

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. BOX 621
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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FILE NO.: QUAL/SV 92-2545
DOC. NO.: 2467E

MEMORANDUM

JAN 29 1992

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

FROM: William W. Paty, Chairperson
Board of Land and Natural Resources

SUBJECT: Document for Publication in the OEQC Bulletin
Environmental Assessment for Conservation District Use
Application OA-1/3/92-2545 for Kaelepulu Pond (Enchanted
Lake) Wetland Enhancement Area at Kailua, Oahu
TMK: 4-2-4: 35

The above mentioned Chapter 343 document was reviewed and a negative declaration was declared based upon the environmental assessment provided with the CDUA.

Please feel free to call me or Roy Schaefer of our Office of Conservation and Environmental Affairs, at 587-0377, if you have any questions.

1992-02-08-0A-FEA - Kaelepulu Pond (Enchanted Lake)
Wetland Enhancement

ENVIRONMENTAL REQUIREMENTS

I. GENERAL INFORMATION

A. APPLICANT:

LECI Properties
5070 Likini Street, #312
Honolulu, Hawaii 96818
Telephone: 833-0210
Contact Person: James A. Lee

B. AGENT:

Gray, Hong, Bills & Associates, Inc.
119 Merchant Street, Suite 607
Honolulu, Hawaii 96813
Telephone: 521-0306
Contact Person: David Bills

C. APPROVING AGENCY:

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

D. AGENCIES CONSULTED IN MAKING ASSESSMENT:

Land Use Commission
State Historic Preservation Program
Department of Land and Natural Resources, Division of Aquatic Resources

II. GENERAL DESCRIPTION OF PROPOSED ACTION

A. TECHNICAL CHARACTERISTICS

1. **Use Characteristics:** The proposal will change the use characteristics of the site from vacant, undeveloped and overgrown wetland and fast land to a quality wetland feeding habitat for waterbirds, maintained in perpetuity.
2. **Existing Site Characteristics:** The site is primarily flat to gently sloping. Elevations at the site range from below mean sea level at Kaelepulu Pond to approximately 14 feet MSL at a hillock which is located just southeast of the proposed wetland area (see Exhibit 4). The land slopes generally to the north and east with an average gradient of approximately 5%. Several small hillocks reaching 10 to 14 feet MSL are located in the southern portion of the site. The existing wetland boundary is generally parallel to Keolu Drive within the northern part of the site. At Kiukee Place the wetland boundary turns and continues generally eastward until it reaches Kaelepulu Pond as shown on Exhibit 4.

California grass is dominant over much of the site, with mangroves predominating on the lakeward side and koa haole occupying the landward areas near the roadways.

3. **Mitigation Wetland Characteristics:** Primary features of the proposed mitigation wetland, as shown on Exhibit 4, include mudflats with water depths ranging from 0 to 2 feet, small islets emerging above the water surface, and a fence and moat separating the mudflats from adjacent fast land. The landward edge of the moat, where it passes through the Urban District portion of the parcel along Keolu Drive, will be formed by a rock retaining wall. This is in accordance with the modification to the permit issued by the Corps in November, 1991. The retaining wall will be almost entirely within the Urban Land Use District portion of the parcel. Only a 20-foot section of the wall where it ends near Kiukee Drive will be in the Conservation District. The purpose of the wall is to support level fill for development of the proposed house lots in the Urban District.

Slopes within the wetland will be less than 5% exclusive of the moat. Existing introduced vegetation, including mangrove trees and California grass, will be removed and replaced with emergent wetland vegetation, such as pickleweed, water hyssop, marsh cyperus, makai, and knottgrass. A vegetative hedge will be installed along the lakeward side of the fence line, where it passes through the proposed residential lots, to visually buffer the wetland from the surrounding urban development.

Periodic maintenance of the wetland will be provided by the applicant in perpetuity to ensure that the quality of the wetland will be maintained. This maintenance will include removal of mangrove seedlings; maintenance of the fence, hedge, moat and walkway; and limiting the vegetative cover to not more than 50% of the wetland area.

Construction and maintenance of the mitigation wetland will be in accordance with requirements of Department of the Army Permit No. PODCO 2151, provided in Appendix A, and the modification to the permit provided in Appendix D.

4. **Construction Characteristics:** The primary construction characteristic will be the earthwork operation. Existing vegetation will be removed and the site will be graded to provide for the mitigation wetland. A preliminary grading plan for the project is shown on Exhibit 4. It is estimated that construction of the wetland will require approximately 20,000 cubic yards of excavation. It is proposed to deposit approximately 13,000 cubic yards of the excavated material in an area of undeveloped land at the southern end of the parcel as shown on Exhibit 4. After grading, a cover of grass will be established on the fill area. This area of approximately 2.3 acres is entirely within the Conservation District, but is outside of the area designated as wetland by

the Corps of Engineers. After completion of grading, all other habitat features, including the fence, hedge, and planting of emergent wetland vegetation, will be completed.

5. **Site Access:** Landward access to the site will be limited by the fence and moat. Access for maintenance will be from Kiukee Place.

B. ECONOMIC CHARACTERISTICS

1. **Construction:** The total construction cost for the wetland facility is estimated to be approximately \$500,000. Construction is scheduled to begin June, 1992 and to be completed by October, 1992.
2. **Operation:** Total annual maintenance costs are estimated to be approximately \$18,000. The maintenance costs will be borne entirely by the applicant, through an endowment which provides sufficient interest income to completely pay the cost of maintenance.

C. SOCIAL CHARACTERISTICS: As the only constructed wetland habitat in the Enchanted Lake community, the proposed facility will reverse the historic trend of wetland destruction, and thus reflect the increase in environmental awareness among the general population. Because the wetland will be designated as such in perpetuity, it will also provide the community with open space. By significantly increasing the area of waterbird habitat at Kaelepulu Pond, indirect benefits will be provided to ornithologists, hobbyist bird watchers, and the general community. By providing mitigation for wetlands previously filled, the project will make possible the development of single family housing units on currently vacant land, thus increasing the supply of single family housing in Windward Oahu. The housing, however, is in the State Urban Land Use District and is not a part of this application.

D. ENVIRONMENTAL CHARACTERISTICS: The proposed project will create a productive wetland habitat from wetland and fast land which is currently overgrown with introduced species of vegetation. The existing environment consists of marginal quality wetlands choked by mangroves and California grass, and unused fast land also overgrown by California grass. The proposed project will create and maintain in perpetuity a quality wetland habitat, resulting in a very significant improvement over existing environmental conditions at the site.

III. AFFECTED ENVIRONMENT

- A. **SOILS:** The entire site has soils classified as HnA (Hanalei silty clay, 0 to 2 percent slopes).
- B. **TOPOGRAPHY:** Elevations at the site range from less than 0 feet MSL on the lakeward side of the site to approximately 14 feet MSL at a hillock which is

located just southeast of the proposed wetland area (see Exhibit 4). The land slopes generally to the north and east with an average gradient of approximately 5%. Several small hillocks reaching 10 to 14 feet MSL are located in the southern portion of the parcel. Slopes throughout the parcel are generally flat.

- C. VEGETATION:** As is typical of the entire parcel of land, much of the proposed wetland area is dominated by California grass. Other introduced species, including shrubs and vines, are found in patches or mixed with the California grass at various locations. The grasslands are separated from the open water of Kaelepulu Pond by a strip of red mangroves. Koa haole is found at higher elevations, often sharing these locations with California grass and various shrubs and vines. Two detailed biological assessments of the site have been conducted, neither of which identified any native Hawaiian plants or endangered species on the site (see Appendix B).
- D. SURFACE RUNOFF, DRAINAGE AND EROSION HAZARD:** All land within the subject parcel is covered with vegetation, and slopes are mild, resulting in slow runoff and slight erosion hazard. Both Conservation and Urban District lands within the subject parcel drain to Kaelepulu Pond. Two drainage culverts under Keolu Drive discharge storm water to the Urban District portion of the subject property. This storm water currently flows through the Urban District portion of the property to Kaelepulu Pond in the Conservation District portion of the property. These drainage culverts do not drain any part of the subject property.
- E. FEDERAL FLOOD INSURANCE RATE MAP (FIRM) ZONE AND OTHER GEOLOGICAL HAZARDS:** The site is in the FIRM Zone X, which indicates that fast land on the subject property has been determined to be outside the 500-year flood boundary. The project is in Seismic Zone 1.

IV. PROJECT IMPACTS AND MITIGATION MEASURES

- A. GENERAL:** Overall project impacts will consist of converting the site from overgrown wetland and fast land into a wetland habitat capable of supporting water birds and maintained in perpetuity.
- B. CONSTRUCTION**
 - 1. Clearing, Grubbing and Grading:** The major construction activities will be clearing, grubbing and grading of the site. During this period erosion control measures will be implemented to minimize impacts. The project will comply with City and County of Honolulu erosion control standards. A grading permit, including an approved erosion control plan, will be obtained from the City and County of Honolulu Department of Public Works prior to commencement of grading operations. Revegetation of the fill area with stabilizing vegetation will be implemented as soon as possible after grading is completed.

2. **Noise:** Noise will be limited to that generated by construction equipment. After completion of construction, there will be no noise-generating operations, with the exception of occasional maintenance activities which may generate small amounts of noise for short periods of time.
3. **Dust:** Earthwork operations inherently have the potential to produce fugitive dust. Dust will be minimized by the use of watering trucks, when necessary, during the earthwork operations.

C. DRAINAGE: The project will have little effect upon existing drainage patterns. Furthermore, the project will have negligible effect on the quantity, or quality of stormwater runoff. The entire parcel is within the drainage basin of Kaelepulu Pond. Fast lands within the subject property will drain primarily to the mitigation wetland, which will be contiguous with Kaelepulu Pond. The drainage basin of the Urban District portion of the parcel, located between Kaelepulu Pond and Keolu Drive, is a strip of land 1200 feet long by 125 feet wide, comprising less than 3.5 acres. In conjunction with the development of house lots on the Urban District portion of the parcel, the two existing drainage culverts will be extended to the wetland moat. Neither the quantity nor the quality of stormwater discharged from these drains will be altered by the proposed project.

D. VIEW PLANES: View planes from Keolu Drive toward Kaelepulu Pond will not be affected by activities within the Conservation District. These views are currently obscured by existing vegetation on the site. After development views will be obscured by the hedge, provided as a visual buffer along the fence line, and by residential development of the lots, both of which are located in the Urban District.

At the northern end of Kiukee Place it is anticipated that views toward Kaelepulu Pond will be opened up by the removal of existing vegetation. As growths of emergent wetland vegetation develop, and with ecological progression, these views may become partially obscured. Views from Kiukee Place across the southern end of the parcel will be partially blocked by the embanked material at this end of the parcel.

E. ODORS: Stagnant drainage water exists on the subject property at the outlets of the two culverts under Keolu Drive and currently causes occasional odor problems. With the development of residential lots on the Urban District portion of the subject property, the culverts will be extended to the proposed wetland moat. The moat will provide for better circulation of water and will reduce and/or eliminate sources of odor from the subject property.

V. ALTERNATIVES

- A. NO DEVELOPMENT:** The no-development option would result in the entire property remaining in its existing condition. No wetland would be created and all of the California grass and mangrove would remain.
- B. DEVELOPMENT OF A LARGER OR SMALLER MITIGATION WETLAND:** The area of the proposed mitigation wetland, encompassing approximately 5.7 acres, has been approved by the Department of the Army Permit. A smaller area of mitigation wetland would not be acceptable to the Department of the Army, which issued the permit after consultation with the U.S. Fish and Wildlife Service. A larger area of mitigation wetland would not be acceptable to the applicant, because construction and maintenance costs would exceed the applicant's resources.
- C. DEVELOPMENT OF MITIGATION WETLAND OUTSIDE OF THE CONSERVATION DISTRICT:** This alternative was rejected because the applicant owns only 3.44 acres of land outside of the Conservation District which can be developed. This land is in the Urban District and is zoned R-5. Without developing this land for residential use, resources would be unavailable for wetland construction and maintenance.

SUMMARY OF PROPOSED USE

The proposed action consists of construction and maintenance of a 5.7-acre wetland from wetland and fast land that is currently overgrown with introduced species of vegetation. The wetland will be composed of mudflats with small islets, and will be surrounded on the landward side by a moat and fence for protection of waterbirds from predators. Material excavated during wetland construction will be placed within an area outside of the wetland boundary at the southern end of the parcel. The purpose of the project is to provide mitigation for the loss of wetland resulting from the unauthorized placement of fill by the previous owner in 1977 and 1978. The proposed project is authorized by Department of the Army Permit No. PODCO 2151, dated June 25, 1991 and by a modification to the permit dated November 26, 1991.

Impacts of this project are virtually all positive, converting overgrown wetland and fast land into a productive wetland habitat with perpetual funding for maintenance. Construction impacts will be minor due to the implementation of dust and erosion control measures. Impacts upon drainage, archaeology, view planes and odors will be either negligible or beneficial.

APPENDIX A

DEPARTMENT OF THE ARMY PERMIT

DEPARTMENT OF THE ARMY PERMIT

Permittee LECT Properties

Permit No. PODCO 2151

Issuing Office CEPOD-CO-0

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: This permit provides after-the-fact approval for the placement of about 20,000 CY of fill material into the waters and wetlands of Kaelepulu Pond, adjacent to Keolu Drive. In addition, the Permit authorizes the placement of an additional 20,000 CY of fill on top of the existing fill and the extension of two drain lines through the existing fill in order to develop residential houselots.

As mitigation for both the after-the-fact fill and proposed fill, the permit also authorizes the construction of a mitigation wetland area, substantially in accordance with the recommendations of the Fish & Wildlife Service. The permittee shall be responsible for maintenance of the mitigation wetland area in perpetuity.

Project Location: Adjacent to Keolu Drive, Kailua, Oahu, on western shore of Kaelepulu Pond.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 1994. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions: See attached Special Conditions.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

Section 404 of the Clean Water Act (33 U.S.C. 1344).

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

PERMIT NO. PODCO 2151
SPECIAL CONDITIONS

Rev. 6/25/91

- a. The mitigation wetland shall be built and maintained by the permittee in conformance with the design criteria provided in Enclosure 1. The mitigation plan shall include, but not be limited to, ground elevations, slopes, location of vegetation plantings, fencing, buffer zones, and moat. The wetland construction plan shall be reviewed and approved by the U.S. Army Corps of Engineers (COE), in consultation with the U.S. Fish & Wildlife Service (FWS), within 90 days of issuance of the COE permit.
- b. The sale of subdivision lots or the construction of housing units shall not commence until the mitigation wetland has been successfully completed by the permittee. The determination on the successful completion of the mitigation wetland shall be made by the COE in consultation with the FWS. Upon receipt of the local and state permits for the construction of the mitigation wetland, construction of the mitigation wetland shall be completed within one (1) year.
- c. Within 30 days after the permittee has received all necessary State and local permits and authorizations, and prior to commencement of the construction of the mitigation wetland, the permittee shall furnish the COE a cash bond to guarantee the construction and completion of the mitigation wetland. The cash bond shall be in the face amount of \$205,000 and shall be deposited in an interest-bearing account with a commercial escrow or trust company. Escrow instructions shall provide that unless and until the permittee shall default in the construction of the mitigation wetland, all accrued interest shall be paid to the permittee. In the event of a default, and upon thirty days prior notice to the permittee, the COE shall be authorized to draw upon said cash bond in such reasonable amounts as in its discretion shall be necessary to complete the mitigation wetland. Upon completion of the mitigation wetland, all funds remaining on deposit shall be returned to the permittee.
- d. The mitigation wetland shall be encumbered with a conservation easement or other binding mechanism to designate the site as wetland habitat in perpetuity. The conservation easement shall prohibit activities incompatible with maintaining the mitigation wetland as habitat for endangered Hawaiian waterbirds and migratory birds. The conservation easement or other binding mechanism shall be concluded within two years after the issuance of the Department of the Army (DA) permit.

e. An endowment fund shall be established by the applicant to fund the maintenance and management of the wetland in perpetuity. The endowment shall consist of a trust fund or equivalent, paying interest quarterly in the amount of at least \$4,500. The amount of the trust fund and the interest generated may be reduced by the COE in consultation with the FWS upon a showing by the applicant that cost of maintaining the wetland is substantially less than \$4,500 per quarter. The trust fund shall be held by a third party unrelated to the applicant or landowner

The trust fund shall be established in full when construction of the mitigation wetland is complete. The sale of subdivision lots or construction of housing units shall not commence until the trust fund has been established and fully funded in an amount sufficient to produce interest income of \$4,500 quarterly.

f. To insure that no additional fill is accidentally discharged into the wetland during earthmoving activities on the unauthorized fill, the toe of the existing fill and the wetland boundary shall be staked and flagged by the applicant, and certified by the COE prior to construction.

g. A water pollution and erosion control plan shall be developed in consultation with the Clean Water Branch of the Department of Health, State of Hawaii. The plan shall include mitigative measures to be applied during construction of the project to minimize degradation of receiving water quality as well as measures to minimize adverse effects of storm water discharges from the proposed extension of the drain outlets. The plan shall be submitted to the COE for review with the detailed construction plan of the mitigation wetland.

DESIGN CRITERIA FOR WETLAND MITIGATION
KAELEPULU POND, FILE NO. PODCO 2151

The mitigation wetland shall be built and maintained by the permittee in conformance with the following design criteria:

1. Ground elevations within the mitigation wetland shall be based upon measured water surface elevations and fluctuations within Kaelepulu Pond in the vicinity of the mitigation wetland. The applicant shall conduct the necessary studies and measurements using standard surveying methods to determine water surface elevations within Kaelepulu Pond in the vicinity of the mitigation wetland. Ground elevations within the mitigation wetland shall vary to provide water depths that range between 0-2 feet, exclusive of the moat. Slopes within the wetland shall be less than 5%, exclusive of the moat.
2. Introduced vegetation, including mangrove trees and California grass, shall be removed during the construction of the mitigation wetland. Emergent wetland vegetation, such as pickleweed (Baris maritima), water hyssop (Bacopa monnieri), marsh cyperus (Mariscus javanicus=Cyperus javanicus), makai (Bolboschoenus maritimus=Scirpus maritimus), and konggrass (Paspalum distichum), shall be planted in an interspersed pattern by the applicant to provide cover and food for endangered and migratory waterbirds. Vegetation cover maintained by the applicant shall not exceed 50% of the area. Mangrove seedlings shall be removed by the applicant on a periodic basis.
3. A moat and chain-link fence shall be constructed along the landward perimeter of the mitigation wetland to deter predators from entering the wetland. The moat shall be approximately 4-feet deep and 10-feet wide at the bottom. Encroachment of vegetation across the moat shall be controlled by the applicant on a periodic basis.

A 4-foot high chain-link fence shall be constructed along the outside boundary of the moat. The bottom 6 inches of the fence shall be buried below grade to reduce the potential for predators from crawling or digging under the fence. The perimeter fence shall include a secured gate to allow access into the wetland for maintenance purposes.

4. A hedge of vegetation shall be planted along the lakeward boundary of the fence line along the portion of the unauthorized fill that fronts the mitigation wetland to provide a visual buffer between the wetland and the surrounding urban development.

5. A 10-foot-wide buffer zone measured from the wetland edge of the sidewalk shall extend along the mitigation wetland along Kiukee Place.

6. A 5-foot-wide maintenance walkway between the fence line and the moat shall be provided along the landward perimeter of the mitigation wetland. This walkway would allow maintenance of the fence and the periodic mowing of vegetation on the banks of the moat.

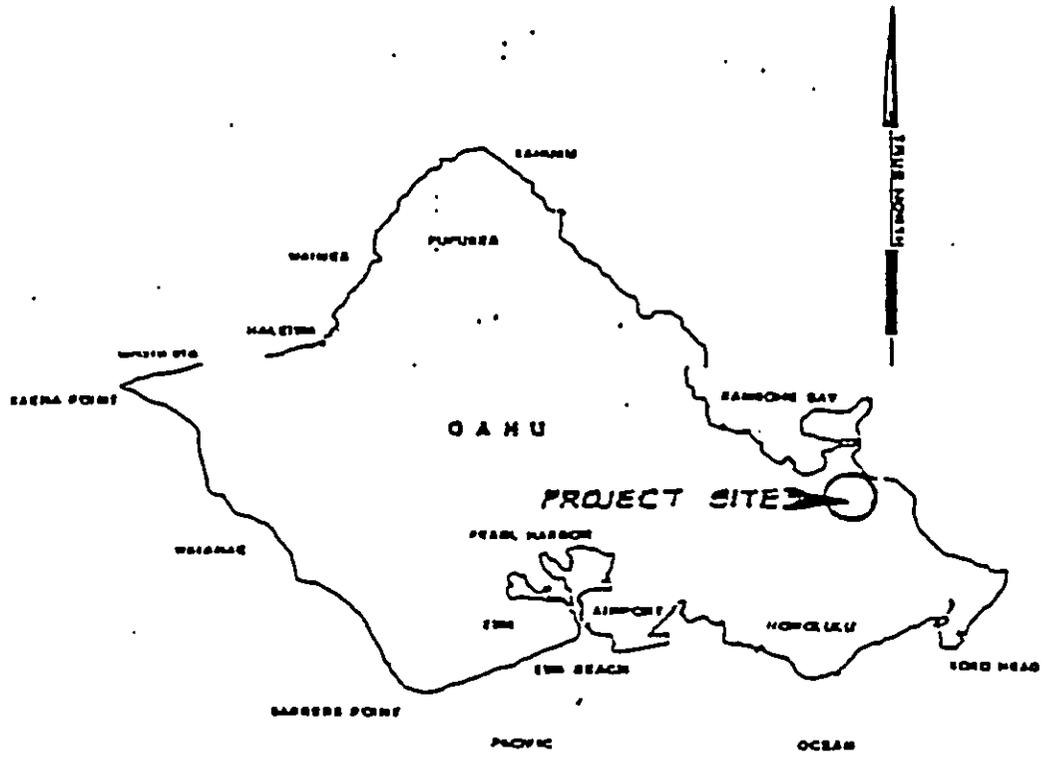
7. Debris, trash, and sediment carried into the mitigation wetland by the drainage culverts shall be removed by the applicant on a periodic basis.

2 Encl

1. Print of Plan (4 sheets)
2. Notice of Authorization (ENG Form 4336)

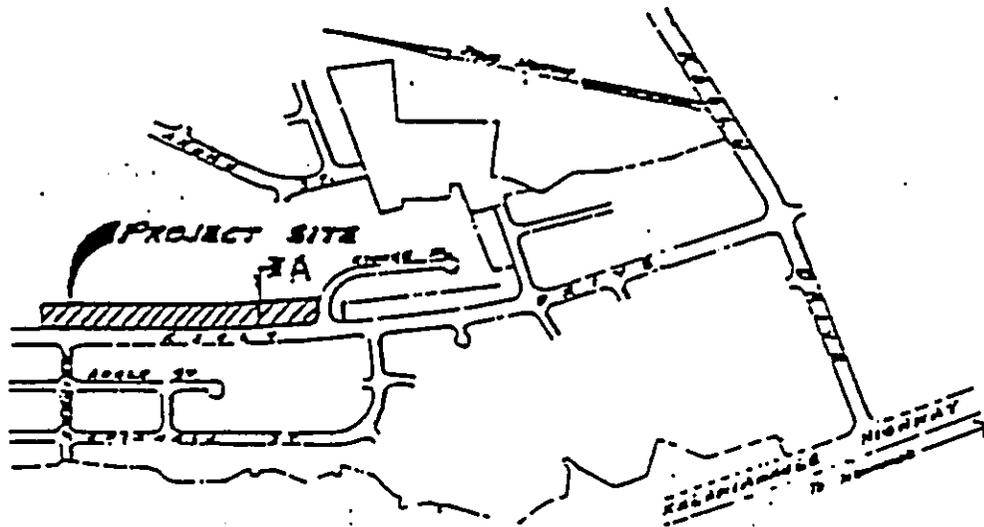
Copies Furnished: w/Encl 1

US Fish & Wildlife Service, Portland, OR
US Fish & Wildlife Service, Honolulu, HI
Nat'l Marine Fisheries Service, Terminal Island, CA
Nat'l Marine Fisheries Service, Honolulu, HI (2 cys)
US Environmental Protection Agency, San Francisco, CA
Commander, Fourteenth Coast Guard District
Commanding Officer, U.S. Coast Guard, Marine Safety Office, Honolulu, HI
State Department of Land & Natural Resources, Honolulu, HI (2 cys)
Office of State Planning, CZM Program Office, Office of the Governor,
State Capitol, Honolulu, HI 96813
State of Hawaii Harbors Division, Honolulu, HI
State Historic Preservation Office, Honolulu, HI
Clean Water Branch, Env Mgt Div, Hawaii State Dept of Health, Honolulu, HI
*Department of Land Utilization, City & County of Honolulu, Honolulu, HI



VICINITY MAP:

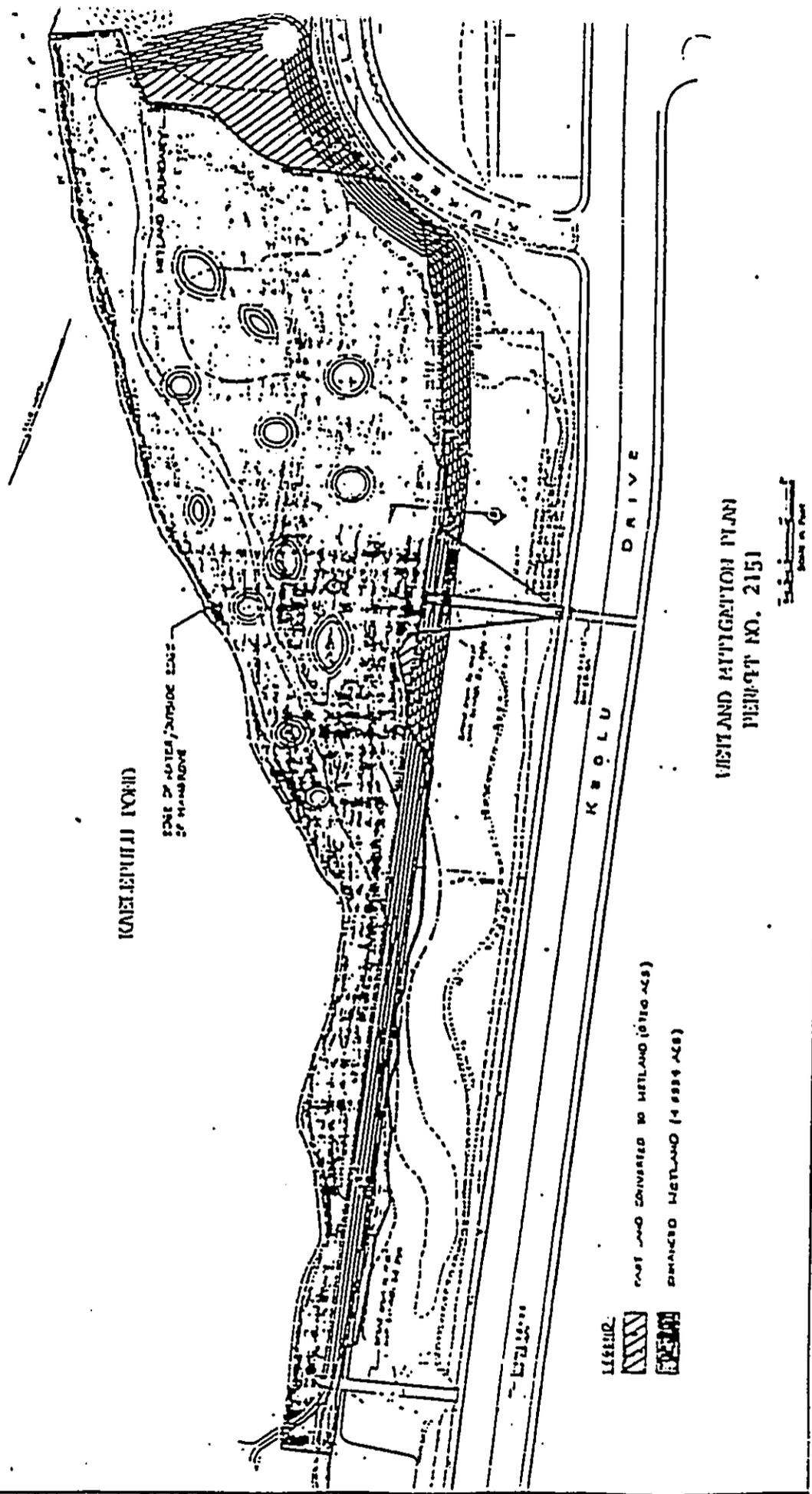
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LOCATION MAP

NOT TO SCALE

Sheet 1 of 4
May 1961



KOLEPUNU IOWD

LINE OF WATER SURFACE EDGE OF WETLAND

WETLAND BOUNDARY

K E O L U DRIVE

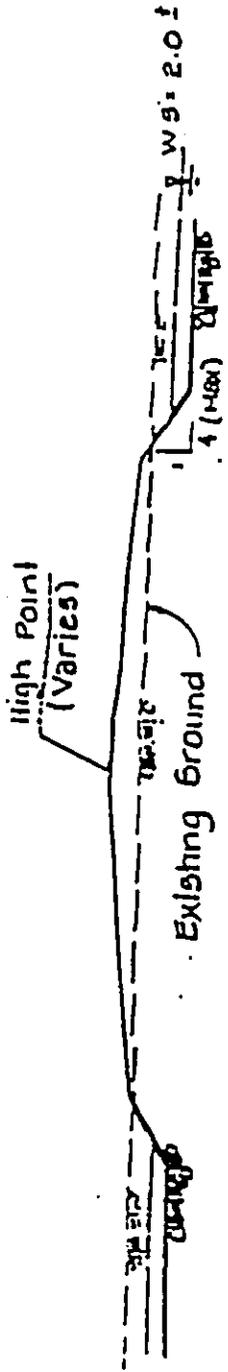
ESTUARY

- LINE OF WATER SURFACE EDGE OF WETLAND
- WETLAND BOUNDARY
- EMBRANKMENT

WETLAND MITIGATION PLAN
PERMIT NO. 2151

SCALE IN FEET

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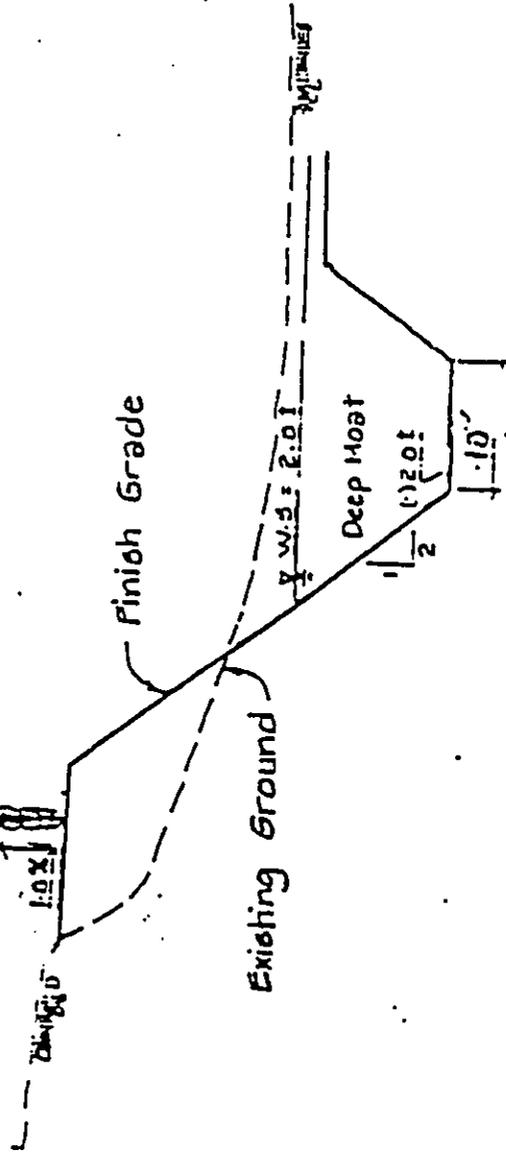


SECTION 'A'

TYPICAL MUDFLAT DETAIL

Scale: Horiz: 1" = 20'-0"
 Vert: 1" = 4'-0"

Pannox hedges, or equal
 5 gal. size, 4'-0" O.C.
 Residential
 Houses Lots
 4-ft. tall Standard C & C
 of Honolulu Chain Link Fence



SECTION 'B'

NOT TO SCALE

APPENDIX B

REPORT OF CHARLES H. LAMOUREUX, PH.D.

BOTANICAL CONSULTANT

CHARLES H. LAMOUREUX, Ph.D.
BOTANICAL CONSULTANT
3426 Oahu Ave.
Honolulu, Hawaii 96822

August 1, 1990

Mr. David Bills
Gray, Hong, Bills & Associates
Consulting Engineers
119 Merchant Street, Suite 607
Honolulu, Hawaii 96813

Dear Mr. Bills:

On July 28, 1990 I visited the project site identified as Kaopa Subdivision Unit III-B, Enchanted Lake, Kailua, Oahu. I had previously surveyed this area in October 1988, at which time I prepared a biological assessment of the site. I believe you have a copy of this report in your files.

On this recent visit I concentrated my survey to the site at the south end of the project site which was described in my earlier report as the "Californiagrass meadow."

The boundaries of this meadow are: on the east, the fringe of red mangroves (Rhizophora mangle) which occur at the edge of Kaelepulu Pond; on the north, the recently filled area along Keolu Drive; on the northwest the bottom of the slope of older fill which extends about 80-100 feet from the edge of Keolu Drive; on the southwest the bottom of the slope at the edge of Kiukee Place; on the south by a line of koa-haole (Leucaena leucocephala) which extends in approximately a west-east direction from the edge of Kiukee Place. Most of this meadow lies between 2 and 6 feet above sea level, rising to some mounds as much as 14 feet above sea level at the south end of the meadow.

Most of the meadow is occupied by a nearly pure stand of Californiagrass which forms a dense mass two to six feet high. In the northeast part of the meadow there are some patches of shrubs of two kinds, Christmas berry (Schinus terebinthifolius) and Indian fleabane (Pluchea indica). Mixed with the Californiagrass are occasional vines of the scarlet-fruited passionflower (Passiflora foetida). Where the Californiagrass is shorter one can find a few plants of honohono (Commelina diffusa), wedelia (Wedelia trilobata), and jungle rice (Echinochloa colona).

Four of the plants which grow in the meadow are facultative wetland species (i.e., species which may be found in wetlands but are not wholly dependent on wetland conditions for survival and reproduction. They will grow well in wetlands, but will also grow well in other areas). These species are Californiagrass, jungle rice, honohono and Indian fleabane. The other species here are not wetland species.

In both October 1988 and July 1990 I checked the soil in several places under the Californiagrass. On both occasions the surface soil was moist, but not saturated, and there was no standing surface water.

As I indicated in my earlier report, it is possible that there could be standing water in parts of this area for short periods after heavy rains or high runoff. However, the absence of obligate wetland species, and the presence of several non-wetland species indicates that the area is not inundated on a regular long term basis.

The dominance of Californiagrass and the absence of koa-haole in this meadow does suggest that its ecology is different from nearby areas which support considerable koa-haole and much less Californiagrass. These areas are typically a foot or two higher than the low parts of the meadow, but the higher mounds in the meadow are also dominated by Californiagrass and lack koa-haole, and they rise to heights several feet above the meadow floor.

Based on this information, it is possible that the difference between the vegetation of the meadow (and its included mounds), and the koa-haole dominated areas which surround it on the three sides away from the lake, could be, at least in part, a consequence of the past disturbance, including clearing, grading and filling which has occurred on the site. Since the meadow vegetation extends over a range of elevations from lower to higher than the surrounding area, it suggests that this vegetation type is not dependent solely on distance to water table.

If one considers all the factors discussed above, then it seems reasonable to argue that the Californiagrass meadow should not be classified in total as wetland, since this fairly uniform vegetation extends over a range of elevations from the edge of the mangroves to the top of the highest mound, which is higher than much of the surrounding area that has already been determined not to be wetland.

Sincerely,

A handwritten signature in cursive script that reads "Charles H. Lamoureux". The signature is written in dark ink and is positioned above the printed name.

Charles H. Lamoureux

BIOLOGICAL ASSESSMENT
KAOPA SUBDIVISION UNIT III-B
KAILUA, KOOLAUPOKO, OAHU, HAWAII

OCTOBER 1988

by

Charles H. Lamoureux, Ph.D.
2426 Oahu Ave.
Honolulu, HI 96822

I. INTRODUCTION

At the request of Mr. Gail S. Sims, President, Lone Star Hawaii Properties, Inc., on October 1, 1988 I surveyed the plants growing in the area known as Kaopa Subdivision Unit III-B, Kailua, Oahu.

II. PHYSICAL CHARACTERISTICS OF THE AREA

The area in question is a strip of low ground 100 to 125 feet wide between Keolu Drive on the west, Ka'elepulu Pond on the east, and Kiuke'e Drive on the south. This strip of land is about 1500 feet long and runs in a north northwest by south southeast direction. It is land which has been cleared and filled in the past, and at times in the past also served as a desilting basin, which was separated from Ka'elepulu Pond by an earth berm about 1 foot above water level, running parallel to and about 100 feet east of Keolu Drive. The elevation ranges from about 10 feet above sea level at the edge of Keolu Drive to about 1 foot above sea level at the edge of Ka'elepulu Pond. The present ground surface includes both soil and rocks of various sizes, some up to 1.5 feet in diameter.

Just prior to my visit six transect lines had been cleared from the edge of Keolu Drive to the mangrove trees on the shore of Ka'elepulu Pond. I surveyed both the transect lines and the intervening vegetation to develop this report. The approximate locations of the transects are noted on the enclosed sketch map.

III. BIOLOGICAL CHARACTERISTICS OF THE AREA

A total of 34 species of higher plants were found in the area. They are included in the Checklist which forms part of this report. No native Hawaiian plants were found, and no threatened or endangered species were encountered.

The area in question is today best characterized as "ruderal", the technical term for a disturbed habitat dominated by weedy plants. Four different wild plant communities, and a small area containing cultivated garden plants could be distinguished.

A. KOA-HAOLE SHRUBLAND. This community occupied nearly all of the project site. It is dominated by shrubs or small trees of koa-haole (Leucaena leucocephala), 10 to 15 (occasionally 20) feet tall. Where the plants grow closely together little grows in their shade; where they are more scattered Californiagrass (Brachiaria mutica) grows underneath and climbs up into the koa-haole. Occasional shrubs of Christmas berry (Schinus terebinthifolius) and fleabanes (Pluchea spp.) are mixed with them, and two small vines are frequently found climbing them, the scarlet-fruited passionflower (Passiflora foetida) and the morning glory (Ipomoea oracilis). A number of other species occurred less commonly and more widely scattered in the community (see Checklist of Plants). This community is not a wetland community and this habitat is not a wetland. There is no standing water, and there are no obligate wetland species found in this habitat.

B. CALIFORNIAGRASS MEADOW. This community was found at the south end of the project site, starting about 110 feet east of Keolu Drive and just to the north of Kiuke'e Place. It is adjacent to, but just outside of, the proposed project area. It is dominated by a dense growth of Californiagrass (Brachiaria mutica), 3 to 5 feet deep, with scattered plants of jungle rice (Echinochloa colona), honohono (Commelina diffusa), and wedelia (Wedelia trilobata). At the time this survey was made the ground in this area was moist, but no standing water was found. After heavy rainfall, however, this area may be flooded. (Indicated on map by coarse cross-hatching).

Smaller patches of this vegetation type mark the locations of the two existing flowage easements which extend from Keolu Drive to Ka'elepulu Pond. (Indicated on map by fine cross-hatching).

C. MANGROVE FOREST. A band of red mangrove trees (Rhizophora mangle) extends along the shore of Ka'elepulu Pond. Toward the northern end of the project this band is typically 10 to 25 feet wide, with the edge of the water somewhere in the middle of the zone. It becomes wider near the southern end of the project area, where some mangrove seedlings were found on dry ground 50 feet or more from the edge of the pond. The mangroves are reproducing abundantly, and the width of this zone appears to be increasing.

D. STANDING WATER. At the time the survey was made there were small bodies of standing water at the Keolu Drive end of the two flowage easements. Duckweeds (Lemna and Spirodela) were floating on the surface of the water and jungle rice (Echinochloa colona) grew mixed with Californiagrass at the edges of the patches. If the flowage easements were cleared of vegetation these bodies of standing water should disappear.

E. CULTIVATED PLOT. A small area of land at the edge of the standing water on the Keolu Drive end of the southern flowage easement is being used to cultivate food plants, including taro (Coleocasia esculenta), ung choi (Ipomoea aquatica), sweet potato (Ipomoea batatas), bitter melon (Momordica charantia), and hyacinth bean (Dolichos lablab).

IV. WETLAND CONSIDERATIONS

In the attached Checklist of plants those which are OBLIGATE WETLAND SPECIES are indicated by the letter O in the first column, and those which are FACULTATIVE WETLAND SPECIES are indicated by the letter F. Obligate wetland species require wetland conditions for survival, establishment and reproduction - places where they occur are therefore usually considered wetlands. Facultative wetland species may be found in wetlands but are not wholly dependent upon those conditions for survival and reproduction - they will grow well in wetlands but will also grow well in other areas. (Definitions and classification of species as facultative or obligate wetland species are based on: Lani Stemmermann. 1981. A Guide to Pacific Wetland Plants. Published by U.S. Army Corps of Engineers, Honolulu District. 118 pp.)

The US Army Corps of Engineers regulations (33 CFR 323.2(c)) defines wetlands as "those areas inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

The KOA-HAOLE SHRUBLAND which occurs over most of the proposed project site is not a wetland under this definition, since the dominant koa-haole, and the "prevalence of vegetation" are neither obligate nor facultative wetland species. The MANGROVE FOREST and STANDING WATER communities are wetlands, and the CALIFORNIAGRASS MEADOW is a borderline community which is probably periodically inundated. The CULTIVATED PLOT is mostly non-wetland, but extends into the STANDING WATER habitat where the taro and ung choi are being grown.

No native Hawaiian plants were found in the project site and no endangered or threatened species were encountered. The wetlands which are in and adjacent to the project site have developed as a consequence of human activity, and do not represent pristine natural habitats. There should be no significant biological consequences if the project is developed as proposed.

EXPLANATION OF INFORMATION IN THE "CHECKLIST OF PLANTS":

WETLAND SP?: F = facultative wetland species
 O = obligate wetland species
 no symbol = not a wetland species

SCIENTIFIC NAME: The botanical name of each species found

COMMON NAME: The common name of each species found

NAT STAT: P = species thought to have been introduced to Hawaii by early Polynesians
 X = species introduced to Hawaii since the time of Captain Cook
 No native species (those occurring naturally in Hawaii without human assistance) were found in the project area

FAMILY: The botanical name of the plant family to which each species belongs

COMMUNITY: The plant community or communities in which each species was found

A = KOA-HAOLE SHRUBLAND
 B = CALIFORNIAGRASS MEADOW
 C = MANGROVE FOREST
 D = STANDING WATER
 E = CULTIVATED PLOT

CHECKLIST OF PLANTS, KAOPA SUBDIVISION III-B, ENCHANTED LAKE

WETLAND SP?	SCIENTIFIC NAME	COMMON NAME	NAT STAT	FAMILY	COMMUNITY
MONOCOTYLEDONS					
F	<i>Colocasia esculenta</i> (L.) Schott	kalo, taro	P	ARACEAE	E
F	<i>Commelina diffusa</i> Burm. f.	honohono	X	COMMELINACEAE	A, B
F	<i>Brachiaria mutica</i> (Forsk.) Stapf	Californiagrass	X	GRAMINEAE	A, B
F	<i>Echinochloa colona</i> (L.) Link	jungle rice	X	GRAMINEAE	B, D
	<i>Panicum maximum</i> Jacq. var. <i>maximum</i>	Guineagrass	X	GRAMINEAE	A
O	<i>Lemna</i> sp., <i>Spirodela polyrrhiza</i> (L.) Schleid.	duckweed	X	LEMNACEAE	D
DICOTYLEDONS					
	<i>Asystasia gangetica</i> (L.) T. Anders.	Chinese violet	X	ACANTHACEAE	A
	<i>Schinus terebinthifolius</i> Raddi	Christmas berry	X	ANACARDIACEAE	A
	<i>Spathodea campanulata</i> Beauv.	African tuliptree	X	BIGNONIACEAE	A
F	<i>Pluchea X fosbergii</i> Cooperrider & Galang	<i>P. indica</i> X <i>odorata</i> hybrid	X	COMPOSITAE	A
F	<i>Pluchea indica</i> (L.) Less.	Indian fleabane	X	COMPOSITAE	A
F	<i>Pluchea odorata</i> (L.) Cass.	shrubby fleabane	X	COMPOSITAE	A
	<i>Wedelia trilobata</i> (L.) Hitchc.	wedelia	X	COMPOSITAE	A, B
O	<i>Ipomoea aquatica</i> Forsk.	swamp cabbage, ung choi	X	CONVOLVULACEAE	E
	<i>Ipomoea batatas</i> (L.) Poir.	'uala, sweet potato	P	CONVOLVULACEAE	E
	<i>Ipomoea gracilis</i> R.Br.	morning glory	X	CONVOLVULACEAE	A
	<i>Momordica charantia</i> L.	bitter melon, balsam apple	X	CUCURBITACEAE	A, E
	<i>Ricinus communis</i> L.	castor bean, koli	X	EUPHORBIACEAE	B
	<i>Crotalaria incana</i> L.	fuzzy rattlepod	X	LEGUMINOSAE	A
	<i>Dolichos lablab</i> L.	hyacinth bean	X	LEGUMINOSAE	E
	<i>Leucaena leucocephala</i> (Lam.) de Wit	koa-haole, ekoa	X	LEGUMINOSAE	A
	<i>Malvastrum coromandelianum</i> (L.) Garcke	false mallow	X	MALVACEAE	A
	<i>Sida rhombifolia</i> L.	Cuba jute	X	MALVACEAE	A
F	<i>Thespesia populnea</i> (L.) Soland. ex Correa	milo	P	MALVACEAE	C
	<i>Passiflora edulis</i> Sims forma <i>flavicarpa</i> Deg.	yellow liliko'i	X	PASSIFLORACEAE	C
	<i>Passiflora foetida</i> L. var. <i>foetida</i>	scarlet-fruited passionflower	X	PASSIFLORACEAE	A
	<i>Rivina humilis</i> L.	rouge plant, coral berry	X	PHYTOLACCACEAE	A
O	<i>Rhizophora mangle</i> L.	red mangrove	X	RHIZOPHORACEAE	C
	<i>Paederia foetida</i> L.	maile pilau	X	RUBIACEAE	A
	<i>Murraya paniculata</i> (L.) Jack	mock orange	X	RUTACEAE	A
	<i>Capsicum annuum</i> L.	chili pepper	X	SOLANACEAE	A
	<i>Solanum wendlandi</i> Hook. f.	potato vine	X	SOLANACEAE	A
	<i>Stachytarpheta</i> sp.	vervain	X	VERBENACEAE	A

APPENDIX C

HISTORIC PRESERVATION OFFICE CORRESPONDENCE

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

KEITH W. AHUE
MANABU TAGOMORI
DAN T. KOCHI

AQUACULTURE DEVELOPMENT
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ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER RESOURCE MANAGEMENT

June 25, 1991

Mr. Walter Billingsley
Gray Hong Bills & Associates Inc.
119 Merchant Street, Suite 607
Honolulu, Hawaii 96813

Dear Mr. Billingsley:

SUBJECT: Request for Information on Probable Presence of
Historic Sites
Enchanted Lake, Kailua, O'ahu
TMK: 4-2-04: 35

This is to follow-up your telephone request to Carol Kawachi on June 5, 1991, regarding the probable presence of historic sites at this parcel.

A review of our files show that this parcel is fill land. It is highly unlikely that historic features will be found at this parcel. Therefore, we believe that any future actions on this parcel will have "no effect" on significant historic sites.

Sincerely,

A handwritten signature in dark ink, appearing to read "Don Hibbard".

DON HIBBARD, Administrator
State Historic Preservation Division

APPENDIX D

MODIFICATION OF DEPT OF THE ARMY PERMIT NO. PODCO 2151



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

November 26, 1991

DEC 2 1991

REPLY TO
ATTENTION OF

Operations Division

Date Received _____

File: _____ / 1658

To: DH / DB _____

Assign: _____

Mr. James Lee
LECI Properties
5070 Likini Street, #312
Honolulu, Hawaii 96818

Dear Mr. Lee:

Your request for modification of Department of the Army Permit No. PODCO 2151 is hereby approved. The permit was issued in June 1991 and provides for after-the-fact approval of unauthorized fill and proposed installation of drain lines along Keolu Drive at Kaelepulu Pond, Kailua, Oahu, Hawaii.

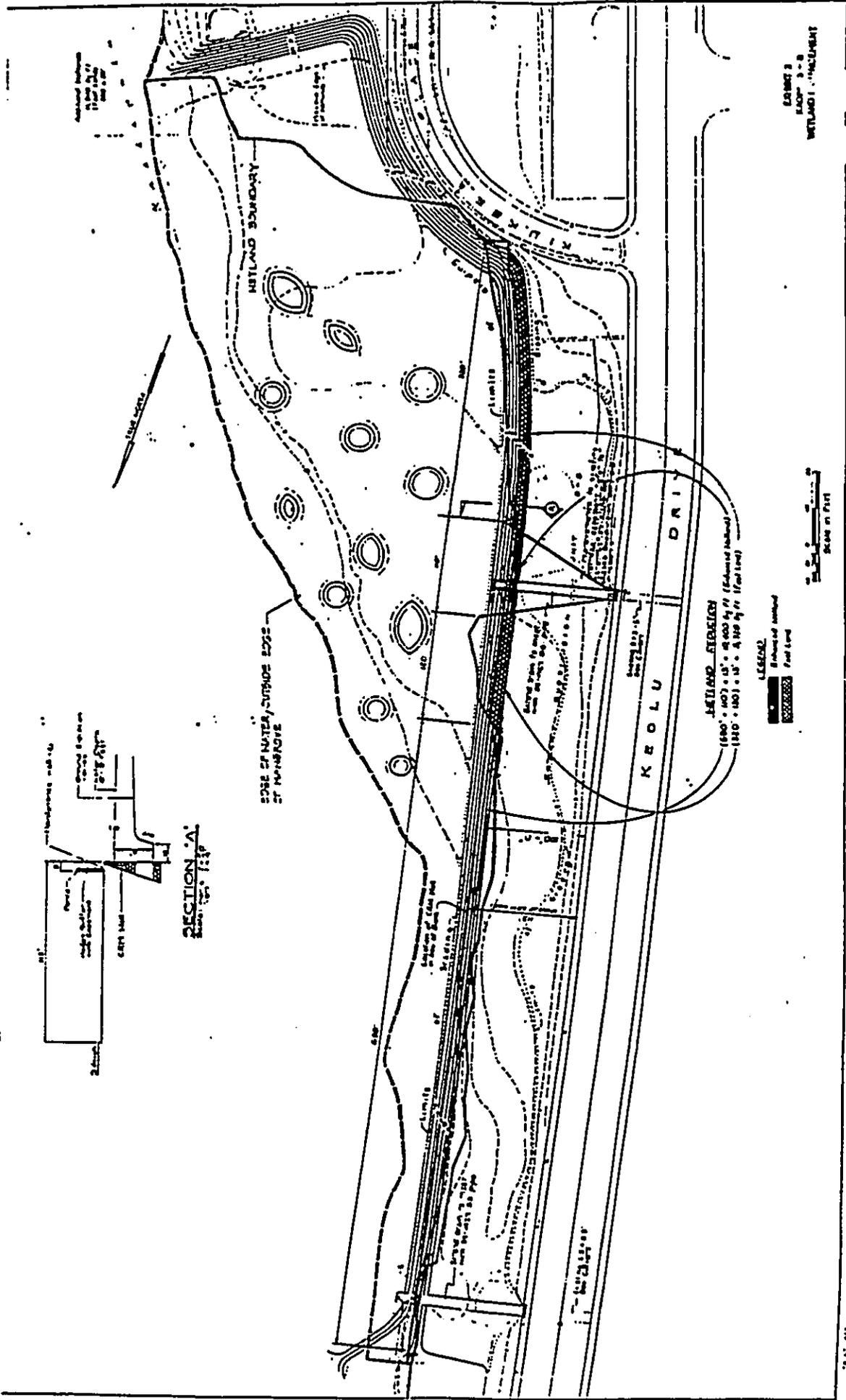
The modification involves replacement of a 2H:1V sloping bank adjacent to the mitigation wetland with a vertical rock retaining wall. The modification would permit you to maximize the lot size of your development in accordance with the current residential zoning and would also minimize maintenance requirements along the bank.

The differences in wetland enhancement/creation resulting from the modification have been fully compensated by creating additional wetlands at the south end of the project site. All other terms and conditions of the permit remain in effect.

Sincerely,

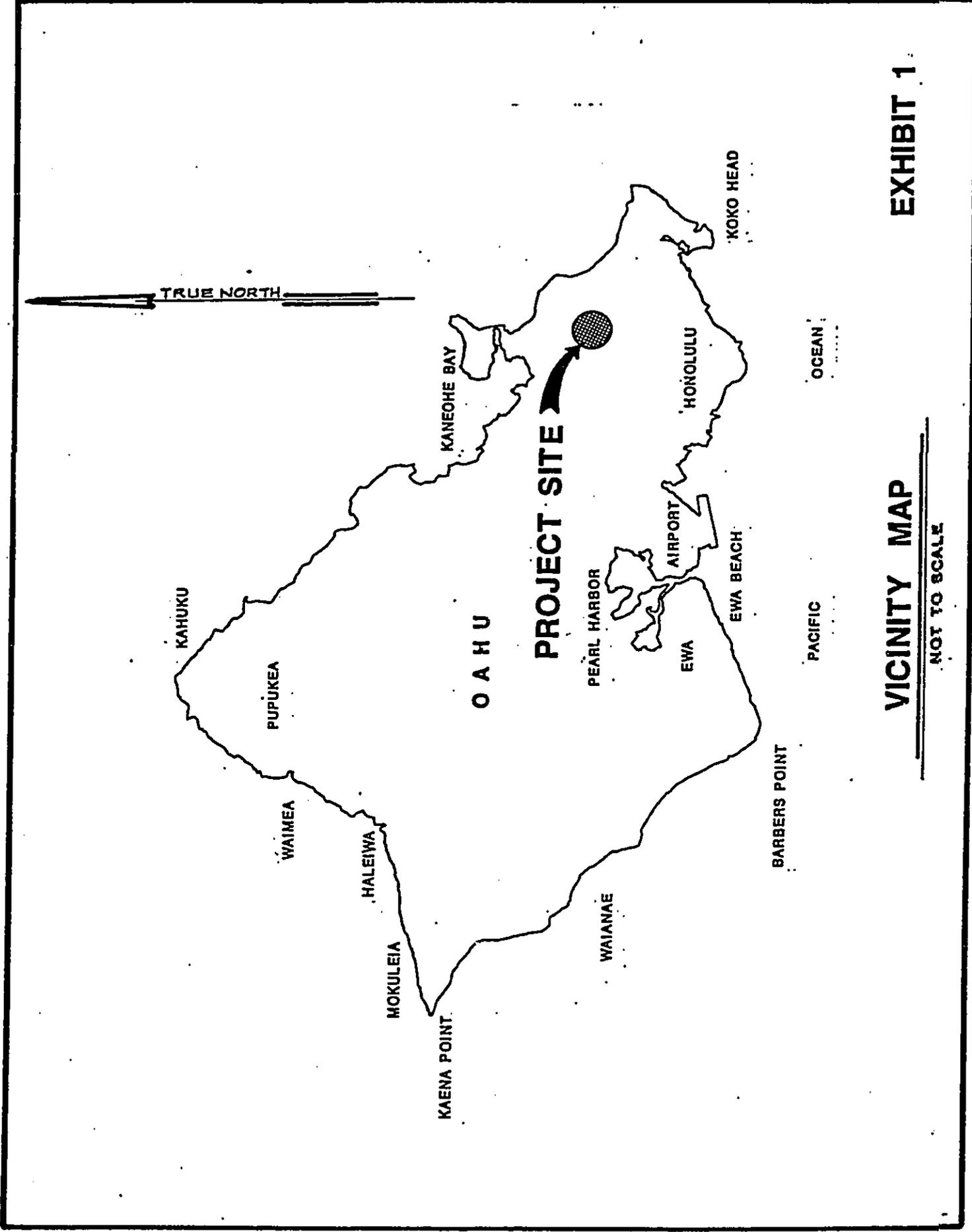
Stanley J. Arakaki
Stanley T. Arakaki
Chief, Operations Division

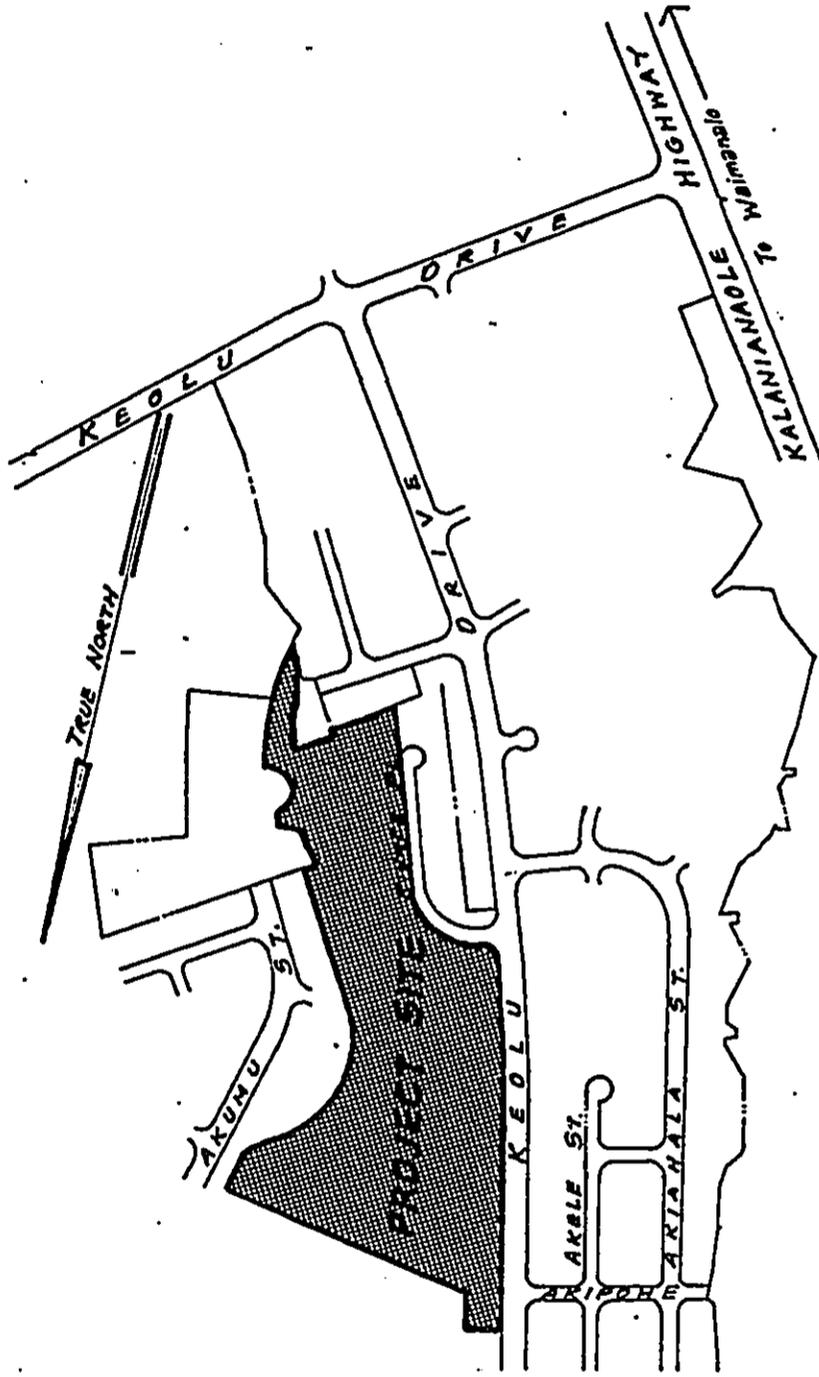
Enclosure



Modified 26 Nov 91
 Replaces sheets 3 and 4 of POCO 2151

EXHIBITS

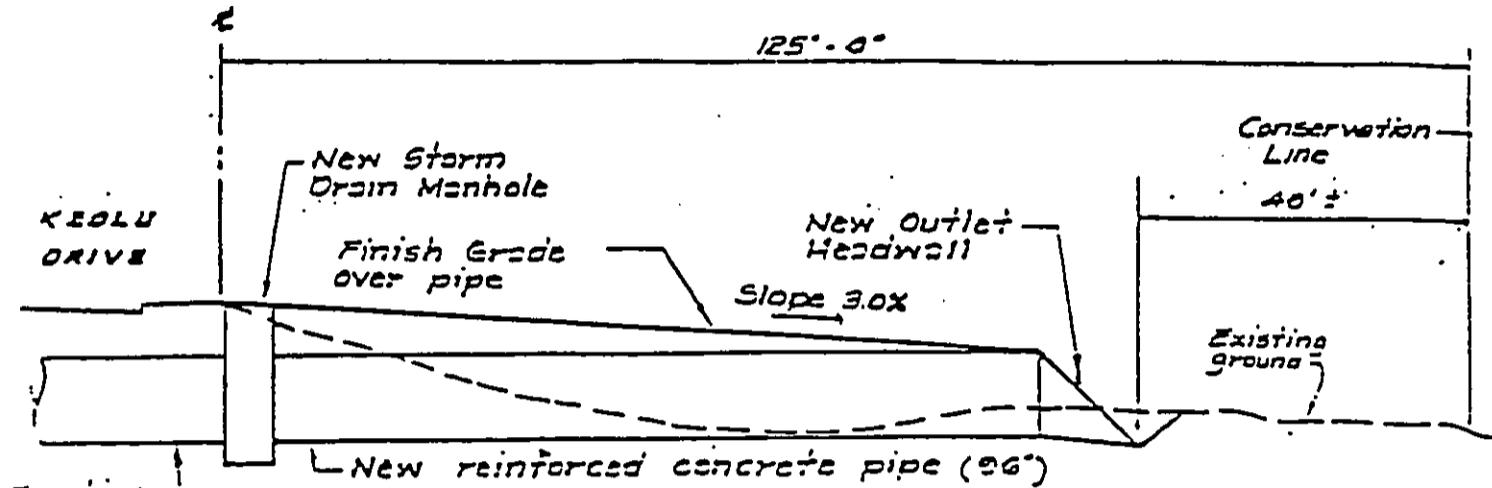




LOCATION MAP

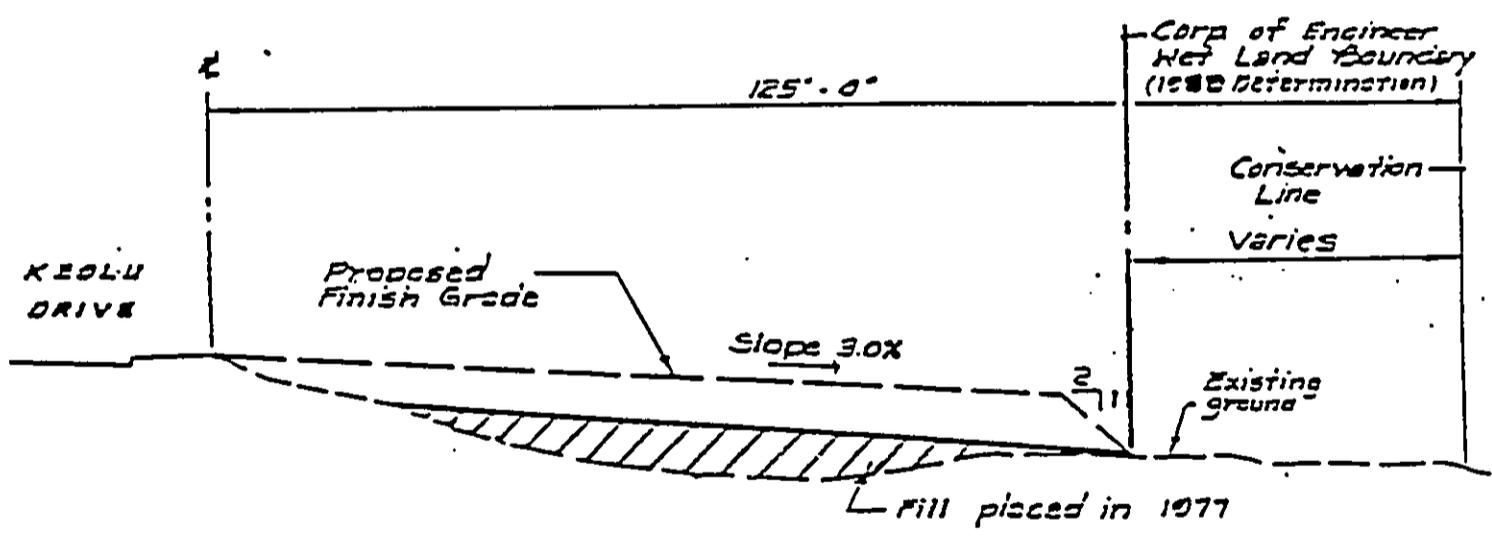
Not to Scale

EXHIBIT 2



TYPICAL SECTION A
96"-INCH DRAIN LINE EXTENSION ACTION

Scale: 1" = 20'-0"



TYPICAL SECTION A
AFTER-THE-FACT-FILL ACTION

Scale: 1" = 20'-0"

KAOPA UNIT 3-B
 TMK: 4-2-02 & 4-2-04
 Kailua, Koolauloaha, Oahu, Hawaii

Sheet 2 of 4
 May, 1991

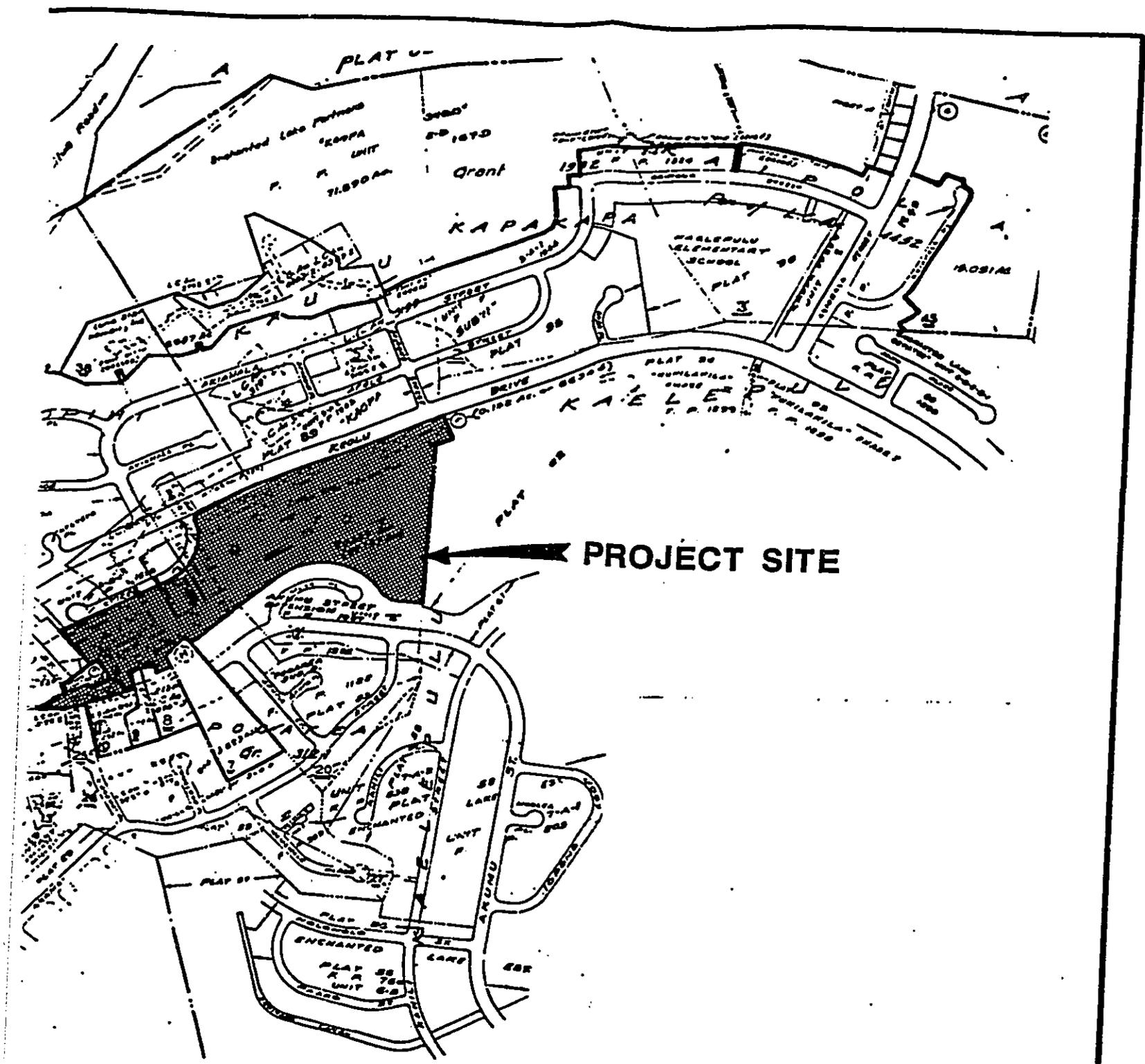


EXHIBIT 3
T.M.K. 4-2-04:18,35, & 36