPH NAGAMINE, P.E.
Engineering Division
BRIAN HASHIRO, P.E.
Solid Waste Division
MELVIN HIPOLITO
Highways Division

Joseph K. Conant
Executive Director
Department of Budget and Finance
Finance and Development Corp.
Seven Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Conant:

Re: Subdivision for the Relocated Ikena Street Residence at
Lahaina, Maui, TMK:4-6-18:Portion of 3
Your File #92:DEV/152

We have reviewed the subject project and offer the following comments:

1. The subdivider must obtain a "Community Plan Amendment" and "Change in Zoning" to conform with the land use requested for the subject subdivision.
2. All utilities for the subject subdivision shall be placed underground.
3. Designate and dedicate a road widening strip along Lahainaluna Road in conformance with roadways classified as "urban collector". A 60 to 70 feet right-of-way is needed for this classification.
4. Improvements to the subdivision roads and the adjoining half of Lahainaluna Road and the road widening strip will be required.
5. Design and construct the drainage facilities to the requirements of the Department of Public Works. Provide a detailed drainage and erosion control plan including, but not limited to, hydrologic and hydraulic calculations, scheme for controlling erosion and disposal of runoff water, and an analysis of the soil loss using the HESL erosion formula, for our review and approval. The plan shall provide verification that the grading and all runoff water generated by the project will not have an adverse effect on the adjacent and downstream properties.



March 2, 1992
Joseph K. Conant
TMK:4-6-18:Portion of 3

6. Payment of \$20,470.08 for parks and playground assessment. Make a check payable to the Director of Finance, County of Maui, and remit payment to the Division of Land Use and Codes Administration.
7. No access permitted restriction shall be imposed on all lots fronting Lahainaluna Road and all corner lots.
8. Provide a temporary cul-de-sac at the end of the proposed Kuialua Street extension.
9. Plans should show the installation of an advance riser for each sewer lateral.
10. The owners and their contractors shall implement solid waste reduction, re-use and recycling programs to reduce the amount of solid waste to be disposed of at the County landfills.
11. All yard debris shall be composted and re-used on their landscape plantings.
12. Alternative means of disposal of grubbed material and rock shall be utilized other than disposed of at the County landfills.

Please call Mr. Glen Ueno of our Land Use and Codes Administration at 243-7373, if you have any questions or need further assistance.

Very truly yours,



GEORGE N. KAYA
Director of Public Works

AS:mht

cc: Dept. of Human Concerns
Engineering Division
Solid Waste Division
Wastewater Reclamation Division

SENT BY:X

; 9-24-92 ; 8:41AM ;

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808 244 4856:# 2

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
477 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0800

IN REPLY REFER TO:
92:DEV/4559

September 10, 1992

The Honorable George Kaya, Director
Department of Public Works
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Kaya:

Re: Ikena Street Relocation Site

Thank you for your March 3, 1992 letter with comments and requirements regarding the subject project and please accept our apology for the lateness of this response letter. The following is in response to your comments and requirements.

Requirement 1: The subdivider must obtain a "Community Plan Amendment" and a "Change in Zoning" to conform with the land use requested for the subject subdivision.

Response: The Housing Finance and Development Corporation (HFDC) is currently developing a large master planned community above the Lahaina Civic Center. Among the essential offsite infrastructure improvements required to support this master planned community is a major road improvement known as the "Lahaina By-Pass Highway" which will meet the future traffic needs of this master planned community as well as the existing community of West Maui. This major highway improvement will transverse the master planned community in a north-south direction and will require relocation of affected residents along Ikena Avenue. The State

DEV.22100.00

The Honorable George Kaya
September 10, 1992
Page 2

Land Use Commission imposed a condition on the master planned community that such development of lands mauka of the proposed Lahaina By-Pass Highway cannot be developed by HFDC, unless construction of the By-Pass Highway is substantially underway. The relocation of the affected residents of Ikena Avenue is an integral part of the Lahaina By-Pass Highway project and until such relocation is completed, the start of construction of this By-Pass Highway cannot be realized. In order to expedite the necessary "Community Plan Amendment" and "Changes in Zoning" for the master planned community as well as the relocation projects, we plan to process the necessary plan review and approval under Section 73A of the Hawaii Administrative Rules which were granted to HFDC under Act 15, HRS 1988.

Requirement 2:

All utilities for the subject subdivision shall be placed underground.

Response:

Except for pad-mounted electrical transformers and service equipment, all utilities within the subdivision will be placed underground.

Requirement 3:

Designate and dedicate a road widening strip along the Lahainaluna road in conformance with roadways classified as "urban collector." A 60 - 70 foot right-of-way is needed for this classification.

Response:

Our project engineering consultant, Warren Unemori Engineering, Inc. will study this requirement as well as the line-of-sight requirements and discuss this matter in more detail with your Land Use and Codes Administration personnel.

Requirement 4:

Improvements to the subdivision roads and adjoining half of Lahainaluna Road and the road widening strip will be required.

The Honorable George Kaya
September 10, 1992
Page 3

Response:

Our project engineering consultant, Warren Unemori Engineering, Inc. will discuss these requirements in more detail with your Land Use and Codes Administration personnel.

Requirement 5:

Design and construct the drainage facilities to the requirements of the Department of Public Works. Provide a detailed drainage and erosion control plan including, but not limited to, hydrologic and hydraulic calculations, scheme for controlling erosion and disposal of runoff water, and an analysis of the soil loss using the HESL erosion formula, for our review and approval. The plan shall provide verification that the grading and all runoff water generated by the project will not have an adverse effect on the adjacent and downstream properties.

Response:

Our project engineering consultant, Warren Unemori Engineering, Inc. will provide the detailed drainage and erosion control plan, hydrologic and hydraulic calculations, scheme for controlling erosion and disposal of runoff water and an analysis of the soil loss using the HESL erosion formula when preliminary subdivision design plans are submitted for the Department of Public Works review and approval.

Requirement 6:

Payment of \$20,470.08 for parks and playground assessment. Make a check payable to the Director of Finance, County of Maui, and remit payment to the Division of Land Use and Codes Administration.

Response:

Because the subject subdivision will permit relocation of existing families within the same area, the demand for parks and playground remains constant. On this basis we will request the County of Maui for a waiver of this requirement.

The Honorable George Kaya
September 10, 1992
Page 4

Requirement 7:

No access permitted restriction shall be imposed on all lots fronting Lahainaluna road and all corner lots.

Response:

Our project engineering consultant, Warren Unemori Engineering, Inc. will be addressing this restriction in more detail to ensure there is safe vehicular access to and from this subdivision.

Requirement 8:

Provide a temporary cul-de-sac at the end of the proposed Kuialua Street extension.

Response:

A cul-de-sac has been incorporated at the end of the proposed Kuialua Street extension.

Requirement 9:

Plans should show the installation of an advance riser for each sewer lateral.

Response:

Our project engineering consultant, Warren Unemori Engineering, Inc. will be addressing this requirement in more detail with your Land Use and Codes Administration personnel.

Requirement 10:

The owners and their contractors shall implement solid waste reduction, re-use and recycling programs to reduce the amount of solid waste to be disposed of at the County landfills.

Response:

Our Development staff will coordinate this requirement with the future owners and contractors of this subdivision. We would appreciate any assistance the County Department of Public Works can offer in developing a solid waste reduction, re-use and recycling program specifically for this subdivision.

Requirement 11:

All yard debris shall be composted and re-used on their landscape plantings.

Response:

Again, we would appreciate any assistance the County Department of Public Works can

The Honorable George Kaya
September 10, 1992
Page 5

offer in developing composting methods to ensure yard debris is properly re-used.

Requirement 12:

Alternative means of disposal of grubbed material and rock shall be utilized other than disposed of at the County landfills.

Response:

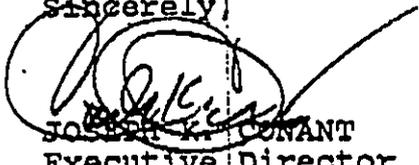
Again, we would appreciate any assistance the County Department of Public Works can offer in developing composting methods to ensure yard debris is properly re-used.

Regarding Items Nos. 10, 11 & 12, please be informed that on August 26, 1992, a meeting with the affected residents of Ikena Avenue was held at the Princess Nahienaena Elementary School. HFDC staff extended an invitation to Ms. Hana Steel of the County Solid Waste Management Division to attend this meeting to present an overview of the County's Solid Waste Recycling program. However, due to a last minute change in her schedule, Ms. Steel was not able to attend this meeting. In the interim we will arrange another meeting for Ms. Steel later this year to acquaint the affected residents to the County's Solid Waste Recycling Program. This response letter and your comments will be appended to the Environmental Assessment for the project.

Enclosed is a copy of the latest development schedule which indicates a revised construction start date of March 1993 for this project.

If there are any questions in this matter, please contact Neal Wu, Project Coordinator, at 587-0538.

Sincerely,


JOSEPH K. CONANT
Executive Director

NW:em

c: Ms. Hana Steel

KETT LINGLE
Mayor
GORDEN KAYA
Director
CHARLES JENCKS
Deputy Director
LLOYD P.C.W. LEE, P.E.
Chief Staff Engineer

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JUN 21 12 33



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS

200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

June 18, 1992

AARON SHINMOTO, P.E.
Land Use and Codes Administration
EASSIE MILLER, P.E.
Wastewater Reclamation Division
RALPH NAGAMINE, P.E.
Engineering Division
BRIAN HASHIRO, P.E.
Solid Waste Division
MELVIN HIPOLITO
Highways Division

Mr. Neal Wu
Senior Project Coordinator
State of Hawaii
Department of Budget and Finance
Housing Finance and Development Corporation
Seven Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, HI 96813

SUBJECT: IKENA AVENUE RELOCATION - TRAFFIC ASSESSMENT

Dear Mr. Wu:

We concur with the conclusions and recommendations drawn in the draft Traffic Assessment dated May 1992. The civil engineering consultant should be provided a copy of the report so all recommended improvements are incorporated in the construction plans.

Also, our review of the tax map shows the proposed access on Lahainaluna Road across Kuialua Street is located on the inside of a curve. Entrance sight distance may be a problem looking mauka. Since left turn movements will experience poor levels-of-service during morning and afternoon peak hours, this movement should not be hampered by inadequate sight distance. Therefore, the lots fronting Lahainaluna Road on the mauka side of Kuialua Street may require setbacks to prevent yard fences and shrubs from obstructing drivers view.

If there are any questions regarding our comments, please call Charlene Shibuya of our Engineering Division at 243-7437 or 7745.

Very truly yours,

GEORGE N. KAYA
Director of Public Works

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Ikma-T.IAR Disk 3

DEVELOPMENT

02:DEV/3027

587-0600

July 23, 1992

Mr. George Kaya, Director
County of Maui
Department of Public Works
200 South High Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Kaya:

SUBJECT: IKENA AVENUE RELOCATION - TRAFFIC ASSESSMENT

Thank you for your comments on the draft Traffic Assessment study dated May 1992. The civil engineering consultant has received copies of both the study and your comments and anticipates no problems at this time.

Consequently, the Housing Finance and Development Corporation will comply with your comments.

Should you have any questions or comments, please call Neal Wu, Project Coordinator, at 587-0538 or Paul Kay, Project Coordinator, at 587-0552.

Sincerely,

JOSEPH K. CONANT
Executive Director

PJK:dl

DEV.22-11:00

JOHN WAIHEE
GOVERNOR



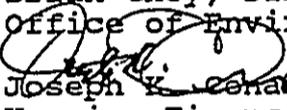
JOSEPH K. COHANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5604

November 20, 1992

TO: Brian Choy, Director
Office of Environmental Quality Control

FROM:  Joseph K. Cohant, Executive Director
Housing Finance and Development Corporation

SUBJECT: Environmental Assessment for the Relocation of Ikena
Avenue Residents.

As accepting agency, the Housing Finance and Development Corporation (HFDC) acknowledges an Environmental Impact Statement (EIS), as defined by chapter 343, HRS, and by the State Office of Environmental Quality Control, is required only if the accepting agency (State of Hawaii) finds that the proposed action may have "significant environmental effects" [Section 11-200-6(b)] and if (1) the proposed development is contrary to the County General Plan, (2) the petition area is located in the SLUC Conservation District or shoreline setback areas, (3) the project contained a historic site listed on the State or National Registers of Historic Places, or (4) the project required the use of State or County funds.

Since the proposed project requires use of State funds for improvements, the proposed project is subject to the provisions of Chapter 343, Hawaii Revised Statutes and the Office of Environmental Quality Control (OEQC), Chapter 200 of Title 11, Administrative Rules.

Anticipated Determination

It is anticipated that development of the proposed project will not have a "significant environmental effect" on the subject property or the surrounding environment, and that negative declaration will be appropriate. An Environmental Impact Statement (EIS), therefore, would not be required. The sum of effects on the quality of the environment is evaluated in the

Mr. Brian Choy
November 20, 1992
Page 2

Draft Environmental Assessment, along with overall cumulative effects of the proposed action.

Should you have any questions, please contact Neal Wu, Project Coordinator, at 587-0538.

NW:dl

K.I.D.S. School is located 2 properties away from the subject site where it has operated for more than 3 years with no negative impact to adjacent properties.

MAUI

CAMP MALUHIA WATER TANK

District: Wailuku
TMK: 3-1-01:por. 1

Agency:
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809
Attention: Land Management Division (587-0439)

Applicant:
Boy Scouts of America
200 Liholiho Street
Wailuku, Hawaii 96793
Attention: Eric Murray (244-3724)

Consultant:
Michael T. Munekiyo Consulting Inc.
2035 Main Street
Wailuku, Hawaii 96793
Attention: Michael Munekiyo (244-2015)
Deadline: January 7, 1993

The Maui County Council, of the Boy Scouts of America, proposes to construct a 23,000 gallon potable water tank at Camp Maluhia. The new tank site will be located southwest of the camp at the 1,245-foot elevation. The tank, 10-foot high and 20-foot in diameter, will be built on a concrete pad approximately 25 feet by 25 feet in size.

The proposed project site is located in open and undeveloped pasturelands on the north facing slopes of the West Maui Mountains. The slope at the project site is approximately 18%.

Potable water will be trucked in via a water tanker and stored in the proposed 23,000 gallon tank. This water will be used for domestic purposes by camp users.

A gravity transmission line from the new water tank will be installed and connected to the camp's water distribution network. The existing surface-diverted water source and existing water tanks (2) will be retained as a back up system to meet non-domestic needs (e.g. water for camp swimming pool).

**HANA HIGHWAY STORM DAMAGE REPAIRS,
HUELO TOWARDS NAHIKU**

District: Hana
TMK: 1-1-02:01

Approving Agency:
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809
Attention: Don Horiuchi (587-0381)

Proposing Agency:
Department of Transportation, Highways Division
869 Punchbowl Street
Honolulu, Hawaii 96813
Attention: Allan Nishimura (587-2244)
Deadline: January 7, 1993

The State of Hawaii, Department of Transportation is proposing to repair and improve areas of Hana Highway, on the island of Maui. Several slides have led to road closures in the subject area. The proposed locations of repair and improvement are on Hana Highway, between Huelo and Nahiku.

The proposed project consists of the following: excavating slopes; constructing cement rubble masonry walls and grouted rubble slope protection; installing horizontal drains, drain inlets, asphalt concrete gutters, guardrails and pavement markings.

IKENA AVENUE RELOCATION SUBDIVISION

District: Lahaina
TMK: 4-6-18: (por) 3

Agency:
Housing Finance and Development Corporation
677 Queen Street, Suite 300
Honolulu, Hawaii 96813
Attention: Neal Wu (587-0538)

Consultant:
Warren S. Unemori Engineering, Inc.
2145 Wells Street, Suite 403
Wailuku, Hawaii 96793
Attention: Warren Unemori (242-4403)
Deadline: January 7, 1993

The project consists of a 24-lot single family residential subdivision for the relocation of Ikena Avenue residents affected by the proposed Lahaina By-Pass Highway which is an integral part of the Villages of Leialii. The project is located on about 8 acres of Bishop Estate-owned land adjacent to Lahainaluna Road. The subdivision will consist of a 56' wide roadway extension of the existing Kualua Street with a 44' wide interior roadway, street trees, concrete curbs, gutters, sidewalks and underground utilities designed to County standards. These lots range in area from 8,691 square feet to 13,451 square feet with an average lot size of 10,802 square feet. The offsite work includes widening of Lahainaluna Road to allow for left and right turn storage lanes, relocation of existing shower trees and one utility pole, pedestrian crossing at the intersection of Lahainaluna Road and Kualua Street. Water, sewer, electrical, telephone and CATV systems are available along Lahainaluna Road. Storm run-off will be primarily discharged into the existing gully adjacent to the subdivision.

**KALAMA-INTERMEDIATE SCHOOL
EIGHT-CLASSROOM BUILDING**

District: Makawao
TMK: 2-4-32:110

Agency:
Department of Accounting and General Services
1151 Punchbowl Street, Room 430

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

Mr. Reginald Kurakawa, Manager
Maui District Office
Department of Agriculture
635 Mua Street
Kahului, Hawaii 96732

Dear Mr. Kurakawa:

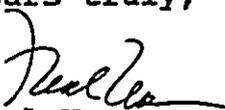
Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

Enclosed for your review and comment, is one copy of the draft environmental assessment. We would appreciate receiving any comments from your agency by January 7, 1993.

Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,


Neal Wu
Project Coordinator

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

Mr. Alan Tokunaga
District Land Agent
Department of Land and Natural Resources
54 High Street
Wailuku, Hawaii 96793

Dear Mr. Tokunaga:

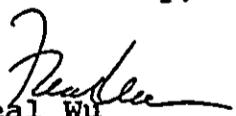
Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

Enclosed for your review and comment, is one copy of the draft environmental assessment. We would appreciate receiving any comments from your agency by January 7, 1993.

Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,


Neal Wu
Project Coordinator

JOHN WAHEE
GOVERNOR OF HAWAII

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FEB 23 2 03 PM '93



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 8TH FLOOR
HONOLULU, HAWAII 96813

February 19, 1993

Mr. Neal Wu, Project Coordinator
Housing Finance and Development Corporation
677 Queen St., Suite 300
Honolulu, Hawaii 96813

Dear Mr. Wu:

SUBJECT: Historic Preservation Review of a Draft Environmental
Assessment for the Ikena Avenue Relocation
Lahaina, Maui
TMK: 4-6-18: por. 3

Thank you for submitting a copy of this document for our review
and comments.

You specifically requested our comments on item C, page 11
(HISTORICAL, ARCHAEOLOGICAL OR CULTURAL). We recommend the
following wording of the paragraph under this item:

As stated on page 3, the proposed project site has been in
cane cultivation for a number of years. It is highly
unlikely that significant historic sites are present due to
extensive ground disturbance resulting from this activity.
Numerous large mounds of rocks collected from field clearing
are evidence of the extent of ground alteration.
Furthermore, previous archaeological studies conducted in
the cane fields of Lahaina have identified no historic sites
(Hommon 1982. An Archaeological Reconnaissance Survey of an
Area Near Waine'e Village, West Maui and Jensen 1989.
Archaeological Inventory Survey, Lahaina Master Planned
Project Site).

Should you have any questions, please contact Ms. Annie Griffin
at 587-0013.

Sincerely,

DON HIBBARD, Administrator
State Historic Preservation Division

AG:amk

WILLIAM W. FATTY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCE

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANAKE

AQUACULTURE DEVELOPMENT
PROGRAM

AQUATIC RESOURCES
CONSERVATION AND

ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT

CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
DIVISION

LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

LOG NO: 7476

DOC NO: 9302AG36

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

Mr. Robert Siarot
Maui District Engineer
650 Palapala Drive
Kahului, Hawaii 96732

Dear Mr. Sairot:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

Enclosed for your review and comment, is one copy of the draft environmental assessment. We would appreciate receiving any comments from your agency by January 7, 1993.

Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,

A handwritten signature in cursive script, appearing to read "Neal Wu".

Neal Wu
Project Coordinator

HAWAII
GOVERNOR

RECEIVED
H.F.D.C.

JAN 15 7 44 AM '93



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

January 13, 1993

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. OMINE
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO:

HWY-PS
2.5181

TO: Joseph K. Conant, Executive Director
Housing Finance and Development Corporation
Department of Budget and Finance

ATTN: Neal Wu

FROM: Rex D. Johnson, Director
Department of Transportation *R. Johnson*

SUBJECT: ENVIRONMENTAL ASSESSMENT FOR RELOCATION OF
IKENA AVENUE RESIDENCES - VILLAGES OF LEIALII,
LAHAINA, MAUI, TMK: 4-6-18: POR. 3

Thank you for your letter of December 8, 1992, transmitting the subject document for our review and comment.

We strongly support this project and appreciate the work you are doing for us to help relocate the displacees caused by our highway project.

DEVELOPMENT
COPY

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

Mr. David Nakagawa
Environmental Program Supervisor
Department of Health
54 High Street
Wailuku, Hawaii 96793

Dear Mr. Nakagawa:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

Enclosed for your review and comment, is one copy of the draft environmental assessment. We would appreciate receiving any comments from your agency by January 7, 1993.

Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,


Neal Wu
Project Coordinator

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

Mr. Keoki Freeland, Manager
Pioneer Mill Co., Ltd.
P.O. Box 727
Lahaina, Hawaii 96767

Dear Mr. Freeland:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

Enclosed for your review and comment, is one copy of the draft environmental assessment. We would appreciate receiving any comments from your agency by January 7, 1993.

Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,


Neal Wu
Project Coordinator

PIONEER MILL COMPANY, LIMITED

RECEIVED
H.F.O.C.

Growers of sugar cane and producers of raw sugar

JAN 6 12 20 PM '93 P. O. Box 727
Lahaina, Hawaii 96767
Fax (808) 661-0992

Jan. 4, 1993

Mr. Neal Wu, Project Director
State of Hawaii
Housing Finance and Development Corp.
677 Queen Street
Honolulu, HI 96813

Dear Mr. Wu:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Draft Environmental Impact Statement

As you are aware, Pioneer Mill's primary concern with the Ikena Street relocation project is the impact of the additional drainage from the subdivision on our sugarcane crop located below the project area.

The proposed plan divides the drainage into three sub-areas with sub-areas 1 & 2 directed toward Kahoma stream via the existing Kelawea Mauka storm drain system. Sub-area 3 is to drain into the basin located below Kelawea Mauka Park which flows to the south side of Lahainaluna Road.

Sub-area 3 is a concern as it flows into an area without any defined drainage structures and there is presently a flooding problem in this area during periods of heavy rainfall. The drainage analyses in the draft E.I.S. indicates that sub-area 3 will actually have a reduction of flows after the subdivision than is presently being generated. If this in fact the case, the new subdivision will have no adverse drainage impact on Pioneer Mill Company cane lands.

Sincerely,


George W. Freeland
Vice president and Manager
Pioneer Mill Company, Ltd.


DEVELOPMENT

Mar 1 11/26/93

IOH WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
877 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
93:DEV/0758

February 16, 1993

Mr. George W. Freeland
Vice President and Manager
Pioneer Mill Company, Ltd.
P. O. Box 727
Lahaina, Hawaii 96767

Dear Mr. Freeland:

Subject: Draft Environmental Assessment for Ikena Avenue
Relocation

Thank you for your January 4, 1993 letter and comments regarding
the draft EA. The following are our responses to your comments:

Comment:

As you are aware, Pioneer Mill's primary concern with the Ikena
Avenue relocation project is the impact of the additional
drainage from the subdivision on their sugarcane crop located
below the project area.

The proposed plan divides the drainage into three sub-areas with
Sub-areas 1 & 2 directed toward Kahoma stream via the existing
Kelawea Mauka storm drain system. Sub-area 3 is to drain into
the basin located below Kelawea Mauka Park which flows to the
south side of Lahainaluna Road.

Sub-area 3 is a concern as it flows into an area without any
defined drainage structures and there is presently a flooding
problem in this area during periods of heavy rainfall. The
drainage analyses in the draft E.I.S. indicates that Sub-area 3
will actually have a reduction of flows after the subdivision is
developed than is presently being generated. If this is in fact
the case, the new subdivision will have no adverse drainage
impact on Pioneer Mill Company cane lands.

DEV.26000.00

Mr. George W. Freeland
February 16, 1993
Page 2

Response:

We share the same conclusion that the new subdivision will not have a significant effect on the downstream properties.

Your comment letter and our response letter will be appended to the final EA. Thank you for your assistance in this draft EA review.

Sincerely,



Joseph R. Conant
Executive Director

DEV.26000.00

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

Mr. Neal Fujiwara
Soil Conservation Service
217 Federal Building
Wailuku, Hawaii 96793

Dear Mr. Fujiwara:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

Enclosed for your review and comment, is one copy of the draft environmental assessment. We would appreciate receiving any comments from your agency by January 7, 1993.

Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,


Neal Wu
Project Coordinator

UNITED STATES
DEPARTMENT OF AGRICULTURE

RECEIVED
H.F.D.C.
SOIL CONSERVATION
SERVICE

70 S. HIGH STREET
ROOM 215
WAILUKU, HI 96793

December 15, 1992

Neal Wu
State of Hawaii, Department of Budget and Finances
Housing Finance Development Corporation
Honolulu, Hawaii

Dear Neal,

Subject: Environmental Assessment for Relocation of Ikena Avenue
Residences
TMK: 4-6-18: (por) 3

Drainage Plan located in Section IV of the Environmental
Assessment Report indicates that an additional drainage amount of
9.7 cfs will be temporarily connected through Kelawea Mauka III
Subdivision Drainage Plan.

Please address if Kelawea Mauka III Subdivision Drainpipes are
capable to handle additional drainage.

Neal Fujiwara

Neal Fujiwara
District Conservationist

DEVELOPMENT
COPY

HN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
93:DEV/1342

March 19, 1993

Mr. Neal Fujiwara
District Conservationist
United States Department of Agriculture
Soil Conservation Service
70 South High Street, Room 215
Wailuku, Hawaii 96793

Dear Mr. Fujiwara:

SUBJECT: Environmental Assessment for Relocation of Ikena
Avenue Residence, TMK: 4-6-18:por 3

Thank you for your December 15, 1992 letter and your question whether the existing Kelawea Mauka III Subdivision storm drain system is adequate to deal with the runoff expected to come from our proposed 24-lot subdivision. The following is our response to your question.

The purpose of this new subdivision is, as you know, to provide a relocation site for the residents along Ikena Avenue who will be displaced by the proposed Lahaina Bypass Highway. According to our consultant engineer, the Department of Transportation will be widening and re-grading Ikena Avenue when it constructs that portion of the new highway. At that time, it will have to construct (among other things) a new drainline to handle runoff from the area, mauka of Ikena Avenue. The connection shown on the subdivision plans is intended only as an interim measure, designed to provide basic storm water disposal during the transition period between the time the Ikena Avenue residents are relocated, and when the Ikena Avenue section of the Lahaina Bypass Highway is completed and a permanent drainage connection can be provided.

Accordingly, the section of the existing Kelawea Subdivision storm drain to be connected to temporarily, has enough unused capacity remaining to accommodate the runoff added by the new subdivision during all but the most

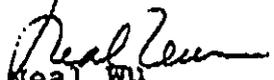


Mr. Neal Fujiwara
March 19, 1993
Page 2

severe rainstorms. Should an exceptionally heavy rain occur, however, any runoff that cannot be accommodated in the underground drainline will simply spill out into the street, and flow along the gutter down to the existing open ditch at the end of Ikena Avenue and into the Kahoma Stream Drainage Channel. (Ikena Avenue has curbs and gutters on both sides of the street and slopes continuously towards Kahoma Stream at grades between 0.5 and 1.0 percent, making it ideal for conveying surface runoff.) The temporary connection currently proposed is therefore very safe, and poses no flood hazard to residents of the area.

Please contact me if you have any more questions about the project, or would like more information on the matter.

Sincerely,


Neal Wu
Project Manager

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0800

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

The Honorable Charmaine Tavares
Department of Parks and Recreation
1580 Kaahumanu Avenue
Wailuku, Hawaii 96793

Dear Ms. Tavares:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

Enclosed for your review and comment, is one copy of the draft environmental assessment. We would appreciate receiving any comments from your agency by January 7, 1993.

Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,


Neal Wu
Project Coordinator

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

The Honorable David Craddick
Department of Water Supply
200. S. High Street
Wailuku, Hawaii 96793

Dear Mr. Craddick:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

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Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,


Neal Wu
Project Coordinator

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

The Honorable Stephanie Aveiro
Department of Human Concerns
200 S. High Street
Wailuku, Hawaii 96793

Dear Ms. Aveiro:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

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Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,

A handwritten signature in cursive script, appearing to read "Neal Wu".

Neal Wu
Project Coordinator



DEPARTMENT OF
HUMAN CONCERNS
COUNTY OF MAUI

RECEIVED
H.F.D.C.

LINDA CROCKETT LINGLE
Mayor
STEPHANIE AVEIRO
Director
HENRY OLIVA
Deputy Director

JAN 4 1 35 PM '93

200 SOUTH HIGH STREET, WAILUKU, HAWAII 96793

(808) 243-7805

December 28, 1992

Mr. Neal Wu
Project Coordinator
Housing Finance and Development Corporation
State of Hawaii
677 Queen Street, Suite 300
Honolulu, Hawaii 96813

Dear Mr. Wu:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Draft Environmental Assessment Report
TMK: 4-6-18:(por) 3

We have reviewed your December 8, 1992 letter and the Housing Finance and Development Corporation's Draft Environmental Assessment Report for the subject project, and hereby request that the following be addressed in the Final Environmental Assessment Report.

1. The basis of compensation in purchasing the affected residents' dwelling units.
2. It is stated that the selling prices for the improved lots in the proposed subdivision will be based on actual development cost. Has an estimated selling price been established based on HFDC's estimated development cost of the project, and if so, what is the estimated selling price?
3. Will the affected residents incur any out of pocket expense for a comparable dwelling unit under the proposed relocation plan?
4. Is it the desire of all the affected residents to purchase improved lots instead of a house and lot package?

**DEVELOPMENT
COPY**

Housing Division

Senior Services Division

Youth Services Division

Immigrant Services

Volunteer Action Division

Office on Aging

Printed on recycled paper 

Mr. Neal Wu
Page 2
December 28, 1992

5. What method will be used to determine the order in which the affected residents will select an improved lot?
6. Are all of the affected residents financially able and agreeable to HFDC's proposed relocation plan?

Please contact Mr. Wayde Oshiro of our Housing Division at 243-7351 if you have any question.

Very truly yours,


for STEPHANIE AVEIRO
Director of Human Concerns

WTO:hs

xc: Housing Administrator

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
93:DEV/0822

February 22, 1993

The Honorable Stephanie Aveiro
Director
Department of Human Concerns
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Ms. Aveiro:

Subject: Draft Environmental Assessment for Ikena Avenue
Relocation Project TMK: 4-6-18: (por) 3

Thank you for your December 28, 1992 letter with your questions and comments. The following is our response to your questions and comments:

Question No. 1

The basis of compensation in purchasing the affected residents' dwelling units.

HFDC Response:

According to the Department of Transportation's Right-of-Way Branch, the basis of compensation in purchasing the affected residents' dwelling units will be the dwelling units' "fair market value" as determined by independent appraisal.

Question No.2

It is stated that the selling prices for the improved lots in the proposed subdivision will be based on actual development cost. Has an estimated selling price been established, based on HFDC's estimated development cost of the project; and if so, what is the estimated selling price?

The Honorable Stephanie Aveiro
February 22, 1993
Page 2

HFDC Response:

The estimated selling price has not been determined. However, the estimated development cost of the project is \$2,255,400 and the estimated development cost per improved lot is \$93,975. The selling price for each lot will vary depending upon the size of the lot. When the development cost for the site improvements are confirmed by contract bid, HFDC will be able to determine the selling price for each lot in this project.

Question No. 3

Will the affected residents incur any out-of-pocket expense for a comparable dwelling unit under the proposed relocation plan?

HFDC Response:

According to the Department of Transportation Right-of-Way Branch, the compensation for the affected residents' dwelling units should not cause the residents to incur any out-of-pocket expense for a comparable replacement dwelling. Much of cost will depend upon the size and quality design of the replacement dwelling.

Question No. 4

Is it the desire of all the affected residents' to purchase improved lots instead of a house and lot package?

HFDC Response:

The present arrangement is to provide the affected residents with only an improved lot. Under this present arrangement, the affected residents are responsible for obtaining their own design consultants, builders, and financing for the homes.

Question No. 5.

What method will be used to determine the order in which the affected residents will select an improved lot?

HFDC Response:

The method to determine the order of selection will be up to the affected residents. Neither the DOT nor the HFDC will be involved in determining the method. HFDC staff has discussed various selection methods with the affected residents (i.e. lottery, first-come-first-serve, etc.)

The Honorable Stephanie Aveiro
February 22, 1993
Page 3

Question No. 6.

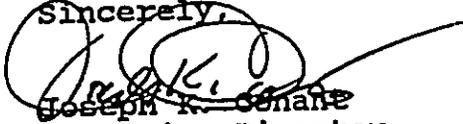
Are all of the affected residents financially able and agreeable to the HFDC's proposed relocation plan?

HFDC Response:

This relocation plan was suggested by the affected residents as an alternative to relocating to the HFDC's first phase adjacent to the Lahaina Civic Center.

Your comment letter and our response letter will be appended to the final EA. Thank you for assisting us in the draft EA review.

Sincerely,


Joseph K. Senane
Executive Director

JOHN WAIHEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

JOSEPH K. CONANT
EXECUTIVE DIRECTOR

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

The Honorable Brian Miskae
Planning Department
250 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Miskae:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

Enclosed for your review and comment, is one copy of the draft environmental assessment. We would appreciate receiving any comments from your agency by January 7, 1993.

Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,

A handwritten signature in cursive script, appearing to read "Neal Wu".

Neal Wu
Project Coordinator

LINDA CROCKETT LINGLE
Mayor



BRIAN W. MISKAE
Planning Director

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COUNTY OF MAUI
PLANNING DEPARTMENT

200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

December 21, 1992

Mr. Neil Wu
HFDC
677 Queen Street, Suite 300
Honolulu, Hawaii 96813

Dear Mr. Wu,

RE: Villages of Leialii - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: por of 3.

The Planning Department has reviewed the draft environmental assessment for the above project and has no comments to offer.

Thank you for the opportunity to comment. If further clarification is required, please contact this office.

Very truly yours,

A handwritten signature in dark ink, appearing to read "B. Miskae".

BRIAN MISKAE
Director of Planning

cc: Ann Cua

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93:DEV/95

January 8, 1993

Mr. Brian Miskae
Director of Planning
Planning Department
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Miskae:

Subject: Villages of Leiali'i
Ikena Avenue Relocation Subdivision
TMK: 4-6-18: por of 3

Thank you for your December 21, 1992 letter regarding the subject project. Your letter and this acknowledgement letter will be appended to the final environmental assessment.

Thank you for your assistance in this matter.

Sincerely,

Neal Wu
Project Coordinator

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JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/5862

December 8, 1992

The Honorable George Kaya
Department of Public Works
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Kaya:

Subject: Villages of Leiali'i - Ikena Avenue Relocation
Subdivision TMK: 4-6-18: (por) 3

Pursuant to Chapter 343, Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) filed a draft environmental assessment on the subject project and a notice was published in the OEQC Bulletin on December 8, 1992 pursuant to Act 241, SLH 1992. The comment period for this draft environmental assessment commences on December 8, 1992 and ends on January 7, 1993.

Enclosed for your review and comment, is one copy of the draft environmental assessment. We would appreciate receiving any comments from your agency by January 7, 1993.

Your attention in this matter is appreciated very much. If you have any questions, please contact me at 587-0538.

Yours truly,


Neal Wu
Project Coordinator

JOHN WAIHEE
GOVERNOR

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BRIAN J. J. CHOY
Director

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185

December 1, 1992

Mr. Joseph Conant, Executive Director
Housing Finance and Development Corporation
677 Queen Street, Suite 300
Honolulu, Hawaii 96813

Attn: Mr. Neal Wu

Dear Mr. Conant:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE IKENA AVENUE
RELOCATION SUBDIVISION, LAHAINA, MAUI

We have reviewed the draft environmental assessment for the subject project and request that when submitting the final environmental assessment, you include the following items pursuant to §11-200-10 and 11-200-12, Hawaii Administrative Rules:

- ▶ list of agencies consulted; and
- ▶ findings and reasons supporting the determination.

Please call Margaret Wilson at 586-4185 if you have any questions.

Sincerely,

Brian J. J. Choy

Brian J.J. Choy
Director

c: Warren Unemori

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JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:
92:DEV/6012

December 15, 1992

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

FROM: *Joseph K. Conant*
Joseph K. Conant, Executive Director
Housing Finance and Development Corporation

SUBJECT: Draft Environmental Assessment (EA) for Ikena Avenue
Relocation Subdivision, Lahaina, Maui

Thank you for your December 1, 1992 letter regarding the subject
Draft EA.

In accordance with 11-200-10 and 11-200-12 Hawaii Administrative
Rules, we will submit a final EA which will include a list of
the agencies consulted, and the findings and reasons supporting
the determination.

If there are any questions, please contact Neal Wu, Project
Coordinator, at 587-0538.

KAWAIAHAO PLAZA
567 South King Street
Suite 200
P.O. Box 3466
Honolulu, Hawaii, 96801
Telephone (808) 537-6200
Fax (808) 537-4214

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January 5, 1993

Mr. Neal Wu, Project Coordinator
Villages of Leiali'i
Ikena Avenue Relocation Subdivision
Housing Finance and Development Corporation
677 Queen Street, Suite 300
Honolulu, Hawaii 96813

Dear Mr. Wu:

Comments on Draft Environmental Assessment for Ikena Avenue Relocation Subdivision,
TMK 246-018-003 (portion), Lease No. 24,878, Lahaina, Maui, Hawaii

We have reviewed the draft Environmental Assessment (EA) transmitted by letter dated December 8, 1992, and have the following comments:

1. The section of the EA that deals with the impacts states that there will be no biological, historical, archaeological or cultural impacts, because the project site has been used for can cultivation (EA, pp. 10 and 11). While this statement might be accurate, the EA does not disclose whether this is merely an assumption, or whether a field inspection has been undertaken to verify this.
2. The proper standard for determining whether an environmental impact statement will be prepared is not, as implied on page 14 of the EA, whether the project will have an adverse impact, but rather whether it might have a significant effect, beneficial or adverse, on the environment.
3. The EA on page 12 refers to the withdrawal of 8.07 acres of cane land from cultivation. This does not correspond to the acreage used in the Department of Transportation purchase offer of 7.06 acres.

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Mr. Neal Wu
Page 2
January 5, 1993

Thank you for giving us the opportunity to review the EA. If you have any questions regarding our comments, please feel free to call me at 523-6239.

Very truly yours,

Kapu C. Smith

Kapu C. Smith
Land Manager, Region II

wat

cc: Mr. Michael Amuro, DOT
Ms. Anne Lo-Shimazu, AMFAC/JMB

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0600

IN REPLY REFER TO:

93:DEV/689

February 11, 1993

Ms. Kapu Smith, Land Manager, Region II
Kamehameha Schools
Bernice Pauahi Bishop Estate
567 South King Street, Suite 200
Honolulu, Hawaii 96813

Dear Ms. Smith:

Subject: Draft Environmental Assessment for
Ikena Avenue Relocation Subdivision
TMK: 2-4-6-18:003 (portion)
Lease No. 24,878 Lahaina, Maui

Thank you for your January 5, 1993 letter and comments regarding the environmental assessment. The following are our responses to your comments.

Comment:

The section of the Environmental Assessment (EA) that deals with the impacts states that there will be no biological, historical, archaeological, or cultural impacts, because the project site has been used for cane cultivation (EA, pp. 10 and 11.) While this statement might be accurate, the EA does not disclose whether this is merely an assumption, or whether a field inspection has been undertaken to verify this.

Response:

The statement is a general assumption based on the present cultivation activity. We have also consulted with the State Historic Preservation Division to provide comments which may warrant revisions to this statement.

Comment:

The proper standard for determining whether an environmental impact statement will be prepared is not, as implied on page 14 of the EA, whether the project will have an adverse impact, but

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Ms. Kapu Smith
February 11, 1993
Page 2

rather whether it might have a significant effect, beneficial or adverse on the environment.

Response:

The statement will be revised to state that "Based on the foregoing, it is reasonable to conclude that the proposed replacement project will not have significant effects on the environment."

Comment:

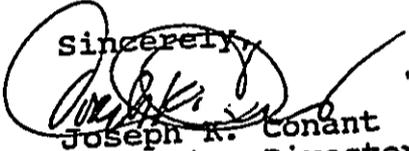
The EA on page 12 refers to the withdrawal of 8.07 acres of cane land from cultivation. This does not correspond to the acreage used in the Department of Transportation purchase offer of 7.06 acres.

Response:

The 8.07 acres of cane land is correct. The increase to 8.07 acres was due to the addition of the sewer easement area to the land.

Your comments and these responses will be appended to the final EA. Thank you for your assistance in this draft EA review.

Sincerely,


Joseph R. Conant
Executive Director

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JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
877 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0800

IN REPLY REFER TO:
93:DEV/1249

March 16, 1993

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

FROM: *Joseph K. Conant*
Joseph K. Conant, Executive Director
Housing Finance and Development Corporation

SUBJECT: Negative Declaration for the Ikena Avenue Relocation
Subdivision Project, Tax Map Key: 4-6-18: portion of 3

The Housing Finance and Development Corporation (HFDC) has reviewed the comments received during the 30-day public comment period which began on December 8, 1992. The HFDC has determined that this project will not have significant environmental effect and has issued a negative declaration. Please publish this notice in the April 8, 1993, OEQC Bulletin.

We have enclosed a completed OEQC Bulletin Publication Form and four (4) copies of the final EA.

Please contact Neal Wu, Project Coordinator, at 587-0538 if you have any questions.

Enclosures



OEQC BULLETIN PUBLICATION FORM

TITLE OF PROJECT: Ikena Avenue Relocation Subdivision
(Relocation of Ikena Avenue Residence)
LOCATION: ISLAND Maui DISTRICT Lahaina
TAX MAP KEY : 4-6-18:(por) 3

PLEASE CHECK THE FOLLOWING CATEGORIES:

Type of Action: AGENCY APPLICANT

Applicable State or Federal Statute:

Chapter 343, HRS Chapter 205A, HRS NEPA (Federal Actions Only)

Type of Document:

Draft Environmental Assessment (Negative Declaration anticipated) Draft EIS NEPA NOP
 Final Environmental Assessment (Negative Declaration) Final EIS NEPA Draft EIS
 Final Environmental Assessment (EIS Preparation Notice) NEPA FONSI NEPA Final EIS

Type of Revision (if applicable):

Revised Supplemental Addendum Other (please explain)

Prior to general distribution, please submit to OEQC: 4 copies of the Draft EA, Final EA (Negative Declaration or EIS Preparation Notice), 4 copies of the Draft EIS or Final EIS (For Draft and Final EISs an additional copy is mailed to OEQC.)

PROPOSING AGENCY OR APPLICANT SHOULD SUBMIT COPIES OF THE DOCUMENTS TO THE APPROVING AGENCY OR ACCEPTING AUTHORITY PRIOR TO SUBMITTING COPIES TO OEQC.

APPROVING AGENCY OR

ACCEPTING AUTHORITY:

Housing Finance and Development Corporation

ADDRESS:

677 Queen Street, Suite 300
Honolulu, Hawaii 96813

CONTACT:

Neal Wu, Project Coordinator PHONE: 587-0538

PROPOSING AGENCY OR APPLICANT:

Housing Finance and Development Corporation

ADDRESS:

677 Queen Street, Suite 300
Honolulu, Hawaii 96813

CONTACT:

Neal Wu, Project Coordinator PHONE: 587-0538

CONSULTANT:

Warren S. Unemori Engineering, Inc.

ADDRESS:

2145 Wells Street, Suite 403
Wailuku-Maui, Hawaii 96793

CONTACT:

Warren Unemori PHONE: 242-4403

COMMENT PERIOD END DATE: January 7, 1993

CONDITIONS WHICH TRIGGER THE EIS LAW: PLEASE CHECK ALL THAT APPLY TO THE PROPOSED ACTION.

Use of State or County lands or funds
HRS 343-5(a)(1)

Use of lands in the Waikiki Special District
HRS 343-5(a)(5)

Use of Conservation District Lands
HRS 343-5(a)(2)

Amendment to a County General Plan
HRS 343-5(a)(6)

Use of Shoreline Setback Area
HRS 343-5(a)(3)

Reclassification of Conservation Lands
HRS 343-5(a)(7)

Use of Historic Site or District
HRS 343-5(a)(4)

Construction or modification of helicopter facilities
HRS 343-5(a)(8)

OTHER CONDITIONS:

Use of Special Management Area (City & County of Honolulu)

Other: _____

* If the project does not trigger HRS 343, please explain why document is being submitted to OEQC.

SUMMARY of the proposed action or project to be published in the OEQC Bulletin. Please submit it as a summary ready for publication. The description should be brief (300 words or less), yet provide sufficient detail to convey the full impact of the proposed action.

The project consists of a 24-lot single family residential subdivision for the relocation of Ikena Avenue residents affected by the proposed Lahaina By-Pass Highway which is an integral part of the Villages of Leialii. The project is located on or about 8 acres of Bishop Estate-owned land (Tax Map Key:4-6-18:por. of 3) adjacent to Lahainaluna Road. The subdivision will consist of a 56' wide roadway extension of the existing Kualua Street with a 44' wide interior roadway, street trees, concrete curbs, gutters, sidewalks and underground utilities designed to County standards. These lots range in area from 8,691 s.f. to 13,451 s.f. with an average lot size of 10,802 s.f. The offsite work includes widening of Lahainaluna Road to allow for left and right turn storage lanes, relocation of existing shower trees and one utility pole, pedestrian crossing at the intersection of Lahainaluna Road and Kualua Street. Water, sewer, electrical, telephone and CATV systems are available along Lahainaluna Road. Storm run-off will be primarily discharged into the existing gully adjacent to the subdivision.

NOTE: Since the deadline for EIS submittal is so close to the publication date for the OEQC Bulletin, please assist us by bringing the Document for Publication Form and a computer disk with the project description (size 3 1/2" or 5 1/4" disk are acceptable; preferably WordPerfect 6.1 or ASCII text format) to the Office of Environmental Quality Control as early as possible. Thank you.