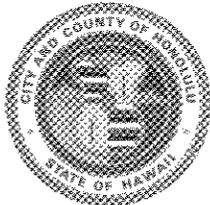


DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR



GEORGE S. MORIGUCHI
DIRECTOR

77/EC-9 (JW)

April 12, 1978

Mr. Donald Bremner, Chairman
Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Mr. Bremner:

Revised Environmental Impact Statement
for the Mililani Sewage Treatment Plant
Effluent Disposal System,
Mililani, Oahu

On behalf of the Mayor of the City and County of Honolulu, we are notifying you of our acceptance of the above as an adequate fulfillment of Chapter 343, HRS, requirement. Our Acceptance Report is attached. By copy of this letter, we are also informing the proposing agency of our decision.

Very truly yours,

A handwritten signature in cursive script, appearing to read "George S. Moriguchi".

GEORGE S. MORIGUCHI
Director of Land Utilization

GSM:s1

Attach.

cc: DPW

2/8/78



DEPARTMENT OF LAND UTILIZATION

ACCEPTANCE REPORT: REVISED EIS FOR THE MILILANI SEWAGE
TREATMENT PLANT EFFLUENT DISPOSAL SYSTEM
MILILANI, OAHU

A. Background

The Environmental Impact Statement (EIS) was filed by the Dept. of Public Works (DPW) of the City and County of Honolulu. It describes the anticipated environmental effects of a proposed system whereby treated sewage effluent would be reclaimed for irrigation of sugarcane fields. The intent of the proposal is to improve water quality of West Loch, Pearl Harbor, and Kipapa and Waikele Streams, as well as conserve valuable water resources.

City and County funds will be used for construction, operation and maintenance of this project, so the provisions of Chapter 343, HRS, are applicable. The project was assessed by the DPW and the EIS was prepared by that agency and its consultant, Park Engineering, Inc. Since State funds will also be used for a portion of the construction costs, the Governor is the final "accepting authority."

B. Procedures

1. The DPW issued an EIS Preparation Notice on April 18, 1977. The Notice was published in the Environmental Quality Commission (EQC) Bulletin on May 8, 1977. Organizations and persons consulted during preparation of the EIS are listed in Exhibit A. All parties which were consulted or which requested to be consulted had 30 days to submit comments and received a written response from the DPW, in accordance with Section 1:41 of the EIS Regulations.
2. The EIS was filed with the EQC, which distributed the document to the persons and organizations listed in Exhibit B. The deadline for comments was November 7, 1978, which allowed for a 30-day review period. Late comments were submitted by the Fish and Wildlife Service and the Dept. of the Air Force.
3. The DPW made a point-by-point response to all comments on the EIS, including those which were submitted after the close of the review period. The Revised EIS, which included these responses, was submitted to the Dept. of

Land Utilization for acceptance on March 28, 1978.
Twenty copies were also transmitted to the EQC.

C. Content

The Revised EIS meets all the basic content and style requirements specified in Sections 1:42 and 1:43 of the EIS Regulations.

D. Response

The DPW made an adequate point-by-point response to all comments submitted during the official review period.

E. Determination

The Revised EIS is determined to be acceptable under the criteria for acceptance established in Section 1:71 of the EIS Regulations.

APPROVED



GEORGE S. MORIGUCHI
Director of Land Utilization

GSM:sl

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

ADDENDA TO
REVISED ENVIRONMENTAL IMPACT STATEMENT FOR
MILILANI SEWAGE TREATMENT PLANT EFFLUENT DISPOSAL SYSTEM

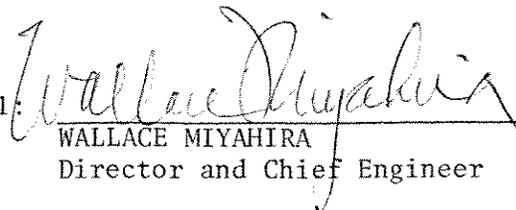
MILILANI, OAHU, HAWAII

TAX MAP KEY: 9-4-03: 2,3,5
9-4-04: 7,12
9-4-05: 19,48

This Document is Prepared Pursuant to Chapter 343, HRS

Proposing Agency: Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Responsible Official:

 5/30/80
WALLACE MIYAHIRA Date
Director and Chief Engineer

Prepared By: Planning Branch
Division of Wastewater Management

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
I	Statement of Objective and Description of the Proposed Action	1
II	Agencies and Persons Being Consulted for the Assessment Process	1
III	General Description of the Action's Technical, Economic, Social and Environmental Characteristics	3
IV	Description of the Affected Environment	6
V	Discussion of the Assessment Process	6
VI	Identification and Summary of Probable Impacts	6
VII	Alternatives Considered	7
VIII	Proposed Mitigation Measures	7
IX	Determination	13
X	Findings and Reasons Supporting The Determination	13

I. STATEMENT OF OBJECTIVE AND DESCRIPTION OF THE PROPOSED ACTION

The objective of the action is to use effluent from the Mililani Sewage Treatment at the Oahu Sugar Company's (OSC's) Field 215.

The proposed action was originally assessed in the REVISED ENVIRONMENTAL IMPACT STATEMENT FOR MILILANI SEWAGE TREATMENT PLANT EFFLUENT DISPOSAL SYSTEM, completed on July 4, 1977 and accepted by the Governor on March 9, 1978. The basic change in this addenda is to use Field 215 instead of the Five-Finger Reservoir (Figure 1) as the point of discharge of the Mililani STP effluent for furrow irrigation of sugarcane.

II. AGENCIES AND PERSONS BEING CONSULTED DURING THE ASSESSMENT PROCESS

FEDERAL

Army Engineer District, Honolulu
Army Support Command, Hawaii
Coast Guard
Fifteenth Air Base Wing (PACAF)
Fish and Wildlife Service
Fourteenth Naval District
Soil Conservation Service

STATE

Department of Accounting and General Services
Department of Agriculture
Department of Defense
Department of Health
Department of Land and Natural Resources
Department of Planning and Economic Development
Department of Social Services and Housing
Department of Transportation
Office of Environmental Quality Control

CITY AND COUNTY

Board of Water Supply
Department of General Planning
Department of Housing and Community Development
Department of Land Utilization
Department of Parks and Recreation
Department of Transportation Services

UNIVERSITY OF HAWAII

Environmental Center
Leeward Community College
Water Resources Research Center

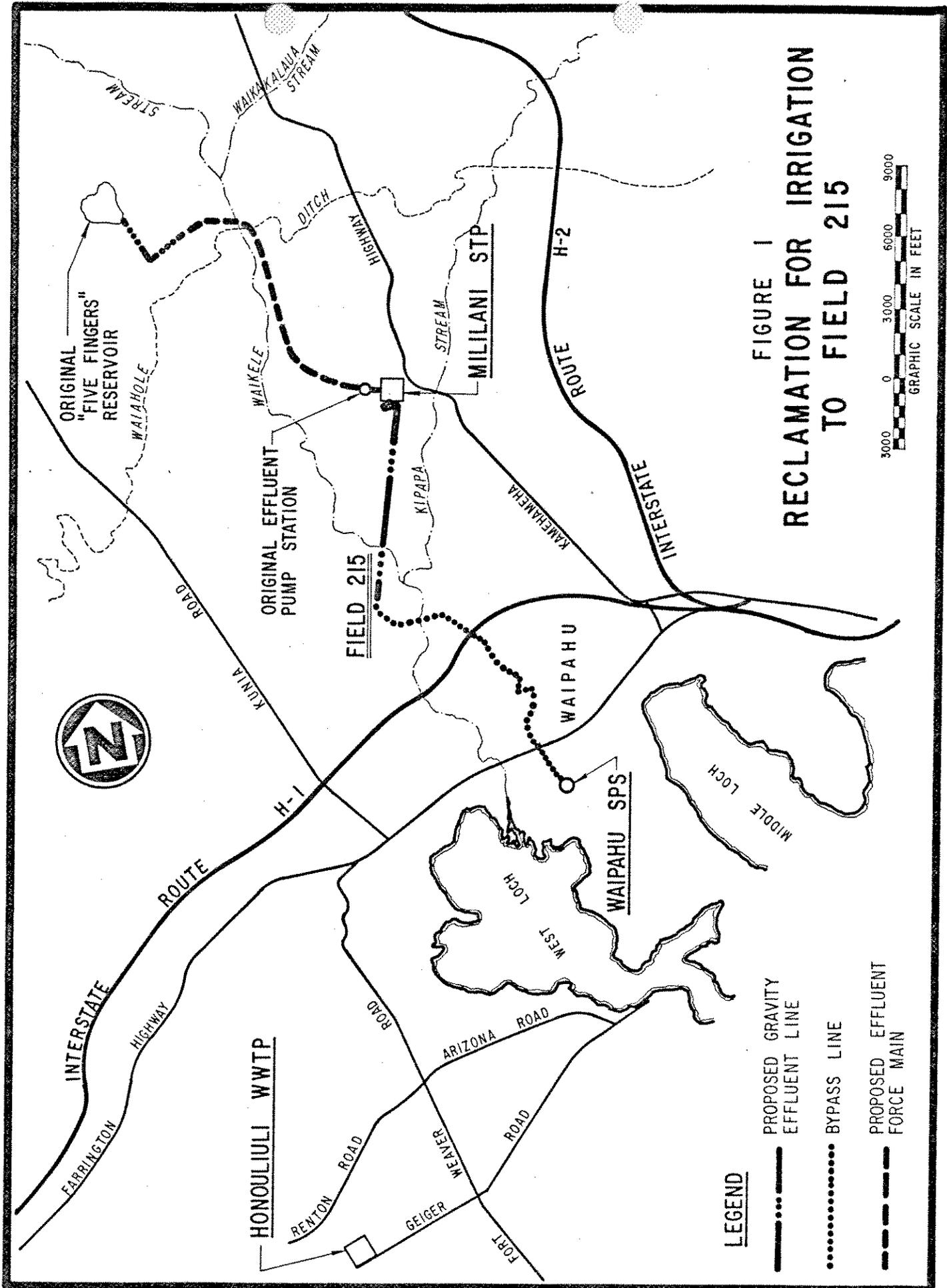


FIGURE 1
RECLAMATION FOR IRRIGATION
TO FIELD 215

LEGEND

- PROPOSED GRAVITY EFFLUENT LINE
- BYPASS LINE
- - - PROPOSED EFFLUENT FORCE MAIN



III. GENERAL DESCRIPTION OF THE ACTION'S TECHNICAL, ECONOMIC,
SOCIAL AND ENVIRONMENTAL CHARACTERISTICS

A. TECHNICAL CHARACTERISTICS

The basic Environmental Impact Statement (EIS) for the project selected the alternative to use the Mililani STP effluent for sugarcane irrigation. All the involved organizations agreed with the alternative to pump effluent to the Five-Finger Reservoir for furrow irrigation of the Oahu Sugar Company's (OSC's) sugarcane fields. However, OSC has since requested that the location of the delivery point be changed in order to convert the furrow irrigation system serving the fields tributary to the Five-Finger Reservoir to a drip irrigation system.

This addenda proposes to divert the effluent by gravity to OSC's Field 215. This scheme is basically the same as the Five-Finger Reservoir plan in that up to five million gallons per day of effluent will be utilized in furrow irrigation of sugarcane until June 30, 1995.

The proposed facilities include a gravity diversion line to Field 215 and a gravity bypass line to the Waipahu SPS.

The diversion line consists of 14,100 linear feet of 30-inch pipe, including 3,100 linear feet for crossing Waikele Gulch. The bypass consists of 14,400 linear feet of 30-inch pipe. The effluent pump station and reservoir in the original Five-Finger Reservoir alternative will not be required.

The effluent bypass will be used during periods of non-irrigation caused by heavy rains or sugar labor strikes. The effluent can then be diverted to the Barbers Point Outfall via the Waipahu Sewage Pump Station (SPS) instead of diversion into Kipapa Stream.

Since the original EIS was accepted, the following two adjustments have also been made:

(1) The planning period has been changed from "1976 to 1996" to "1980 to 2000" and the implementation schedule has been revised to the following:

- | | |
|--|------------------|
| 1. Completion of Preliminary Plan Report | April 30, 1980 |
| 2. Completion of Construction Plans and Specifications | October 31, 1981 |
| 3. Initiation of Construction | October 31, 1982 |
| 4. Completion of Construction | October 31, 1983 |

(2) The State Department of Planning and Economic Development released new population projections in 1978. The new series II-F projection shows a reduction in population in the Mililani-Waipio area for the year 2000, from 37,500 to 34,900. The average daily flow and peak flow for year 2000, therefore, have been changed from 5.00 mgd and 14.63 mgd to 4.19 mgd and 12.53 mgd, respectively.

B. ECONOMIC CHARACTERISTICS

The project development cost estimates for the Effluent Disposal System to Field 215 with a bypass to the Waipahu SPS is \$5,077,000 (Table 1). Under the Federal Water Pollution Control Act, the Federal Government will contribute 75% of the total costs. The State will contribute 10% and the City 15% of the costs.

The City and County of Honolulu's 15% share is \$761,550. This will be financed by the use of general funds which is generated by property taxes. The estimated annual and monthly operations and maintenance costs of \$16,000 and \$1,333, respectively, will be financed by the sewer service charges in effect since January 1, 1977.

C. SOCIAL CHARACTERISTICS

This new plan to use Field 215 instead of Five-Finger Reservoir as the new point of effluent discharge will not have any different social impacts as described in the original EIS.

D. ENVIRONMENTAL CHARACTERISTICS

The new plan to use Field 215 differs from the Five-Finger Reservoir plan in that the new alignment crosses Waikele Gulch and a sewer line bypassing the irrigation system will also be provided.

The exact alignment of the Waikele Gulch crossing will be determined during the design phase of the project. At that time, an archaeologist will survey the alignment for possible archaeological sites. The Corps of Engineers will also be contacted and a permit will be obtained for the crossing. The final alignment will conform to all federal and local regulations to preserve the environment.

TABLE 1

EFFLUENT DISPOSAL SYSTEM
TO FIELD 215 WITH
BY BYPASS TO WAIPAHA SPS
COST ESTIMATE

Line to 215

1. 30" Effluent Line (11,000 LF)	\$1,485,000
2. 30" Gulch Crossing (3,100 LF)	775,000
Sub-Total	\$2,260,000

Bypass to Waipahu SPS

30" Effluent Line (14,400 LF)	<u>1,944,000</u>
TOTAL	\$4,204,000

Contingency (10%) 420,000

TOTAL CONSTRUCTION COST \$4,624,000

Engineering	381,000
Administration	24,000
Construction Management	<u>48,000</u>

TOTAL PROJECT COST \$5,077,000

The bypass line will require construction through Waipahu. The construction will be limited to the City and County streets and will not displace any homes or businesses. The basic impacts will be temporary construction impacts and not long-term environmental impacts.

IV. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The project is basically located on land used by Oahu Sugar Company for growing sugarcane. The alignment also goes through Waikele Gulch, which is used by the military, and through City streets in Waipahu. A major portion of the alignment has been previously disturbed by recent urban or agricultural activities. The only exception would be on the slopes of Waikele Gulch which probably have not yet been disturbed by such activities.

V. DISCUSSION OF THE ASSESSMENT PROCESS

An EIS was written for the project in January, 1977 and accepted on March 9, 1978 by the Governor. Since then, OSC has requested to change the location of the delivery point from the Five-Finger Reservoir to Field 215. This change and the effects on the original EIS are now being assessed. The agencies commenting on the original EIS will be contacted.

VI. IDENTIFICATION AND SUMMARY OF PROBABLE IMPACTS

The basic concept of the accepted EIS is not being changed with the new effluent discharge location. No new secondary impacts will result with this revised plan.

There will be construction impacts, but these will be confined to sugarcane land and City streets in Waipahu. Noise and dust nuisance will be controlled by restricting construction activities to comply with State Department of Health Regulations, Chapter 44B - Community Noise Control for Oahu, and Chapter 43 - Air Pollution Control.

Trenching activities will impact traffic movement in Waipahu. Any inhibition of traffic movement will be in accordance with Department of Transportation Services Regulations. The contractor will obtain a Street Use Permit which will list construction limitations to minimize traffic disruptions. Construction will be limited to one lane and off-peak hours. Continuous access to adjacent private driveways will be provided by the contractor. All these impacts will be minimal and temporary.

Grading and grubbing will be minimal along the alignment. Excess material will be hauled away to approved dump sites and the disturbed areas will be restored to original conditions.

VII. ALTERNATIVES CONSIDERED

The No Action, Deep Well Injection, Tertiary Treatment and Continued Use of Present Outfall alternatives were considered not viable in the original EIS and nothing has changed to alter the status of these alternatives.

The dilution of sewage effluent in the Waiahole Ditch is no longer viable as the Water Resources Research Center-University of Hawaii (WRRRC) research project has indicated that sugar quality will be affected by improper dilution. This alternative is unacceptable to OSC because of the difficulty in actually managing the mixing of proper dilutions in the field.

The Five-Finger Reservoir scheme must be changed since OSC has decided to convert furrow irrigation fields served by the reservoir to drip irrigation fields. Another WRRRC study showed that post treatment of sewage effluent would be required. The existing plantation practice of filtering the water before discharging into the drip irrigation tubes would not work with secondary treated effluent. Use of more sophisticated treatment which could possibly work would be costly (\$9.2 vs \$4.4 million for furrow irrigation - present worth costs, Tables 2 and 3).

The new alternative considered is the Reclamation for Irrigation - Field 215. The effluent will be conveyed by gravity to OSC's Field 215 for furrow irrigation of sugarcane. A bypass to the Barbers Point Outfall via the Waipahu SPS during periods of non-irrigation caused by heavy rains or sugar labor strikes will be constructed.

The Disposal of Untreated Wastewater into the Honouliuli Wastewater System is still possible, but it will mean (1) the loss of a valuable resource and (2) the loss of money already expended for the existing Mililani STP.

Comparison of all alternatives indicate that Reclamation for Irrigation-Field 215 is the best alternative (Tables 4 and 5).

VIII. PROPOSED MITIGATING MEASURES

There are no known major or significant environmental effects that will require mitigating measures. The environmental impacts will be minor and have been discussed in Section VI.

The only area where limited activities have occurred is in the gulch crossing. As discussed earlier, an archaeologist will be hired for an archaeological reconnaissance of the alignment during the design stage. Also, when the alignment is set, a permit from the Corps of Engineers will be obtained.

TABLE 2

RECLAMATION FOR IRRIGATION TO "FIVE-FINGERS" RESERVOIR
WITH POST TREATMENT

Description	Cost In \$1,000					Salvage Value 1996
	Present Worth	1977-1981	1982-1986	1987-1991	1992-1996	
Construction Cost						
Effluent Pump Station (Struc)		930				
Effluent Pump Station (Equip)		345				
Post Treatment (Struc)		1,875				
Post Treatment (Equip)		1,530				
30" Effluent Line (11,400 LF)		1,539				
24" Effluent Line (5,000 LF)		500				
Gulch Crossing (1,000 LF)		250				
Sub-Total		6,969				
Contingency (10%)		697				
TOTAL CONSTRUCTION COST	7,666					
Salvage Value	(-) 900					2,955
Equipment Replacement Cost	255			462		
Annual O&M Cost						
Effluent Pump Station (Fixed)	341	30	30	30	30	
Effluent Pump Station (Variable)	406	24	31	47	58	
Post Treatment (Fixed)	170	15	15	15	15	
Post Treatment (Variable)	194	10	16	22	30	
Effluent Line (Fixed)	125	11	11	11	11	
TOTAL ANNUAL O&M COST	1,236					
Other Costs						
Engineering		700				
Administrative		40				
Construction Management		80				
O&M Manual		92				
TOTAL OTHER COSTS	912					
TOTAL COST WITH POST TREATMENT	9,169					

TABLE 3

RECLAMATION FOR IRRIGATION TO
FIELD 215 WITHOUT POST TREATMENT
WITH BYPASS TO WAIPAIJU SPS

Description	Cost In \$1,000					Salvage Value 1996
	Present Worth	1977-1981	1982-1986	Replacement 1986	1987-1991	
<u>Line to 215</u>						
Construction Cost						
30" Effluent Line (11,000 LF)		1,485				
Gulch Crossing (3,100 LF)		<u>775</u>				
SUB-TOTAL		2,260				
Contingency (10%)		<u>226</u>				
TOTAL CONSTRUCTION COST	2,486	2,486				
Salvage Value	(-) 454					1,492
Annual Maintenance Cost (Fixed)	80	7	7	7	7	
Other Costs						
Engineering						165
Administrative						10
Construction Management						<u>21</u>
TOTAL OTHER COSTS	196	196				
SUB-TOTAL	2,308	2,308				

TABLE 3

(Continued)

Description	Present Worth	Cost In \$1,000					Salvage Value 1996
		1977-1981	1982-1986	Replacement 1986	1987-1991	1992-1996	
<u>Bypass to Waipahu SPS from 215</u>							
Construction Cost							
30" Effluent line (14400 LF)		1944					
Contingency (10%)		<u>194</u>					
Total construction cost	2138	2138					
Salvage Value	(-)391					1283	
Annual Maintenance Cost (Fixed)	102	9	9	9	9		
Other Costs							
Engineering		216					
Administrative		14					
Construction Management		<u>27</u>					
Total other costs	257	257					
SUBTOTAL	2106	2106					
TOTAL COST	4414	4414					

TABLE 4

COST SUMMARY OF THE ALTERNATIVES
IN PRESENT WORTH VALUES
(IN THOUSANDS OF DOLLARS)

<u>Disposal Scheme</u>	<u>Cost</u>
"A" Ocean Outfall	
Construction	\$ 7,678
Salvage Value	(-) 1,403
Maintenance	352
Other Costs	<u>905</u>
Total	\$ 7,532
"C" Reclamation for Irrigation to Five- Finger Reservoir (with Post Treatment)	
Construction	\$ 7,666
Salvage Value	(-) 900
Equipment Replacement	255
Operation and Maintenance	1,236
Other Costs	<u>912</u>
Total	\$ 9,169
"D" Reclamation for Irrigation to Field 215 (without Post Treatment)	
Construction	\$ 4,624
Salvage Value	(-) 845
Maintenance	182
Other Costs	<u>453</u>
Total	\$ 4,414

TABLE 5

RANKING OF FINAL ALTERNATIVE PROPOSALS

	<u>Alternative Proposals*</u>		
	<u>1</u>	<u>2</u>	<u>3</u>
1. Environmental Effects	2	2	2
2. Monetary Costs	3	5	1
3. Implementation Capacity	1	1	1
4. Energy and Resource Use	1	5	1
5. Reliability	1	5	1
6. Public Acceptability	4	1	1
7. Flexibility	3	5	1
8. Contribution to Goals and Objectives	5	1	1
TOTAL	20	25	9
RANKING	2	3	1

*Alternate Proposal 1 - Ocean Outfall

Alternate Proposal 2 - Irrigation, Five-Finger
Reservoir Option with Post Treatment

Alternate Proposal 3 - Irrigation, Field 215
without Post Treatment

IX. DETERMINATION

This assessment has shown that there will be no significant effects on the environment by this revised plan and a Supplemental Environmental Impact Statement is not required. A Negative Declaration will be filed with the Environmental Quality Commission.

X. FINDINGS AND REASONS SUPPORTING THE DETERMINATION

The following findings and reasons were used to determine that there will be no significant effects on the environment by the new plan.

1. The plan is basically the same as the plan chosen in the original EIS. The use of effluent for sugarcane irrigation will conserve a valuable resource.
2. The Field 215 alternative is the most cost effective.
3. The bypassing of effluent to the Barbers Point Outfall during periods of non-irrigation is a better alternative than bypassing into Kipapa Stream.
4. The Field 215 plan will not require electrical energy as did the Five-Finger Reservoir plan. The Five-Finger Reservoir scheme required energy for the effluent pump station and post treatment.
5. The environmental disturbances due to construction will be temporary and most will be limited to areas already disturbed by past activities. Any possible environmental problems that may affect the Waikele Gulch crossing will be mitigated during the selection of the exact alignment in the design stage.

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

REVISED
ENVIRONMENTAL IMPACT STATEMENT
FOR
MILILANI SEWAGE TREATMENT PLANT EFFLUENT DISPOSAL SYSTEM
MILILANI, OAHU, HAWAII

TAX MAP KEY: 9-4-03:2, 3 & 5

9-4-04:7 & 12

9-4-05:19 & 48

This Environmental Document is Submitted Pursuant to Chapter 343, HRS

PROPOSING AGENCY: Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

RESPONSIBLE OFFICIAL:


WALLACE MIYAHIRA
DIRECTOR AND CHIEF ENGINEER

1/4/77
DATE

PREPARED BY: Park Engineering, Inc.
190 South King Street
Suite 2085
Honolulu, Hawaii 96813

ACCEPTING AUTHORITY: GOVERNOR, STATE OF HAWAII

Office of Environmental Quality Control
Office of the Governor
550 Halekauwila Street
Tani Office Building, Third Floor
Honolulu, Hawaii 96813

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY	vi
I. PROJECT DESCRIPTION	
A. PROJECT LOCATION	1
B. STATEMENT OF OBJECTIVE	1
C. BACKGROUND	3
D. GENERAL DESCRIPTION OF THE ACTION	4
E. USE OF PUBLIC FUNDS	7
F. PHASING AND TIMING OF ACTION	7
G. SUMMARY OF TECHNICAL DATA	9
II. DESCRIPTION OF THE ENVIRONMENTAL SETTING	
A. PLANNING AREA DESCRIPTION	20
B. PHYSICAL GEOGRAPHY	20
C. DEMOGRAPHIC AND LAND-USE DATA	26
D. WATER QUALITY AND USES	29
E. OTHER ENVIRONMENTAL CONSIDERATIONS	35
F. EXISTING WASTEWATER FLOWS AND TREATMENT SYSTEMS	40
G. PERFORMANCE OF EXISTING MILILANI STP	45
III. THE RELATIONSHIP OF THE PROPOSED ACTION TO LAND-USE PLANS, POLICIES, AND CONTROLS FOR THE AFFECTED AREA	47
IV. THE PROBABLE IMPACT OF THE PROPOSED ACTION ON THE ENVIRONMENT	48
V. ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED	55

TABLE OF CONTENTS
(Continued)

	<u>Page</u>
VI. ALTERNATIVES TO THE PROPOSED ACTION	56
VII. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY	60
VIII. MITIGATION MEASURES PROPOSED TO MINIMIZE IMPACT	61
IX. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES	62
X. ORGANIZATIONS AND PERSONS CONTACTED	63
XI. REPRODUCTION OF COMMENTS AND RESPONSES MADE DURING THE CONSULTATION PERIOD	65
XII. SUMMARY OF UNRESOLVED ISSUES	104
XIII. LIST OF NECESSARY APPROVALS	105
PERSONS CONTACTED	106
REFERENCES	108
APPENDIX: COMMENTS AND REPLIES TO ENVIRONMENTAL IMPACT STATEMENT	

LIST OF TABLES

<u>Table Number</u>	<u>Title</u>	<u>Page</u>
1	COST ESTIMATE	19
2	WAIKELE STREAM WATER QUALITY	32
3	KIPAPA STREAM WATER QUALITY	34
4	24-HOUR CONCENTRATION OF SPECIFIED CONTAMINANTS FOR PEARL CITY AIR MONITORING STATION FOR 1976	36
5	ALLOWABLE NOISE LEVELS IN dBA AT THE PROPERTY LINE	39
6	WILDLIFE IN PLANNING AREA	42

LIST OF FIGURES

<u>Figure Number</u>	<u>Title</u>	<u>Page</u>
1	LOCATION MAP	2
2	OPTION 1 - RECLAMATION FOR IRRIGATION TO WAIHOLE DITCH	5
3	EFFLUENT IRRIGATION BOUNDARIES	6
4	OPTION 2 - RECLAMATION FOR IRRIGATION TO "FIVE-FINGERS" RESERVOIR	8
5	EFFLUENT PUMP STATION-SITE PLAN	12
6	EFFLUENT PUMP STATION-FLOOR PLAN	13
7	EFFLUENT FORCE MAIN-PLAN	15
8	EFFLUENT FORCE MAIN-PLAN	16
9	EFFLUENT RESERVOIR-PLAN AND TYPICAL SECTION	18
10	PLANNING AREA BOUNDARY	21
11	MEAN ANNUAL RAINFALL	22
12	GENERAL SOIL MAP	24
13	GENERALIZED HYDROLOGIC SECTION	27
14	STATE LAND USE MAP	28

LIST OF FIGURES
(Continued)

<u>Figure Number</u>	<u>Title</u>	<u>Page</u>
15	WATER SOURCES AND AREAS SERVED	31
16	DISTRIBUTION OF COMMUNITY NOISE	38
17	ENDANGERED SPECIES HABITAT	41
18	MILILANI-WAIPIO SERVICE AREA	44
19	SCHEME "A" OCEAN OUTFALL	59

SUMMARY

The proposed action will terminate the discharge of secondary treated effluent from the Mililani Sewage Treatment Plant into Kipapa Stream by reclaiming the effluent for irrigation of sugarcane fields in Central Oahu. The significant beneficial impacts of this action are: 1) the water quality of West Loch, Pearl Harbor and the portions of Kipapa and Waikele Streams that are downstream of the present sewer outfall will be significantly improved, and 2) a valuable resource, effluent for irrigation, would be conserved.

The proposed project would consist of an effluent pump station at the Mililani STP site, about 17,500 linear feet of effluent force main located within agricultural lands west of Mililani Town, and a 15 million gallon effluent reservoir at the junction of Poliwai and Manuwaihou Gulches. However, if the current studies on dilution of effluent with Waiahole Ditch water and on post treatment by the Water Resources Research Center, University of Hawaii, are favorable, the project would be terminated at Waiahole Ditch. This option would eliminate approximately 6,000 linear feet of force main and the effluent reservoir. Facilities for post treatment, viral deactivation, and flow regulation will be provided; if a need for these facilities is demonstrated by current and proposed investigations.

Alternatives considered were: 1) no action, 2) tertiary treatment and continue discharge into Kipapa Stream, 3) effluent disposal by deep well injection, 4) disposal of secondary treated effluent through the deep ocean outfall for Honouliuli WWTP, and 5) disposal of untreated wastewater to the Honouliuli Wastewater System.

Temporary adverse environmental impacts associated with construction activities will occur; however, these impacts will be mitigated by appropriate measures. Some lands will be permanently lost from sugarcane cultivation.

No significant permanent adverse environmental effects are anticipated.

I. PROJECT DESCRIPTION

A. PROJECT LOCATION

The project planning area, as determined by the City and County of Honolulu, is located in Central Oahu as shown in Figure 1. This planning area is a portion of the Central Oahu Sewerage District, which is one of the seven districts established in the Water Quality Program for Oahu.

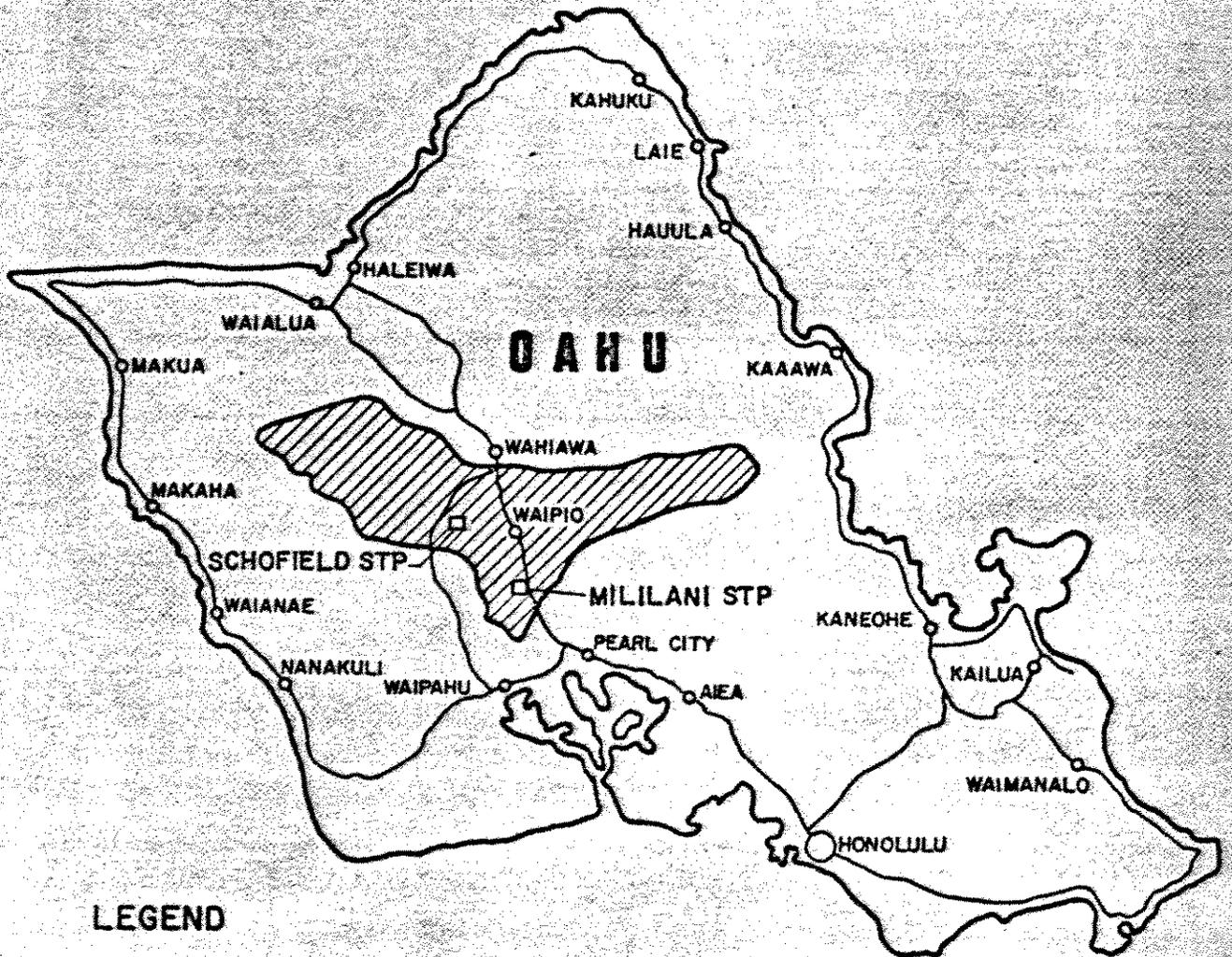
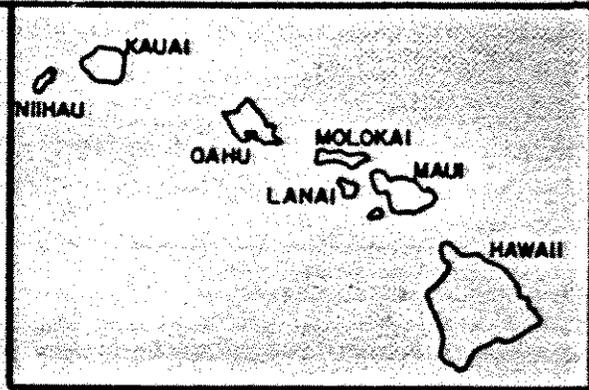
The proposed improvements are to be located within the existing boundaries of the Mililani Sewage Treatment Plant and in the agricultural lands west of the Mililani-Waipio residential development.

B. STATEMENT OF OBJECTIVE

The Hawaii State Department of Health has placed stringent effluent limitations on the Mililani Sewage Treatment Plant which discharges into Kipapa Stream, Oahu. Stringent effluent limitations have been established because 1) the effluent discharge significantly effects the water quality of Kipapa Stream, 2) Kipapa Stream flows into Waikele Stream which in turn drains into West Loch, Pearl Harbor, and 3) portions of West Loch have been designated Class AA, the highest receiving water classification included in the State of Hawaii's Water Quality Standards (DOH, 1974). These effluent limitations are described in the National Pollutant Discharge Elimination System (NPDES) permit for that facility.

Presently, the discharge from this facility does not meet the effluent nutrient limitations stated in the NPDES permit. The two nutrients of concern are total nitrogen and total phosphorous. The present effluent concentrations of these nutrients are 24.5 and 9.2 mg/l, respectively, as compared to a permit limitation of 0.1 and 0.02 mg/l, respectively.

The proposed action is therefore intended to provide an effluent disposal plan that would allow the discharge from the Mililani STP to be in compliance with this NPDES permit, as well as with all other State and Federal regulations.



LEGEND

 **PLANNING AREA**

**FIGURE I
LOCATION MAP**

C. BACKGROUND

In 1971, the disposal of effluent from Mililani STP was evaluated in the Water Quality Program for Oahu (WQPO) Study. This report recommended that the secondary treated effluent be discharged into Waiahole Ditch and utilized for irrigation of sugarcane lands.

Also in 1971, the University of Hawaii's Water Resources Research Center (WRRC) began conducting tests on the effect of sewage effluent irrigation on sugarcane yield and groundwater quality. This study (WRRC, 1975) concluded that: 1) Mililani STP's secondary treated and chlorinated sewage effluent, containing insignificant amounts of toxic chemicals (such as heavy metals and pesticide residues), represents a generally usable water supply for irrigation, 2) sewage effluent may be used for the first year of a 2-year sugarcane crop cycle without decreased sugar yield; however, when applied for an entire 2-year cycle, sugar yield is reduced, and 3) the possibility of contaminating deep underground water sources is remote.

Although supportive of effluent irrigation, this WRRC study did not answer technological questions associated with using secondary treated effluent in drip irrigation systems and what effects diluted effluent would have on sugar yield. Nevertheless, based on these study results, the Oahu Sugar Company has agreed to: 1) provide 1,000 acres of sugarcane fields for effluent irrigation, 2) accept 5.0 million gallons per day (mgd) of effluent, and 3) provide land for an effluent reservoir.

Furthermore, the WRRC has recently undertaken a research study to answer these technological questions; however, the study may take several years to complete.

The Schofield STP, another major wastewater treatment facility, is also located in the planning area and is owned and operated by the U.S. Army. As with the Mililani facility, the discharge from this plant does

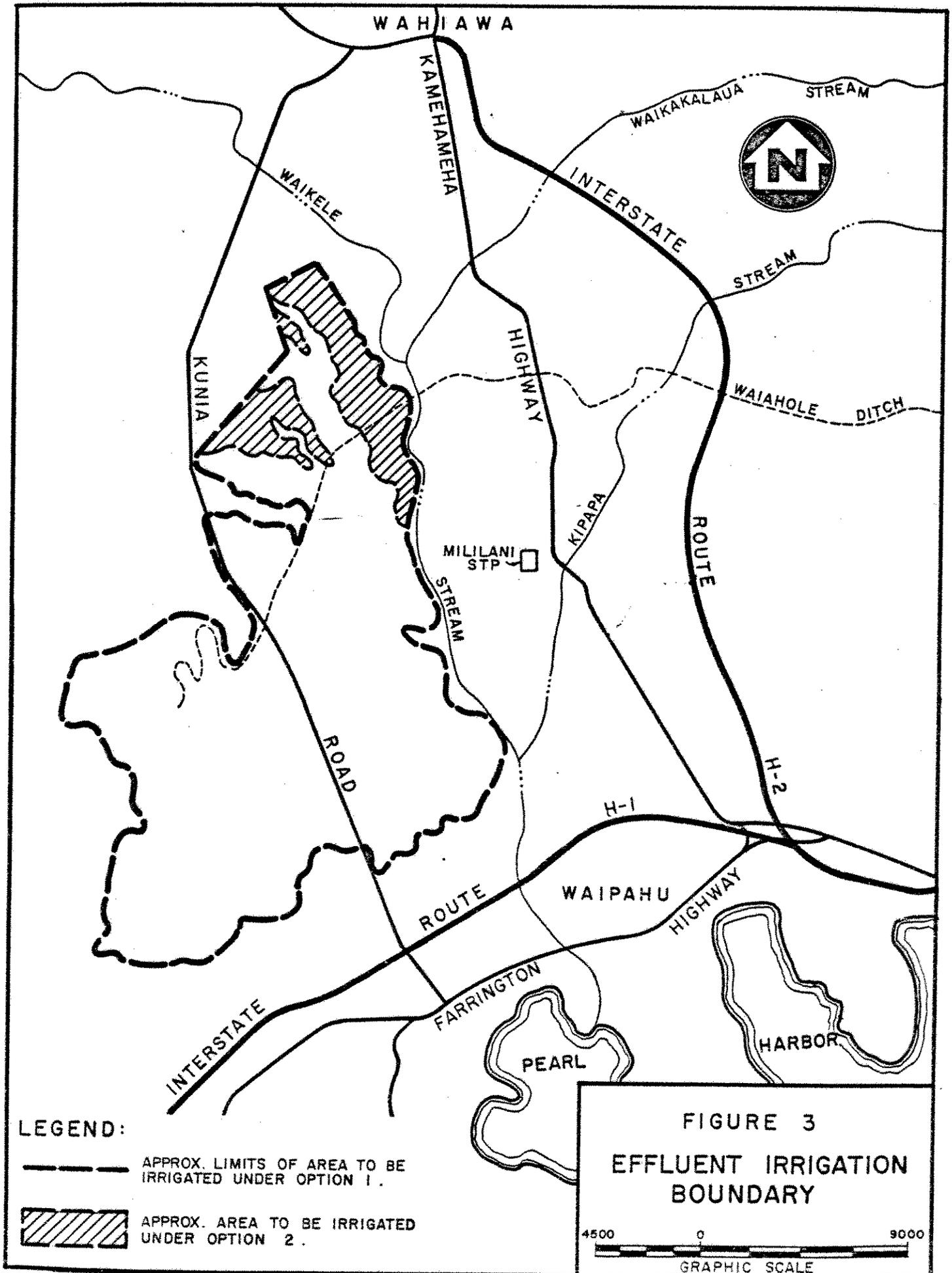
not meet its NPDES permit effluent limitations. Initially, disposal of the Schofield STP effluent was considered in the planning for the Mililani STP Effluent Disposal System. However, in December of 1976, the Army requested that the City and County of Honolulu exclude Schofield STP from its studies. The U.S. Army is currently pursuing its own plans for diverting Schofield Barracks STP treated effluent to irrigation.

It should be noted that Oahu Sugar Company's commitment to accept the 5.0 mgd of effluent is not affected by the results of the current WRRC research study. If necessary, furrow irrigation will be utilized, with effluent being used during the first year followed by Waiahole Ditch water during the second year.

D. GENERAL DESCRIPTION OF THE ACTION

The proposed action will terminate the discharge of secondary treated effluent from the Mililani STP into Kipapa Stream by reclaiming the effluent for irrigation of sugarcane fields in Central Oahu. However, provision will be included in the effluent pump station design to discharge secondary treated effluent into Kipapa Stream during rainstorms of unusually long duration, and in the event of emergencies, such as effluent force main failures. The irrigation plan consists of two options; however, the option that will be implemented is dependent upon the results of the previously mentioned WRRC research study presently being conducted. These options are as follows:

1. Option One - Disposal to Waiahole Ditch. This option consists of an effluent pump station and an effluent force main from the pump station to Waiahole Ditch as shown in Figure 2. The pump station will be located within the existing boundary of the Mililani STP and the force main will be within existing cane lands along the western boundary of Mililani Town. If a need for post treatment is demonstrated by the current WRRC research study, the facility will be provided if it is cost effective; however, additional land may be required. The approximate area that would be irrigated under this option is shown in Figure 3. Oahu Sugar Company has indicated that flow regulation would be required prior to discharge into Waiahole Ditch; however, the required degree of



regulation is not known at this time. The need for flow regulation will be evaluated during the design of the proposed project; and, if required, flow regulation facilities will be provided.

2. Option Two - Disposal to the proposed Five-Fingers Reservoir.

This option is similar to Option One; however, the force main would be extended to an effluent reservoir at the Five-Fingers site as shown in Figure 4. The extension of the force main would require crossing Waikele Stream, and the effluent reservoir would require 6.5 acres of additional land. The reservoir would be constructed on uncultivated land at the junction of Poliwai and Maunuwaihou gulches. Also, as in Option One, post treatment facilities would be provided if required and cost effective. The approximate area that would be irrigated under this option is also shown in Figure 3.

E. USE OF PUBLIC FUNDS

The present financial practice of the City and County of Honolulu is to use property taxes and grant-in-aids from State and Federal agencies to construct necessary sewage treatment facilities. All construction contracts involving the proposed action are eligible for funding under the Environmental Protection Agency (EPA) Construction Grants Program for Treatment Works. Funding participation for the proposed action under this Grants Program is 75% EPA, 10% State and 15% County.

The recently (January 1977) adopted sewer service charge of the City and County of Honolulu will finance the operation and maintenance costs of the proposed facilities.

F. PHASING AND TIMING OF ACTION

The City and County of Honolulu's NPDES permit compliance schedule for the Mililani STP Effluent Disposal System is as follows:

1. Completion of Preliminary Plan Report (Facilities Plan) - December 31, 1977
2. Completion of Construction Plans and Specifications - August 31, 1979
3. Initiation of Construction - November 30, 1979
4. Completion of Construction - July 31, 1982
5. Demonstration of Compliance with Effluent Limitations - January 31, 1983

If the above compliance schedule is inflexible and cannot await the results of the WRRRC research study, then the following phasing as recommended in the Preliminary Plan Report (Facilities Plan) should be initiated:

1. The irrigation option of disposal to Five-Fingers Reservoir be designed.
2. The portion of the project between Mililani STP to Waiahole Ditch consisting of the effluent pump station and force main be constructed.
3. Await the results of the current WRRRC research study.
4. If the WRRRC study favors Option One, then necessary changes in design should be made and the project be terminated at Waiahole Ditch.
5. If the WRRRC study favors Option Two, then the remainder of the project, the force main extension and reservoir, be constructed.
6. Also, if the WRRRC study demonstrates a need for post treatment, the required facilities would be designed and constructed at that time.

G. SUMMARY OF TECHNICAL DATA

The following information is based on Option Two (Disposal to the proposed Five-Fingers Reservoir) because of: 1) Option Two's similarity with Option One, 2) Option Two's larger scope of facility requirements, and 3) appropriate design changes in Option Two can be made to terminate the force main at Waiahole Ditch if the results of the current WRRRC studies so indicate.

1. Population

The recently (January, 1977) adopted City and County of Honolulu's General Plan projects a Mililani-Waipio resident population of 39,000 in the year 2000. Presently, for long-range planning purposes, the Department of Public Works, City and County of Honolulu is projecting a resident population of 70,800 in the project area for the year 2020.

In compliance with Environmental Protection Agency requirements under the Federal Construction Grants Program for Treatment Works, the Department of Public Works is presently reviewing the above projections. The project design will be based on the result of this study; however, no significant changes are anticipated.

2. Design Flows

The sewerage flows projected for the Mililani-Waipio area are as follows:

<u>Year</u>	<u>Average Daily Flow (MGD)</u>	<u>Peak Flow (MGD)</u>
1996	4.58	12.92
2000	5.00	14.63
2020	7.58	20.73

These flows are based on the above population projections and on the design criteria recommended in the WQPO, supplemented by the Design Standards of the Division of Sewers. The recommended WQPO design criteria are as follows:

Flow Per Capita	85 gallons per day
Infiltration (Dry Weather)	5 gallons per capita per day
Maximum Flow Factor	Babbitt Formula ($MF = 5/P^{0.2}$)

The applicable design standards of the Division of Sewers are as follows:

Commercial (Local Business)	4,000 gallons per acre per day
Infiltration (Wet Weather)	1,250 gallons per acre per day

The following flows are used in the design of the proposed facilities:

	<u>Average Daily Flow</u>	<u>Peak Flow</u>
First Phase	5.00 MGD	14.63 MGD
Ultimate	7.58 MGD	20.73 MGD

However, if the population projections are revised, these design flows would also be adjusted.

The proposed facilities include an effluent pump station, a force main from the pump station to Five-Fingers Reservoir, and the reservoir itself as shown in Figure 4.

3. Effluent Pump Station

The pump station will be constructed within the existing boundaries of the Mililani STP as shown in Figure 7. The site plan and floor plan of this station are shown in Figures 5 and 6, respectively.

The pump station is designed for the first phase peak flow of 14.63 MGD; however, provisions for increasing the pumping capacity to the ultimate peak flow of 20.73 MGD are included in the design. The total dynamic head used in the design is 370 feet. This includes a static head of 260 feet, pipe friction loss (at C = 100) of 100 feet, and minor losses for fittings, valves, etc. of 10 feet.

The pump station design includes one constant speed and three variable speed pumps and each pump will be driven by a 400 horsepower motor. The full load speed of the pumps is 1,770 RPM and normal operating range of the variable speed pumps will be between 75% to 92% of the full load speed. Three pumps, operating simultaneously, will discharge the design peak flow of 14.63 MGD and the fourth pump would be an emergency standby.

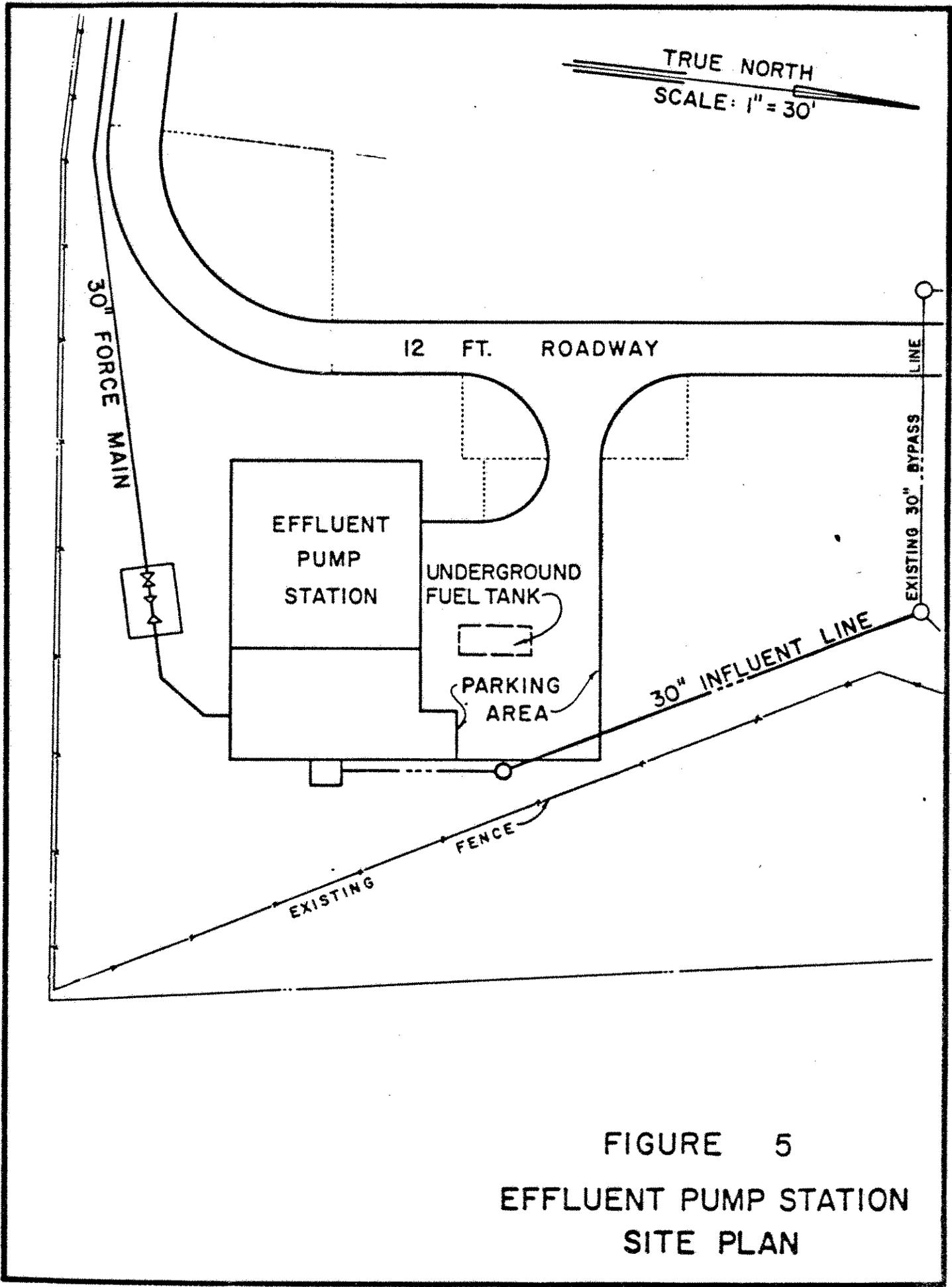


FIGURE 5
 EFFLUENT PUMP STATION
 SITE PLAN

ITEM	DESCRIPTION
①	VERTICAL TURBINE PUMP
②	18" CHECK VALVE
③	18" GATE VALVE
④	18" x 18" WYE
⑤	24" x 18" WYE
⑥	30" x 18" WYE
⑦	SURGE TANK
⑧	FLOW TUBE
⑨	30" GATE VALVE

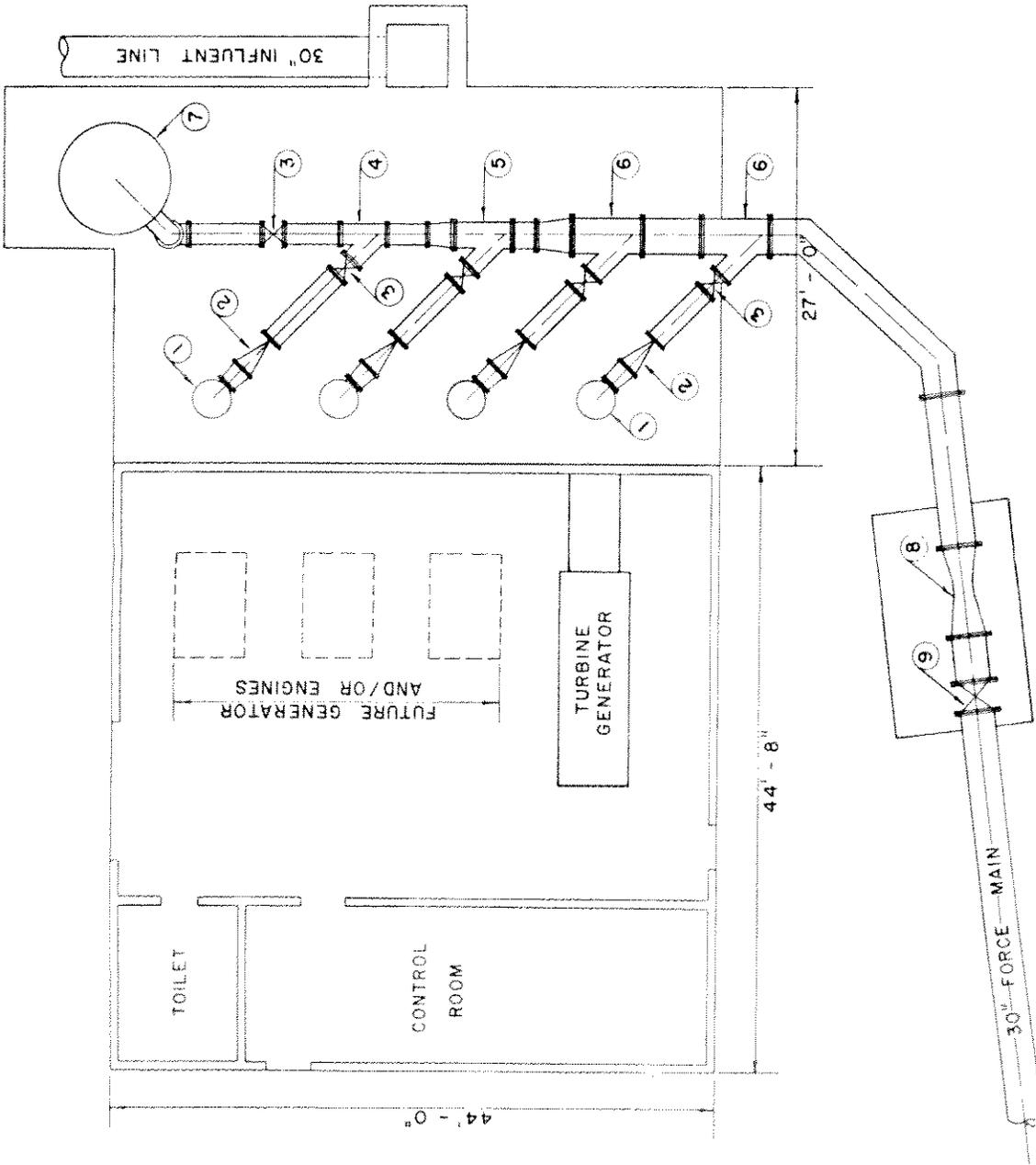


FIGURE 6
EFFLUENT PUMP STATION
FLOOR PLAN

Initially, only three pumps will be installed of which one will be a standby. The total pumping capacity of two pumps is 11.0 MGD (peak flow), which is nearly equal to the hydraulic capacity of Mililani STP after its current expansion is completed. The fourth pump will be installed in conjunction with the next expansion of the treatment plant. The capacity of the pump station can be increased, when necessary, by replacing the pumps and motors with those of higher capacities.

A standby turbine generator will be installed to ensure continued operation during power outages. Adequate space is provided within the pump station to add an additional generator or engine drives for the pumps.

4. Effluent Force Main

The force main will be installed along the western boundary of Mililani Town, across Waikele Gulch, and within existing unpaved cane field roads as shown in Figures 7 and 8. The 11,500 linear feet of 30-inch force main from the pump station to Waiahole Ditch will be designed for the ultimate peak flow of 20.73 MGD. On the other hand, due to Oahu Sugar Company's current commitment to accept an average daily flow of only 5.0 MGD at Five-Fingers Reservoir, the 6,000 linear feet of 24-inch force main from the ditch to the reservoir will be designed for only the first phase peak flow of 14.63 MGD. The minimum and maximum velocities in these force mains are 2.0 and 7.2 feet per second, respectively.

With the exception of the force main across Waikele Gulch, a minimum cover of 3.0 feet will be provided over the pipe. The approximate average and maximum depth (top ground to pipe invert) will be 8 and 12 feet, respectively. The force main will be installed within 15 feet wide easements, which encompasses a total area of approximately 248,000 square feet.

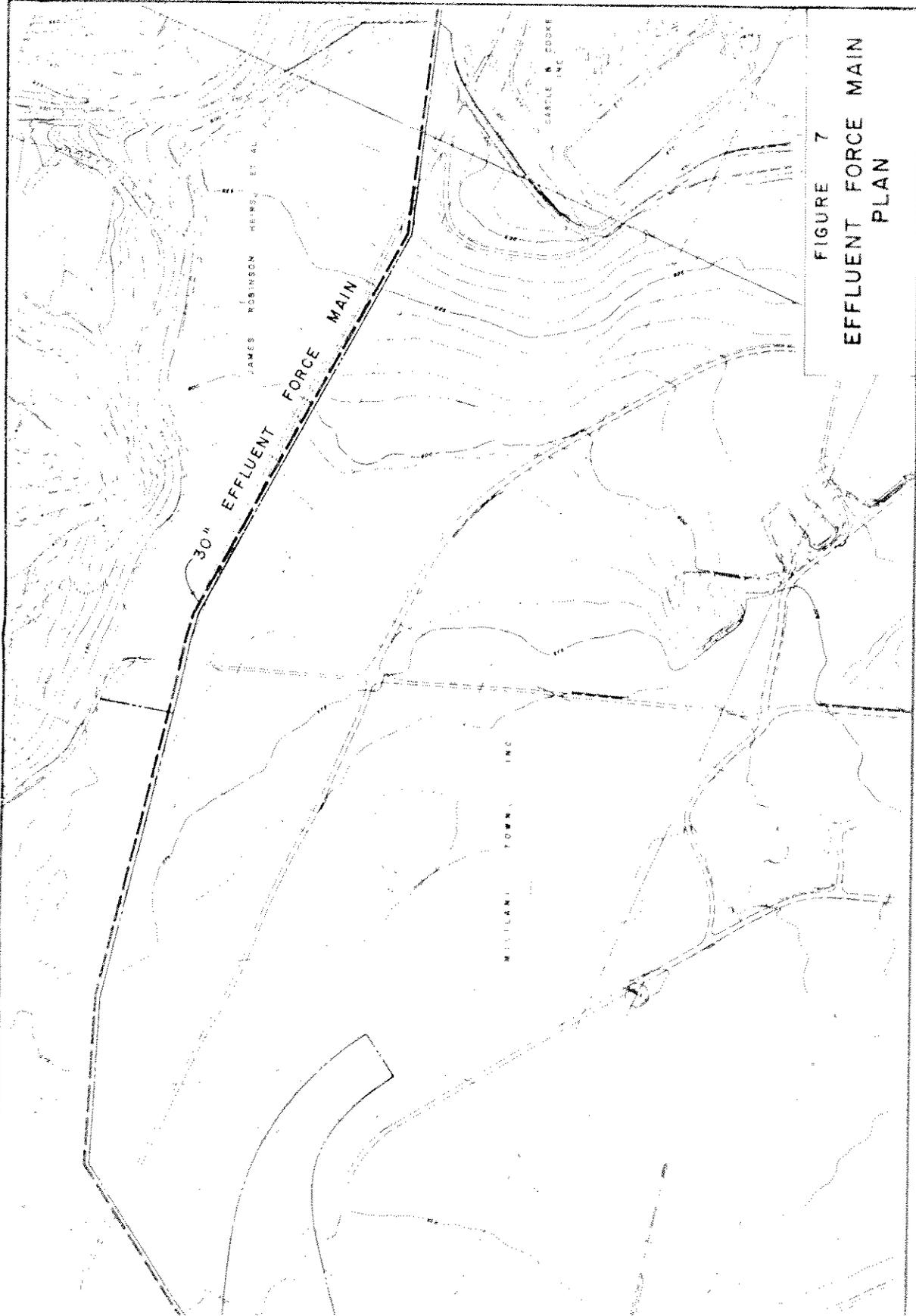
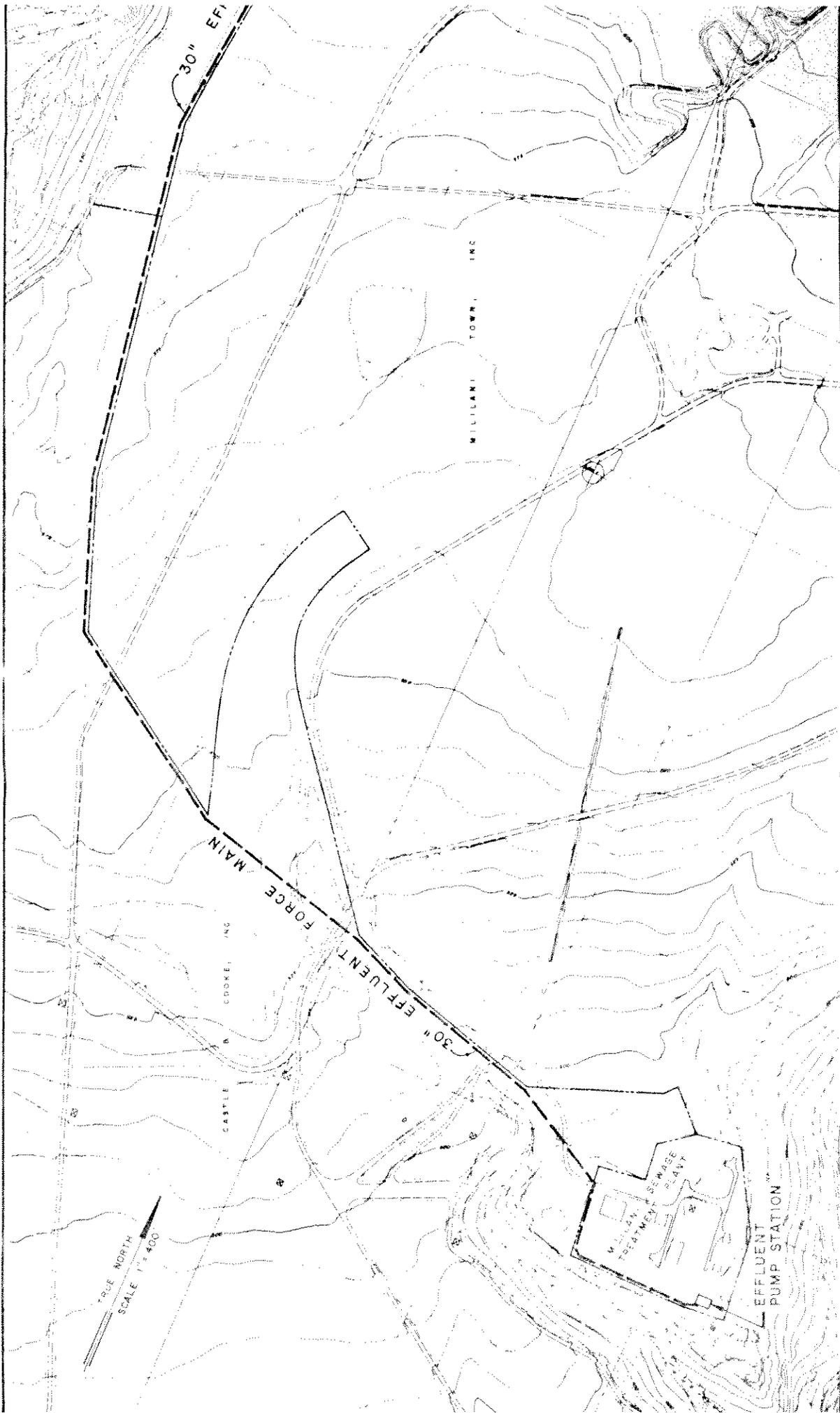


FIGURE 7
EFFLUENT FORCE MAIN
PLAN



30" EFI

MILILANI TOWN, INC

COOKER, INC

CASTLE

MILILANI TREATMENT PLANT

SEWAGE SLUVE

EFFLUENT PUMP STATION

TRUE NORTH
SCALE 1" = 400'

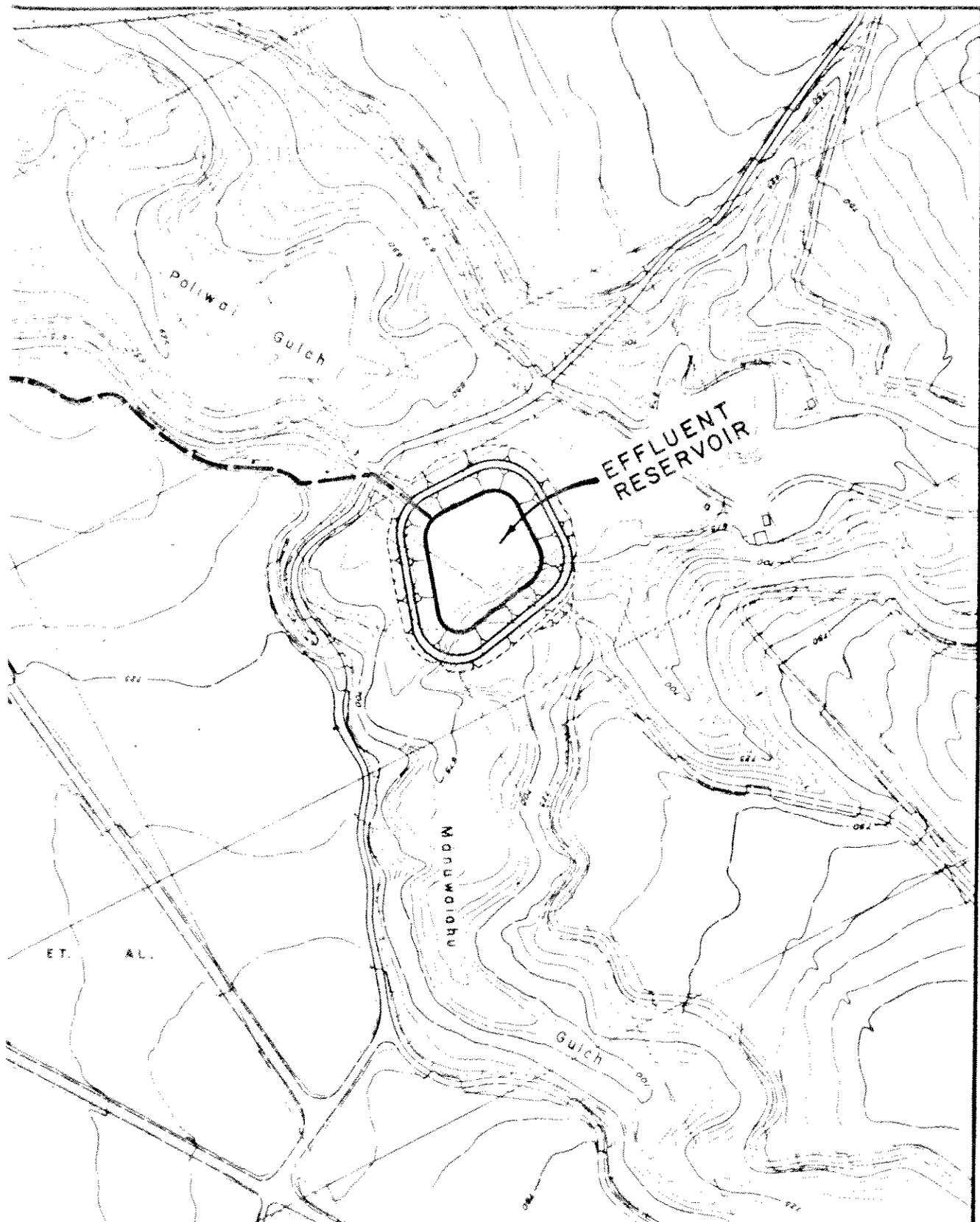
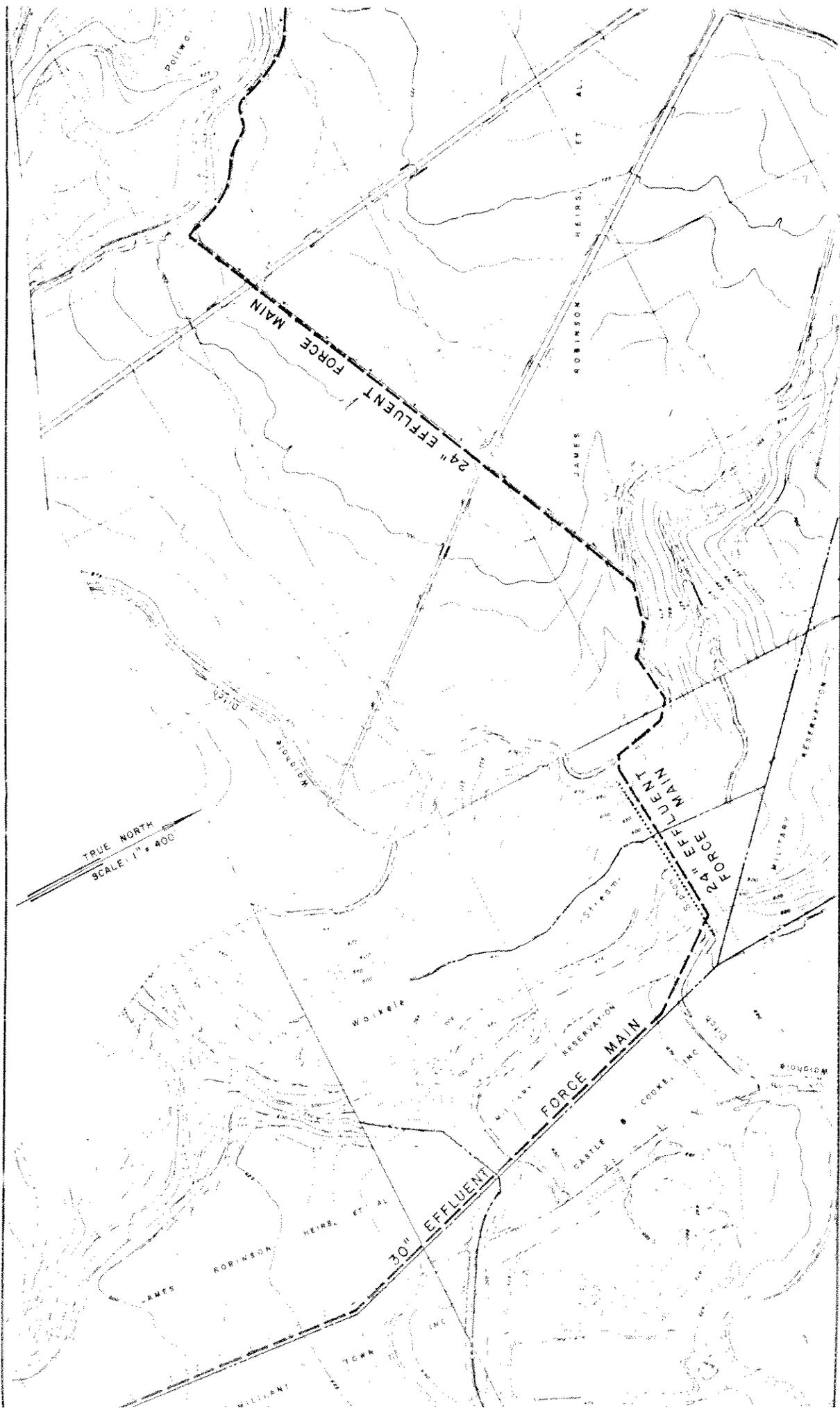


FIGURE 8
EFFLUENT FORCE MAIN
PLAN



No unusual construction difficulties, other than the Waikele Gulch Crossing, are anticipated. The force main across this gulch will be supported on reinforced concrete piers and located adjacent to the existing Waiahole Ditch "siphon". Steel pipe, with either welded or flanged joints, will be used for this crossing. The construction within the stream would be limited to one concrete pier to support the force main. The width of Waikele Stream at the crossing is about 15 feet and the average flow is about 28 cubic feet per second.

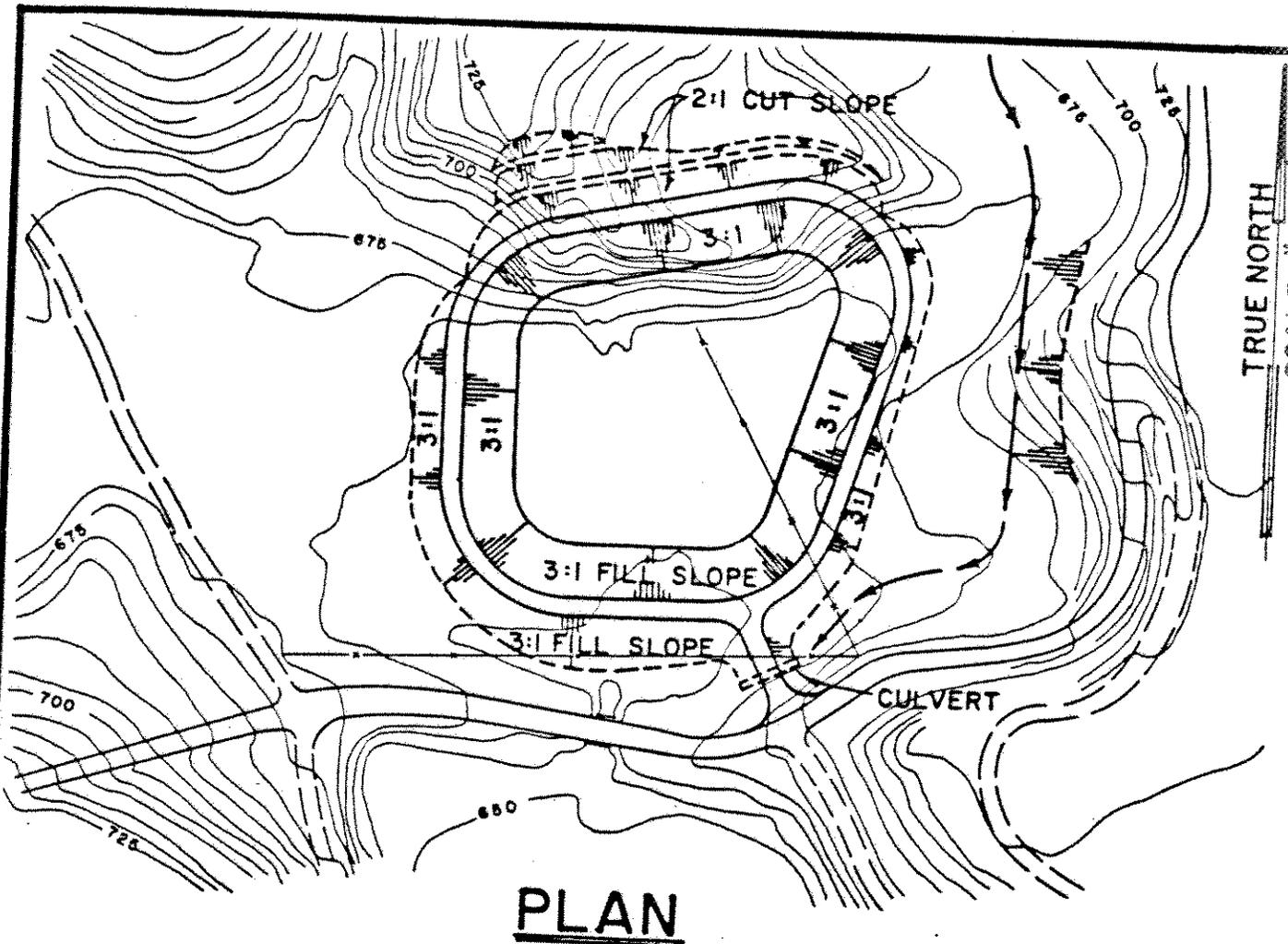
5. Effluent Reservoir

The Five-Fingers Reservoir will be constructed at the junction of Poliwai and Manuwaihou Gulches as shown in Figure 8. The capacity of this reservoir is 15.0 million gallons, three days storage for the design average daily flow of 5.0 MGD. Approximately 6.5 acres of land will be required for this reservoir, and the reservoir will be lined with butyl rubber or other impervious material to further protect the groundwater sources from possible contamination.

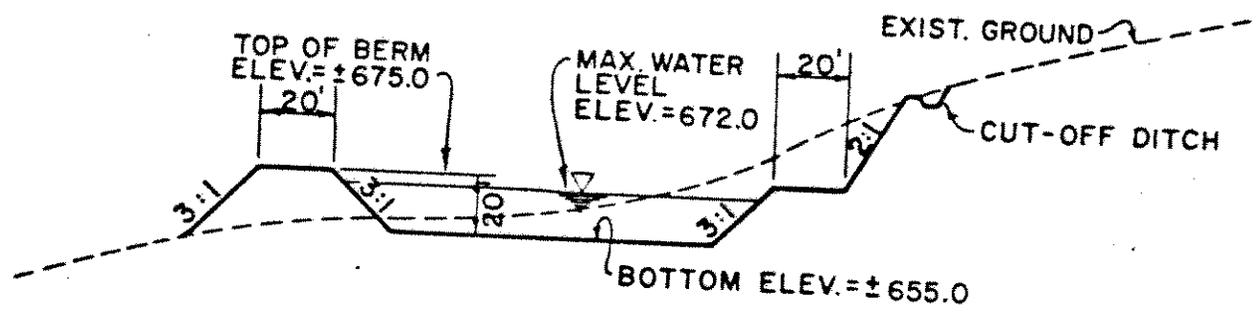
The preliminary site plan and typical section for this reservoir is shown in Figure 9. These plans were developed from best available information for preparing a cost estimate; therefore, they must be re-evaluated after a detailed topographic map is prepared and soil investigations conducted.

6. Cost Estimate

The project development cost estimates are summarized in Table 1.



PLAN



TYPICAL SECTION

NOT TO SCALE

FIGURE 9

EFFLUENT RESERVOIR
PLAN AND TYPICAL SECTION

TABLE 1
COST ESTIMATE

Pump Station			
1.	Site Work	\$ 38,000.00	
2.	Structural Excavation (1,200 CY)	36,000.00	
3.	Pump Station Building	173,000.00	
4.	Pumping Units (4 EA)	200,000.00	
5.	Turbine Generator	215,000.00	
6.	Surge Arrestor	20,000.00	
7.	Miscellaneous Equipment	15,000.00	
8.	Pipe, Fittings and Valves	95,000.00	
9.	Electrical	<u>425,000.00</u>	
	Sub-Total		\$1,217,000.00
Force Main			
1.	Excavation (22,400 CY)	\$448,000.00	
2.	30" Force Main (11,500 LF)	805,000.00	
3.	24" Force Main (6,000 LF)	<u>390,000.00</u>	
	Sub-Total		1,643,000.00
15 M.G. Reservoir			
1.	Excavation (71,000 CY)	\$355,000.00	
2.	Reservoir Lining (184,000 SF)	184,000.00	
3.	Riprap Slope Protection (4,000 SY)	88,000.00	
4.	Force Main Outlet	6,000.00	
5.	Discharge & Overflow System	40,000.00	
6.	Drainage System	<u>25,000.00</u>	
	Sub-Total		<u>698,000.00</u>
	TOTAL		<u>\$3,558,000.00</u>
Contingency (10%)			<u>356,000.00</u>
	TOTAL CONSTRUCTION COST		<u>\$3,914,000.00</u>
Engineering			628,000.00
Administrative			36,000.00
Construction Management			72,000.00
O&M Manual			<u>75,000.00</u>
	TOTAL PROJECT COST		<u>\$4,725,000.00</u>

II. DESCRIPTION OF THE ENVIRONMENTAL SETTING

A. PLANNING AREA DESCRIPTION

The planning area boundaries, as determined by the City and County of Honolulu, are shown in Figure 10. In general, the planning area is bounded by the Waialua-Wahiawa and the Wahiawa-Ewa District boundaries to the north; the ridge lines of the Waianae and Koolau Ranges to the west and east, respectively; and Poliwai, Waikele and Kipapa Gulches to the south. This planning area is a portion of the Central Oahu Sewerage District, which is one of the seven districts established in the Water Quality Program for Oahu..

The planning area covers approximately 50 square miles, which is divided into the land use classifications of urban, agricultural, and conservation (forest reserves) as shown in Figure 14. Essentially all of the urban development, including Military, are located in the relatively level Central Plateau of the planning area.

B. PHYSICAL GEOGRAPHY

1. Climate

The climate of the planning area is characterized by mild temperatures, northeast trade winds, and between 25 and 250 inches of rainfall annually as shown in Figure 11 (Rosenau et al., 1971; Visher and Mink, 1964). However, the annual rainfall in the area affected by the proposed action varies between 25 and 40 inches annually. The average annual temperature ranges from about 72°F on the central plateau area to about 67°F along the Koolau Range (Visher and Mink, 1964). The relative humidity varies between 59 and 76 per cent and the prevailing northeast trade winds are present approximately 66 per cent of the time.

2. Geology

The geology of the planning area was formed by the Waianae and Koolau Volcanic Series, the eroded remains of which are known today as the Waianae and Koolau Mountain Ranges. The volcanoes were built up by basaltic lava flows issuing from cracks in the earth many miles long, rather than from concentrated vents (BWS, 1966).

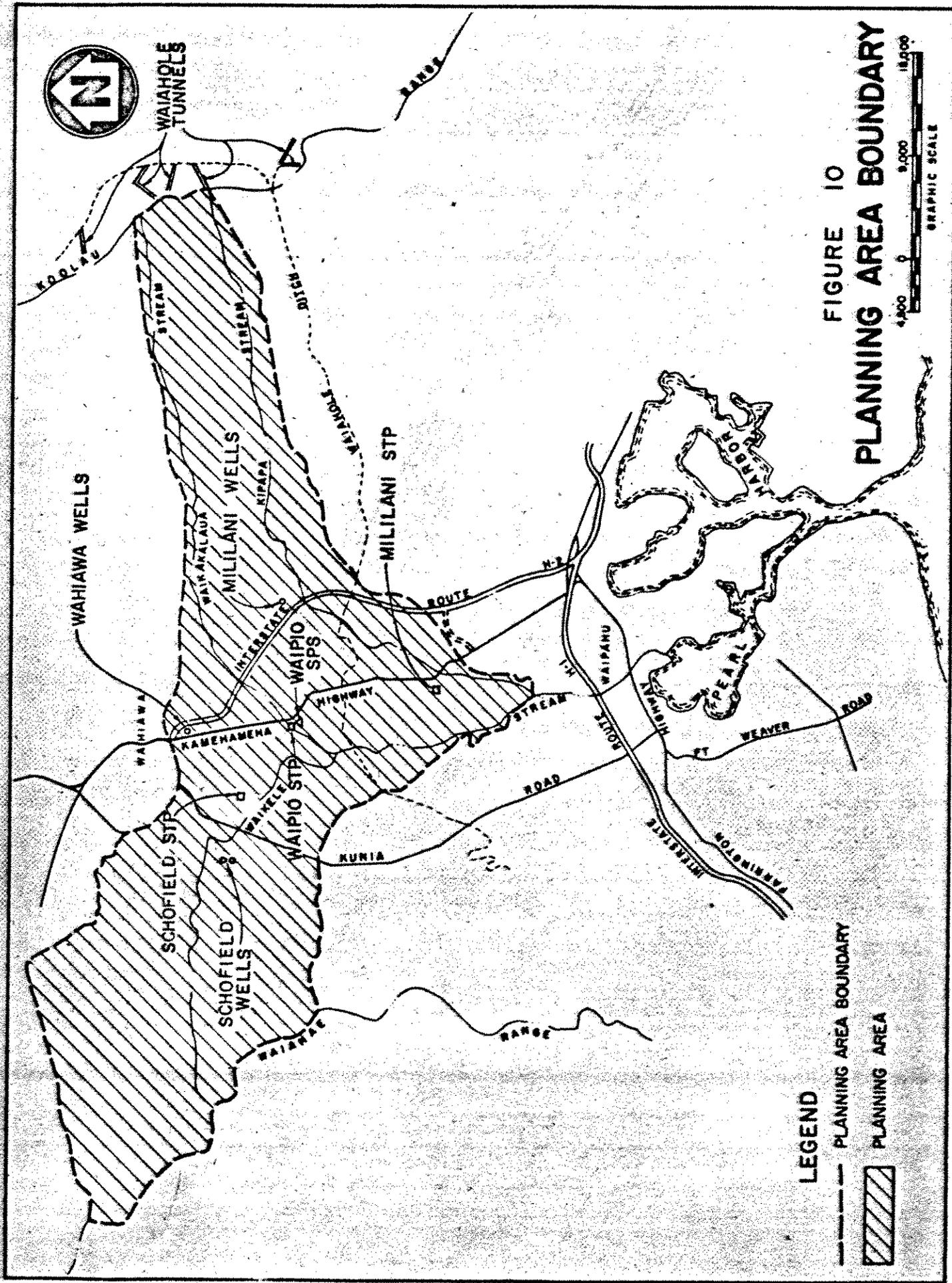


FIGURE 10
PLANNING AREA BOUNDARY

LEGEND
 - - - - - PLANNING AREA BOUNDARY
 ▨ PLANNING AREA

The Waianae volcano attained maturity much earlier than the Koolau volcano. The Koolau lavas flowed against the already deeply weathered and eroded Waianae slopes, thus forming the central plateau of the island upon which the planning area is located (Visher and Mink, 1964; Rosenau et al., 1971).

The Waianae Range is composed of three major groups of lava flows that erupted during the Tertiary Period of the Waianae Volcanic Series. The first flow was a thin-bedded pahoehoe; the second was similar, but with more aa; and the third was a massive aa adesite flow (Stearns, 1967).

The northern part of the Koolau Range was formed by basaltic flows of the Koolau Volcanic Series. The series consist of thin-bedded pahoehoe and aa flows that were extremely fluid and succeeded one another fairly rapidly.

3. Soils

There are four major soil associations located in the planning area (Foote, et al., 1972). Their general locations are shown in Figure 12. Most of the central plateau contains soils belonging to the Helemano-Wahiawa association. The Helemano soils are dark reddish-brown silty clays, usually occurring in the steep gulches. The Wahiawa soils are dusky red silty clays, usually occurring on the mild sloping uplands. The Waianae Range mainly consists of the Tropohumults-Dystrandeps association. The Tropohumults are reddish-brown silty clays generally occurring on the narrow ridges. The Dystrandeps are silt loams or silty clay loams occurring on the steep side slopes. The Koolau Range consists of soils belonging to the Rough Mountainous Land-Kapaa and Lolekaa-Waikane association. The Rough Mountainous Land soils are very shallow, dark grayish-brown, smeary silty clay while the Kapaa soils are dark reddish-brown silty clays. The Lolekaa and Waikane soils are dark-brown silty clays which are found on nearly level to very steep areas.

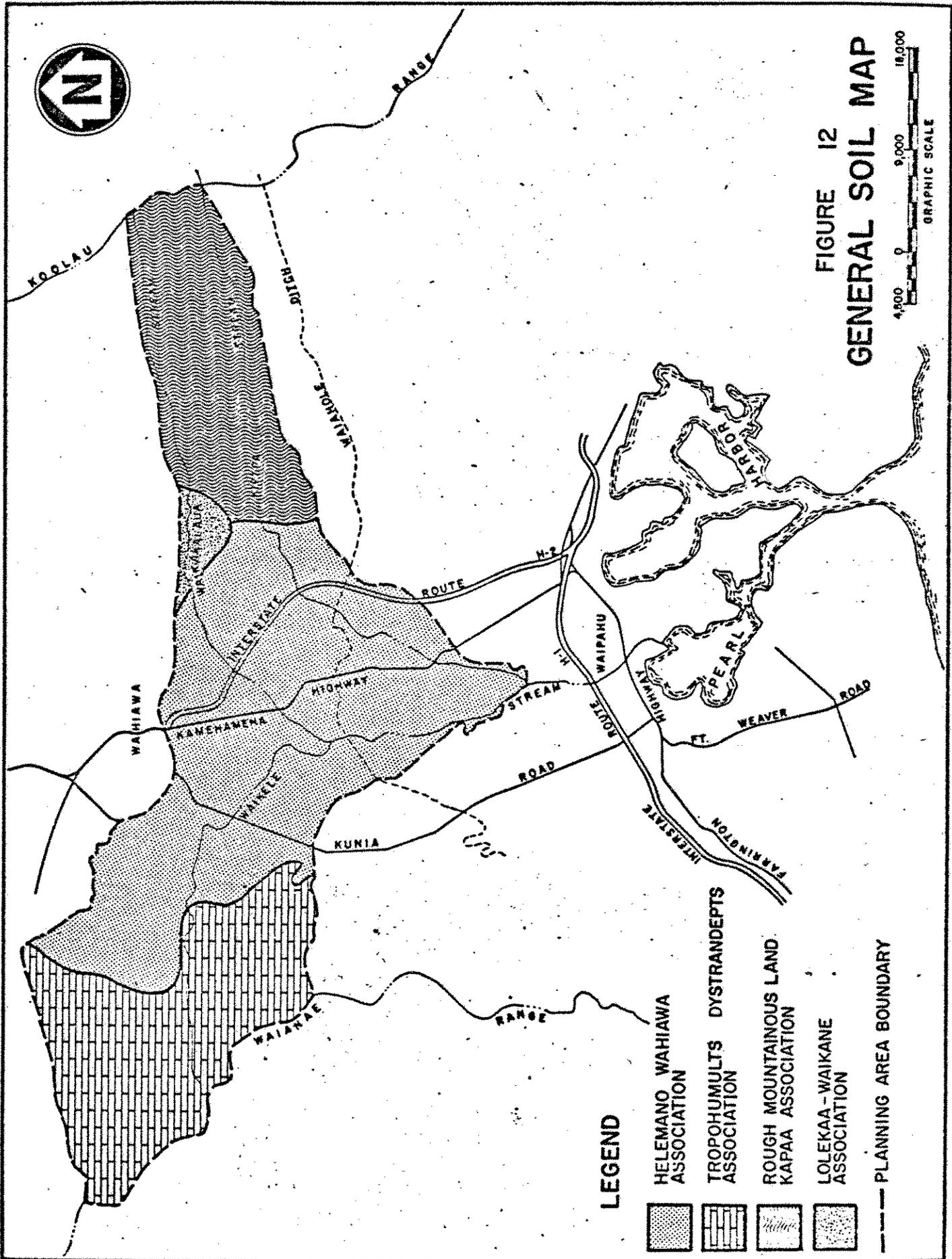


FIGURE 12
GENERAL SOIL MAP



The soils are underlaid by lithosols and latosols that have developed mostly on lava flows and on upland deposits of terrestrial alluvium. Their ability to absorb and transmit water readily permits a large part of the rainfall and irrigation water to move down to the water table (Visher and Mink, 1964).

Field investigations were conducted by WRRRC to determine, among other effects, the effects of irrigation with the Mililani STP effluent on the properties of soils in the Mililani area (WRRRC, May, 1975). The test plots were located approximately one mile from the treatment plant and were selected because sugarcane on adjacent fields, as well as approximately 90% of the sugarcane under irrigation on Oahu, are grown on similar soils (WRRRC, May, 1975). With respect to effects on soil properties, no significant surface clogging or impairment of soil chemical properties were observed.

4. Topography

In general, the topography of the lands affected by the proposed improvements and effluent irrigation are gentle with ground slopes varying from 1.5 to 9.0 percent. The elevation of the cane fields that would be affected by the effluent ranges from about 400 feet above sea level to about 800 feet, and the elevations of the proposed construction sites range from about 480 feet at the Mililani STP to about 680 feet at the proposed effluent reservoir.

Two major gulches are located in the planning area and they are the end product of erosion caused by Waikele and Kipapa Streams. Waikele Stream has its head waters in the Waianae Range and as it crosses the plateau, it is joined by the Waikakalaua Stream which originates in the Koolau Range. Kipapa Stream has its head waters in the Koolau Range and it crosses the plateau to later join with Waikele Stream near Waipahu, which discharges into Pearl Harbor's West Loch.

5. Hydrology

The general hydrologic setting begins with evaporation on the ocean surface which increases the moisture in the clouds. As the trade wind pushes the clouds over the Koolau Range, orographic precipitation results (See Figure 13). The rainfall upon reaching the ground may return to the atmosphere via evaporation or transpiration, return to the sea in streams, or filter down through the soil and rock to recharge the dikes and groundwater reservoirs. If the water returns to the atmosphere, the orographic rainfall phenomenon occurs again except that it is the Waianae Range that receives the rainfall. The rainfall has the same options mentioned previously and that ends the hydrologic cycle.

The Schofield high-level groundwater reservoir and the Pearl Harbor basal lens occur in the underlying lava of the planning area. These two underground water bodies are recharged by subsurface leakage from dike-impounded water in the Koolau Range and by infiltration of rainfall on the Plateau. All natural groundwater outflow is by subsurface percolation to Pearl Harbor (Visher and Mink, 1964).

C. DEMOGRAPHIC AND LAND-USE DATA

The 1975 resident population for the Mililani-Waipio area was 20,302 (General Plan, 1977).

The current State Land Use for the study area is shown in Figure 14. Approximately, 7 per cent of the study area is urban (municipal), 10 per cent is urban (military), 30 per cent is conservation and 53 per cent is agriculture. The present Land-Use data is as follows:

<u>Category</u>	<u>Areas in Acres</u>
Urban (Military)	3,200
Urban (Municipal)	2,400
Conservation	9,500
Agriculture	16,900

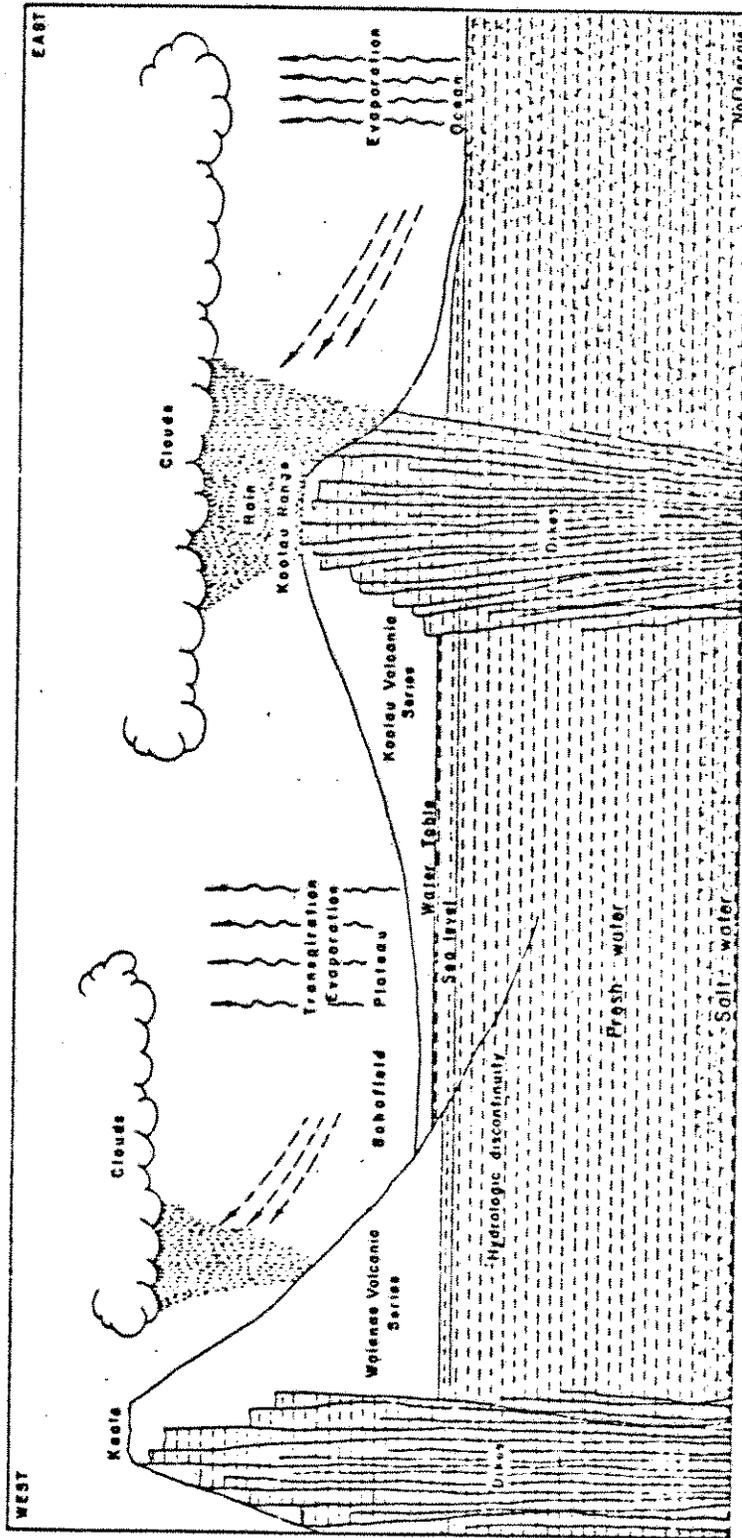


FIGURE 13
GENERALIZED HYDROLOGIC SECTION

The force main, except for the Waikele Gulch crossing, will be installed in agricultural lands, which are currently used for sugarcane cultivation. The Waikele Gulch crossing will be in unused agricultural lands owned by the Army.

The proposed Five-Fingers Reservoir is located at the site of an abandoned irrigation reservoir. This proposed site is also within agricultural lands and is currently subleased by Oahu Sugar Company for use as a pasture for a few cattle and horses.

The effluent will be reclaimed on agricultural lands, which is presently used for sugarcane cultivation as shown on Figure 3. Although Oahu Sugar Company's lease for this area expires in 1996, this lease may be renewed and sugarcane cultivation could be continued after that date. In any event, since the long-term goal of both the State and County is to maintain this area in agriculture, there would be a need for irrigation for the foreseeable future.

D. WATER QUALITY AND USES

The potability of Hawaiian waters is generally defined by the chloride content since most or all chloride and dissolved solids in fresh water are derived from sea water. Therefore, chloride content is used as an index of the chemical quality of water and the U. S. Public Health Service's recommended limits for chloride is 250 ppm (parts per million) for potable water (Visher and Mink, 1964).

Currently in the planning area, water of good quality is obtained from the Schofield high-level groundwater reservoir and the Pearl Harbor basal lens. The Schofield groundwater has a chloride content that ranges from 14 to 37 ppm and the Pearl Harbor groundwater ranges from 20 to 30 ppm at the Mililani Well site (Visher and Mink, 1964 and Dale, 1967).

Presently, nearly 8.0 million gallons per day (MGD) is pumped from the Schofield groundwater reservoir for use by the military in the study area. The Mililani Wells are averaging 1.3 MGD for domestic consumption by residents of Mililani Town; however, the wells have a sustainable capacity of 4.0 MGD. A small portion of the 2.9 MGD pumped at Wahiawa Wells is used for domestic consumption in Waipio. Refer to Figure 15 for water sources and areas served.

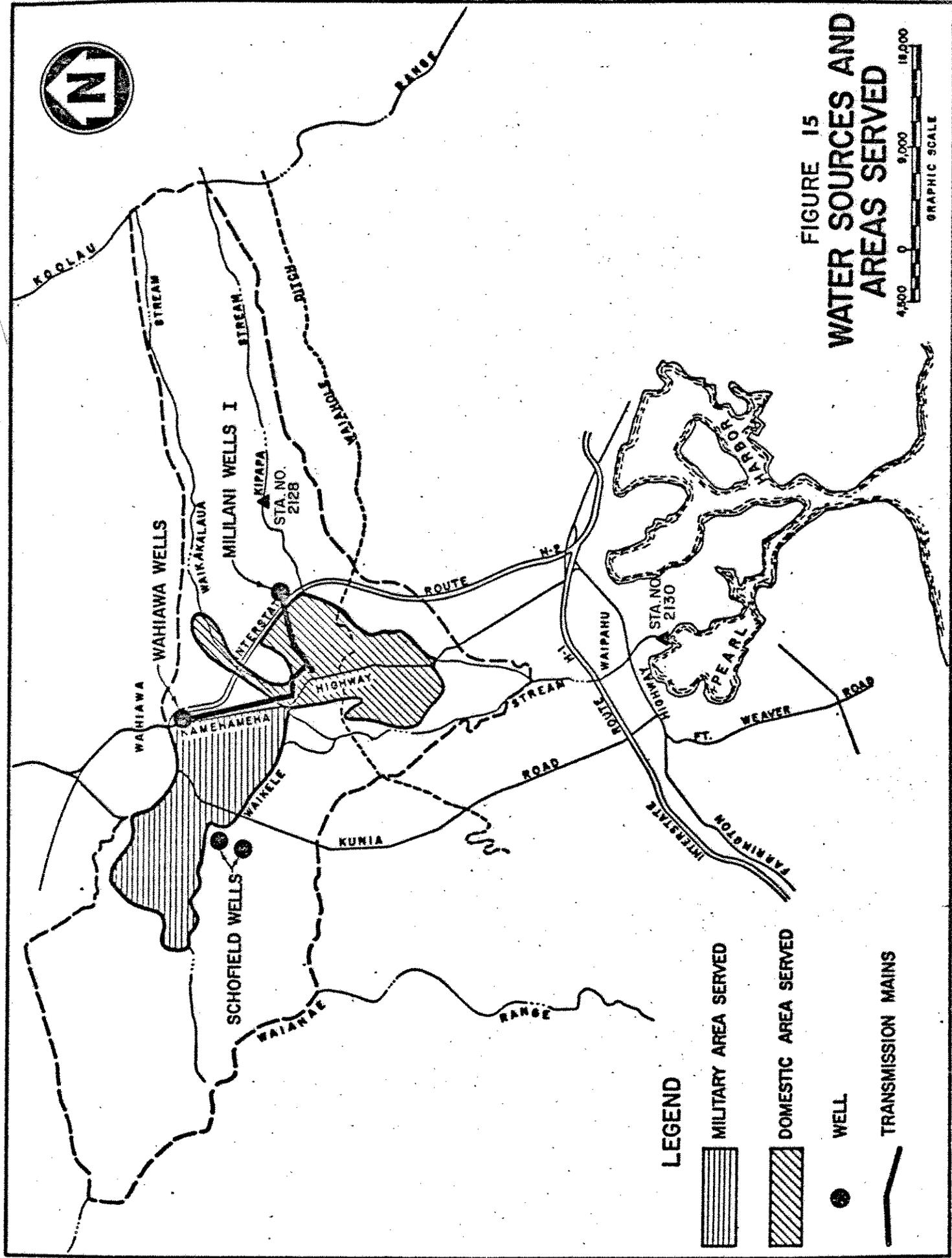
The Waiahole Ditch system transports about 30 MGD from Waiahole Tunnel on the eastern side of the Koolau Range for the irrigation of sugarcane in southwest Oahu. The quality of this water is very good as noted by its chloride content of 11 ppm (Takasaki et al., 1969).

The area affected by the proposed action is located within the Waikele Stream Basin, one of two major stream basins that drain to West Loch, Pearl Harbor (Honouliuli Stream Basin is the other). Waikele Stream itself originates in the Waianae Range; however, it does form confluences with Waikakalua Stream at about elevation 540 feet, and Kipapa Stream at about elevation 80 feet, both of which drain from the Koolau Range. In between these two confluences, Poliwai Gulch (which also drains from the Waianae Range) joins Waikele Stream at about elevation 300 feet. Thus, the Waikele Stream Basin, which has a drainage area of some 45.7 square miles, is seen to drain from both the Waianae and Koolau Ranges (USGS, 1975).

There is an abundance of streamflow data (USGS, 1954-76) and water quality data (USGS, 1969-75) for Waikele Stream at a gaging station located in Waipahu Town near its mouth (Refer to Figure 15 for station location). Average discharge at this gage over 22 years of record is 39.2 cfs (USGS, 1975). Selected water quality data for the period 1973-75 are given in Table 2. While there are no total nitrogen standards for Class 2 waters, there are standards for total phosphorous, pH and fecal coliform. For Class 2 waters, these standards are, respectively, less than 0.2 mg/l, between pH 7.0 and 8.5, and less than 200/100 ml.



FIGURE 15
WATER SOURCES AND
AREAS SERVED



LEGEND

- MILITARY AREA SERVED
- DOMESTIC AREA SERVED
- WELL
- TRANSMISSION MAINS

TABLE 2
 WAIKELE STREAM WATER QUALITY
 STATION NO. 2130

Date	Discharge cfs	pH	Fecal Coliform per 100 ml	Total N* mg/l	Total P* mg/l
2-27-73	21	7.4	420	2.04	0.79
3-27-73	17	7.0	22	2.33	1.5
4-24-73	20	6.8	38	1.6	1.0
6-26-73	13	7.8	---	1.98	1.1
7-25-73	9.7	7.8	ND	2.46	1.8
8-29-73	10	7.2	ND	1.46	1.3
9-20-73	10	7.1	510	1.83	1.4
11-28-73	37	---	620	2.0	0.17
12-19-73	7	7.5	330	3.9	1.7
1-28-74	49	7.3	910	2.1	0.67
2-20-74	37	---	1,300	2.3	0.79
3-26-74	28	---	710	2.8	0.88
4-25-74	86	6.8	9,200	1.5	0.56
5-30-74	10	7.0	1,800	2.9	0.91
6-26-74	4.6	6.9	240	3.1	1.4
7-29-74	18	7.1	8,830	2.8	1.1
8-28-74	16	7.3	210	2.6	1.5
9-25-74	29	6.3	1,900	2.7	1.1
10-29-74	39	7.1	6,600	2.1	0.87
11-25-74	40	6.6	2,200	3.0	1.2
12-23-74	86	7.3	1,800	1.6	0.57
1-06-75	54	7.2	510	1.9	0.84
2-05-75	76	6.5	---	2.1	0.59
3-18-75	16	6.6	820	3.1	1.2
4-08-75	27	6.9	1,300	3.6	1.2
5-05-75	24	7.0	1,400	3.1	1.4
6-16-75	17	6.8	1,000	3.4	1.6
7-21-75	18	6.9	650	2.0	0.91
8-18-75	15	7.1	360	2.6	1.1
9-15-75	2.8	7.1	930	2.9	1.6

*N = Nitrogen
 *P = Phosphorus

Source: Water Resource Data for Hawaii and other
 Pacific Areas, U. S. Geological Survey

From Table 2, it is seen that for the 30 samples assayed during the period 1973-75, only one met the total phosphorous standard, four met the fecal coliform standard and the pH standard was exceeded thirty-three per cent of the time.

Total phosphorous data for Waikele Stream during the period 1973-75 indicates a linear relationship with the stream discharge, as described by the following:

$$\text{Total P, mg/l} = 1.425 - 0.01196 \times \text{Discharge, cfs}$$

The U. S. Geological Survey Water Data Report HI-75-1 discloses an average daily flow of 39.2 cfs at the mouth of Waikele Stream. At this average daily flow, the average total phosphorous concentration is 0.958 mg/l, which results in an emission rate of 202 lbs/day.

Water quality data for Kipapa Stream are also available, and selected parameters are given in Table 3 for the period 1973-75. This data was collected at a crest stage gaging station located above the existing Mililani STP discharge outfall (Refer to Figure 15 for station location). The stream at this point is unaffected by urban-generated point and non-point discharges. Total phosphorous and total nitrogen levels are not available; however, in natural, relatively unpolluted waters dissolved orthophosphate and dissolved nitrate are considered to be the principal forms of each of these two elements. From Table 3 it is evident that for non-polluted streams, the phosphorous levels are low, typically in the order of a few hundredths of a mg/l. These levels have also been observed elsewhere on Oahu for similar non-polluted streams.

The significantly higher levels of phosphorous found in the lower reaches of Waikele Stream is believed to be urban generated. To illustrate, a comparison was made between the 1974 estimated Mililani and Waipio STPs' total phosphorous mass emission rate and the 1974 Waikele Stream mass emission rate of 202 lbs/day. The Waikele Stream mass

TABLE 3
KIPAPA STREAM WATER QUALITY
STATION NO. 2128*

Date	Discharge cfs	pH	Nitrite and Nitrate mg/l	Ortho Phosphorus mg/l
1-29-73	0.12	6.6	0.00	0.00
6-08-73	3.1	6.6	0.10	---
12-04-73	5.5	7.3	0.00	0.01
5-24-74	7.7	7.0	0.18	0.01
2-05-75	7.8	6.7	1.30	0.01
5-06-75	12.0	6.9	0.01	0.03

*For station location, see Figure 15.

emission rate reflects contributions from both the Mililani and Waipio STPs and from Schofield STP; however, the Schofield contribution cannot be quantified because an unknown amount of its effluent is diverted for sugarcane irrigation.

Total phosphorous in typical raw domestic wastewater is approximately 10 mg/l (Metcalf and Eddy, 1972). Assuming a 10 per cent reduction during secondary treatment, the effluent from Mililani and Waipio STPs may have levels as low as 9 mg/l. In 1974, total average discharge from Mililani and Waipio STPs was 1.1 MGD, which when combined with a total phosphorous concentration of 9 mg/l results in a mass emission rate of 83 lbs/day, or about 40 per cent of that estimated for Waikele Stream. This suggests that the present quality of Waikele Stream is influenced significantly by wastewater discharges from the Mililani-Waipio area.

E. OTHER ENVIRONMENTAL CONSIDERATIONS

1. Air Quality

The closest State Health Department air monitoring station is the Pearl City Station, which is located at the Pearl City STP. This station measures only the concentration of particulates, sulfur dioxide and nitrogen dioxide for a 24-hour period every four days. The 24-hour concentrations at this station for the year 1976 and the maximum permissible concentrations of Hawaii's Ambient Air Quality Standards are shown in Table 4. All the measured contaminants are within the allowable concentration levels.

Since the planning area is predominantly agricultural or conservation district, as opposed to the heavily urbanized Pearl City area, the air quality should be better or at least equal to the Pearl City concentration levels. Therefore, the air quality should be within tolerable limits.

TABLE 4
 24-HOUR CONCENTRATION OF SPECIFIED CONTAMINANTS FOR
 PEARL CITY AIR MONITORING STATION FOR 1976

Contaminants in $\mu\text{g}/\text{m}^3$ *	January		February		March		April		Hawaii Air Quality Standard
	Range	Mean	Range	Mean	Range	Mean	Range	Mean	
Particulates	16-49	31	27-57	42	19-65	39	33-74	51	100 $\mu\text{g}/\text{m}^3$
Sulfur Dioxide	0-33	6	1-50	10	0-8	3	5-32	6.7	80 $\mu\text{g}/\text{m}^3$
Nitrogen Dioxide	12-38	25	22-44	29	11-42	25	-	-	150 $\mu\text{g}/\text{m}^3$

Contaminants in $\mu\text{g}/\text{m}^3$ *	May		June		July		August		Hawaii Air Quality Standard
	Range	Mean	Range	Mean	Range	Mean	Range	Mean	
Particulates	29-67	42	21-51	30	29-37	37	30-83	50	100 $\mu\text{g}/\text{m}^3$
Sulfur Dioxide	5-18	5	5-25	5.7	5	5	5	5	80 $\mu\text{g}/\text{m}^3$
Nitrogen Dioxide	-	-	-	-	-	-	-	-	150 $\mu\text{g}/\text{m}^3$

Contaminants in $\mu\text{g}/\text{m}^3$ *	September		October		November		December		Hawaii Air Quality Standard
	Range	Mean	Range	Mean	Range	Mean	Range	Mean	
Particulates	30-61	50	25-65	45	24-53	38	33-55	42	100 $\mu\text{g}/\text{m}^3$
Sulfur Dioxide	5	5	5-8	5	5	5	5	5	80 $\mu\text{g}/\text{m}^3$
Nitrogen Dioxide	-	-	-	-	-	-	-	-	150 $\mu\text{g}/\text{m}^3$

*Concentration in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)

NOTE: Nitrogen Dioxide monitoring was discontinued in April because of a manpower shortage.

2. Noise Level

The State Department of Health has no noise monitoring stations and at present a complaint-inquiry system is used due to money and manpower shortages (Oumi, May, 1976). However, the noise levels at 20 locations in Mililani were monitored for several days in 1974 before the allowable noise levels of Chapter 44B, of the State of Hawaii Public Health Regulations were established (D.O.H., July, 1974). The distribution of the recorded noise levels is shown in Figure 16 and the allowable noise levels in dBA (A-weighted sound pressure level expressed in decibels) at the property line is shown in Table 5. These recorded noise levels are within tolerable limits.

3. Historic or Archaeological Sites

The Department of Land and Natural Resources, Historic Division, show no records on both the State and Federal Register of any historic or archaeological sites within the planning area.

4. Flora and Fauna in Planning Area

Vegetation ranges from almost purely native along the summits of the two mountain ranges to almost purely exotic in the lowlands, with gradations in between. Most of the gently sloping agricultural land is under sugarcane or pineapple cultivation and this cultivation has eliminated almost all the endemic plant species on the plateau. On the slopes of the gullies, the vegetation consists predominantly of Eucalyptus and Guava, with an undergrowth of tall grasses and weeds.

Feral pigs are widespread throughout the forested areas, particularly in the uplands, and feral goats are restricted to a few ridge lines in the Waianae Mountain Range. Endangered forest birds are found in the remote regions of the native forest. On the plateau and within the gulches there are common finches, thrushes, rodents and mongooses, all of which were introduced to Hawaii by man. The Pueo, a native Hawaiian owl whose population is considered endangered on Oahu, has been sighted in the planning area. The Pueo most likely does not inhabit the Five-Fingers reservoir site because of the dense tall grasses; however, after heavy grazing by cattle the area could become a temporary feeding ground for the Pueo and other birds in the area (Saito, 1977).

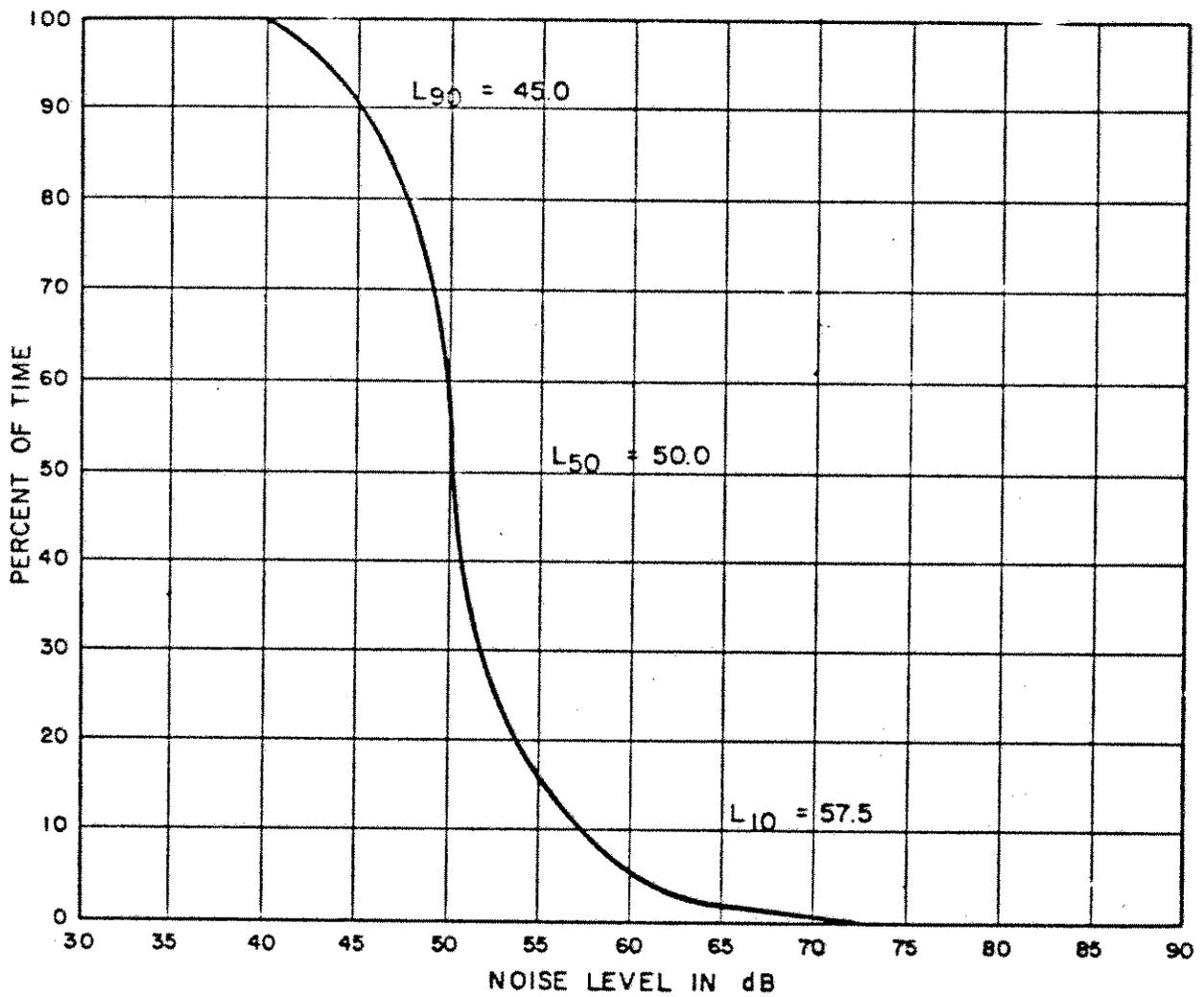


FIGURE 16
 DISTRIBUTION OF COMMUNITY NOISE
 MILILANI TOWN
 7:00 AM - 7:00 PM

TABLE 5
ALLOWABLE NOISE LEVELS IN dBA AT THE PROPERTY LINE

Zoning Districts	Daytime	Nighttime
	7 A.M. to 10 P.M.	10 P.M. to 7 A.M.
Residential (R-1 through current R-7)	55	45
Preservation (P-1)	55	45
Apartment (A-1 through current A-5)	60	50
Hotel (H-1 and H-2)	60	50
Business (B-1 through current B-5)	60	50
Agricultural (AG-1 and AG-2)	70	70
Industrial (I-1 through current I-3)	70	70

The project will have no impact on endangered flora or fauna in the area. See Figure 17 for locations of endangered species habitat and Table 6 for a list of wildlife and their classification for the planning area.

5. Special Flood Hazard Area

The project is not in any special flood hazard area (HUD, June, 1970).

6. Electrical Energy

The primary source of electrical power for the Mililani-Waipio area is the Waiau Power Plant and the secondary source is the Kahe Power Plant. The area is served by the Mililani and Uwapo Substations with a current total capacity of 30 Megavolt-ampere (MVA). The capacities of these substations can be increased to a total of 70 MVA, as required (Kami, June 1977).

F. EXISTING WASTEWATER FLOWS AND TREATMENT SYSTEMS

All of the municipal wastewater generated in the planning area is from the Mililani-Waipio area and is currently being treated at the Waipio STP and the Mililani STP. However, the Waipio STP will soon be abandoned and the wastewater currently being treated at that facility will be pumped into the Mililani system to be subsequently treated at the Mililani STP. The service areas for these treatment plants are shown in Figure 18. The combined average daily flow for the first quarter of 1976 was 1.34 MGD.

The current (1976) influent wastewater characteristics for the Mililani-Waipio System are as follows:

BOD	338 mg/l
SS	254 mg/l
Total N	24 mg/l
Total P	10 mg/l

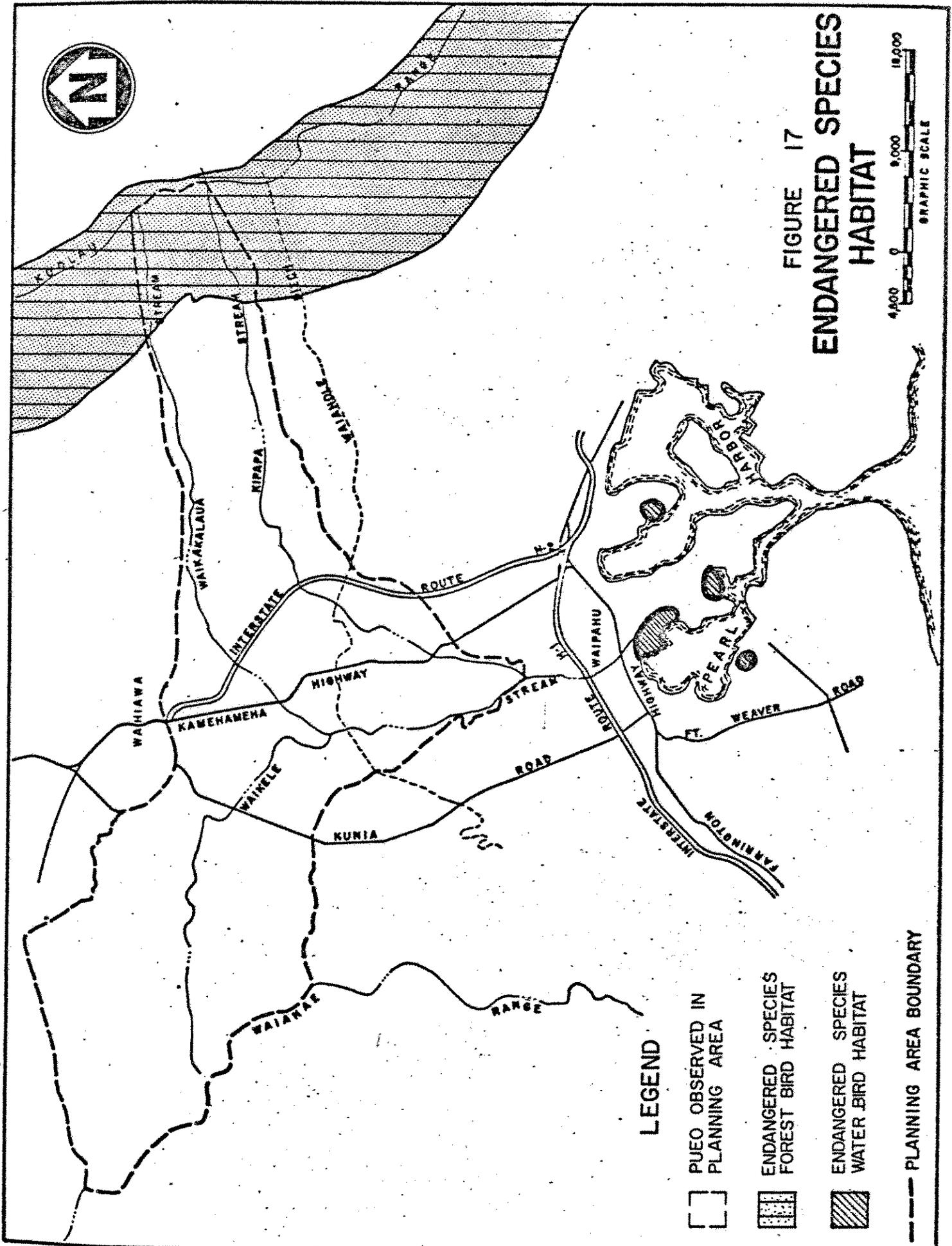


FIGURE 17
ENDANGERED SPECIES
HABITAT



LEGEND

-  PUENO OBSERVED IN PLANNING AREA
-  ENDANGERED SPECIES FOREST BIRD HABITAT
-  ENDANGERED SPECIES WATER BIRD HABITAT
-  PLANNING AREA BOUNDARY

TABLE 6
WILDLIFE IN PLANNING AREA

Category: Endangered - 0
Threatened - []
Endemic - X
Indigenous - +
Migratory - #
Exotic - *

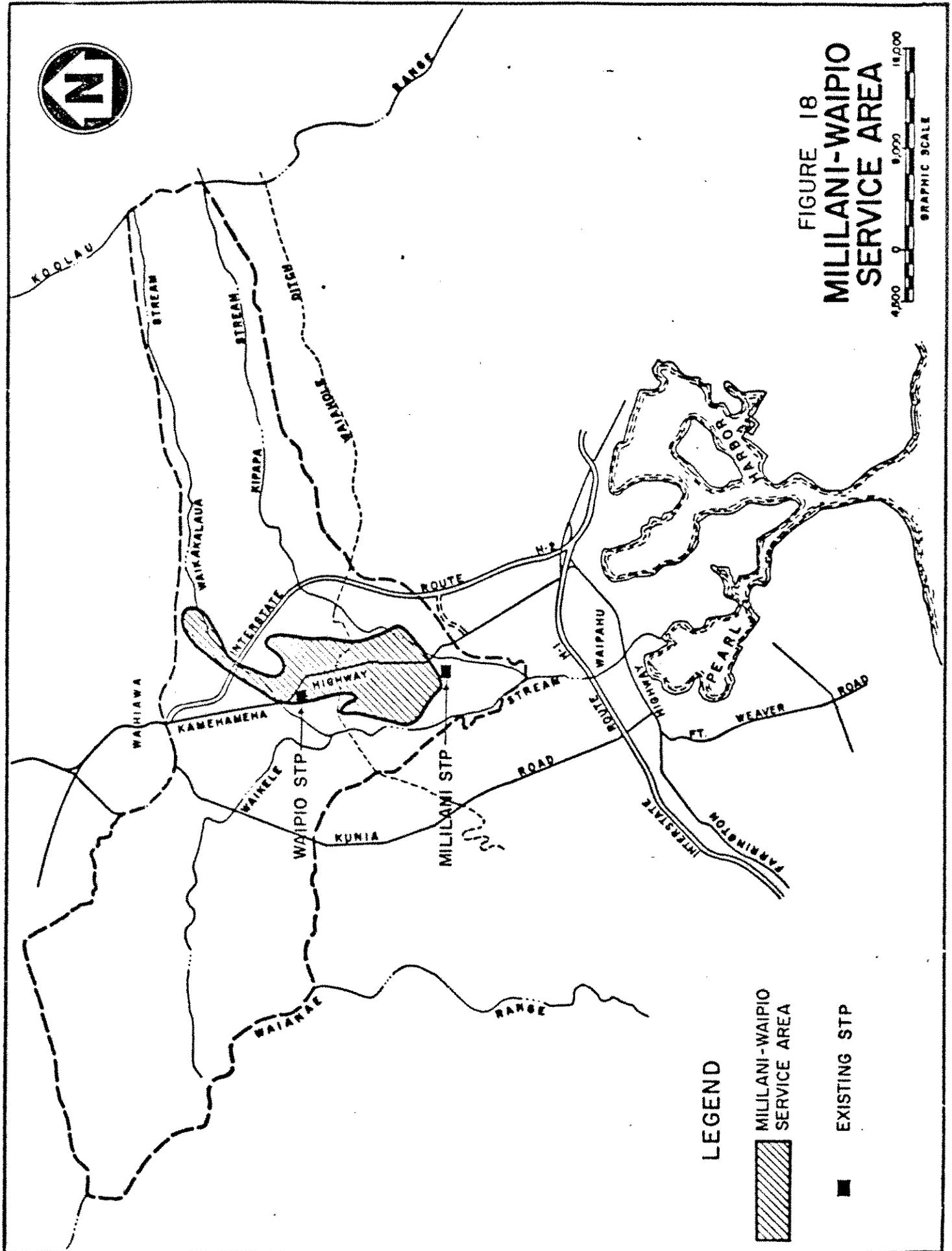
<u>Scientific Name</u>	<u>Common Name</u>	<u>Category</u>
<i>Nycticorax nycticorax hoactli</i>	Black-crowned Night Heron	+
<i>Bubulcus ibis</i>	Cattle Egret	*
<i>Anas wyvilliana</i>	Hawaiian Duck	0,X
<i>Coturnix coturnix japonica</i>	Japanese Quail	*
<i>Phasianus colohicus torquatus</i>	Ring-necked Pheasant	*
<i>Francolinus erckelii</i>	Erckel's Francolin	*
<i>Fulica americana alai</i>	Hawaiian Coot	0,X
<i>Pluvialis dominica fulva</i>	Pacific Golden Plover	+,#
<i>Arenaria interpres</i>	Ruddy Turnstone	+,#
<i>Streptopelia chinensis</i>	Lace-necked Dove	*
<i>Geopelia striata</i>	Barred Dove	*
<i>Columba livia</i>	Feral Pigeon	*
<i>Tyto alba pratincola</i>	Barn Owl	*
<i>Asio flammeus sandwichensis</i>	Hawaiian Short-eared Owl (Pueo)	0,X
<i>Parus varius</i>	Varied Tit (Yamagara)	*
<i>Leiothrix lutea</i>	Red-billed Leiothrix	*
<i>Garrulax canorus</i>	Chinese Thrush	*
<i>Pycnonotus cafer</i>	Red-vented Bulbul	*
<i>Mimus polyglottos</i>	Mockingbird	*
<i>Copsychus malabaricus</i>	Shama Thrush	*
<i>Chasiempis sandwichensis gayi</i>	Oahu Elepaio	X
<i>Acridotheres tristis</i>	Indian Mynah	*
<i>Zosterops japonica</i>	White eye (Mejiro)	*
<i>Loxops virens chloris</i>	Oahu Amakihi	X
<i>Loxops maculata</i>	Oahu Creeper	0,X
<i>Vestiaria coccinea</i>	I'iwi	0,X

TABLE 6
(Continued)

<u>Scientific Name</u>	<u>Common Name</u>	<u>Category</u>
<i>Carpodacus mexicanus frontalis</i>	House Finch	*
<i>Passer domesticus</i>	English Sparrow	*
<i>Amandava amandava</i>	Strawberry Finch	*
<i>Lonchura malacca atricapilla</i>	Black-headed Mannikin	*
<i>Lonchura punctulata</i>	Rice Bird	*
<i>Richmondia cardinalis</i>	Cardinal	*
<i>Paroaria coronata</i>	Brazilian Cardinal	*
<i>Lasiurus cinereus semotus</i>	Hawaiian (Hoary) Bat	0,X
<i>Rattus rattus</i>	Black Rat	*
<i>Rattus norvegicus</i>	Brown Rat	*
<i>Rattus exulans hawaiiensis</i>	Hawaiian Rat	*
<i>Mus musculus domesticus</i>	House Mouse	*
<i>Canis familiaris</i>	Feral Dog	*
<i>Herpestes auropunctatus</i>	Mongoose	*
<i>Felis catus</i>	Feral Cat	*
<i>Sus scrofa</i>	Feral Pig	*
<i>Capra hircus</i>	Feral goat	*
<i>Awaous</i>	Goby	X
<i>Poecilia</i>	Guppy	*
<i>Xiphophorus helleri</i>	Swordtail	*
<i>Procambarus clarkii</i>	Crayfish	*



FIGURE 18
MILILANI-WAIPIO
SERVICE AREA



LEGEND

MILILANI-WAIPIO
SERVICE AREA

EXISTING STP

The Mililani STP is an activated sludge plant designed for an average daily flow of 1.81 MGD and is currently being expanded to a capacity of 3.60 MGD, average daily flow. This plant expansion is scheduled to be completed in April, 1978. The treated effluent is discharged into Kipapa Stream and the sludge is dewatered on drying beds (vacuum filters when expansion is completed) and hauled to the Waianae Land Fill.

G. PERFORMANCE OF EXISTING MILILANI STP

The operating data for Mililani STP for the first quarter of 1976 was as follows:

Average Daily Flow, MGD	1.15
Influent BOD ₅ , mg/l	338
Effluent BOD ₅ , mg/l	30
% BOD ₅ , Removal	91
Influent SS, mg/l	254
Effluent SS, mg/l	25
% SS, Removal	90

As evidenced by this data, the Mililani STP is providing adequate treatment for the incoming domestic sewage. BOD₅ removals have averaged 91 percent for the first quarter of 1976, and SS removals have averaged 90 percent for the same period. Although the present flow of 1.15 MGD does not exceed the design capacity of 1.81 MGD, the plant is being expanded to 3.60 MGD capacity. Based on the waste flow projections, and the scheduled abandonment of the Waipio STP, the existing Mililani STP design capacity of 1.81 MGD will be reached by the end of 1978 and the expanded design capacity of 3.6 MGD will be reached in 1990.

For irrigation purposes, the amount of heavy metals in the Mililani STP effluent is insignificant (WRRC, 1975). In addition, the City and County of Honolulu will limit the amount of heavy metals by source control and will also monitor the effluent.

Operating personnel consists of one operator, one assistant operator, and one laborer. These individuals are well-trained with considerable experience and are operating the plant admirably.

The sampling and monitoring program is carried out by the Sewers Division's Sanitary Engineering and Laboratory Section, with analyses being performed at a fully-equipped laboratory located at the Pearl City STP by qualified Sanitary Chemists.

Tests for operational control are performed daily at the Mililani STP by the operating personnel and include settleability tests, pH, dissolved oxygen, and suspended solids.

III. THE RELATIONSHIP OF THE PROPOSED ACTION
TO LAND-USE PLANS, POLICIES,
AND CONTROLS FOR THE AFFECTED AREA

The proposed action is not in conflict with the State of Hawaii's long-term environmental and land-use policies or goals and guidelines as expressed in Chapter 342 and 344, Hawaii Revised Statutes. Furthermore, the proposed action is consistent with the Division of Sewers' Master Plan for the area and enables the implementation of the development policy of the city.

IV. THE PROBABLE IMPACT OF THE PROPOSED ACTION ON THE ENVIRONMENT

Land Use. The proposed action will not require relocation of households, businesses and services.

The effluent pump station will be located within the existing boundaries of the Mililani Sewage Treatment Plant. Therefore, no additional lands will be required for this facility.

The effluent force main will require a 15-foot wide permanent easement and temporary construction easements. These easements will be acquired from Castle and Cooke, Robinson Estate and the Federal Government. The land is classified agricultural and most of the land is leased by Oahu Sugar Company for sugarcane cultivation. About 6.0 acres will be required for the permanent easements and another 6 acres will be required for the temporary easements. There will be a loss of about 10 acres of sugar crop associated with both the temporary and permanent easements, of which about 5 acres will be permanently removed from sugar production.

Construction of the effluent reservoir will require about 6.5 acres of land which is located within an abandoned irrigation reservoir. This land is owned by Castle and Cooke and is leased to Oahu Sugar Company who in turn is subleasing the land on a monthly basis for horse and cattle grazing. This land is not planned to be used by Oahu Sugar Company for sugar cultivation due to the site condition. Therefore, the proposed use of this land should not have any significant adverse impact on agriculture.

Disruption of Agricultural Operation. There may be a temporary disruption of Oahu Sugar Company's field operation. However, this impact could be eliminated, or at least minimized, by proper close coordination during construction.

Population. The proposed project will be designed for the projected population of 39,000 persons in the year 2000, with provisions in the design to increase the system capacity to accommodate the population of 71,000 persons projected for the year 2020. In this sense, there is a secondary impact of allowing future development to occur.

These projections are based on the City and County of Honolulu's master plan for the area. However, population growth is controlled by State land-use changes and County zoning revisions. Considering these facts, the secondary impact of allowing for future growth is not believed to be adverse.

Noise. The area immediately adjacent to the proposed action will be subjected to noise generated during construction. The residents near the effluent pump station and the force main along the western boundary of Mililani Town may be temporarily disturbed by the noise. The Contractor will be required to meet the provisions of, Chapters 44A and 44B, Vehicular Noise Control on Oahu and Community Noise Control for Oahu, respectively, of the State Public Health Regulations. Construction activities will also be restricted to certain days and hours to minimize disturbances.

Pumps, motors and other equipment will generate noise during normal operation. The emergency standby generator will generate noise during power outages and during preventive maintenance testing. Provisions will be included in the design to reduce the noise levels to the limits specified in Chapter 44B of the State Public Health Regulations.

Therefore, both construction and operating noises should not have any significant adverse effects.

Air Pollution. Construction activities will temporarily affect the quality of the air. Dust will be generated and residential areas near the proposed project may experience higher than normal concentrations of particulates in the air. Dust problems will be minimized by requiring

the Contractor to adhere to Chapter 43 of the State Public Health Regulations. Specific dust control measures which will be included in the contract documents are watering work areas, use of dust palliatives, planting of grass cover as soon as practicable, and, if necessary, curtailing activities during dry, high-wind conditions. Only conventional construction equipment is expected to be used and exhaust fumes should not be adverse. Therefore, dust and exhaust fumes should not cause any significant air pollution.

Odor. The proposed project will pump, transport and store only treated effluent, and therefore should not generate any offensive odor. The nearest residence will be over 300 yards away from the pump station and should not be affected. The effluent reservoir is located within sugarcane fields and the closest residence is over one mile away. Therefore, odors should have no significant impact.

Erosion and Water Pollution: The proposed project sites will be subjected to erosion hazard during construction. To minimize the potential adverse impact on water quality, the Contractor shall be required to adhere to the Soil Erosion Standards and Guidelines of the City and County of Honolulu. Specific requirements shall include: 1) removal of all silt and debris resulting from construction work, 2) installation of temporary dikes and outlets to prevent water from running down slopes, and 3) sodding and planting of all slopes and exposed areas immediately after the grading work has been completed. In addition, construction of the Waikele Gulch force main crossing will only be permitted during dry periods, and be performed in such a manner as to have minimum impact to the stream water quality.

Energy. Electrical power will be required for normal operation. However, the amount of power required (about 0.4 MVA at present flows) should not have a significant impact, since it represents less than 2 per cent of the total demand for the area and is well within the capabilities of the power company.

Water Quality. The proposed action is expected to significantly improve the water quality of West Loch, Pearl Harbor and the portions of Kipapa and Waikele Streams that are downstream of the present sewer outfall. The diversion of the treated effluent now discharged into these waters will reduce their nutrient loads. The decrease in nutrient loads should reduce the adverse effects of excessive biostimulation that presently occur in portions of Waikele Stream near West Loch, Pearl Harbor.

Contamination of Deep Water Sources. While it has been shown that irrigation water does percolate to the groundwater aquifer (WRRC, 1969), other more recent effluent irrigation studies (WRRC, 1975) have demonstrated that the possibility of viral contamination of deep underground water sources in the Mililani area is remote. The previously mentioned field investigations conducted by the University of Hawaii's Water Resources Research Center also demonstrated that 1) the quality of percolate from the effluent-irrigated sugarcane cultured soil is of acceptable concentration from the standpoint of groundwater quality protection, and 2) the absence of viruses in the percolate suggest strongly that the possibility of viral contamination of deep underground water sources is extremely remote.

Historical, Archaeological, Geological, Cultural or Recreational Areas. The proposed project will not cause any destruction of these areas. As described earlier, there are no registered historical or archaeological sites within the planning area. Should such sites be uncovered during construction, the State Parks, Outdoor Recreation and Historic Sites Division will be notified. The proposed project will be through agricultural lands, thus, no recreational lands will be affected, nor any significant or unusual geologic features.

Aesthetics. The proposed action will not significantly affect the aesthetics of the project and the surrounding areas since 1) the pump station will be located within the existing Mililani STP site, 2) most of the force main will be buried within lands presently used for sugarcane cultivation, 3) the portion of the force main at Waikele Gulch will be elevated; however, this portion is not visible from public areas, and 4) the proposed effluent reservoir will be constructed within agricultural land and will not be visible from public roadways and urban developments.

Traffic. The proposed project will not significantly affect traffic since the project is away from public roadways. Some impact due to transporting equipment and material to and from the project site can be expected. However, this impact will be mitigated by requiring the contractor to perform this activity during non-peak traffic hours.

Sensitive Ecosystems. The proposed project will not cause any destruction of sensitive ecosystems, including wet lands and the habitats of endangered species. The physically affected areas of the project have been so altered by agricultural activities that the impacts on the ecosystem should not be significant. However, as was reported in Section II.E.4. "Flora and Fauna in Planning Area," the Pueo (Hawaiian Owl) is found in the Planning Area but no adverse impact on the Pueo is anticipated.

The State Fish and Game Division has indicated that migratory and other water fowl may frequent the proposed Five-Fingers Reservoir. Although this suggests the possible creation of a water fowl habitat, the Division is reluctant to so state at this time, due to the biological requirements that may not be economically feasible. The same argument is also applied to the potential creation of a fish habitat. These two possibilities may be pursued further during the design phase of the project.

Occupational Health. Virus survival in agricultural fields must be considered. Survival of poliovirus has been shown to be minimal in open fields, which were exposed to direct sunlight, high temperature and dessication; however, the viability of the virus was maintained for up to two months in a mature sugarcane field where the virus was protected from the elements (WRRRC, May, 1975). It has therefore been recommended that a virus monitoring and quality-control program of the treated sewage effluent before application be implemented. Also, a more effective method of virus inactivation prior to irrigation is recommended, while precautionary measures for sugar workers should be developed (WRRRC, May, 1975). Engineering studies would be required before a disinfection method is selected while precautionary measures might include protective clothing and close control during storage and application of the irrigation water to minimize contact, such as through aerosol transport, etc. As a point of departure for developing such protective measures, the safety procedures observed by sewage treatment plant operators might be examined.

While the potential for viral persistence in the reservoir is recognized, public protection can be provided through controlled access to this storage facility. It should be noted that the existence of a real viral problem is unknown at this time; however, when considering other effluent storage practices such as that at Lake Wilson, Wahiawa, Oahu, viral persistence may not pose a threat to public health. Lake Wilson presently receives 2.49 MGD of effluent from two municipal secondary treatment plants located along its banks, and this water body is used for fishing and for other non-contact recreational purposes. Furthermore, recent tests indicate that additional viral deactivation takes place in the reservoir.

Viral deactivation is presently practiced at the Mililani STP and viral kill is about 40 per cent after chlorination. Provisions for additional viral deactivation will be considered for both irrigation options and will be implemented if required and cost effective. However, viral-free effluent at either discharge point cannot be assured.

Water Resource. A significant beneficial impact of the proposed action is that a valuable resource, effluent for irrigation, would be conserved. The Board of Water Supply estimates, based on present growth trends, that the limit of groundwater resources will be reached by the year 2000, assuming that the other major water users continue their present water use trends (OWP, 1975). In this BWS report, it is also stated that one of the alternatives for future water resource consideration is the exchange of Mililani STP sewage effluent for good quality irrigation water.

Agricultural. From an agricultural economic standpoint, it has been concluded that the Mililani STP effluent may be used for irrigation of sugarcane during the first year of growth followed by surface water during the second year without decrease in sugar yield. However, when used for the entire 2-year crop cycle without added treatment, poor sugar yield will result (WRCC, May, 1975).

Secondary Impact. The proposed project will not cause any indirect or induced changes in the patterns of land use and population growth; therefore, there are no secondary impacts. Changes in land use patterns and population growth are controlled by State land use laws and by County Zoning Ordinances and the County is presently preparing a Detailed Development Plan Ordinance for the island of Oahu. In addition, population growth will be limited by the capacity of the treatment plant.

V. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS
WHICH CANNOT BE AVOIDED

In all projects such as that being proposed, some stress will be placed on the environment. However, the designation of stresses as adverse impacts is dependent upon the magnitude of such stresses. Furthermore, a distinction must be made as to the short- or long-term nature of these impacts.

In the short-term, the primary adverse impacts that will result from the proposed project are those associated with the construction activities. Temporary air pollution from dust, possible erosion hazard, noise pollution from construction equipment, and temporary interruptions to agricultural operations will no doubt result.

No long-term primary adverse impacts resulting from the proposed project are anticipated.

VI. ALTERNATIVES TO THE PROPOSED ACTION

Other alternatives that were considered and the reasons for rejecting them are as follows:

No Action. Without this project, the secondary treated effluent from the Mililani Sewage Treatment Plant will continue to be discharged into Kipapa Stream and this stream discharges via Waikele Stream into the portion of West Loch that is classified Class AA waters. This discharge is in violation of the effluent limitations delineated by the NPDES permit effective July 1, 1977.

The objection to this method of effluent discharge is that it does not contribute towards the overall objective of the State of Hawaii to protect and enhance the quality of its streams, estuaries and coastal waters, inasmuch as the quality of typical secondary effluent is normally characterized by a relatively high nutrient concentration. Furthermore, the effluent will not be available for irrigation.

Deep Well Injection. Since the subsurface water in this area is the prime source of the area domestic water supply, disposal of effluent by deep well injection is not acceptable and is not permitted by the Honolulu Board of Water Supply.

Tertiary Treatment and Continued Use of Present Outfalls. Under the terms of the existing NPDES permit, it is doubtful whether existing state-of-the-art technology can provide the effluent quality required with respect to nitrogen and phosphorus. For example, phosphorous is normally considered to be the easier of the two nutrients to remove, and existing technology can provide better than 90 per cent reductions on a routine basis. However, based on typical influent total phosphorous concentrations of 10 mg/l and also on a permit limitation of 0.02 mg/l total phosphorous, the required removals would have to be better than 99.8 per cent on a routine basis (or every and anytime a grab sample was taken for analysis). It would be extremely difficult for existing technology to achieve this level of performance on a routine basis.

The situation with nitrogen would be much more difficult inasmuch as present nitrogen removal technology is much less advanced than phosphorous removal technology. This, compounded with the permit limitation of 0.1 mg/l total N, makes the technical feasibility of this alternative extremely questionable. To illustrate, typical influent nitrogen concentrations range from 20 to 30 mg/l. Assuming an influent nitrogen concentration of 25 mg/l, the required nitrogen removal to attain a concentration of 0.1 mg/l would be 99+ per cent, as compared with a maximum attainable 80-90 per cent using present-day technology.

Based on the foregoing, it is readily apparent that tertiary treatment of the domestic wastewater followed by stream discharge is not a technologically viable alternative.

Notwithstanding these technological difficulties, from a cost standpoint tertiary treatment is also unattractive. The Military retained Sunn, Low, Tom and Hara, a Honolulu sanitary consultant firm, to prepare a cost analysis to reduce phosphorus to 0.2 milligrams per liter (mg/l) at the Schofield Sewage Treatment Plant (STP). The recommended method for this phosphorus removal was interception and lime treatment of the secondary effluent after the existing biological treatment process. The conclusions of this study, dated July, 1975, were that 1) construction cost would be \$2,730,000.00 and 2) operation and maintenance cost to treat an average daily flow of 3.2 million gallons per day (MGD) would be \$231,000.00 per annum. On the basis of this study, the Military concluded that tertiary treatment is not economically feasible at this time.

For the Mililani STP, the discharge limitation for phosphorus is 0.02 mg/l, as compared to 0.2 mg/l for the Schofield STP, and there is also a discharge limitation for nitrogen of 0.1 mg/l. If it were technologically feasible, both the cost of constructing tertiary treatment facilities at the Mililani STP and its operation and maintenance should be much higher than at the Schofield STP.

Disposal of Treated Wastewater Through the Deep Ocean Outfall for Honouliuli WWTP. The general alignment of this alternative is shown in Figure 19.

This alternative would consist of approximately 48,000 LF of 30" gravity effluent lines. The southern portion of this line would be along Geiger and Fort Weaver Roads as shown in Figure 19 and the portion between Fort Weaver Road and Waikele Stream would be within lands currently used for sugarcane cultivation by Oahu Sugar Company. Approximately 75 per cent of the effluent lines within the sugarcane fields would be constructed within existing unpaved cane field roads. A deep gulch within U. S. Navy property would need to be crossed at Waikele Stream. The remaining line between the Navy property and Mililani STP would be in land currently used for pineapple cultivation.

This action was rejected after evaluating its cost-effectiveness, public comments, operational considerations and the probable effects on the environment. Specifically, 1) the present worth cost for this alternative is much higher than the selected plan, 2) public involvement to date supports the selected plan, 3) the design capacity of the deep ocean outfall would be reached sooner, and 4) a valuable resource, effluent for irrigation, would be wasted.

Disposal of Untreated Wastewater to Honouliuli Wastewater System. This alternative consists of a sewer line from Mililani STP to the Honouliuli Wastewater System. After this line is in service, the Mililani STP would be abandoned or demolished and removed. After preliminary evaluation, this alternative was rejected because 1) this alternative was not included in the Water Quality Program for Oahu, 2) most of the monies expended for the existing 3.6 MGD Mililani STP would be lost, 3) the capacity of the Honouliuli Wastewater Treatment Plant must be increased to treat the Mililani-Waipio Sewage at considerable public expense, and 4) a valuable resource would be wasted.

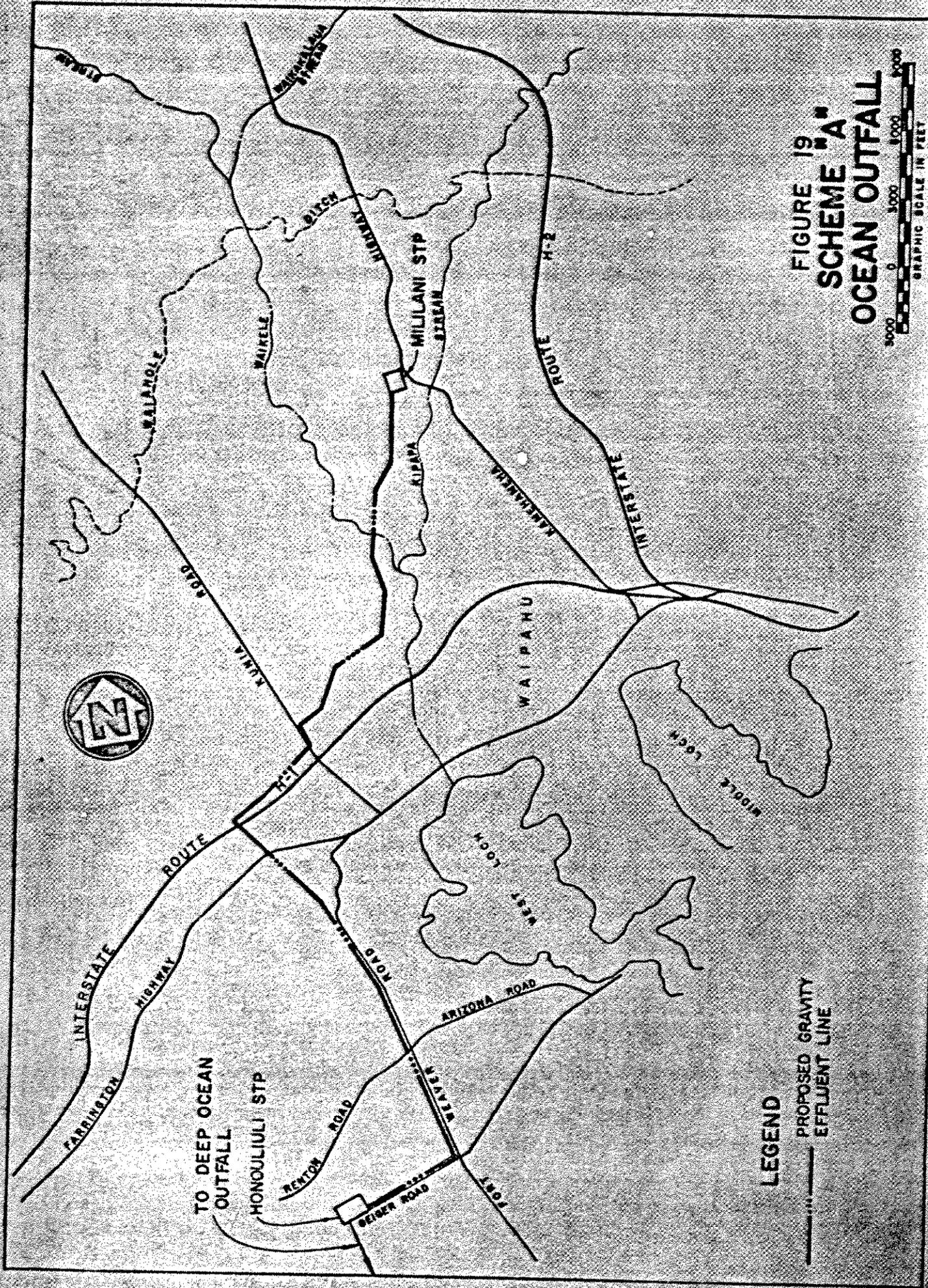


FIGURE 19
SCHEME "A"
OCEAN OUTFALL

LEGEND
 - - - - - PROPOSED GRAVITY EFFLUENT LINE

VII. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES
OF MAN'S ENVIRONMENT AND THE MAINTENANCE
AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed action will eliminate a major source of pollutants now degrading the coastal waters of Pearl Harbor and will enhance the aesthetics and recreational potential of these waters.

The Honolulu Board of Water Supply estimates the limit on groundwater consumption will be reached by the year 2000, based on present growth and use trends. One of the alternatives is to exchange sewage effluent for good quality irrigation water. Therefore, the proposed action would aid in providing good quality water for future generations.

VIII. MITIGATION MEASURES PROPOSED TO MINIMIZE IMPACT

Short-term construction related impacts and operational impacts will be mitigated by appropriate measures as previously discussed in Section IV. The only other mitigative measures that are proposed relate to viral persistence in the effluent. Precautionary measures for sugar workers who would be handling this effluent or working in the fields need to be implemented, and more effective treatment for virus de-activation would be provided, such as ozonation or superchlorination, to name a few. Since the viruses are not transmitted by physical contact, but must be ingested before they can infect a person, precautionary measures would include: 1) posting of signs warning unauthorized persons from entering the sewage irrigation areas, 2) thoroughly washing of hands which may have come into direct or indirect contact with the effluent, and 3) daily washing of outer garments used when working with effluent.

IX. ANY IRREVERSIBLE AND IRRETRIEVABLE
COMMITMENTS OF RESOURCES

The proposed Mililani STP effluent disposal system will irreversibly commit land, labor, material and energy resources required for its design, construction and operation. Approximately 6 acres of agricultural land will be lost to permanent easements for the effluent force main and another 6.5 acres for the effluent reservoir.

Labor will be involved in the construction and operation of this system, as is the case with any piping and pumping network; all labor expenditure will be essentially irreversible and irretrievable. Materials such as concrete, cast iron, reinforcing steel, etc., will be required for construction, and when in-place, will be for all practical purposes irreversibly and irretrievably committed.

The operation of the pump and appurtenances will require electrical energy or other fuel for the life of the system. This constant energy demand, although not large at all, will be an irreversible and irretrievable commitment of energy resources in the future.

X. ORGANIZATIONS AND PERSONS CONTACTED

The following agencies and persons were formally consulted during the preparation of the EIS. An asterisk denotes those who commented in writing, and both comments and responses are included in the following pages:

<u>FEDERAL</u>	<u>Page No.</u>
Department of Agriculture, *Soil Conservation Service	66
Department of the Army *Honolulu District, Corps of Engineers	68
Department of the Interior *Fish and Wildlife Service Geological Survey	70
Department of the Navy *Headquarters, 14th Naval District	73
 <u>STATE</u>	
*Department of Education	76
*Department of Health	78
*Department of Land and Natural Resources	80
*Department of Planning and Economic Development	82
*Office of Environmental Quality Control	84
 <u>CITY AND COUNTY</u>	
*Board of Water Supply	86
*Department of General Planning	88
*Department of Land Utilization	93
*Mililani/Waipio/Melemanu Neighborhood Board No. 25	95

Page No.

OTHER

Campbell Estate	
Hawaiian Electric Company	
*Hawaiian Sugar Planters Association	99
Life of the Land	
Mililani Town Association	
*Oahu Sugar Company, Ltd.	101
The Outdoor Circle	

XI. REPRODUCTION OF COMMENTS AND RESPONSES
MADE DURING THE CONSULTATION PERIOD

77 03259

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

P. O. Box 5004, Honolulu, HI 96813

RECEIVED
DEPT. OF PUBLIC WORKS

MAY 23 8 19 1977 AM '77

TO ENVU

SEWER

MAY 23 AM 10 38 '77

RECEIVED
DIV. OF SEWERS

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City & County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Miyahira:

Subject: EIS for Mililani Sewage Treatment Plant Effluent Disposal System

We have reviewed the above-mentioned EIS preparation notice and have no comments to offer.

Thank you for the opportunity to review this document.

Sincerely,

Jack P. Kanalz
Jack P. Kanalz
State Conservationist



SPP 77-217

June 6, 1977

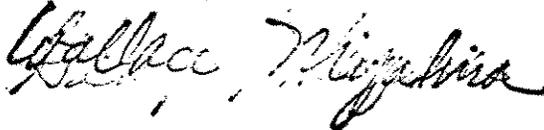
Mr. Jack P. Kanalz
State Conservationist
Soil Conservation Service
U.S. Department of Agriculture
P. O. Box 5004
Honolulu, Hawaii 96813

Dear Mr. Kanalz:

Subject: Environmental Impact Statement
Preparation Notice for the
Mililani Sewage Treatment Plant
Effluent Disposal System
(Reference: Your letter dated May 20, 1977)

Thank you for reviewing and commenting on the subject
EIS Preparation Notice.

Very truly yours,



WALLACE MIYAHIRA
Director and Chief Engineer

cc: Park Engineering Inc.

Park Eng. Inc.	
Route to	Initial
— L.M.	F
— C.T.	W
— R.T.	h
— H.K.	
— R.S.	
— W.T.	
— J.T.	W
— G.Y.	
— E.M.	
— M.S.	
— M.N.	
— T.K.C.	
— T.U.	
—	
—	

770 4443 2.2



PODED-P

DEPARTMENT OF THE ARMY
HONOLULU DISTRICT, CORPS OF ENGINEERS
BLDG. 230, FT. SHAFTER
APO SAN FRANCISCO 96358
RECEIVED
CORPS OF ENGINEERS
PUBLIC WORKS

JUN 9 1 44 PM '77
TO ENULL 7 June 1977
Sewer

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

RECEIVED
DIV. OF SEWERS

77 JUN 13 AM 9 15

Dear Mr. Miyahira:

We have reviewed the Environmental Impact Statement Preparation Notice for the Mililani Sewage Treatment Plant Effluent Disposal System as requested in your letter of 2 May 1977. The following comments are offered for your consideration:

- a. Is sufficient land under cultivation in the area to accommodate all the effluent?
- b. Will crop uptake of heavy metals be a hazard to sugar users?
- c. During the rainy season, will the effluent be stored?
- d. If chlorinization is required to clear clogged trickle irrigation lines, will the chlorine have any impact on the nitrogen-fixing bacteria in the soil?
- e. You may wish to consult the "Final Report on the Disposal of Wastewater through Land Application at Helemano, Oahu, Hawaii" during the preparation of your document. The report, done by Sunn, Low, Tom and Hara, Inc. for the Corps in March 1977, covers a similar topic and is available from the Corps.

Thank you for the opportunity to review this document.

Sincerely yours,

Kisuk Cheung
KISUK CHEUNG
Chief, Engineering Division





United States Department of the Interior

FISH AND WILDLIFE SERVICE

Division of Ecological Services
300 Ala Moana Blvd., Rm. 5302
P. O. Box 50167
Honolulu, Hawaii 96850

RECEIVED
DEPT OF PUBLIC WORKS

JUN 3 1 16 PM '77

TO
Ann M
Sewer

77 04269
80
6/6/77

June 2, 1977

Mr. Wallace Miyahira, Director
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Re: EIS
Mililani Sewage Treatment Plant
Effluent Disposal System

RECEIVED
DIV. OF SEWERS
JUN - 3 PM 3 55

Dear Sir:

This responds to your EIS preparation notice for the Mililani Sewage Treatment Plant Effluent Disposal System, island of Oahu, Hawaii

General Comments

The subject document generally considers every viable project alternative rather than presenting justification of a selected plan. However, the value of such alternatives to decision makers can be realized only upon full and equal evaluation of each alternative.

Specific Comments

Page 4 - Tertiary treatment and continued use of present outfalls.

It may be appropriate to provide a current economic breakdown of this plan as well as identify environmental benefits to Waikele Stream and its associated biota.

Page 11 - Alternative Effluent Disposal Scheme "B" - Reclamation for Irrigation, Waiahole Ditch.

The draft EIS should indicate whether or not the selected plan will be determined upon conclusion of the ongoing studies conducted by the Water Resources Research Center.



Page 14 - Alternative Effluent Disposal Scheme "C" - Reclamation for Irrigation, "Five-Fingers" Reservoir.

A location map of the proposed reservoir should include highways, unpaved roads, existing reservoirs, streams and other reference points to sufficiently locate the project site. Another enlarged diagram may be appropriate to describe areal limits and other details of the reservoir. A reservoir system could also provide an opportunity to create rather than displace water bird habitat if designed with tapered shorelines.

Page 20 - Proposed Mitigation Measures.

It is recommended that specific measures of erosion control be identified rather than citing existing regulations.

We appreciate this opportunity to comment.

Sincerely yours,

Maurice H. Taylor

Maurice H. Taylor
Field Supervisor

cc: HA
HDF&G

HEADQUARTERS
FOURTEENTH NAVAL DISTRICT
DEPT. OF PUBLIC WORKS
FPO SAN FRANCISCO 96610

7704339
JPS
GO
4/8/77

JUN 7 9 58 AM '77
TO ENV. CL
Sewers

IN REPLY REFER TO:
48B:WKL:amn
Ser 1151

6 JUN 1977

77 JUN -7 PM 2 04

RECEIVED
DIV. OF SEWERS

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

Environmental Impact Statement Preparation Notice
for Mililani Sewage Treatment Plant Effluent
Disposal System, Mililani, Oahu

It is requested that this Command be listed as an
agency to be consulted in the preparation of the subject
EIS.

Sincerely,

J.W. Dew

FRED W. DEW
LT, CEC, USN
Deputy District Civil Engineer
By direction of the Commandant

Copy to:
COMPACNAVFACENGCOM

7705162

HEADQUARTERS
FOURTEENTH NAVAL DISTRICT

BOX 110
FPO SAN FRANCISCO 96610
RECEIVED
DEPT OF PUBLIC WORKS

IN REPLY REFER TO:
002:09F:SH:mm
Ser 1362

JUL 11 8 29 AM '77

TO _____ 7 JUL 1977

ENULL
Sewers &

GO
7/13/77
9

MW

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

Environmental Impact Statement (EIS)
Preparation Notice for the Mililani Sewage
Treatment Plant Effluent Disposal System

77 JUL 11 PM 2 30

RECEIVED
DIV. OF SEWERS

The subject Environmental Impact Statement Preparation Notice, which was forwarded by your letter of June 17, 1977, has been reviewed. The alternatives to be considered appear to be the most feasible and desirable from the environmental standpoint and will be in compliance with the recommendations of the Pearl Harbor Enforcement Conference.

It is requested that this Command be provided with a copy of the EIS for review.

Sincerely,

R. P. Nystedt

R. P. NYSTEDT
CAPTAIN, CEC, USN
DISTRICT CIVIL ENGINEER
BY-DIRECTION OF THE COMMANDANT



7703087

RECEIVED
DEPT. OF PUBLIC WORKS

STATE OF HAWAII

MAY 16 8 18 AM '77

DEPARTMENT OF EDUCATION

TO ENV U

P. O. BOX 2380

HONOLULU, HAWAII 96804

Sewers &

77 MAY 17 PM 1 22

RECEIVED
DIV. OF SEWERS

OFFICE OF BUSINESS SERVICES

May 11, 1977

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

Subject: Environmental Impact Statement (EIS)
for Mililani Sewage Treatment Plant
Effluent Disposal System

We have reviewed the subject EIS and have no objection to any of the possible alternatives to disposing of the effluent.

Sincerely,


KOICHI H. TOKUSHIGE
Assistant Superintendent
Office of Business Services
KHT:JEE:yk

cc: Central District

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



RECEIVED
DEPT. OF PUBLIC WORKS

7704332

pic

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

JUN 7 7 32 AM '77

EVU

Sewers

GEORGE A. L. YUEN
DIRECTOR OF HEALTH
Audrey W. Mertz, M.D., M.P.H.
Deputy Director of Health
Henry N. Thompson, M.A.
Deputy Director of Health
James S. Kumagai, Ph.D., P.E.
Deputy Director of Health

June 1, 1977

In reply, please refer to:
File: EPHS-SS

JUN -7 PM 1 13

RECEIVED
DIV. OF SEWERS

MEMORANDUM

To: Mr. Wallace Miyahira, Director and Chief Engineer
Department of Public Works, City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Preliminary Comments to the EIS for Mililani Sewage Treatment
Plant Effluent Disposal System

Thank you for allowing us to review and comment on this EIS.

We have the following comments to offer for your consideration:

1. The treatment plant must be designed to attenuate the noise emitted by its operations to meet the provisions of Public Health Regulations, Chapter 44B, Community Noise Control for Oahu.
2. Construction activities must comply with Public Health Regulations, Chapter 44B, Community Noise Control for Oahu.
 - a. An application for community noise permit must be filed and approved by the Department of Health.
 - b. Construction activities must comply with the provisions of the conditional use of permit as stated in Public Health Regulations, Chapter 44B and the conditions of the permit.
3. All heavy vehicles travelling on trafficways to and from the construction project must comply to the limits stated in Public Health Regulations, Chapter 44A, Vehicular Noise Control for Oahu.
4. We have no major comments to offer at this time regarding the disposal system or the alternatives discussed in the statement.

We realize that the plans are preliminary and we reserve the right to impose future environmental restrictions as needed.

Should you have any questions or comments regarding this letter, please do not hesitate to call our Pollution Technical Review Branch at 548-6410.

JAMES S. KUMAGAI, Ph.D.

7704090
5/27/77

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



RECEIVED
PUBLIC WORKS

CHRISTOPHER COBB, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. BOX 621
HONOLULU, HAWAII 96809

DIVISIONS:
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

May 25, 1977

Your: SPP 77-138

1977 MAY 27 PM 2 30

RECEIVED
DIV. OF SEWERS

Honorable Wallace Miyahira
Dept. of Public Works
650 So. King St.
Honolulu, Hawaii 96813

Dear Sir:

We have reviewed the EIS preparation notice for the Mililani STP.

With respect to the ocean discharge alternative, we suggest that the EIS address the impact of increased wastewater discharge into the ocean and any mitigating measures needed.

Paragraph 3 of page 8 should be revised to include the pueo which on Oahu is considered endangered. Its primary habitat is open grasslands.

Very truly yours,

GORDON SOH
Program Planning Coordinator

cc: Fish and Game
Historic Sites Office
DOWALD

7704300



DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

DEPT. RECEIVED PUBLIC WORKS

GEORGE R. ARIYOSHI Governor

HIDETO KONO Director

FRANK SKRIVANEK Deputy Director

Kamamalu Building, 250 South King St., Honolulu, Hawaii Mailing Address: P.O. Box 2359 Honolulu, Hawaii 96804

June 1, 1977

47 JUN 1977
EWU
Sewers gpm

Ref. No. 3690

77 JUN -6 PM 1 19

RECEIVED
DIV. OF SEWERS

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

Subject: Environmental Impact Statement Preparation Notice for Mililani Sewage Treatment Plant and Effluent Disposal System

We have reviewed the subject EIS Preparation Notice and find that, in general, it seems to adequately acknowledge the important environmental impacts which can be anticipated resulting from the proposal project alternatives. We note that the effluent discharge from the existing Mililani Sewage Treatment Plant does not now nor would be able to meet National Pollutant Discharge System (NPDES) permit effluent limitations which are to be in effect as of July 1, 1977.

As described in the subject report, the proposed action is intended to 1) evaluate alternative effluent disposal and treatment systems, and 2) recommend from these alternatives, a plan that would allow discharge from the facility to be in compliance from State and Federal regulations.

May we suggest that an analysis of alternatives to the existing Mililani Sewage Treatment Plant and Effluent Discharge System should include an inventory of proposed projects which may generate additional demand. Mililani Town Inc., for example, is currently petitioning the State Land Use Commission to reclassify approximately 590 acres of land located in Waipio from Agricultural to the Urban District for residential purposes. The proposed development would generate an estimated sewage effluent flow of 1.4 million gallons daily.

We have no further comments to offer, however, we do appreciate the opportunity to review this EIS Preparation Notice.

Sincerely,

Frank Skrivaneck
for HIDETO KONO

SPP 77-224

June 13, 1977

Mr. Hideto Kono
Department of Planning
and Economic Development
State of Hawaii
P. O. Box 2359
Honolulu, Hawaii 96804

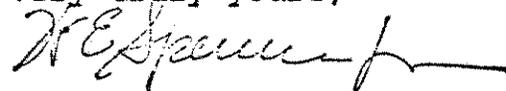
Dear Mr. Kono:

Subject: Environmental Impact Statement
Preparation Notice for the
Mililani Sewage Treatment Plant
Effluent Disposal System
(Reference: Your letter dated June 1, 1977)

Thank you for reviewing and commenting on the subject EIS
Preparation Notice.

Proposed projects within the Mililani STP service area
were evaluated to obtain the sewage flow projections. However,
this data will be updated and discussed in the EIS.

Very truly yours,



WALLACE MIYAHIRA
Director and Chief Engineer

CC: Park Engineering, Inc.

Park Eng. Inc.	
Date	Initial
—	L.M.
—	C.T.
—	R.T.
—	H.K.
—	P.S.
—	W.T.
✓	J.T.
—	G.Y.
—	E.M.
—	M.S.
—	M.N.
—	T.K.C.
—	T.U.
—	
—	
—	
—	
—	M.F.
File	

7703124

GEORGE R. ARIYOSHI
GOVERNOR



RECEIVED
OF PUBLIC WORKS

RICHARD E. MARLAND, PH.D.
DIRECTOR

TELEPHONE NO.
548-6915

Handwritten initials

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
OFFICE OF THE GOVERNOR
550 HALEKALUWILA ST.
ROOM 301
HONOLULU, HAWAII 96813

*DIR
DEP
ENV
Sewers to*

May 13, 1977

77 MAY 19 PM 2 19

DIV. OF SEWERS

Wallace Miyashira, Director
Department of Public Works
City and County of Honolulu
Honolulu, Hawaii 96813

SUBJECT: Environmental Impact Statement for Mililani Sewage
Treatment Plant Effluent Disposal System, Mililani,
Oahu

Dear Mr. Miyahira

Wally

Thank you for inviting us to comment on the subject project. Unfortunately, we are not able to accomodate every request for consultation that is received. We will, however, comment on the EIS when it is officially filed with the Environmental Quality Commission.

If you should have further questions on this matter, please do not hesitate to contact us again.

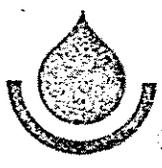
Sincerely,

Richard E. Marland

Richard E. Marland
Director

7704118

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
65 SOUTH BERETANIA
HONOLULU, HAWAII 96843



FRANK F. FASI, Mayor
YOSHIE H. FUJINAKA, Chairman
STANLEY S. TAKAHASHI, Vice Chairman
~~KAZUHIKO KUBO~~
TERESITA R. JUBINSKY
EDWARD F.C. LAU
E. ALVEY WRIGHT
Wallace Miyahira
Fred Dailey
EDWARD Y. HIRATA
Manager and Chief Engineer

RECEIVED
DEPT. OF PUBLIC WORKS

May 20, 1977
MAY 27 1 48 PM '77

TO ENVELOPE
Sewers

77 MAY 31 PM 1 43

RECEIVED
DIV. OF SEWERS

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

Subject: Environmental Impact Statement
Preparation Notice for Mililani
Sewage Treatment Plant Effluent
Disposal System, Mililani, Oahu,
Hawaii - Tax May Key: 9-04-05

We concur with the intent of the project. However, we disagree with the statement on Page 17 that "the possibility of contaminating the deep underground water sources in the Mililani area is extremely remote (WRRC, May, 1975)." It has been shown in a report by the Water Resources Research Center (Technical Report No. 33) that irrigation water does percolate to the groundwater aquifer. A discussion on the potential effects that irrigation return water would have on groundwater quality should be incorporated into the statement. We also request that preliminary construction plans be submitted to us for review.

Our department contact is Lawrence Whang at 548-5221.

Very truly yours,

E. Y. Hirata
For Edward Y. Hirata
Manager and Chief Engineer

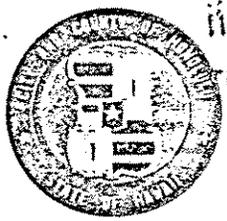
77 03128

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, HONOLULU, HAWAII 96813

RECEIVED
DEPARTMENT OF PUBLIC WORKS

Jm
5/20/77

FRANK F. FASI
MAYOR



MAY 17 10 04 AM '77
ENV
Sewers 20

ROBERT R. WAY
CHIEF PLANNING OFFICER

DGP5/77-1078 (CT)

May 16, 1977

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
Honolulu, Hawaii

Dear Mr. Miyahira:

Environmental Impact Statement Preparation Notice -
Mililani Sewage Treatment Plant Effluent Disposal System
Comments Requested - DPW Reference No. SPP 77-135

We offer the following comments and suggestions:

1. Project Consistency. The proposed project is consistent with City policies as expressed in the revised General Plan adopted under Resolution 238. But this is not the critical concern. What is important is that the proposed action is required to meet State water quality standards and the Implementation and Enforcement Plan. The EIS should indicate what standards are applicable and the compliance schedule, and when these were adopted.
2. Effluent Characteristics. The EIS preparation notice indicates that present discharges do not meet effluent limitations. (P. 1.) Permit limitations for phosphorous and nitrogen are shown under the discussion of tertiary treatment (p. 4), but present effluent concentrations are not provided.
3. Effluent Flows. Effluent flows should be provided in the "DESCRIPTION OF THE PROPOSED ACTION" rather than in the "SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT." The relevant data should be assembled into one table, rather than being scattered throughout. For instance, the EIS preparation notice indicates that the combined average daily flow from the Waipio and Mililani STP's during the

77 MAY 17 PM 4 04

RECEIVED
DIV. OF SEWERS

first quarter of 1976 was 1.34 MGD (p. 8); Mililani STP is being expanded from a design capacity of 1.81 MGD to 3.60 MGD (p. 9); projected sewage flows for the Mililani-Waipio area are 4.6 MGD in 1996 and 7.6 MGD in 2020 (p. 9); and effluent disposal Scheme B would be designed for the ultimate peak flow of 20.73 MGD (p. 11). The basis for the projected flows should be clearly shown.

4. Population. A current population for the Mililani-Waipio area of 18,782 persons is given (p. 5), but the date for which the estimate was made is not provided. Also, the figure differs from the 1975 estimate of 20,302 shown in the revised General Plan.

The revised General Plan projects a population of 39,000 for the year 2000. The EIS preparation notice projects 39,000 for 1996 and 71,000 for the year 2020. The EIS should show (map) what areas are expected to be developed and the population projections for these areas. These should be shown in relation to State Land Use Commission boundaries for urban uses and previously adopted General Plan or Detailed Land Use Map designations, particularly since Development Plans under the new City Charter are not available.

5. Military Population. Schofield-Wheeler area population estimates are provided (p. 5). Schofield and Wheeler Air Force Bases are included in the Planning Area (Plate II).

Except for a reference to a July, 1975 Corps of Engineers' study indicating construction costs of \$2.73 million for construction and annual operating expenses of \$231,000 to treat 3.2 MGD of effluent for phosphorous removal only, the military effluent load is not discussed.

If the Military effluent is not part of this proposal, the EIS should clearly state this and the population figures and the planning area map should be revised accordingly.

6. Costs. Cost estimates are shown in order of magnitude. (Pp. 14-15.) In the EIS, cost estimates should be related to the discussion, i.e., which are Schemes A, B and C. Cost breakdowns and sources of funding should be indicated. The EIS preparation notice indicates the possibility of State funding (p. 20). In August 1975, this department provided an A-95 clearinghouse review for Federal funds for planning of the effluent disposal system. The City's 6-year CIP indicates that Federal funds will be requested.

7. Vegetation. The EIS preparation notice indicates that "Vegetation ranges from almost purely native along the summits of the two mountain ranges to almost purely exotic in the lowlands, with gradations in between." This should be clarified in the EIS.

A land use map showing what areas are planted in sugar, pineapples and diversified crops, and what areas are in forest reserves, and what areas are urbanized would provide a better understanding of the affected environment.

8. Scheme A. The southern portion of the effluent lines will be along Geiger and Fort Weaver Roads (p. 9) under this alternative. This may be affected by the State Department of Transportation proposals for widening and realigning Fort Weaver Road.

We recommend that the Department of Transportation be contacted to find out which of their various proposals is likely to be selected and whether Scheme A will be affected.

9. Scheme B. It is indicated that selection of this alternative will depend on results of studies being conducted on the effect of diluted effluent on cane growth and the effect of treated effluent on drip irrigation systems (p. 11). The EIS should discuss the impact of the effluent within the irrigation system, i.e., will bacteria and viruses be transported via the Waiahole Ditch and to where? The survival of polio virus in open fields is discussed (p. 17). Viral persistence in a reservoir could create potentially hazardous conditions (p. 20). What of viral persistence in the Waiahole Ditch?

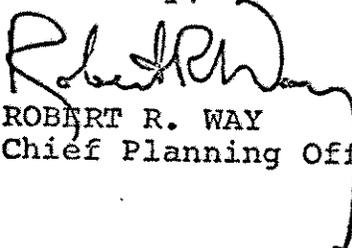
10. Scheme C. The EIS should provide information on the "Five Fingers" reservoir site. Its location should be mapped on a scale similar to Plate V (Plates IV and VI do not provide sufficient detail). The area of the site should be mentioned.

11. Irrigation Requirements. The EIS preparation notice mentions the use of effluent for irrigation in cane fields. The EIS should indicate how much water is required for growing sugar-cane under the two systems of irrigation. The EIS should indicate the prospects for use of effluent in pineapple fields and for diversified crops, should sugar be phased out. In this regard, the EIS should indicate how much longer the leases on sugar and pineapple land will extend.

Mr. Wallace Miyahira
Page 4

12. Precautionary Measures. The EIS preparation notice indicates: "The only other mitigative measures that are proposed relate to the virus problem. Precautionary measures for sugar workers who would be handling this effluent or working in the fields would be implemented, and more effective treatment for virus de-activation would be provided . . ." The EIS should describe the potential hazards more fully and indicate the precautionary measures that would be implemented.
13. Water Exchange. The EIS preparation notice indicates that "the philosophy of 'water exchange' is currently being pursued by the Honolulu Board of Water Supply." The term "water exchange" should be defined. Discussion of this should be expanded in the EIS.

Sincerely,


ROBERT R. WAY
Chief Planning Officer

RRW:fmt

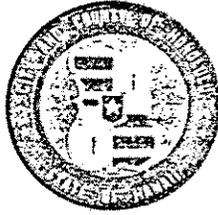
DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

7704261

82

FRANK F. FASI
MAYOR



RECEIVED
DEPT. OF PUBLIC WORKS

JUN 3 9 46 AM '77

TO Enw ll

GEORGE S. MORIGUCHI
DIRECTOR

Sewer *pmv*

LU5/77-1559 (CS)

June 2, 1977

77 JUN -3 PM 1 18

MEMORANDUM

TO : MR. WALLACE MIYAHIRA, DIRECTOR AND CHIEF
ENGINEER, DEPARTMENT OF PUBLIC WORKS

ATTENTION: MR. CHEW LUN LAU

FROM : GEORGE S. MORIGUCHI, DIRECTOR

SUBJECT : ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
FOR MILILANI SEWAGE TREATMENT PLANT
EFFLUENT DISPOSAL SYSTEM

This is in response to your May 2, 1977, letter (SPP77-134) and accompanying submittal of an Environmental Impact Statement Preparation Notice for the above project.

We are in agreement with the objectives of the action proposed and feel that the submitted document provides adequate basis to its determination.

Thank you for the opportunity to review and comment on this matter.

George S. Moriguchi
GEORGE S. MORIGUCHI
Director

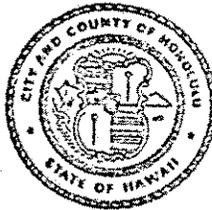
GSM:gc

77 04248

MILILANI/WAIPIO/MELEMANU NEIGHBORHOOD BOARD NO. 25

c/o WAHIAWA SATELLITE CITY HALL DEPT. OF PUBLIC WORKS
830 CALIFORNIA AVE. WAIHAWA, HAWAII 96786

JUN 3 9 55 AM '77



TO _____
DIR
DEPT. OF
ENR
Sewer

pp
60
6/3/77

June 2, 1977

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City & County of Honolulu
Honolulu Municipal Building, 11th Floor
650 South King Street
Honolulu, Hawaii 96813

CHEN -
SEE MS. Discussion
WV
dl

Dear Mr. Miyahira:

Our Board has the following comments on the E.I.S. preparation notice for the Mililani Sewage treatment plant.

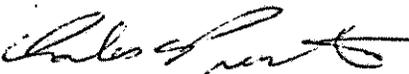
1. The Mililani-Waipio-Melemanu Neighborhood Board is No. 25 not No. 28.
2. The Neighborhood Boards have been determined by Corporation Counsel to be City and County agencies; they should not be listed under "Private" as you do.
3. It is not clear how using the "Five Fingers" reservoir would adequately dispose of the effluent if the reservoir must be constructed with an impervious lining. Will the liquid disappear through evaporation? What will the odors be like?
4. The report makes an assumption that precautionary measures to protect sugar workers in the field will be available. Such protective measures should be made explicit to evaluate their feasibility.
5. The New General Plan of the City and County states that the Mililani-Waipio area is authorized a maximum population of 39,000 people by the year 2000. There is no present plan or policy to allow an increase in the population to 71,000.
6. There should be a discussion of the combined effects of the Mililani sewage treatment problem and the Gentry-Waipio sewage treatment problem. The Gentry project is proposing connection to the Honouliuli treatment plant. Why must there be a Mililani line to Honouliuli and a separate Gentry line to the same place? The costs of combining the two should perhaps be considered.

Mr. Wallace Miyahira
Re: Mililani Sewage Treatment Plant
June 2, 1977
Page 2

7. As an aside, we are also waiting to comment on your E.I.S. on the proposal to spread the effluent from the Gentry project on the ground between Gentry-Waipio and Mililani and on the Ted Makalena golf course. Would not the virus alluded to in your report endanger golfers as it would the sugar workers, and also affect children playing between Mililani and Gentry-Waipio?

We feel that these are serious questions which must be addressed.

Sincerely,



Charles A. Prentiss
Chairman

cc: Toraki Matsumoto

Mr. Charles A. Prentiss

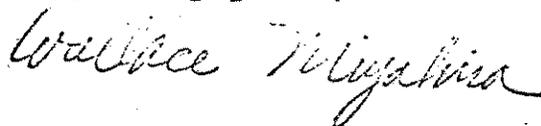
- 2 -

June 16, 1977

Subsequent to the publication of the subject EIS Preparation Notice and after further evaluation, we have decided that the proposed action should be the alternative of reclaiming the effluent for sugarcane irrigation. The reasons for rejecting the ocean out-fall alternative will be discussed in the EIS. Therefore, we believe that your comment regarding a combined line from Gentry-Waipio and Mililani is no longer applicable.

In reference to item #7, we agree that it is a serious question which must be addressed. However, considering that the Gentry project is not included in the scope of work for the subject project, we have no comment to offer.

Very truly yours,



WALLACE MIYAHIRA
Director and Chief Engineer

cc: Park Engineering, Inc.



770 400 6

RECEIVED
DEPT OF PUBLIC WORKS

MAY 20 1 55 PM '77

TO _____
May 23, 1977

ENV 4
Sewers

77 MAY 24 PM 3 20

SEWERS

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

The EIS for Mililani Sewage Treatment Plant Effluent Disposal System, SPP 77-145 dated May 2, has been reviewed by our staff.

We would suggest only one change of any consequence:

Page 6, 3rd paragraph, spelling of latosols

Page 18, 1st paragraph, Suggested rewording:

D. From an agricultural economic standpoint, it has been concluded that the Mililani STP effluent may be used for irrigation of sugar-cane during the first year of growth followed by surface water during the second year without decrease in sugar yield. However, when used for the entire 2-year crop cycle without added treatment, poor sugar yield will result (WRCC, May, 1975).

Thank you for the opportunity to comment.

Sincerely,

H. Wayne Hilton, Ph.D.
Acting Head, Crop Science Department

HWH:mr

cc: R. L. Cushing
D. J Heinz

SPP 77-215

June 6, 1977

Dr. H. Wayne Hilton, Ph. D.
Acting Head, Crop Science Department
Hawaiian Sugar Planters' Association
P. O. Box 1057
Aiea, Hawaii 96701

Dear Dr. Hilton:

Subject: Environmental Impact Statement
Preparation Notice for the
Mililani Sewage Treatment Plant
Effluent Disposal System
(Reference: Your letter dated May 23, 1977)

Thank you for reviewing and commenting on the subject
EIS Preparation Notice.

Your suggestion will be incorporated into the EIS.

Very truly yours,

Wallace Miyahira

WALLACE MIYAHIRA
Director and Chief Engineer

cc: Park Engineering Inc.

Park Eng. Inc.	
Date	By
—	L.M.
—	C.T. ✓
—	R.T. h
—	H.K. 7
—	R.S.
—	W.T.
—	J.T. ✓
—	C.Y.
—	E.A.
—	M.S.
—	M.N.
—	T.K.C.
—	T.U.
—	—
—	—
—	—
—	—
—	—
—	—
—	M.F.
File	—
Date	6/13/77

OAHU SUGAR COMPANY LTD.

P.O. BOX "O"
WAIPAHU, HAWAII 96797
TELEPHONE 677-3577

RECEIVED
DEPT OF PUBLIC WORKS

AN Amfac COMPANY

JUL 22 1 50 PM '77
TO ENV July 21, 1977

slwca
P+PS

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
CITY AND COUNTY OF HONOLULU
650 South King Street
Honolulu, HI 96813

Dear Mr. Miyahira:

EIS PREPARATION NOTICE FOR
MILILANI SEWAGE TREATMENT PLANT
EFFLUENT DISPOSAL SYSTEM

Oahu Sugar's response to your letter of June 7 is as follows:

The problem of flow limitations and reservoir location would be better handled in the design stage. At that time we would probably bring Castle & Cooke into the picture as two possible sites are on their land and one is subject to withdrawal from our lease.

If we can be of further assistance, please do not hesitate to call us.

Very truly yours,

OAHU SUGAR COMPANY, LIMITED

David W. Ballie
David W. Ballie, President

OAT:cla
cc: J.E. Loomis

77 JUL 22 PM 4 26

RECEIVED
DIV. OF SEWERS

XII. SUMMARY OF UNRESOLVED ISSUES

A. BACKGROUND

The use of treated effluent for sugarcane irrigation requires several years of field studies to determine the economic feasibility and environmental impacts. The first phase field study (August 1971 to June 1975) has resolved the basic issue of accepting the concept of recycling sewage effluent for irrigation. The second phase field studies (November 1976 to 1979), which are presently being conducted, as well as a laboratory viral deactivation study, will address the following unresolved issues.

B. EFFECT OF DILUTED EFFLUENT ON SUGARCANE

A determination of sugar and cane yields irrigated with various dilutions of Mililani STP sewage effluent, Waiahole Ditch water and chemical ripeners is being carried out under pilot field conditions. A recommendation as to the best dilution ratio for maximum growth and yield will be made at the completion of the study.

C. DEACTIVATION OF VIRUSES

Viral control is a major concern in any sewage disposal system and even more so when effluent reclamation is involved. A recommendation as to the best method of virus deactivation will be made at the completion of the study.

D. EFFECT OF EFFLUENT ON DRIP IRRIGATION SYSTEM

There is an operational problem with existing drip irrigation systems due to the plugging of drip orifices, and this problem is compounded when secondary treated effluent is applied through the system. Consequently, further treatment (post-secondary treatment) is required to insure removal of both organics and residual solids. Recommendations will be made regarding necessary post-secondary treatment at the completion of the current studies.

XIII. LIST OF NECESSARY APPROVALS

Permits will be required from the following agencies:

1. A permit for grading, excavation and fills will be required pursuant to Ordinance No. 3968 (1972), Chapter 23, Revised Ordinance of Honolulu, 1969 as amended. The contractor will obtain said permit from the Department of Public Works.
2. A Conditional Use Permit for Construction Activities under Chapter 44B, Community Noise Control for Oahu, of the Public Health Regulations will be required. The contractor will obtain said permit from the Department of Health.
3. A Special Use Permit from the State Land Use Commission will be required for the construction of Five-Fingers Reservoir since the area is an Agriculture District of the State Land Use Designations.
4. A U. S. Department of the Army Permit under Section 10 of the River and Harbor Act of 1899 and under Section 404 of the Federal Water Pollution Control Act Amendment of 1972 will be required for construction within navigable waters.

PERSONS CONTACTED

- Akii, Paul - May 4, 1976. Department of Health, State of Hawaii.
- Chang, John W. - May 1976. Board of Water Supply, City and County of Honolulu.
- Godfrey, Harold - May 10, 1976. United States Navy, Real Estate Division (Makalapa).
- Greig, G. - April 1, 1976. United States Army, Engineering Division, Pacific Ocean (PODED-MP, Fort Shafter).
- Hashiro, Wayne - April 1, 1976. United States Army, Engineering Division, Pacific Ocean (PODED-C, Fort Shafter).
- Ishikawa, Gordon - April, May 1976. Headquarters United States Army Support Command, Hawaii (DFAE, USASCH, Fort Shafter).
- Kami, Kiyoshi - May 12, 1976 and June 20, 1977. Hawaiian Electric Company, Customer Engineering Supervisor.
- Lau, L. Stephen - April 23, 1976. Director of the Water Resources Research Center, University of Hawaii.
- Merriam, Robert A. - April 15, 1976. Assistant Study Manager for Hawaii Water Resources Regional Study.
- Orenstein - May 6, 1976. Sales Analyst for Hawaiian Telephone Company.
- Oumi, Charles - May 3, 1976. Environment Health Specialist for Department of Health, State of Hawaii.
- Saito, Ralph - April 26, 1976 and July 8, 1977. Wildlife Biologist for Department of Land and Natural Resources. Division of Fish and Game, State of Hawaii.
- Shima, Stanley - April 30, 1976 and July 12, 1977. Aquatic Biologist for Department of Land and Natural Resources, Division of Fish and Game, State of Hawaii.
- Shishido, Kazuo - August 10, 1976. Supervisor, Environmental Control Section No. 1 for Department of Health, State of Hawaii.
- Thompson, Oscar A. - March 25, 1976. Chief Civil Engineer for Oahu Sugar Company.

Tulang, Dennis - March 31, 1976. Department of Health, State of Hawaii.

Whang, Larry - May 4, 1976 and June 21, 1977. Board of Water Supply,
City and County of Honolulu.

Woodside, Dave - April 26, 1976. Specialist in None-Game Wildlife for
Department of Land and Natural Resources, Division of Fish and
Game, State of Hawaii.

Yee, Harold - March 31, 1976. Department of Health, State of Hawaii.

REFERENCES

- Belt, Collins & Associates, Ltd., December 28, 1976. REPORT IN SUPPORT OF A PETITION FOR A STATE LAND USE DISTRICT BOUNDARY AMENDMENT FOR MILILANI TOWN, HAWAII.
- Board of Water Supply, City and County of Honolulu, July 1975. OAHU WATER PLAN.
- Board of Water Supply, City and County of Honolulu, March 1972. RULES AND REGULATIONS FOR THE PROTECTION, DEVELOPMENT AND CONSERVATION OF WATER RESOURCES.
- Board of Water Supply, August 1966. THE WATER SOURCES OF OAHU.
- City and County of Honolulu, Exhibit A, Resolution No. 238, January 18, 1977. GENERAL PLAN. Statement of Objectives and Policies.
- Department of Health, State of Hawaii, July 1974. COMMUNITY NOISE SURVEY AND RECOMMENDATION OF "NON-VEHICULAR NOISE REGULATIONS" FOR OAHU.
- Department of Health, State of Hawaii, 1974. PUBLIC HEALTH REGULATIONS. Chapter 37-A, Water Quality Standards.
- Department of Land and Natural Resources, Division of Fish and Game, State of Hawaii, 1974. ENVIRONMENTAL ASSESSMENT - IMPACT OF THE HAWAII STATEWIDE PITTMAN - ROBERTSON PROGRAM, 1974-1975, ON ENDANGERED SPECIES OF WILDLIFE AND THEIR HABITATS.
- Department of Land and Natural Resources, Division of Fish and Game, State of Hawaii, 1975. ANNOTATED CHECKLISTS OF THE BIRDS AND MAMMALS OF HAWAII.
- Department of Planning and Economic Development, State of Hawaii, 1967. STATE OF HAWAII GENERAL PLAN REVISION PROGRAM (in six parts).
- Department of Planning and Economic Development, State of Hawaii, 1972. COMMUNITY PROFILES FOR HAWAII.
- Department of Planning and Economic Development, State of Hawaii, October 1972. THE CENTRAL OAHU PLANNING STUDY - A SUMMARY REPORT.
- Department of Planning and Economic Development, State of Hawaii, 1974. STATE OF HAWAII GROWTH POLICIES PLAN: 1974-1984, GENERAL PLAN REVISION PROGRAM
- Department of Planning and Economic Development, State of Hawaii, November 1975. DATA BOOK 1975.

- Department of Public Works, City and County of Honolulu, February 1972. WATER QUALITY PROGRAM FOR OAHU WITH SPECIAL EMPHASIS ON WASTE DISPOSAL. Final Report Prepared by Sunn, Low, Tom & Hara, Honolulu, Engineering Sciences, Inc., Los Angeles, and Dillingham Corporation, Honolulu.
- Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens, August 1972. SOIL SURVEY OF THE ISLANDS OF KAUAI, OAHU, MAUI, MOLOKAI, AND LANAI, STATE OF HAWAII. U.S. Department of Agriculture, Soil Conservation Service.
- Metcalfe & Eddy, Inc., WASTEWATER ENGINEERING: COLLECTION, TREATMENT, DISPOSAL. McGraw-Hill Book Company, San Francisco 1972.
- Rosenau, J.C., E.R. Lubke, and R.H. Nakahara, 1971. WATER RESOURCES OF NORTH-CENTRAL OAHU, HAWAII. U.S. Geological Survey, Water Supply Paper No. 1899-D.
- Stearns, Harold T., 1967. GEOLOGY OF THE HAWAIIAN ISLANDS.
- Sunn, Low, Tom & Hara, Inc., July 1975. COST ESTIMATES FOR LIME OR ALUM TREATMENT AT SCHOFIELD BARRACKS STP FOR THE REMOVAL OF PHOSPHORUS.
- Takasaki, K.J., G.T. Hirashima, and E.R. Lubke, 1969. WATER RESOURCES OF WINDWARD OAHU, HAWAII. U.S. Geological Survey, Water Supply Paper No. 1894.
- United States Department of Housing and Urban Development, Federal Insurance Administration, June 2, 1970. FIA OFFICIAL FLOOD HAZARD MAP.
- United States Environmental Protection Agency, March 1973. ESTIMATING STAFFING FOR MUNICIPAL WASTEWATER TREATMENT FACILITIES.
- United States Environmental Protection Agency, May 1975. GUIDANCE FOR PREPARING A FACILITY PLAN.
- United States Environmental Protection Agency, September 1975. MODEL FACILITY PLAN FOR A SMALL COMMUNITY.
- United States Environmental Protection Agency, September 1975. STATE AIR POLLUTION IMPLEMENTATION PLAN PROGRESS REPORT. January 1 to June 30, 1975. EPA-450/2-75-008.
- United States Geological Survey, Department of Interior, 1967. LAND USE AND ITS EFFECT ON THE BASAL WATER SUPPLY, PEARL HARBOR AREA, OAHU, HAWAII, 1931-1965.
- Visher, F.N., J.F., Mink. GROUND-WATER RESOURCES IN SOUTHERN OAHU, HAWAII. U.S. Geological Survey, Water-Supply Paper 1778.

Water Resources Research Center, University of Hawaii, October 1969.
IDENTIFICATION OF RETURN IRRIGATION WATER IN THE SUBSURFACE WATER
QUALITY.

Water Resources Research Center, University of Hawaii, July 1975.
RECYCLING OF SEWAGE EFFLUENT BY IRRIGATION: A FIELD STUDY ON
OAHU. Final Progress Report for August 1971 to June 1975.

A P P E N D I X

COMMENTS AND REPLIES
TO
ENVIRONMENTAL IMPACT STATEMENT

CONTENTS

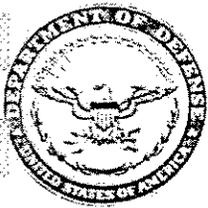
	<u>Page</u>
<u>FEDERAL</u>	
*Army Engineer District, Honolulu	A-3
*Army Support Command, Hawaii	A-5
Coast Guard	A-7
Fifteenth Air Base Wing (PACAF)	A-8
*Fish and Wildlife Service	A-10
*Fourteenth Naval District	A-14
Soil Conservation Service	A-16
 <u>STATE</u>	
Department of Accounting and General Services	A-17
*Department of Agriculture	A-18
Department of Defense	A-20
Department of Health	A-21
*Department of Land and Natural Resources	A-22
*Department of Planning and Economic Development	A-24
Department of Social Services and Housing	A-27
Department of Transportation	A-28
*Office of Environmental Quality Control	A-29
 <u>CITY AND COUNTY</u>	
*Board of Water Supply	A-38
*Department of General Planning	A-40
Department of Housing and Community Development	A-42
Department of Land Utilization	A-43
Department of Parks and Recreation	A-44
Department of Transportation Services	A-45

CONTENTS
(Continued)

	<u>Page</u>
<u>UNIVERSITY OF HAWAII</u>	
Environmental Center	A-46
*Leeward Community College	A-47
Water Resources Research Center	A-54

*An Asterisk denotes that a response was made to the comment.

7708621



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT HONOLULU WORKS
BLDG. 230.

Ft. Shafter, HI 96858
OCT 27 1 57 PM '77

TO ENV/LL

Sewers 25 October 1977

[Handwritten signature]

PODED-PS

77 OCT 28 AM 8 29

RECEIVED
DIV. OF SEWERS

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 So. King Street
Honolulu, HI 96813

Dear Mr. Miyahira:

We have reviewed the EIS for the Mililani STP Effluent Disposal System and have found the identification and evaluation of impacts/tradeoffs for the proposed action to be of adequate breadth and depth. We find the concept of reclaiming treated effluent for the irrigation of sugarcane fields to be in good keeping with current efforts on Oahu to conserve high quality water.

We would also like to inform you that if the Waikele Stream crossing is constructed as proposed on page 17 (i.e., the construction of a concrete pier to support the force main within the stream), a Department of the Army Section 404 (P.L. 92-500) permit will be required. Of course, if alternative actions, as discussed in Chapter VI are adopted, other permit requirements may be applicable. If you have any questions pertaining to Department of the Army permits, please contact our Operations Branch (phone: 438-9258).

We thank you for this opportunity to review the subject EIS.

Sincerely yours,

WM. J. MATTHEWS
Acting Chief, Engineering Division



SPP 77-469

November 3, 1977

Mr. Wm. J. Matthews
Acting Chief, Engineering Division
U. S. Army Engineer District, Honolulu
Department of the Army
Building 230
Ft. Shafter, Hawaii 96858

Dear Mr. Matthews:

Subject: Environmental Impact Statement for the
Mililani Sewage Treatment Plant
Effluent Disposal System

We wish to thank you for reviewing the subject Environmental
Impact Statement.

The design of the proposed project will be coordinated with
your office and applications will be made for required Department
of the Army permits.

Very truly yours,

WALLACE MIYAHIRA
Director and Chief Engineer

cc: OEQC
Park Engineering

77 08405

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY SUPPORT COMMAND, HAWAII
FORT SHAFTER, HAWAII 96858

2
Down
S

RECEIVED
DEPT OF PUBLIC WORKS

AFZV-FE-22

OCT 18 2 35 PM '77
OCT 17 1977
TO *Seniors*

Encl 11
P&PS

Office of the Governor
State of Hawaii
Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

77 OCT 19 AM 11

RECEIVED
DIV. OF SEWERS

Gentlemen:

Thank you for the opportunity to review the Environmental Impact Statement on the Mililani Sewage Treatment Plant Effluent Disposal System.

The Statement has been reviewed and the following comment is offered:

On page 4, 1st paragraph, following ". . . exclude Schofield STP from its studies." add "The U.S. Army is currently pursuing its own plans for diverting Schofield Barracks STP treated effluent to irrigation."

The document is being retained for information and future reference.

Sincerely,

CARL P. RODOLPH
Colonel, CE
Director of Facilities Engineering

Copy furnished:
Department of Public Works
City & County of Honolulu
Honolulu Municipal Building
650 S. King Street
Honolulu, Hawaii 96813

SPP 77-468

November 3, 1977

Colonel Carl P. Rodolph
Director of Facilities Engineering
Headquarters U. S. Army Support Command, Hawaii
Department of the Army
Fort Shafter, Hawaii 96858

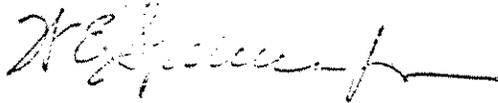
Dear Colonel Rodolph:

Subject: Environmental Impact Statement for the
Mililani Sewage Treatment Plant
Effluent Disposal System

We wish to thank you for reviewing the subject Environmental
Impact Statement.

Your comment will be included in the final Environmental
Impact Statement for the project.

Very truly yours,



WALLACE MIYAHIRA
Director and Chief Engineer

cc: OEQC
Park Engineering

7708439

(mep)

2
J.P.M.
of

RECEIVED
DEPT. OF PUBLIC WORKS

OCT 19 11 34 AM '77 Phone: 808-546-7510

TO ENVU
SEWER 10475
60

Governor, State of Hawaii
Ofc. of Env. Quality Control
550 Halekauwila St., Room 301
Honolulu, Hawaii 96813

Dear Sir:

Staff review of the Mililani Sewage Treatment Plant Effluent Disposal System Environmental Impact Statement has been completed and the Coast Guard has no comments to offer regarding this project.

Thank you for the opportunity to review and comment on this statement.

Sincerely,

Copy to:
Commandant (G-WEP-7)
Dept. of Public Works, C & C of Honolulu

77 OCT 19 PM 4 24

RECEIVED
DIV. OF SEWERS

7709110

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 15TH AIR BASE WING (PACAF)
HICKAM AIR FORCE BASE, HAWAII 96813



RECEIVED
NOV 16 4 22 PM '77
15 NOV 1977

REPLY TO
ATTN OF:

DEEV (Mr. Nakashima, 4491831)

SUBJECT:

Environmental Impact Statement (EIS) for Mililani Sewage Treatment
Plant Effluent Disposal System, Mililani, Oahu, Hawaii

ENVIRONMENTAL QUALITY CONTROL
SEWER
RECEIVED
DIV. OF SEWER
NOV 17 AM 8 28
4

TO: Governor, State of Hawaii
(Office of Environmental Quality Control)
550 Halekauwila St.
Room 301
Honolulu, Hawaii 96813

1. This headquarters has reviewed the subject EIS and has no comment to render relative to the proposed project.
2. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your project and thank you for the opportunity to review the EIS.

ROBERT Q. K. CHING
Chief, Engineering, Construction
and Environmental Planning Div
Directorate of Civil Engineering

Cy to: Dept of Public Works
City and County of Honolulu
Honolulu Municipal Building
Honolulu, Hawaii 96813

770 9087

GEORGE R. ARIYOSHI
GOVERNOR



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
OFFICE OF THE GOVERNOR
550 HALEKAUWILA ST.
ROOM 301
HONOLULU, HAWAII 96813

RECEIVED
DEPT OF PUBLIC WORKS
NOV 16 10 41 AM '77
TELEPHONE NO.
548-6915

TO ENV
Sewers 76
P+PS
9/11/77
NOV 16 PM 2 37
RECEIVED
DIV. OF SEWERING

November 10, 1977

Mr. Wallace Miyahira, Director
Department of Public Works
City and County of Honolulu
Honolulu, HI 96813

SUBJECT: Environmental Impact Statement for Mililani Sewage Treatment
Plant Effluent Disposal System, Mililani, Oahu, Hawaii

Dear Mr. Miyahira:

This Office has received a late comment from the U. S. Fish and
Wildlife Service dated November 8, 1977. We are forwarding the
comment for your appropriate action.

Your cooperation in this matter is greatly appreciated.

Sincerely,

Richard E. Marland
Director

Attachment



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Division of Ecological Services
300 Ala Moana Blvd., Rm. 5302
P.O. Box 50167
Honolulu, Hawaii 96850

Reference: ES

November 8, 1977

Dr. Richard Marland
State of Hawaii
Environmental Quality Commission
550 Halekauwila Street, Rm. 301
Honolulu, Hawaii 96813

Re: EIS for Mililani
Sewage Treatment
Plant Effluent
Disposal System
Mililani, Oahu

Dear Sir:

This provides comments on the referenced draft environmental impact statement.

General Comments

The proposal to use secondary sewage effluent from the Mililani STP for cane irrigation should have minimal adverse impacts on fish and wildlife resources. The net effects of terminating secondary sewage effluent discharge into Waikele Stream, and eventually Westloch, Pearl Harbor, as well as the potential for waterbird and fish habitat if a 6.5 acre reservoir is constructed, should be beneficial for fish and wildlife resources.

Specific Comments

Page 17 - Effluent Reservoir. It is stated that the 15 million gallon reservoir will be lined with an impervious material "...to further protect the ground water sources from possible contamination." We recommend that the reservoir's impervious lining be covered with several feet of earth and that emergent vegetation be allowed to exist.



This would greatly enhance the area's value as waterbird habitat.

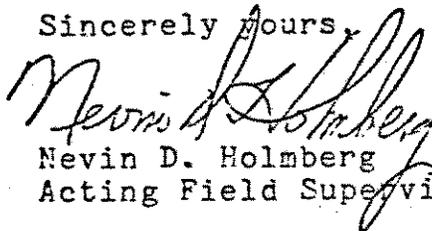
Page 42 - Table 6 - Wildlife in Planning Area - It should be noted that the State of Hawaii Division of Fish and Game considers the Hawaiian owl to be endangered on the island of Oahu.

Page 43 - Table 6 (continued) - The Hawaiian rat, feral pig, and feral dog are introduced rather than endemic species. Also, the current generic names ascribed to the o'opu nakea (goby) and common guppy are Awaous and Poecilia, respectively.

Page 61 - Mitigation Measures Proposed to Minimize Impact - This may be an appropriate section to emphasize the potential for additional waterbird and fish habitat provided by the construction of a reservoir, if Option Two is implemented.

We appreciate this opportunity to comment.

Sincerely yours,



Nevin D. Holmberg
Acting Field Supervisor

cc: HA
NMFS
HDF&G
ARD(AE)

Mr. Nevin D. Holmberg

- 2 -

November 23, 1977

Page 61 - Mitigation Measures Proposed to Minimize Impact

The potential for additional waterbird and fish habitat is discussed on Page 52 under Sensitive Ecosystems.

Very truly yours,



FOR WALLACE MIYAHIRA
Director and Chief Engineer

cc: OEQC
Park Engineering ✓

77 08336

HEADQUARTERS
FOURTEENTH NAVAL DISTRICT PUBLIC WORKS
BOX 110
PEARL HARBOR, HAWAII

RECEIVED
OCT 14 6 32 PM '77
IN REPLY REFER TO:
02:09F:SH:MM
Ser 2064

2
Tamm
D

TO
19 OCT 1977

Office of Environmental
Quality Control
State of Hawaii
Office of the Governor
550 Halekauwila St., Room 301
Honolulu, Hawaii 96813

77 OCT 17 AM 9 29

RECEIVED
DIV. OF SEWERS

Gentlemen:

Environmental Impact Statement (EIS)
for Mililani Sewage Treatment Plant
Effluent Disposal System
Mililani, Oahu, Hawaii

The subject EIS, which was forwarded by your letter of September 29, 1977, has been reviewed, and the following comments are submitted:

- a. The U.S. Navy is vitally concerned with raising the standards of water quality in Pearl Harbor, and reduction of the pollution in the tributaries feeding into Pearl Harbor is a necessary part of this effort.
- b. The proposed action will terminate the discharge of secondary treated effluent from the Mililani Sewage Treatment Plant into Kipapa Stream by reclaiming the effluent for irrigation of sugar cane fields in Central Oahu.
- c. AS Kipapa Stream is within the Pearl Harbor Drainage Basin and terminates in West Loch, the U.S. Navy welcomes and supports such efforts to reduce effluent discharge and, in consequence, raise the water quality in Pearl Harbor.

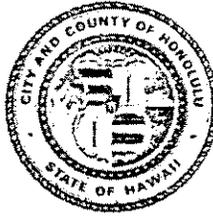
Thank you for the opportunity to review this EIS and to submit these comments for your reference.

Sincerely,
R. P. NYSTEDT
CAPTAIN, CEC, USN
DISTRICT CIVIL ENGINEER
BY DIRECTION OF THE COMMANDANT

Copy to:
Department of Public Works
City and County of Honolulu
Honolulu Municipal Building
Honolulu, Hawaii 96813

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

WALLACE MIYAHIRA
DIRECTOR AND CHIEF ENGINEER

SPP 77-456

October 26, 1977

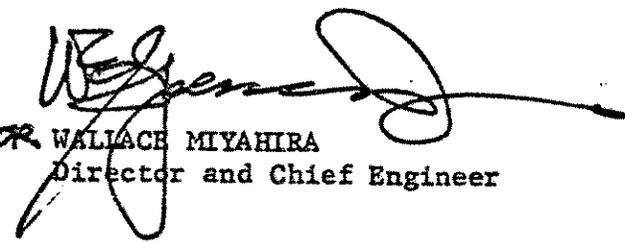
R. P. Nystedt
Captain, CEC, USN
District Civil Engineer
Headquarters, 14th Naval District
Box 110 Pearl Harbor, Hawaii 96860

Dear Captain Nystedt:

Subject: Environmental Impact Statement for the
Mililani Sewage Treatment Plant, Effluent
Disposal System

We wish to thank you for reviewing the subject Environmental
Impact Statement and for your expression of support for the
project.

Very truly yours,


FOR WALLACE MIYAHIRA
Director and Chief Engineer

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

P. O. Box 50004, Honolulu, HI 96850

RECEIVED

DEPT. OF PUBLIC WORKS

OCT 19 PH 4 24

770,8440
RECEIVED
DIV. OF SOIL CONSERVATION

OCT 19 11 34 AM '77
October 17, 1977

TO ENVIRONMENTAL
SEWER

[Handwritten signature]

Environmental Quality Commission
Office of the Governor
550 Halekauwila St., Rm. 301
Honolulu, HI 96813

Gentlemen:

Subject: Environmental Impact Statement for Mililani Sewage Treatment
Plant Effluent Disposal System, Mililani, Oahu, Hawaii

We have reviewed the above EIS and have no comments to offer. Since
we have no future use for this document, the EIS is returned.

Thank you for the opportunity to review this document.

Sincerely,

[Handwritten signature of Jack P. Kanalz]

Jack P. Kanalz
State Conservationist

Enclosure

Copy:

Office of Environmental Quality Control (for)
Governor, State of Hawaii
Dept. of Public Works, City & County of Honolulu



RECEIVED
DEPT. OF PUBLIC WORKS

OCT 19 10 18 AM '77

TO ENV

OCT 19 1977

Sewers

P&PS

[Handwritten initials]

(P) 2083.7

Dr. Richard Marland
Director
Office of Environmental
Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Dr. Marland:

Subject: EIS for Mililani Sewage Treatment Plant
Effluent Disposal System

Thank you for this opportunity to review and comment on the
subject project.

We find that this project will not have any adverse environ-
mental impact on any existing or planned facility serviced by our
department.

Very truly yours,

HIDEO MURAKAMI
State Comptroller

LT:jnt

✓cc: City & County of Honolulu

OCT 19 PM 2 49

RECEIVED
DIV. OF SEWERS

77 08250

GEORGE R. ARIYOSHI
GOVERNOR



RECEIVED
DEPT OF PUBLIC WORKS JOHN FARIAS, JR.
CHAIRMAN, BOARD OF AGRICULTURE
OCT 12 9 33 AM '77
MUKIO KITAGAWA
DEPUTY TO THE CHAIRMAN

Handwritten initials and marks on the right margin.

STATE OF HAWAII

DEPARTMENT OF AGRICULTURE
1428 SO. KING STREET
HONOLULU, HAWAII 96814

Handwritten notes: Sewer, Am U, PPS

October 7, 1977

MEMORANDUM

To: Office of Environmental Quality Control
Subject: Environmental Impact Statement of Mililani Sewage Treatment Plant Effluent Disposal System

The Department of Agriculture has reviewed the subject environmental impact statement. Except for an expression of support for this project, we have no comments to offer.

We appreciate the opportunity to review the EIS.

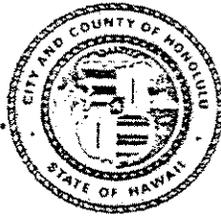
JOHN FARIAS, JR.
Chairman, Board of Agriculture

cc: Dept. of Public Works, C&C of Honolulu

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR



WALLACE MIYAHIRA
DIRECTOR AND CHIEF ENGINEER

SPP 77-457

October 26, 1977

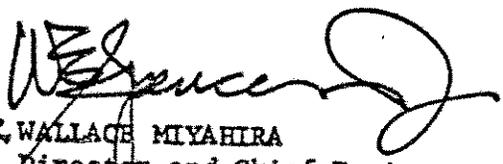
Mr. John Farias, Jr.
Chairman, Board of Agriculture
Department of Agriculture
State of Hawaii
1425 South King Street
Honolulu, Hawaii 96814

Dear Mr. Farias:

Subject: Environmental Impact Statement for the
Mililani Sewage Treatment Plant,
Effluent Disposal System

We wish to thank you for reviewing the subject Environmental
Impact Statement and for your expression of support for the
project.

Very truly yours,


FOR WALLACE MIYAHIRA
Director and Chief Engineer

GEORGE R. ARIYOSHI
GOVERNOR



77083010
VALENTINE A. SIEFERMANN
MAJOR GENERAL
ADJUTANT GENERAL

RECEIVED
DEPT OF PUBLIC WORKS

STATE OF HAWAII
DEPARTMENT OF JOSEPHENSE PH '77
OFFICE OF THE ADJUTANT GENERAL
FORT RUGER, HONOLULU, HAWAII 96816

RECEIVED
DIV. OF SERVICES

12 OCT 1977
OCT 14 AM 9 04

Seisen
Amly
P&PS

HIENG

Department of Public Works
City and County of Honolulu
Honolulu Municipal Building
Honolulu, HI 96813

Gentlemen:

Mililani Sewage Treatment Plant
Effluent Disposal System

Thank you for sending us a copy of the "Mililani Sewage Treatment Plant Effluent Disposal System" Environmental Impact Statement. We have received the publication and have no comments to offer.

Yours truly,

WAYNE R. TOMOYASU
Captain, CE, HARNG
Contr & Engr Officer

1768639

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



RECEIVED
DEPT OF PUBLIC WORKS

OCT 27 1 55 PM '77
EMW
Sawyer

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

October 19, 1977

GEORGE A. L. YUEN
DIRECTOR OF HEALTH
Audrey W. Mertz, M.D., M.P.H.
Deputy Director of Health
Henry N. Thompson, M.A.
Deputy Director of Health
James S. Kumagai, Ph.D., P.E.
Deputy Director of Health

In reply, please refer to:
File: EPHS 77 SS

OCT 28 AM 8 29

RECEIVED
DIV. OF SERVICES

MEMORANDUM

To: Mr. Wallace Miyahira, Director and Chief Engineer
Department of Public Works, City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Environmental Impact Statement (EIS) for Mililani Sewage
Treatment Plant Effluent Disposal System

Thank you for allowing us to review and comment on the subject EIS. On the basis that the project will comply with all applicable Public Health Regulations, please be informed that we have no objections to this project.

Staff comments are: The Department of Health will review this EIS concurrently with the Environmental Protection Agency under the construction grants program guidelines. The EIS must be approved by Department of Health/Environmental Protection Agency before Step 2 (design) can proceed.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

JAMES S. KUMAGAI, Ph.D.

cc: Environmental Quality Commission
Office of Environmental Quality Control

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

October 24, 1977

W. Y. THOMPSON, Chairman
~~SECRETARY OF THE BOARD~~
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

Environmental Quality Commission
550 Halekauwila Street
Honolulu, HI 96813

Gentlemen:

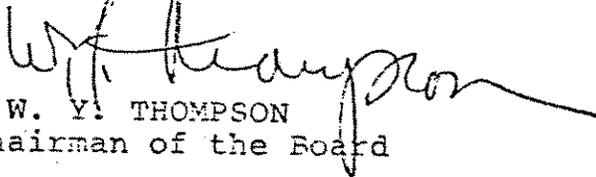
We have reviewed the EIS for the effluent disposal system of the Mililani STP.

We favor the conservation of water resources on Oahu, particularly where it favors agricultural enterprise. We find pp. 45, 51 and 53 adequately address our principal concerns about the quality of the resource albeit not exhaustively so.

Should it be necessary - at a later date - to augment the proposed facility with post treatment, viral deactivation and flow regulation facilities, additive costs will be incurred. These costs should be monitored and the comparative advantages of alternative disposal systems re-evaluated if the additional costs are incurred.

Some corrections about wildlife are warranted. A call to Mr. Ralph Saito (Phone 548-5916) should clear things up.

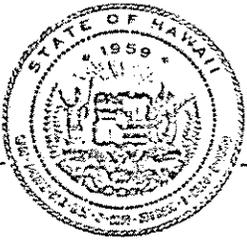
Very truly yours,



W. Y. THOMPSON
Chairman of the Board

cc: Fish and Game
DOWALD





DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT
RECEIVED
DEPT. OF PUBLIC WORKS

GEORGE R. ARIYOSHI
Governor

HIDETO KONO
Director

FRANK SKRIVANEK
Deputy Director

Kamamalu Building, 250 South King St., Honolulu, Hawaii • Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Nov 8 8 35 AM '77
TO ENV 11/10/77
S. Lewis

November 3, 1977

Ref. No. 4887

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

Subject: Environmental Impact Statement for Mililani Sewage Treatment Plant Effluent Disposal System

We have reviewed the subject EIS and wish to offer the following comments for your consideration.

1. Information should be included within the EIS on the water capacity of the Waiahole ditch irrigation systems as proposed within options one or two, especially considering the effects of seasonal flooding. A question arises, for example, as to how the irrigation systems will be used to distribute effluent during periods of excessive rainfall when the capacity of the irrigation systems may be overburdened.
2. Based upon an informal discussion with the staff of the State Land Use Commission a Special Use Permit may not be required to develop the proposed effluent disposal system. May we suggest that you contact the Commission so that a formal determination can be made on this matter.
3. As noted on page 104, additional information and data must be collected and reported upon for certain unresolved issues. With regard to the viral deactivation issues, consideration should be given to the establishment of a monitoring program when the effluent irrigation system is made operational in order to ensure public health.

We have no further comments to offer at this time but appreciate the opportunity to review and comment upon this matter.

Sincerely,

Frank Skrivaneck
for HIDETO KONO

cc: Office of Environmental Quality Control

RECEIVED
DIV. OF SEWERAGE
NOV - 8 PM 2 24
11/10/77
HP

November 22, 1977

SPP 77-520

Mr. Hideto Kono, Director
Department of Planning and
Economic Development
State of Hawaii
P. O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Kono:

Subject: Environmental Impact Statement for the
Mililani Sewage Treatment Plant
Effluent Disposal System

We wish to thank you for reviewing the subject Environmental
Impact Statement.

The following is in reply to your comments:

1. Under option one, the effluent will be pumped to the proposed Five-Fingers Reservoir, then conveyed to the cane fields shown on Figure 3 of the Environmental Impact Statement. Under this option, the effluent will not be discharged into Waiahole Ditch. Should option two be selected, the design of the proposed effluent disposal system will be coordinated with Oahu Sugar Company. Oahu Sugar Company has indicated that the range in discharge rates of the effluent into Waiahole Ditch must be kept within acceptable limits for proper management of their irrigation system. However, Oahu Sugar must first re-evaluate their irrigation requirements and system capacities, including necessary allowance for storm water run-off, before the acceptable range can be determined.

_____ Inc.	
Name	Initial
___ L.M.	
___ C.T.	✓
___ R.T.	
___ H.N.	
___ R.S.	
___ W.T.	
___ J.T.	
___ G.Y.	
___ E.M.	
___ M.S.	
___ M.N.	
___ T.K.C.	
___ T.U.	

___ M.F.	
File	
Date	

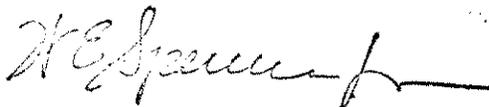
Mr. Hideto Kono

- 2 -

November 22, 1977

2. The State Land Use Commission will be consulted during the preliminary design stage of the proposed project.
3. A monitoring program will be established before the effluent irrigation system is made operational. The establishment of program requirements and guidelines will be coordinated with the other government agencies and the sugar industry.

Very truly yours,



WALLACE MIYAHIRA
Director and Chief Engineer

cc: OEQC
Park Engineering

11 01161

Handwritten initials

RECEIVED
DEPT OF PUBLIC WORKS

OCT 6 1 36 PM 1977

TO Enw

Sewer

P.O. Box 339
Honolulu, Hawaii 96809

October 5, 1977

MEMORANDUM

TO: Environmental Quality Commission
550 Halekuanila St., Room 301
Honolulu, Hawaii 96813

FROM: Andrew I. T. Chang, Director
Department of Social Services and Housing

SUBJECT: Environmental Impact Statement - Mililani Sewage Treatment Plant
Effluent Disposal System

77 OCT -7 AM 8 21

RECEIVED
DIV. OF SEWERS

Subject EIS has been reviewed for its impact on departmental programs.
We have no comment to make and we are returning the EIS for your usage.
Thank you for the opportunity to review and comment.

Andrew I. T. Chang

DIRECTOR

Attachment
cc: Governor (OEQC)
Dept. of Public Works, C&C of Honolulu ✓

RECEIVED
DEPT OF PUBLIC WORKS

7728570

OCT 25 2 21 PM '77
TO ENV clf
Sewers
Pa PS

Handwritten initials

October 20, 1977

STP 8.4508

OCT 26 AM 9 03

RECEIVED
DIV. OF SEWERS

Office of Environmental
Quality Control
550 Halekauwila St., Room 301
Honolulu, Hawaii 96813

Gentlemen:

Subject: Mililani Sewage Treatment Plant
Effluent Disposal System

Thank you very much for giving us the opportunity to
review the above-captioned document. We have no comments to
offer which could improve the statement.

Sincerely,

Handwritten signature
E. CALVEY WRIGHT
Director

ALK:jk

cc: LT-P
City Dept. of Public Works

GEORGE R. ARIYOSHI
GOVERNOR



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
OFFICE OF THE GOVERNOR
550 HALEKAUWILA ST
ROOM 301
HONOLULU, HAWAII 96813

RECEIVED RICHARD E. MARLAND, PH.D.
DEPT. OF PUBLIC WORKS DIRECTOR
NOV 8 1 25 PM '77 TELEPHONE NO. 448-6915

TO _____
ENV
Slaves
P+PS
11/10/77
MD

November 7, 1977

Mr. Wallace Miyahira, Director
Department of Public Works
City and County of Honolulu
Honolulu, HI 96813

SUBJECT: Environmental Impact Statement for Mililani Sewage Treatment
Plant Effluent Disposal System, Mililani, Oahu, Hawaii

Dear Mr. Miyahira:

As of this date, this Office has received seventeen comments on the above subject. An attached sheet lists the responding agencies and/or organizations.

In our review of the environmental impact statement, we have found several areas in which the document should expand discussion. We offer the following comments:

1. Page 4.

The EIS indicates Oahu Sugar Company will accept 5.0 mgd of effluent from Mililani sewage treatment plant. Will this be a permanent commitment with Oahu Sugar? Will this service be free of charge to Oahu Sugar?

2. Page 10.

The paragraph regarding population needs clarification. The resident population figure of 70,800 for Mililani-Waipio for the year 2020 seems optimistic. How is this figure derived? Is this population comparable to the general plan?

3. Page 37.

The EIS states, "The project will have no impact on endangered flora or fauna in the area." However, we find only a general description of the flora is given. What plants have been identified in the area? In addition, figure 17 indicates endangered species habitats are located within the project area. What mitigation measures will be provided to lessen the adverse impacts on the wildlife? A discussion is recommended and should also include federal requirements for protecting endangered species within the project area.

RECEIVED
DIV. OF SEWAGE
1977 NOV - 9 AM 10 13

4. Page 49.

The EIS states,

These projection are based on the City and County of Honolulu's master plan for the area. However, population growth is controlled by State land use changes and County zoning revisions. Considering these facts, the secondary impact of allowing for future growth is not believed to be adverse.
(Emphasis added)

It is important to realize that secondary impacts may generate from future growth. Allowing growth of an area which is presently 18,000 people to a growth of 70,800 is a substantial increase. It would not be realistic to say that future growth is not believed to be adverse. Along with growth, many factors are involved not only land use changes and zoning. Expansion of sewage facilities, highways, schools, and water systems are all growth inducing actions. In particular, it should be realized the Environmental Protection Agency will not give federal funds to sewage treatment plants that induce population growth. With growth, there will be many secondary impacts which is equally as important as the direct impacts such as increased population, transportation systems, water systems, and public facilities, reduction of agricultural lands, and social impacts.

5. Page 53.

The statement indicates that chlorination results in about 40 per cent viral kill. Recent studies have shown that ozonation is much more effective against viruses than chlorination. Has ozonation been considered?

6. Page 56.

What other uses for the sewage effluent been considered? Perhaps, using the effluent for irrigating highway plantings may be feasible.

7. Page 60.

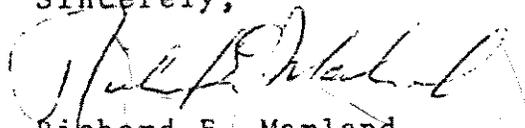
The discussion under short-term uses vs. long-term productivity should be expanded. What are the benefits and trade-offs? What would happen if sugar operations are phased out?

The EIS should be expanded to include a discussion of the use of effluent for cane production. Since the effluent is rich in nutrients, it may be necessary to use both effluent and domestic water during certain stages of cane production. How much domestic water would be required in addition to the effluent? In addition, if effluent irrigation is not feasible during certain stages of cane production, what will become of the effluent?

The EIS Regulations state that responses to comments should be made fourteen days after the review process. However, the Governor or his authorized representative has the discretion to consider late responses. We will consider responses to comments after the fourteen days response period.

We trust that these comments will be helpful to you in preparing the final EIS. We thank you for the opportunity to review the document. We look forward to the final EIS.

Sincerely,



Richard E. Marland
Director

Attachments

LIST OF RESPONDING AGENCIES AND/OR ORGANIZATIONS

FEDERAL

*Fourteenth Naval District	October 13, 1977
*U.S. Coast Guard	October 17, 1977
*Department of the Army (Facilities Engineering)	October 17, 1977
*Soil Conservation Service	October 17, 1977

STATE

*Department of Social Services and Housing	October 5, 1977
*Department of Agriculture	October 7, 1977
Department of Defense	October 12, 1977
Department of Accounting and General Services	October 18, 1977
Department of Transportation	October 20, 1977
Department of Health	October 19, 1977
**Department of Land and Natural Resources	October 31, 1977

CITY AND COUNTY OF HONOLULU

*Board of Water Supply	October 11, 1977
*Department of Housing and Community Development	October 12, 1977
*Department of Land Utilization	October 17, 1977
*Department of Parks and Recreation	October 18, 1977
*Department of Transportation Services	October 27, 1977

UNIVERSITY OF HAWAII

Water Resources Research Center	October 12, 1977
---------------------------------	------------------

*comment forwarded by reviewer

**comment forwarded by the Environmental Quality Commission

December 1, 1977

Dr. Richard E. Marland, Director
State Office of Environmental
Quality Control
550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Dr. Marland:

Subject: Environmental Impact Statement
for the Mililani Sewage Treatment
Plant, Effluent Disposal System

We wish to thank you for reviewing the subject Environmental Impact Statement.

Our reply to your comments are as follows:

1. Page 4

Oahu Sugar Company's commitment is until the year 1996, when their present lease agreement with Castle and Cooke, Inc. expires. The cost of the effluent to Oahu Sugar Company will be nominal.

2. Page 10

The year 2020 resident population was derived as follows:

<u>Development</u>	<u>Area (Acs.)</u>	<u>2020 Population</u>
Waipio Acres	100	2,500
Melemanu Woodlands	340	12,000
Mililani Town	<u>3,600</u>	<u>56,300</u>
Total	4,040	70,800

The area for Mililani Town Development includes about 1,200 acres located Mauka of the H-2 Freeway, which is presently classified agricultural. The State Land Use Classification for all other areas is urban.

The City and County's 1977 General Plan population projection of 39,000 for the year 2000 was adopted for the proposed project. This General Plan does not provide population projections for the year 2020.

We agree that the year 2020 population projection for the Mililani-Waipio area could be optimistic. Therefore, as stated on Page 10 of the Environmental Impact Statement, we are currently reviewing this projection. In addition, these projections will be further reviewed during the design phase of the proposed facilities.

We wish to add that an optimistic population projection for the year 2020 should not significantly affect the design of the proposed project for the following reasons:

- a. The effluent pump station will be designed for the year 2000 wastewater flows. The year 2020 flows are only being investigated so that provisions can be included in the pump station design for future expansions, if required. In addition, whenever feasible, the construction of the pump station and the installation of mechanical equipment (such as the controls, pumps, and emergency generators) will be phased.
- b. If the reservoir option is selected, the capacity of the proposed "Five-Fingers" reservoir will be 15.0 million gallons. This design capacity is in accordance with the current agreement between the City and County of Honolulu and the Oahu Sugar Company, and is based on three days storage capacity for an average daily effluent discharge of 5.0 million gallons. As shown on Page 10 of the Environmental Impact Statement, this average daily flow is that projected for the year 2000. In addition, for the reservoir option, the effluent force main from the east side of Waikele Gulch to the reservoir would be designed for this year 2000 wastewater flow.
- c. The projected year 2020 population projection must be reduced to about 50,000 before a one standard size reduction (30-inch to 24-inch) can be made in the force main between the pump station and Waiahole Ditch. Also, the estimated economical life of the force main is about 50 years or to about the year 2030. Furthermore, the annual operating cost would be less for the larger diameter pipe because of lower friction losses in the pipe.

3. Page 37

We wish to emphasize that the proposed construction sites are all in areas previously disturbed by man. The effluent pump station will be located within the existing Mililani Sewage Treatment Plant site. The effluent force mains will be located in areas presently used for sugarcane cultivation, unpaved roadways, or adjacent to a "siphon" for the Waiahole Ditch system. The reservoir will be located at the site of an abandoned irrigation reservoir, which is currently being used for cattle and horse grazing. Therefore, we believe that it is extremely remote that endangered flora exists within the proposed construction sites.

The following flora were identified during walk through investigations of the project sites:

Common Ironwood	A'ali'i
Swamp Oak	Lantana
Silk Oak	'Ulei
Koa haole	Passion Fruit
Paperbark	Air Plant
Common Guava	Basket Grass
Christmas Berry	California Grass
Sugarcane	Popolo
Pineapple	

As shown on Figure 17 of the Environmental Impact Statement, endangered species habitats are far removed from the construction sites. We believe that the proposed project will not have any adverse impact on these habitats. The Fish and Wildlife Service, U.S. Department of Interior's letter of November 8, 1977 noted that "The net effects of terminating secondary sewage effluent discharge into Waikele Stream, and eventually Westloch, Pearl Harbor, as well as the potential for waterbird and fish habitat if a 6.5 acre reservoir is constructed, should be beneficial for fish and wildlife resources."

4. Page 49

We do agree that secondary impacts due to population growth are equally as important as the direct impacts. However, for this project, we believe that the planned facilities only supports the year 2000 planned population growth for the Mililani-Waipio area and does not induce such growth; therefore, there is really no adverse secondary impacts. Also, wherever feasible, the wastewater treatment and effluent disposal facilities will be constructed in phases as the need arises.

5. Page 53

Based on preliminary studies conducted locally, we believe that the use of bromine chloride for disinfection is more promising than the use of ozone. Research is presently being conducted by the Water Resources Research Center of the University of Hawaii on the use of bromine chloride.

6. Page 56

Sewage effluent is suitable for irrigation of golf courses and highway plants. However, the demand for effluent for these uses within the vicinity of Mililani Sewage Treatment Plant is insufficient for the large flows under consideration.

7. Page 60

The trade-offs resulting from the proposed action are the benefits derived through water conservation and the elimination of a major source of pollution to waters downstream of the present sewer outfall versus the construction, operation and maintenance costs for the proposed facilities and the short-term impacts associated with construction.

If sugar operations are phased out, the reuse of effluent for other plants will be considered. Presently, we are working with the State Department of Agriculture to develop guidelines for the use of sewage effluent for diversified crops. If sugar operation is phased out and if alternative uses are not feasible, the effluent would be transported to and discharged through the Barbers Point Outfall.

8. Expand EIS to Include Discussion of the Use of Effluent for Cane Production

The manner in which the sewage effluent will be used for sugar-cane irrigation will depend on the irrigation option selected. As stated in the Environmental Impact Statement, the option that will be implemented is dependent upon the results of the current WRRC Research Studies on the effects of diluted effluent on sugar yield and the effects of secondary treated effluent on drip irrigation systems.

If the results of the WRRC Studies are favorable, the effluent will be discharged into Waiahole Ditch, diluted with Waiahole Ditch water, and used by Oahu Sugar Company throughout the ditch system. If the results are unfavorable, the reservoir

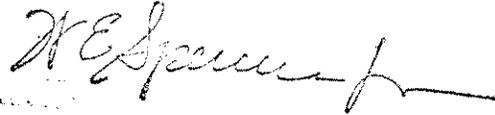
Dr. Richard Marland

-5-

December 1, 1977

option will be implemented. Oahu Sugar Company will use the reservoir effluent to irrigate 1,000 acres of sugarcane on an alternating basis. The first year crops will be irrigated with sewage effluent and Waiahole Ditch water will be used for crops in the second year of growth.

Very truly yours,



WALLACE MIYAHIRA
Director and Chief Engineer

cc: OEQC
Park Engineering

SPP 77-467

November 3, 1977

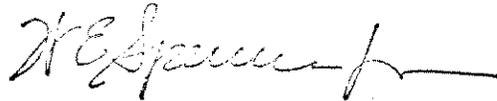
TO: Mr. Edward Y. Hirata, Manager and Chief Engineer
Board of Water Supply

FROM: Wallace Miyahira, Director and Chief Engineer
Department of Public Works

SUBJECT: Environmental Impact Statement for the
Mililani Sewage Treatment Plant,
Effluent Disposal System

We wish to thank you for reviewing the subject Environmental Impact Statement.

The statement on Page 51 will be rewritten as requested to read "recent effluent irrigation studies (WRRC, 1975) have demonstrated that the possibility of viral contamination of deep underground sources in the Mililani area is remote".



WALLACE MIYAHIRA
Director and Chief Engineer

cc: OEQC
Park Engineering

7708452

RECEIVED

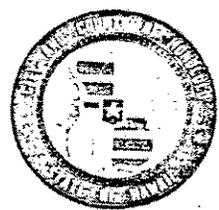
DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

'77 OCT 20 PM 1 13

RECEIVED
DEPT OF PUBLIC WORKS

FRANK F. FASI
MAYOR



OCT 20 8 46 AM '77

RAMON DURAN
CHIEF PLANNING OFFICER

TO ENV
SEWER
P+PS

DGP10/77-2756 (CT)

October 19, 1977

[Handwritten signature]

Mr. Wallace Miyahira
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
Honolulu, Hawaii

Dear Mr. Miyahira:

Environmental Impact Statement dated 9/26/77 for
Proposed Mililani Sewage Treatment Plant Effluent
Disposal System
Comments Requested 9/29/77

Our concerns were indicated in our memorandum of May 16, 1977 to you on the EIS preparation notice (EIS pp. 88-91). We have no other concerns.

We note that you are presently reviewing population projections for this area in compliance with Environmental Protection Agency requirements (p. 10). We would like to have a copy of your study when it is completed. In the meantime, we would appreciate being notified of any changes to this project so that they can be incorporated in our development plan studies for this area.

Sincerely,

Ramon Duran

RAMON DURAN
Acting Chief Planning Officer

RD:fmt

SPP 77-466

November 3, 1977

TO: Mr. Ramon Duran, Acting Chief Planning Officer
Department of General Planning

FROM: Wallace Miyahira, Director and Chief Engineer
Department of Public Works

SUBJECT: Environmental Impact Statement for the
Mililani Sewage Treatment Plant,
Effluent Disposal System

We wish to thank you for reviewing the subject Environmental Impact Statement.

A copy of our study on population projections for this area will be forwarded to your office when it is completed. Also, your office will be consulted during the design of the proposed project.


WALLACE MIYAHIRA
Director and Chief Engineer

cc: OEQC
Park Engineering

7708272

RECEIVED
DEPT OF PUBLIC WORKS
OCT 13 2 03 PM '77
TO Sluker
Em

2
Em
RECEIVED
DIV OF SEWERS
OCT 14 PM 3 17

October 12, 1977

Environmental Quality Commission
State of Hawaii
550 Halekauwila Street, Rm. 301
Honolulu, Hawaii 96813

Gentlemen:

Subject: Mililani Sewage Treatment Plant
Effluent Disposal System
Environmental Impact Statement

We have reviewed the subject environmental impact statement and have no objection to the project.

Per your request, we are returning the copy of the EIS which you forwarded to us.

Sincerely,

TYRONE T. KUSAO
TYRONE T. KUSAO
Director

Enc.
cc: Governor, State of Hawaii
-(Office of Environmental Quality Control)
Department of Public Works, ✓
City and County of Honolulu

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813 DEPT. OF PUBLIC WORKS

7708380
2
DML
D

OCT 18 8 59 AM '77

TO Seewu
ENVILL

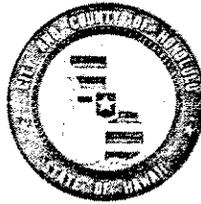
GEORGE S. MORIGUCHI
DIRECTOR

LU10/77-263

77/EC-9

971 OCT 18 PM 3 33

RECEIVED
DIR. OF SEWER



FRANK F. FASI
MAYOR

October 17, 1977

MEMORANDUM

TO : MR. WALLACE MIYAHIRA, DIRECTOR & CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM : GEORGE S. MORIGUCHI, DIRECTOR

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT,
MILILANI SEWAGE TREATMENT PLANT EFFLUENT
DISPOSAL SYSTEM

We have no comments to make on the above.

George Moriguchi
GEORGE S. MORIGUCHI
Director of Land Utilization

GSM:ey

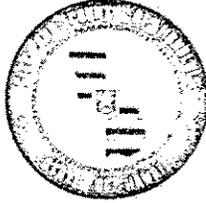
cc: OEQC

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

2
9/21/77
CS
Corrected copy

FRANK F. FASI
MAYOR



YOUNG SUK KO
DIRECTOR

October 18, 1977

Environmental Quality Commission
Office of the Governor
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

'77 OCT 20 AM 14

RECEIVED
DIV. OF STREETS

Gentlemen:

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT
MILILANI SEWAGE TREATMENT PLANT
EFFLUENT DISPOSAL SYSTEM

We have reviewed the Environmental Impact Statement for the Mililani Sewage Treatment Plant Effluent Disposal System and have no comments to offer.

Sincerely,

Young Suk Ko
YOUNG SUK KO, DIRECTOR

cc: Department of Public Works

7708824



RECEIVED
DEPT OF PUBLIC WORKS

University of Hawaii at Manoa 01 AH '77

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 946-7361

TO ENV 111
Sewers
PPD

Handwritten initials

Office of the Director

October 28, 1977

MEMORANDUM

TO: Chairman
Environmental Quality Commission

FROM: Doak C. Cox, Director *Doak C. Cox*

SUBJECT: Review of Mililani Sewage Treatment Plant Effluent Disposal Systems
Mililani, Oahu

77 NOV -4 PM 2 29

RECEIVED
DIV. OF SEWERS

The Environmental Center does not plan to review the above cited EIS due to constraints in time and available personnel.

cc: Office of Environmental Quality Control
x Department of Public Works

DCC/JNM/ln

Cost Figures

Must land be purchased or leased in order to construct the proposed mains and reservoirs? This cost, if necessary, should be reflected in the estimated cost (Table 1).

An explanation of the budget item "O & M Manual" would be desirable in making this document more understandable to the public, a primary goal of EIS's.

Focus of Discussion

The planning area should have been more site specific with discussion focused on areas immediate to the proposed project. It is obviously doubtful that the Koolau summit will receive either beneficial or detrimental impacts from this project. Therefore, information about this region is irrelevant.

Flora and Fauna

Is the endangered species habitat (figure 17) applicable to both flora and fauna? Was the habitat established pursuant to the Endangered Species Act of 1973?

The flora of the area of the proposed reservoir is probably dominated by introduced exotics. However, a walk-through survey should have at least been conducted and a species checklist included to dispel any doubts about the existing vegetation and to supplement the description of the environmental setting.

It is not clear which "gullies" are being referred to (p. 37). All "gullies" within the designated planning area must not be alike due to wide variations in soil composition, topography, climate and other environmental factors. Both native and exotic floral ecosystems are alluded to in the description.

Archeology

Has an archeological survey of the project areas been conducted? State or Federal Registers are inadequate standardized listings simply because not all historical sites have been documented. Indeed, important archeological sites are still being uncovered even on Oahu (for example, Barber's Point and Kalihi Valley).

Irrigation of Diversified Crops

The EIS has not addressed the potential use of effluent in pineapple fields and for diversified crops as requested by Robert Way of the Dept. of General Planning.

General Comments

Overall, the impact of the Mililani STP disposal system seems to have little negative impact while improving the environmental quality of Pearl Harbor. However, it is difficult to make a final assessment when the danger of contaminating the ground water is not fully known. A monitoring system is essential.

The Department of Public Works and the Oahu Sugar Company should be commended for its vital contribution toward water reclamation programs in the State of Hawaii.

John E. Moriyama

John E. Moriyama
Community Information and
Resource Center

SPP 77-525

November 25, 1977

Mr. John E. Moriyama
Community Information
and Resource Center
Leeward Community College
University of Hawaii
96-045 Ala Ike Street
Pearl City, Hawaii 96782

Dear Mr. Moriyama:

Subject: Environmental Impact Statement
for the Mililani Sewage Treatment
Plant, Effluent Disposal System

We wish to thank you for reviewing the subject Environmental Impact Statement.

The following is a reply to your comments:

Groundwater Contamination

The long-term (30-50 years) potential for groundwater contamination due to nutrient-laden sewage effluent is not known. A groundwater quality monitoring program will be initiated before the proposed project is started and continued during its operation. In addition, soil and crop parameters will also be monitored. The following table presents the proposed monitoring program.

Monitoring Points	Frequency	Water Quantity Parameter Grouping*	Remarks
Sewage Treatment Plant Effluent	Weekly	1, 2	
	Monthly	3, 4	
	6 Mos.	5, 6	
Leachate at Bottom of Root Zone	Monthly	1, 3	Porvic points at selected Locations
Groundwater (Baseline Quality)	Start of each growing cycle	2, 5, 6	Upgradient and downgradient from site as feasible
Groundwater (Potable)	3 Mos.	2, 5, 6	
Groundwater (Brackish)	6 Mos.	2, 5, 6	

*1 = Nitrogen Series

2 = Viruses

3 = Chloride, TDS, pH

4 = Sodium, suspended solids, grease

5 = Toxic chemicals: heavy metals (As, Pb, Cu, Zn, Cd, Hg, Ni, CR) pesticides (chlordane, dieldrin, DDT, DDD, lindane, pentachlorophenol)

6 = Complete analysis (TDS, total hardness, suspended solids, BOD₅, TOC, N series, total P, Ca, Mg, Na, K, Cl, SO₄, CO₃, HCO₃, SiO₂, B, electrical conductivity, grease, fecal coliform, total coliform)