



EXECUTIVE CHAMBERS

HONOLULU

GEORGE R. ARIYOSHI
GOVERNOR

March 1, 1979

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

Dear Mr. Bremner:

Subject: Revised Supplemental Environmental Impact Statement
for Proposed Interim Group Cesspool System, Nanakuli
Residence Lots, 4th and 5th Series and Flood Control
Channel, Nanakuli, Waianae, Oahu

Based upon the recommendation of the Office of Environmental Quality Control, I am pleased to accept the subject document as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes, the EIS Rules and Regulations and the Executive Order of August 23, 1971. This environmental impact statement will be a useful tool in the process of deciding whether or not the action described therein should be allowed to proceed. My acceptance of the statement is an affirmation of the adequacy of that statement under the applicable laws, and does not constitute an endorsement of the proposed action.

When a decision is made regarding the proposed action itself, I expect the decision-maker to weigh carefully whether the societal benefits justify the environmental impact which will likely occur. These impacts are adequately described in the statement, which together with the comments made by reviewers, provides a useful analysis of alternatives to accomplish the proposed action.

With warm personal regards, I remain,

Yours very truly,


George R. Ariyoshi

cc: Honorable Georgiana Padeken



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

STATE OF HAWAII

DEPARTMENT OF HAWAIIAN HOME LANDS

FINAL

SUPPLEMENTAL EIS

FOR

PROPOSED INTERIM GROUP

CESSPOOL SYSTEM

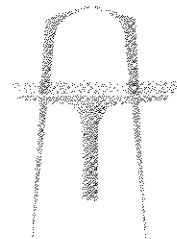
NANAKULI RESIDENCE LOTS

4TH AND 5TH SERIES AND FLOOD CONTROL CHANNEL

NANAKULI, WAIANAE DISTRICT, OAHU

February 1979

WILSON
OKAMOTO
& ASSOCIATES



ENGINEERS
ARCHITECTS
PLANNERS
HONOLULU, HAWAII

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DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

Prepared By
Wilson Okamoto & Associates, Inc.

FINAL
SUPPLEMENTAL EIS
FOR
PROPOSED INTERIM GROUP
CESSPOOL SYSTEM

NANAKULI RESIDENCE LOTS
4TH AND 5TH SERIES AND FLOOD CONTROL CHANNEL

NANAKULI, WAIANAE DISTRICT, OAHU

THIS STATEMENT FOR IMPROVEMENT WAS DEVELOPED IN ACCORDANCE WITH THE ENVIRONMENTAL IMPACT STATEMENT REGULATIONS, STATE OF HAWAII, AND IS SUBMITTED PURSUANT TO:

Chapter 343
Hawaii Revised Statutes



2/16/79

Date

GEORGIANA PADEKEN, Director
Department of Hawaiian Home Lands

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I. INTRODUCTION

This supplemental environmental impact statement will specifically address the interim sewage disposal system, which is being proposed to service the Second Increment of the Nanakuli Residence Lots - 4th and 5th Series. This sewage disposal system will be a series of cesspools to be constructed about 2,000 feet makai (seaward) of the new residential increment, in the north corner of the old Camp Andrew site, which is currently under the jurisdiction of the State Department of Land and Natural Resources. The reasons for the implementation of this system are:

- o The lot improvements, housing construction and inhabitation of the new residential increment are scheduled to be finished before the completion of the Nanakuli Interceptor Sewer Line Section 3 along Farrington Highway. When the interceptor sewer line becomes operational, the sewage generated by this project will be pumped to the Waianae Sewage Treatment Plant via the Lualualei Sewage Pump Station (Leeward Sewage Disposal System). The interceptor sewer line segment is scheduled for completion by February 1984; the sewage pump station and force main will be completed by January 1985.¹ The development of these houselots cannot be delayed. The urgent need for housing is evidenced by the long waiting list for Department of Hawaiian Home Lands house lots. Therefore, the interim group cesspool system will be necessary until the Nanakuli Valley System is connected to the Leeward Sewage Disposal System.

- o Unlike adjacent areas, the soil in the new residential increment is unsuitable to contain individual lot cesspools. The soil consists primarily of impermeable, clayish material with high shrinkage and swell potential.

¹Environmental Impact Statement on the Expansion and Upgrading of the Waianae Wastewater Treatment and Disposal System; prepared by M & E Pacific, Inc. for City and County Department of Public Works; Honolulu, Hawaii; November 1977; p. 14, B-1.

The proposed interim group cesspool system has been approved by the State Department of Health, in a reply to the "Application for Variance", dated April 5, 1978. (See Appendix.) In addition, the connection of the proposed system to the Haleakala Avenue sewer system has been approved by the Department of Public Works, Division of Wastewater Management, on the construction drawings dated July 14, 1978.

The description and impacts of the Second Increment of the Nanakuli Residence Lots 4th and 5th Series were presented in detail in the final environmental impact statement², which was accepted March 1976. A brief summary of this data will be presented in the subsequent "Background" section of this report.

II. BACKGROUND

The Hawaiian Homes Commission Act of 1920 was enacted by the U.S. Congress for the purpose of rehabilitating the Hawaiian race through a return to the soil. The Act allows native Hawaiians (any descendent of not less than one half part of the blood of the races inhabiting the Hawaiian Islands previous to 1778), to become lessees of the Hawaiian Homes Commission. The project addressed in the original EIS entails the development of about 62 acres of land for 223 single-family house lots in Nanakuli Valley. The cost of the site development will be borne entirely by the State Department of Hawaiian Home Lands.

The single-family house lots of the 4th and 5th Series are divided into 184 house lots in the Second Increment (Area I), Waianae side of the Valley (182 will be served by the proposed interim group cesspool system), and 45 house lots in the First Increment (Area II), Ewa side of the Valley. (See Figure 1.) The number of house lots in the Second Increment was reduced due to the steep terrain; the number of house lots in the First Increment was increased when more usable area was developed. This results in a new total of 229 house lots for the 4th and 5th Series. The First Increment site work was completed

²Nanakuli Residence Lots 4th and 5th Series and Flood Control Channel, Final Environmental Impact Statement; prepared by Wilson Okamoto & Associates, Inc. for the State of Hawaii Department of Hawaiian Home Lands; January 1976.

in June, 1978; the sewage generated by these house lots will be disposed through individual cesspools. The Second Increment contains the house lots which cannot be serviced by individual cesspools. The proposed interim group cesspool system at the old Camp Andrews site will accommodate the flows from the Second Increment only.

The following is a brief review of the impacts which will occur as a result of the proposed development of the Second Increment Nanakuli Residence Lots 4th and 5th Series. These impacts were fully addressed in the original EIS³ prepared and accepted for this project.

The proposed Second Increment residential development will provide 184 house-lots for "native" Hawaiians. Three and four-bedroom homes will be constructed on these house lots, which will increase the local population by about 1,200 people. The new population will be economically, ethnically, and culturally homogeneous with the existing community. The new population influx will create proportionate demands upon the surrounding facilities and utilities, however no adverse impacts are anticipated. Some temporary impacts will occur as a result of site preparation and construction activity related to the house lot development, such as traffic disruption, generation of airborne emissions, noise, and minor erosion. However, all City and County of Honolulu construction ordinances will be adhered to, thus minimizing any potential adverse impacts. No significant archaeological, historical, biological, or aesthetic interests were identified at the project site. The major change will be to develop a residential community on a previously undeveloped area.

Providing adequate infrastructure to service this development is of great importance. No problems are foreseen in providing drainage, water, electri-

³Nanakuli Residence Lots 4th and 5th Series and Flood Control Channel, Final Environmental Impact Statement; prepared by Wilson Okamoto & Associates, Inc. for the State of Hawaii Department of Hawaiian Home Lands; Honolulu, Hawaii; January 1976, p. 30-43.

city, telephone, and solid waste collection. However, because of the previously mentioned existing site conditions, the disposal of sewage generated by these new residences has required further evaluation to arrive at the best possible interim solution, before the dry gravity sewer lines in Nanakuli Valley are connected to the Leeward sewage disposal system. This EIA deals with the interim sewage disposal system.

III. DESCRIPTION OF THE PROPOSED INTERIM GROUP CESSPOOL SYSTEM⁴

A. Location and Transmission (Refer to Figures 1 & 2.)

The proposed interim group cesspool system will be located in the north corner of the old Camp Andrew site, in a rectangular area approximately 280 feet by 300 feet. The sewage from the 182 house lots will flow in an 8-inch sewer line 900 feet along the flood control channel to the intersection of Haleakala Avenue and Kauwahi Avenue. From there the sewage will flow in a 12-inch sewer line 640 feet along Haleakala Avenue to Mano Avenue. Ultimately the sewage will be transmitted by a 12-inch sewer line from Mano Avenue along Haleakala Avenue to the Nanakuli Interceptor Sewer Line, Section 3 on Farrington Highway.

During the interim phase, a temporary 8-inch sewer line will convey the sewage from Mano Avenue approximately 576 feet to the group cesspool system. About 300 feet of the last 8-inch sewer line segment will be laid along the driveway of a house lot, tax map key 8-9-02: 19. The Department of Hawaiian Home Lands has obtained the necessary easement from the existing lessee. The old Camp Andrew site is under the jurisdiction of the State Department of Land and Natural Resources. Temporary usage of a portion of this for the group cesspool system is being requested by the Department of Hawaiian Home Lands.

⁴The "interim phase" refers to the time between the inhabitation of the 182 house lots to the initial operation of the Lualualei Sewage Pump Station and Force Main.

B. Design Analysis⁵

The following discussion will outline in seven steps the analysis used in determining the number of cesspools needed, and the dimensions of each cesspool within the proposed interim group cesspool system.

1. Assuming that there will be 100 three-bedroom houses and 82 four-bedroom houses in the Second Increment subdivision, at a density of 2 persons per bedroom, this results in a resident population projection of about 1,256 persons.
2. The total ground water infiltration rate (Q_g), assuming a tributary area of approximately 53 acres at an infiltration rate per acre of 1,250 GPD, is calculated at 66,260 gallons per day (GPD).
3. The peak design wet weather flow (Q_p) is the sum of the maximum wastewater (Q_m) generated by human consumption and the total ground water infiltration rate (Q_g). The maximum wastewater is derived by multiplying 100 GPD by 1,256 persons by a maximum flow factor of 4.75; the result is 596,600[±] GPD. Q_p then equals 662,850[±] GPD or 460[±] gallons per minute (GPM).
4. The total volume of sludge (V_s) for the design period of 5 years (1981 to 1985), at a yearly per capita sludge generation rate of 20 gallons, is 125,600[±] gallons or 16,791.44 cubic feet.
5. The following are design criteria used in this analysis.

⁵References

- A. Babbit H., and E. Baumann; Sewage and Sewage Treatment, John Wiley & Sons Inc., New York, 1958.
- B. Metcalf & Eddy Inc.; Wastewater Engineering, McGraw-Hill, New York, 1972.
- C. U.S. Dept. of HEW; Manual of Septic-Tank Practice.
- D. State Department of Health; Public Health Regulations, Chapter 38, "Sewage Treatment and Disposal System."
- E. City and County of Honolulu, Design Standards of the Division of Sewers; October 1970.

- a. Septic-tank
 - o Assume all cesspools will be eventually clogged with sludge and act like a water-tight septic tank.
 - o Assume there will be no sludge pumping from cesspools during the design life of the system.
 - o Assume the percolation will occur only at the last cesspool (injection well) of the system.

- b. Primary sedimentation tank
 - o Assume the surface-loading rate of 600 gpd/ft² for the average daily flow to assure adequate detention time before sewage reaches the last cesspool (injection well) of the system.
 - o Assume the surface-loading rate of 1,200 gpd/ft² for the peak wet weather flow.

- 6. The data and assumptions derived in the first five steps will be used to determine the number and depth of cesspools required. Two design factors will be examined; cesspools required for surface-loading and cesspools required for sludge storage.
 - a. Surface area of cesspools required for the surface-loading (A):
 - o Area for average daily flow (A₁)
 $A_1 = 125,600/600 = 209.33 \text{ ft}^2$
 - o Area for peak wet weather flow (A₂)
 $A_2 = 662,850/1,200 = 552.38 \text{ ft}^2$
 - o Area for the peak wet weather flow governs
 $A_2 = 552.38 \text{ ft}^2$
 - o Number of eight-foot diameter cesspools required (N)
 $N = 552.38/50.27 = 11\pm$ cesspools

 - b. Number of eight-foot diameter cesspools required for sludge storage (N)
 $N = 16,791.44/(50.27)(H) = 334.03/H$

The next table shows the required number (N) of cesspools required for each hypothesized design depth (H).

H (ft)	N	H (ft)	N
9	37.11	15	22.27
10	33.40	16	20.88
11	30.37	17	19.65
12	27.84	18	18.56
13	25.69	19	17.58
14	23.86	20	16.70

Note: H = depth of sludge storage measured from bottom of cesspool to 2 feet below the pipe invert.

- c. Number of eight-foot diameter cesspools required to meet the liquid capacity based on Table II of Chapter 38⁶ of the Public Health Regulations. (This table presents the necessary minimum septic tank capacity in gallons based on the number of bedrooms being accommodated.)

$$Q = 1,350 + (150)(628) = 95,550 \text{ gallons} = 12,774.06 \text{ ft}^3$$

$$N = 12,774.06/50.27(H) = 254.11/H$$

H (ft)	N	H (ft)	N
9	28.23	15	16.94
10	25.41	16	15.88
11	23.10	17	14.95
12	21.18	18	14.12
13	19.55	19	13.37
14	18.15	20	12.71

Since number of cesspools required for a specified cesspool design depth is larger in Item 6-b than in Item 6-c, the number of cesspools will be determined according to the criteria in Item 6-b. This is more conservative than what is required by the Department of Health.

7. Based upon the calculations in step 6, criteria for the preliminary design of the group cesspool system can be derived. It should be

⁶State Department of Health; "Sewage Treatment and Disposal System," Chapter 38, Public Health Regulations.

noted that some of these criteria were obtained by using the "best" engineering judgment, when faced with a number of objective alternatives.

- a. A primary distribution manhole is needed to provide an equal distribution of flow to each cesspool.
- b. The ground water elevation at the group cesspool site is about 2 feet above mean sea level (MSL). The maximum desirable depth of the eight-foot diameter cesspools should be about 9 feet below the surface of the water table or 16 feet below the invert of the pipes, at -7 feet below MSL. The invert of the incoming pipe varies from 8 to 10 feet above MSL. This depth was determined to be the maximum depth that should be drilled to efficiently use readily available construction drills.
- c. The sludge holding capacity governs the number of cesspools required. Twenty-four 8-foot diameter cesspools will be installed at a minimum depth of 16 feet below the pipe invert to provide adequate detention time for the settlement of suspended solids. The bottom 14 feet of each cesspool will be for sludge and liquid detention. Additionally, six 8-foot diameter cesspools will be installed to insure adequate percolation, in case the twenty-four cesspools become clogged with sludge.
- d. As part of the group cesspool project, three manholes will be installed; one in the old Camp Andrew site, one in the house lot driveway, and one near the intersection of Mano Avenue and Haleakala Avenue. Upon termination of the group cesspool system, only the last manhole mentioned will remain in operation.
- e. Access for inspection and maintenance of the facility will be provided.

C. Life Expectancy, Cost and Phasing

It is anticipated that the group cesspool system will have a maximum life expectancy of 5 years, without pumping out any of the stored sludge. However, proper maintenance will extend the life expectancy of this system indefinitely.

The estimated cost of this system is \$200,000.

Figure 3 shows a tentative schedule for the implementation of the Second Increment, Nanakuli Residence Lots 4th and 5th Series. From the bar graph, the design phase of the interim group cesspool system will require about one-half year beginning in May 1978. The construction of site improvements will begin in 1979 and continue until the end of 1980. The construction of houses will require all of 1980. The construction of the group cesspool system will take approximately six months, and will begin in late 1979. The group cesspool system will be used immediately upon its completion, because the houses will be occupied soon after they are completed.

Two other important and related developments are the completion of the Nanakuli Interceptor Sewer Line Section 3 projected for February 1984, and the completion of the Lualualei Sewage Pump Station and Force Main projected for January 1985. Before the group cesspool system can be phased out and the sewer line along Haleakala Avenue connected to the Nanakuli Interceptor Sewer Line Section 3, the Lualualei Sewage Pump Station and Force Main must be in operation. Therefore, the earliest the group cesspool system can be phased out will be sometime after January 1985. This roughly coincides with the projected longevity of the ganged cesspool system. If the Lualualei system is not completed by the projected date, the life of the group cesspool system can be extended by removing the sludge, which will have accumulated in the cesspools.

IV. DESCRIPTION OF THE AFFECTED AREA

A major portion of the description of the affected area is covered in Section II - "Description of the Existing Environmental Setting" in the Final Environmental Impact Statement for the Nanakuli Resident Lots 4th and 5th Series and Flood Channel. The final EIS should be used as the primary reference for pertinent background information.

The following topics were extensively discussed in the final EIS:

- o land form
- o hydrology - surface, coastal
- o visual and aesthetic
- o biology
- o climate
- o historical and archaeological
- o socio-economic factors
- o surrounding land use
- o public facilities
- o utilities

Two additional topics, which related directly to the proposed group cesspool system, presented here are (1) the results of the soil borings and (2) the percolation tests. See Figure 4.

A. Soil Borings⁷

Two soil borings were conducted in the vicinity of the proposed site of the group cesspools. The 6-inch diameter borings were drilled to a depth of approximately 40 feet below the ground surface elevation of 17 feet above MSL. The boring logs are presented in the appendix. These borings show that ground water at elevation 2 feet above MSL is encountered at -14 to -15 feet below the ground surface. The composition of the subsurface material is primarily sand and coralline material.

⁷Conducted by Walter Lum Associates, Inc., letter dated April 26, 1977.

B. Percolation Tests⁸

Water percolation tests were performed in the two 4-inch diameter, P.V.C. cased holes, to observe the intake flow rate for the proposed group cesspool system.

The two holes were drilled to depths of approximately 40 feet. Boring No. 1 was cased to about 33 feet and Boring No. 2 was cased to about 40 feet. Both holes were cased with 4-inch diameter P.V.C. pipe with the lower 20 feet of pipe perforated. Water was then pumped into the holes at varying rates over time to determine percolation rates.

The results of the water percolation tests are as follows:

1. Boring No. 1 - For one hour of continuous percolation of water into the well at an inflow rate of 89 gallons per minute (GPM), the water level rose about 1.2 feet.
2. Boring No. 2 - For one hour of continuous percolation of water into the well at an inflow rate of 69 GPM, the water level rose about 0.7 feet. The water inflow rate was then increased to 103 GPM for the last 18 minutes; the water level increased from about 0.7 to 0.75 feet.

The percolation or inflow rates may vary throughout the site due to differing ground conditions. Also, the efficiency of any group cesspool system would decrease with time as clogging conservatively occurs. Therefore, the proposed interim group cesspool system has been conservatively designed to account for any ground or flow variations. Also, it should be noted that the percolation of the proposed interim group cesspool system

⁸Conducted by Walter Lum Associates, Inc., letter dated April 26, 1977.

should greatly exceed the results of percolation tests, because each cesspool has an 8-foot diameter, compared to the 4-inch diameter hole used for the percolation tests. The design explained in Section III - "Description of the Proposed Interim Group Cesspool System", includes 30 cesspools, which should be adequate to provide safeguards against any system malfunctions.

V. IMPACTS OF THE PROPOSED INTERIM GROUP CESSPOOL SYSTEM

The impacts of the proposed interim group cesspool system corresponds to Sections III and IV of the final EIS prepared for the Nanakuli Resident Lots 4th and 5th Series and Flood Control Channel. The final EIS dealt more specifically with the effects of the residential development and the implementation of the flood control channel, and included the following types of impacts:

- o Social
- o Economic
- o Land Transportation and Construction
- o Traffic
- o Airborne Emissions
- o Waterborne Effluent
- o Solid Waste Generation
- o Noise
- o Biological
- o Historical/Archaeological
- o Resource Depletion

The impacts which will be discussed here are related directly to the proposed group cesspool system.

A. Construction and Timing

Preceding the development of the proposed interim group cesspool system, Haleakala Avenue will undergo extensive improvements.⁹ These improvements include (1) the widening of the existing right-of-way from 40 feet

⁹Haleakala Avenue Improvements Environmental Assessment - Negative Declaration; prepared by Wilson Okamoto & Associates, Inc. for State Department of Hawaiian Home Lands; Honolulu, Hawaii; December 1976.

to 56 feet, and widening the road pavement surface from 20 feet to 40 feet; allowing for safe 2-lane traffic and roadside parking (2) the construction of curbs, gutters, sidewalks, a drainage system, and an overhead electrical system (3) the realignment and/or relocation of an existing U.S. Army Signal Corps cable and the City and County waterline (4) the installation of a new 8-inch and 12-inch sewer lines.

These improvements are scheduled to begin in October 1978 and continue through October of the following year.

According to the schedule for the proposed interim group cesspool system, it will require about six months for construction from October 1979 to March 1980.

The two main components of the system are the group cesspools and the 8-inch auxiliary sewer line, which will carry sewage from the intersection of Mano and Haleakala Avenues to the group cesspool system.

The proposed interim group cesspool system will be comprised of 30 separate cesspools and a central distribution manhole, all to be interconnected by vitrified clay (V.C.) pipe, varying from 6 to 8 inches in diameter. Construction activity will require the standard types of construction equipment used in site preparation and excavation activity (tractors, bulldozers, etc.). Backhoes, impact and pneumatic tools may be employed to excavate the cesspools at the discretion of the contractor.

Installation of the 8-inch auxiliary sewer line will require the excavation of a 2-foot wide trench of variable depth, a short distance (70'+) along Mano Avenue south of Haleakala Avenue and west down the previously discussed driveway easement to the primary distribution manhole of the group cesspool system. The entire system will be a gravity flow system. See Figure 2.

Impacts of traffic disruption and noise generation will occur with the construction of the group cesspool system. However, these impacts will be

minor and temporary and occur on secondary roads where the relative traffic volumes are low. A Community Noise Permit will be obtained by the cesspool system contractor for the Department of Hawaiian Home Lands from the Department of Health, for the duration of the construction of the proposed interim group cesspool system.

B. Hydrological Impacts

The primary environmental concerns related to the proposed group cesspool system are the impacts of sewage upon (1) the ground water, (2) any surface bodies of water, i.e. Nanaikapono Stream, and (3) the coastal waters and beach areas, i.e. Nanakuli Beach Park. This discussion will analyze these potential hydrological impacts.

1. Impacts to Ground Water

The proposed interim group cesspool system will percolate sewage effluent into the groundwater table, however the effect should not be significant because there is no source of domestic ground water located in Nanakuli Valley. Tests conducted by the Honolulu Board of Water Supply showed that the ground water at the mouth of the valley in the vicinity of the proposed project had a chloride content of greater than 500 mg per liter, which is unsuitable for human consumption. The natural ground water flux toward the ocean will transport the percolated effluent seaward.

2. Impacts to Surface Bodies of Water

The completion of the Nanaikapono Stream improvements will convert this intermittent stream to a completely manmade, concrete-lined drainage channel. Therefore, the infiltration of sewage effluent into the ground will not affect the storm water in the drainage channel.

3. Impacts to the Beach Areas and Nearshore Waters

The two forms of contamination, which are of concern in beach and nearshore environments, are health contamination (fecal coliforms or other pathogens) and nutrient contamination (nitrogen, nitrogen compounds, potassium, phosphorous, suspended solids, etc.)

Health contamination will be minimized, because pathogenic or fecal coliforms will be killed due to the salinity of the ground water and the long travel time. Mixing and dilution by the ground water, as well as absorption by the ground, will minimize any potential nutrient contamination.

VI. ALTERNATIVES

This section will be a concise review of the other alternatives considered for the disposal of sewage generated by the 182 lots of the Nanakuli Residence Lots 4th and 5th Series Second Increment. A preliminary comparative cost estimate of these alternatives follows the analyses.

A. Individual Cesspools

The most economically viable alternative for sewage disposal is to provide an individual cesspool for each lot. However, because the soil at the subdivision site has poor permeability and high shrinkage and swell potential, individual cesspools should not be installed.

B. Package Sewage Lift Station

Another alternative is to construct a package sewage lift station at the old Camp Andrew site, and install 11,000 linear feet of 6-inch force main in Farrington Highway to Maile Beach Park at the terminus of the existing gravity sewer line. However, this alternative is very expensive and is contrary to the Waianae Sewerage Master Plan, which will connect the Nanakuli Valley system to the Leeward system by 1985.

C. Package Secondary Sewage Treatment Plant

The last alternative considered is to construct a package secondary sewage treatment plant with an injection well at the old Camp Andrew site. Considering the limited duration of operation and the scope of this project, the cost of implementing this alternative is infeasible.

The following is a cost comparison of the various interim alternatives; these compare with the proposed group cesspool system construction cost of approximately \$200,000 with minimal maintenance costs. See the following table.

Alternative Cost Comparison

ALTERNATIVE	LOCATION OF INSTALLATION	ESTIMATE CONSTRUCTION COST	OPERATION COST	MAINTENANCE COST
Individual Cesspools	At each homesite UNACCEPTABLE	--	--	--
Package Sewage Lift Station and Force Main	Old Camp Andrew Site & Farrington Highway	\$500,000	Moderate	High
Package Secondary Sewage Treatment Plant	Old Camp Andrew Site	\$450,000	High	High
Group Cesspool System	Old Camp Andrew Site	\$200,000	--	Low

The short span of operation projected for any system servicing the 182 houselots does not warrant the high cost of construction, operating, and maintaining a package sewage lift station and force main or secondary sewage treatment plant.

VIII. BIBLIOGRAPHY

1. Babbit H., and E. Bauman; Sewage and Sewage Treatment; John Wiley & Sons Inc.; New York; 1958.
2. Design Standards; City and County of Honolulu Department of Public Works, Division of Sewers; October 1970.
3. Environmental Impact Statement on the Expansion and Upgrading of the Waianae Wastewater Treatment Disposal System, prepared by M&E Pacific, Inc. for City and County Department of Public Works; Honolulu, Hawaii; November 1977.
4. Haleakala Avenue Improvements Environmental Assessment - Negative Declaration; prepared by Wilson Okamoto and Associates, Inc. for State Department of Hawaiian Home Lands; Honolulu, Hawaii; December 1976.
5. Manual of Septic-Tank Practice; United States Department of Health, Education, and Welfare.
6. Metcalf & Eddy Inc.; Wastewater Engineering; McGraw-Hill; New York; 1972.
7. Nanakuli Residence Lots 4th and 5th Series and Flood Control Channel, Final Environmental Impact Statement; prepared by Wilson Okamoto & Associates, Inc. for State of Hawaii Department of Hawaiian Home Lands; January 1976.
8. Public Health Regulations, Chapter 38, "Sewage Treatment and Disposal System"; State of Hawaii Department of Health.
9. "Soil Borings and Percolation Tests"; conducted by Walter Lum Associates, Inc.; letter April 26, 1977.

APPENDICES

The Appendices include:

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o Soil Borings and Percolation Tests	A-4 to A-10
o Construction Cost Estimate	A-11

STATE OF HAWAII
DEPARTMENT OF HEALTH

In the Matter of the Application)
for Variance for:)
)
DEPARTMENT OF HAWAIIAN HOME LANDS,)
NANAKULI RESIDENCE LOTS,)
4th & 5th Series, 2nd Increment)
_____)

RECEIVED
APR 10 1978

WILSON, OKAMOTO & ASSOCIATES

DECISION AND ORDER

Pursuant to Chapters 342 and 91, Hawaii Revised Statutes and Chapter 38, Sewage Treatment and Disposal Systems, Public Health Regulations, and based upon evidence received prior to and during public hearings held on March 2, 1977 and June 9, 1977 in the Board Room of the Department of Health, 1250 Punchbowl Street, Honolulu, Hawaii, the Department of Health hereby grants a VARIANCE from Chapter 38, Section 3.G. to the Department of Hawaiian Home Lands for the Nanakuli Residence Lots, 4th and 5th Series, 2nd Increment.

The Department of Hawaiian Home Lands filed exceptions to certain items contained in the hearing officer's Findings of Fact and Conclusions of Law, dated June 17, 1977. These exceptions are as follows:

1. Item 10, Findings of Fact

The exception was to the Department of Health staff comment that earlier attempts in nearby areas to construct large diameter cesspools through and below the ground water table had posed some extremely difficult construction problems. The Department of Hawaiian Home Lands contends that the question of construction of cesspools at the indicated depth can be resolved at the time of construction. The Department of Hawaiian Home Lands has agreed to take full responsibility on the matter of constructibility.

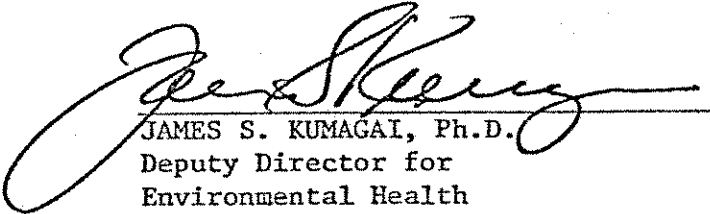
2. Items 1 and 2, Conclusions of Law

The exception expressed here was to the premature failure of the sewage disposal system and the substantial danger to public health or safety which could result from this premature failure. The Department of Hawaiian Home Lands says that there are alternatives which would preclude the situation from deteriorating to the point of danger to public health or safety. One such alternative is that there is enough land available in the disposal area to construct seepage trenches or similar facilities if the situation warrants it.

The Deputy Director for Environmental Health, acting in behalf of the Director of Health, concurs with the Department of Hawaiian Home Lands' position and also affirms that it is in the public interest to provide eligible Hawaiians with available housing pursuant to the programs of the Department of Hawaiian Home Lands.

The variance is being granted under the following conditions:

1. The Department of Hawaiian Home Lands will be responsible for maintenance and for taking any corrective action that may be necessary to the "ganged" cesspool disposal system.
2. Upon availability of a public sewer system in the project area, the subject project will connect to the public sewer. A schedule of connection will be submitted to the Department of Health at that time by the Department of Hawaiian Home Lands.


JAMES S. KUMAGAI, Ph.D.
Deputy Director for
Environmental Health

Dated: April 5, 1978, Honolulu, Hawaii

WALTER LUM ASSOCIATES, INC.

CIVIL, STRUCTURAL, SOILS ENGINEERS

WALTER LUM
EDWARD WATANABE
EZRA KOIKE

3030 WAIALAE AVE., HONOLULU, HAWAII 96816 • TEL. 737-7931

April 26, 1977

RECEIVED

APR 27 1977

WILSON, OKAMOTO & ASSOCIATES

MR. KOSHU HANASHIRO
Wilson, Okamoto & Associates, Inc.
P. O. Box 3530
Honolulu, Hawaii 96811

Dear Mr. Hanashiro:

Subject: Nanakuli Residence Lots - 4th & 5th Series
Off-site Water Percolation Tests
Tax Map Key: 8-9-02: Por. 1

In accordance with your request, water percolation tests were performed in two 6-in. diameter drilled holes at the above site to observe the intake flow rate for a proposed cesspool development.

Two 6-in. holes were drilled to depths of approximately 40 ft. Boring No. 1 was cased to about 33 ft over the drill cuttings that had filled the lower portions of the hole. Boring No. 2 was cased to about 40 ft after removing the drill cuttings from the lower portion of the hole.

The casings in both wells consisted of a 4-in. P.V.C. pipe: non-perforated for the upper portion and perforated (3/64-in. slots) for the lower 20 ft.

The water percolation test results were as follows:

Boring No. 1

In-flow of 89 g.p.m. with a rise in water level of about 1.2 ft for 1 hour of continuous percolation of water into the well.

Boring No. 2

In-flow of 69 g.p.m. with a rise in water level of about 0.7 ft for 1 hour of continuous percolation of water into the well.

The rate of pumping was increased to about 103 g.p.m. for the last 18 minutes with a rise in water level from about 0.7 to 0.75 ft.

It should be understood that the percolation or in-flow rates may vary considerably within a site because of varying ground conditions.

MR. KOSHU HANASHIRO
April 26, 1977
Page 2

Also, cesspools will decrease in efficiency during usage as clogging occurs.

The designer should consider generous safety factors for percolation rates because of ground variations and clogging. Diversion systems for maintenance should be incorporated into the design.

Our professional services, in our opinion, were performed, findings obtained and recommendations prepared in accordance with generally accepted local engineering practices. This warranty is in lieu of all other warranties expressed or implied.

Attached are the pump-in test data, boring logs, Location Sketch and Limitations.

Respectfully submitted,

WALTER LUM ASSOCIATES, INC.

By Wallace Wakahiro
Wallace Wakahiro

CS/WW:vl

LIMITATIONS

In general, soil formations are commonly erratic and rarely uniform or regular. The boring logs indicate the approximate subsurface soil conditions encountered only at the drill holes where the borings were made at the times designated on the logs and may not represent conditions between borings, at other locations, or at other dates. Soil conditions and water levels may change with the weather, passage of time and construction methods or improvements at the site.

During construction, should subsurface conditions much different from those in the borings be observed, encountered, or otherwise indicated, we should be advised immediately to review or reconsider our recommendations in light of the new developments.

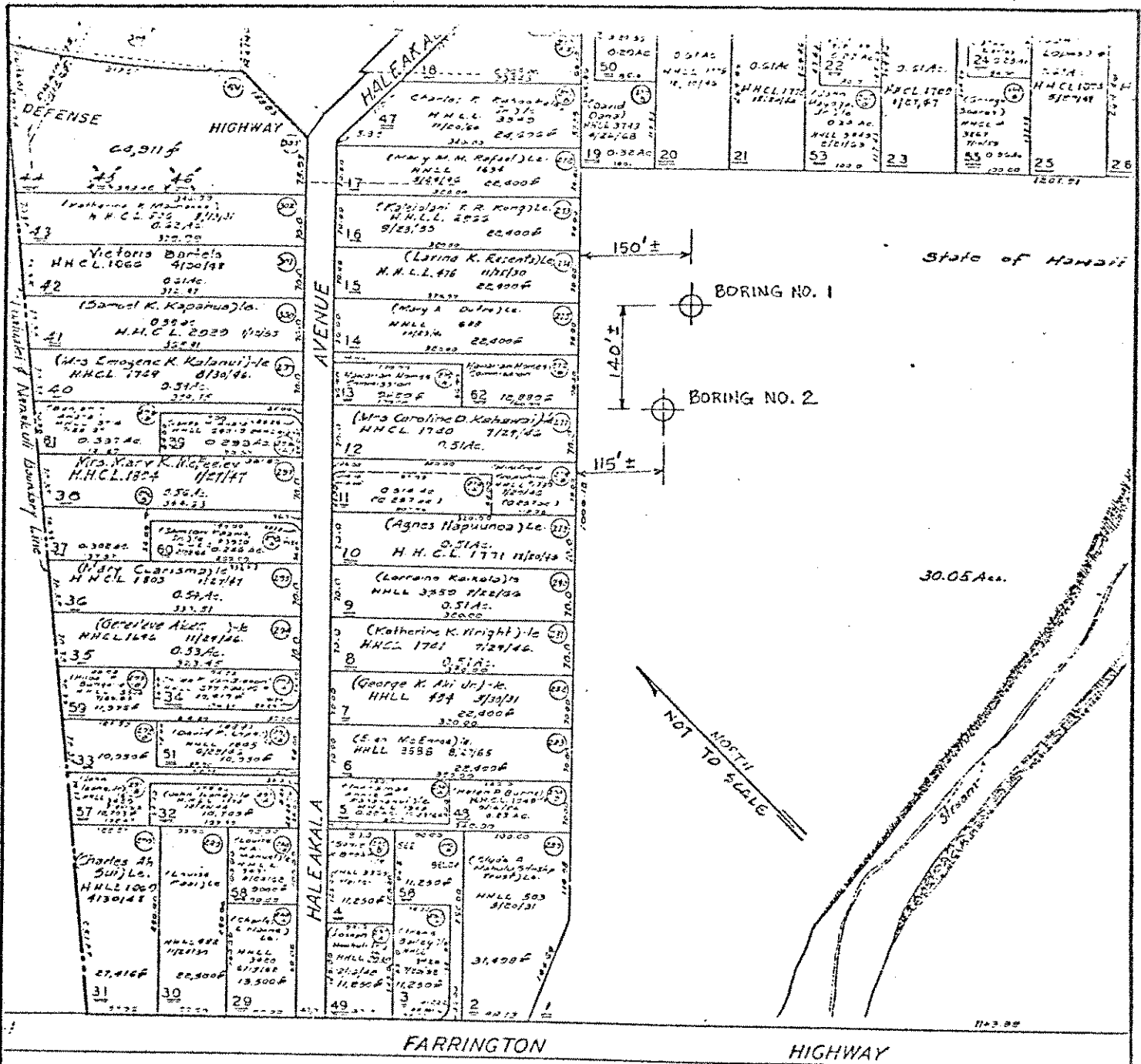
If there is a substantial lapse of time between the submission of this report and the start of work at the site, or if conditions have changed due to natural causes, plan changes, or construction operations at or adjacent to the site, it is recommended that this report be reviewed to determine the applicability of the recommendations considering the time lapse, changed conditions, and changes in the state of the art of soil engineering.

Our professional services were performed, findings obtained and recommendations prepared in accordance with generally accepted engineering practices. This warranty is in lieu of all other warranties expressed or implied.

LIMITATIONS (cont'd.)

Contract documents and specifications often prescribe supervision by the soil engineer. It should be understood by all parties that the soil engineer's actual scope of work is very limited. We as the soil engineer do not assume the day to day physical direction of the works, nor minute examination of the elements, nor do we assume the responsibility for the safety of the contractor's workmen. Supervision, inspection, control, etc., by the soil engineer generally mean taking of soil tests and making visual observations, sometimes on only an intermittent basis relating to earthwork or foundations for the project. The soil engineer does not guarantee the contractors' performance, but rather looks for general conformance to the intent of the plans and soil report. Any discrepancy noted by the soil engineer regarding earthwork or foundations will be referred to the project engineer or architect or contractor for action.

Although the soil report may comment or discuss construction techniques or procedures for the design engineer's guidance, the report should not be interpreted to prescribe or dictate construction procedures or to relieve the contractor in anyway of his responsibility for the construction.



BORING LOCATION SKETCH

NANAKULI RESIDENCE LOTS - 4TH & 5TH SERIES

NANAKULI, OAHU, HAWAII

TAX MAP KEY: 8-9-02: POR. 1

WALTER LUM ASSOCIATES, INC.
CIVIL, STRUCTURAL, SOILS ENGINEERS

APRIL, 1977

PUMP-IN TEST

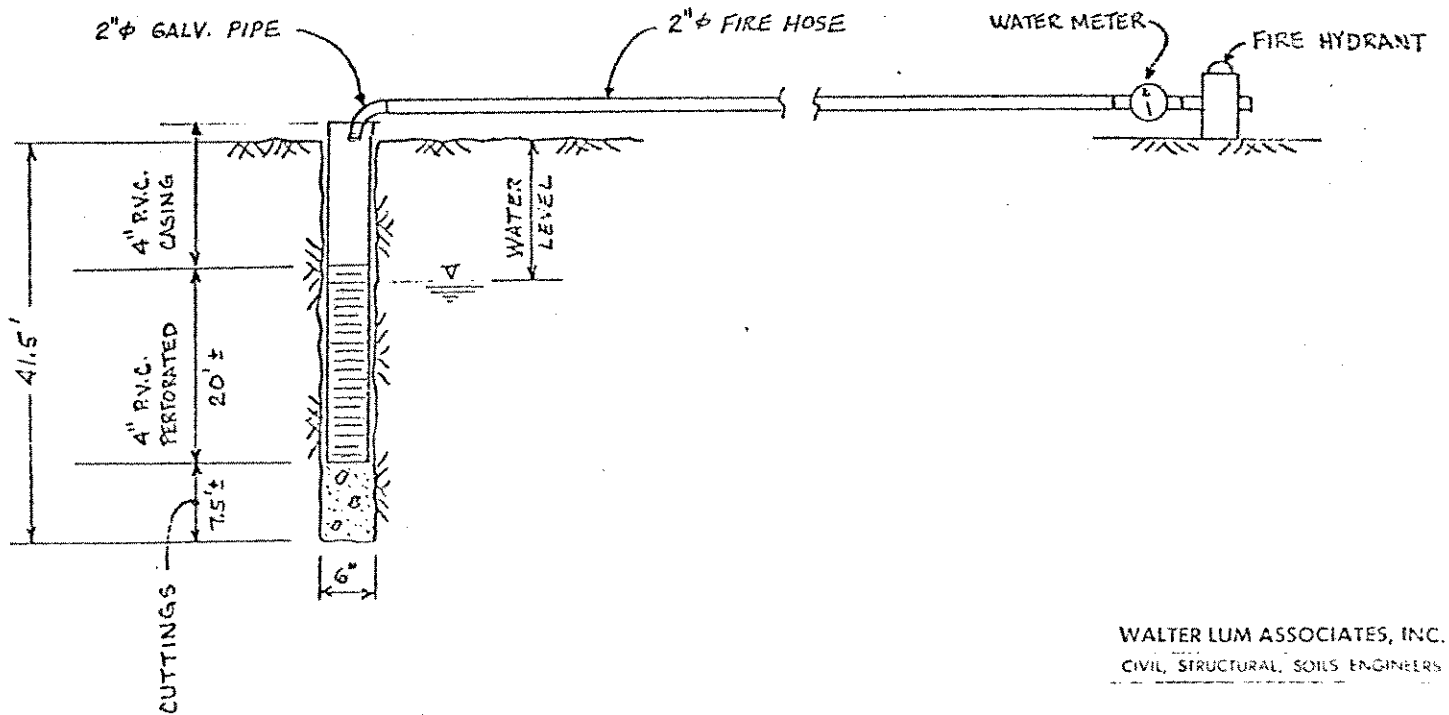
PROJECT: NANAKULI RESIDENCE LOTS 4TH & 5TH SERIES TEST NO.: BORING #1

LOCATION: NANAKULI, OAHU, HAWAII

DATE: 4-21-77

TIME	DEPTH OF WATER LEVEL	QUANTITY G.P.M.	REMARKS
1:07 P.M.	-16.7'	0	BEGIN PUMP-IN TEST w/ 2" FEEDER PIPE.
1:15	-16.0'	57	
1:25	-16.0'	57	
1:33	-	-	INCREASE PUMPING RATE.
1:34	-	89	BEGIN PUMP-IN TEST.
1:40	-15.6'	89	
1:50	-15.6'	89	
2:00	-15.6'	89	
2:10	-15.6'	89	
2:20	-15.55'	89	
2:30	-15.55'	89	
2:35	-15.55'	89	END OF TEST.
2:45	-16.75'	0	

NOTE: DEPTH OF WATER LEVEL MEASURED FROM 0.7 FT. ABOVE EXISTING GROUND SURFACE.



WALTER LUM ASSOCIATES, INC.
CIVIL, STRUCTURAL, SOILS ENGINEERS

PUMP-IN TEST

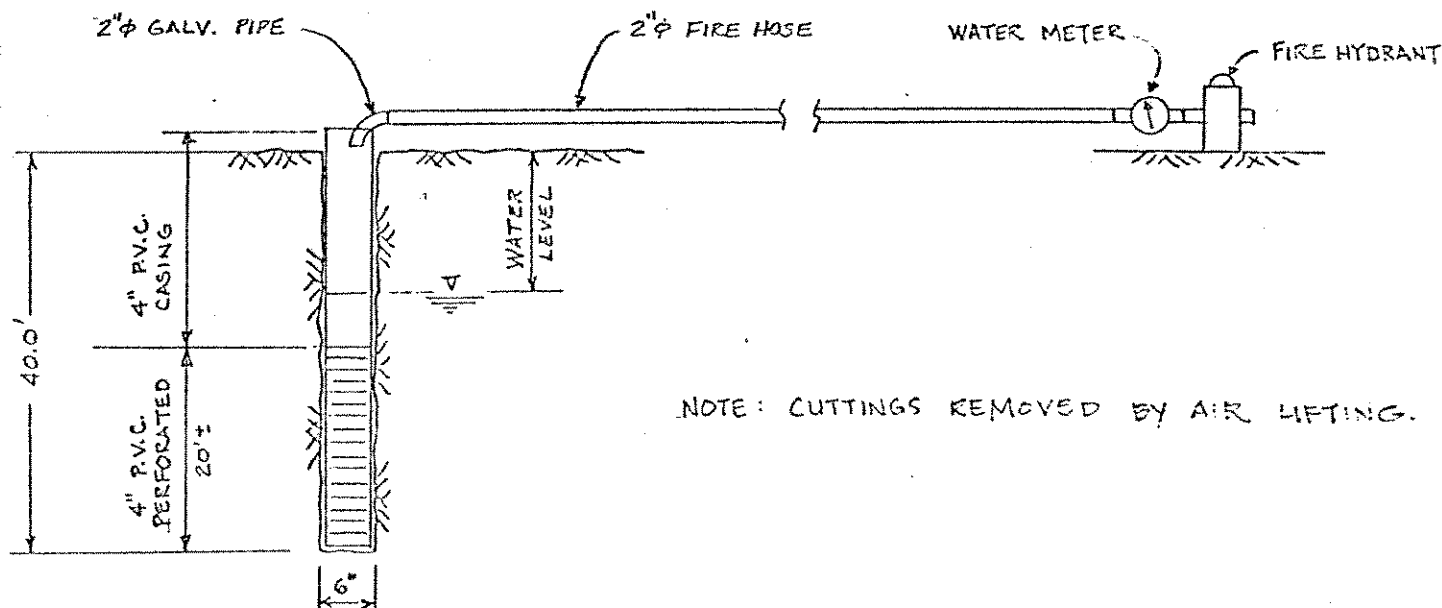
PROJECT: NANAKULI RESIDENCE LOTS 4TH & 5TH SERIES TEST NO.: BORING #2

LOCATION: NANAKULI, OAHU, HAWAII

DATE: 4-21-77

TIME	DEPTH OF WATER LEVEL	QUANTITY G.P.M.	REMARKS
2:55 P.M.	-15.70	0	BEGIN PUMP-IN TEST W/ 2" FEEDER PIPE.
3:35	-15.05	69	
3:45	-15.05	69	
3:50	-15.05	69	
3:55	-15.05	69	
3:56	-	-	INCREASE PUMPING RATE.
3:57	-	103	BEGIN PUMP-IN TEST.
3:58	-15.05	103	
4:00	-15.05	103	
4:05	-14.95	103	
4:10	-15.00	103	
4:15	-15.00	103	END OF TEST
4:35	-15.75	0	

NOTE: DEPTH OF WATER LEVEL MEASURED FROM 1.3 FT. ABOVE EXISTING GROUND SURFACE



NOTE: CUTTINGS REMOVED BY AIR LIFTING.

WALTER LUM ASSOCIATES, INC.
CIVIL, STRUCTURAL, SOILS ENGINEERS

CONSTRUCTION COST ESTIMATE
INTERIM GROUP CESSPOOL SYSTEM

ITEM NO.	CONTRACT ITEMS	QUANTITY	UNIT	AMOUNT
1	Clearing and grubbing	2.0	A.C.	\$ 4,000.00
2	Grassing	84,000	S.F.	8,400.00
3	Chain link fence 6' high	848	L.F.	8,480.00
4	Double swing gate, 12' wide	1	Each	250.00
5	2" A.C. driveways including base course and necessary excavation and embankment	455	S.Y.	3,640.00
6	6" cast iron soil pipe in place	1,501	L.F.	27,018.00
7	8" VCP in place	570	L.F.	11,400.00
8	SMH #3	1	Each	2,500.00
9	SMH #1 & 2	2	Each	2,000.00
10	Distribution	1	Each	1,500.00
11	Cesspools	30	Each	120,000.00
TOTAL ESTIMATED CONSTRUCTION COST.....				\$189,188.00
USE.....				\$200,000.00

FIGURES

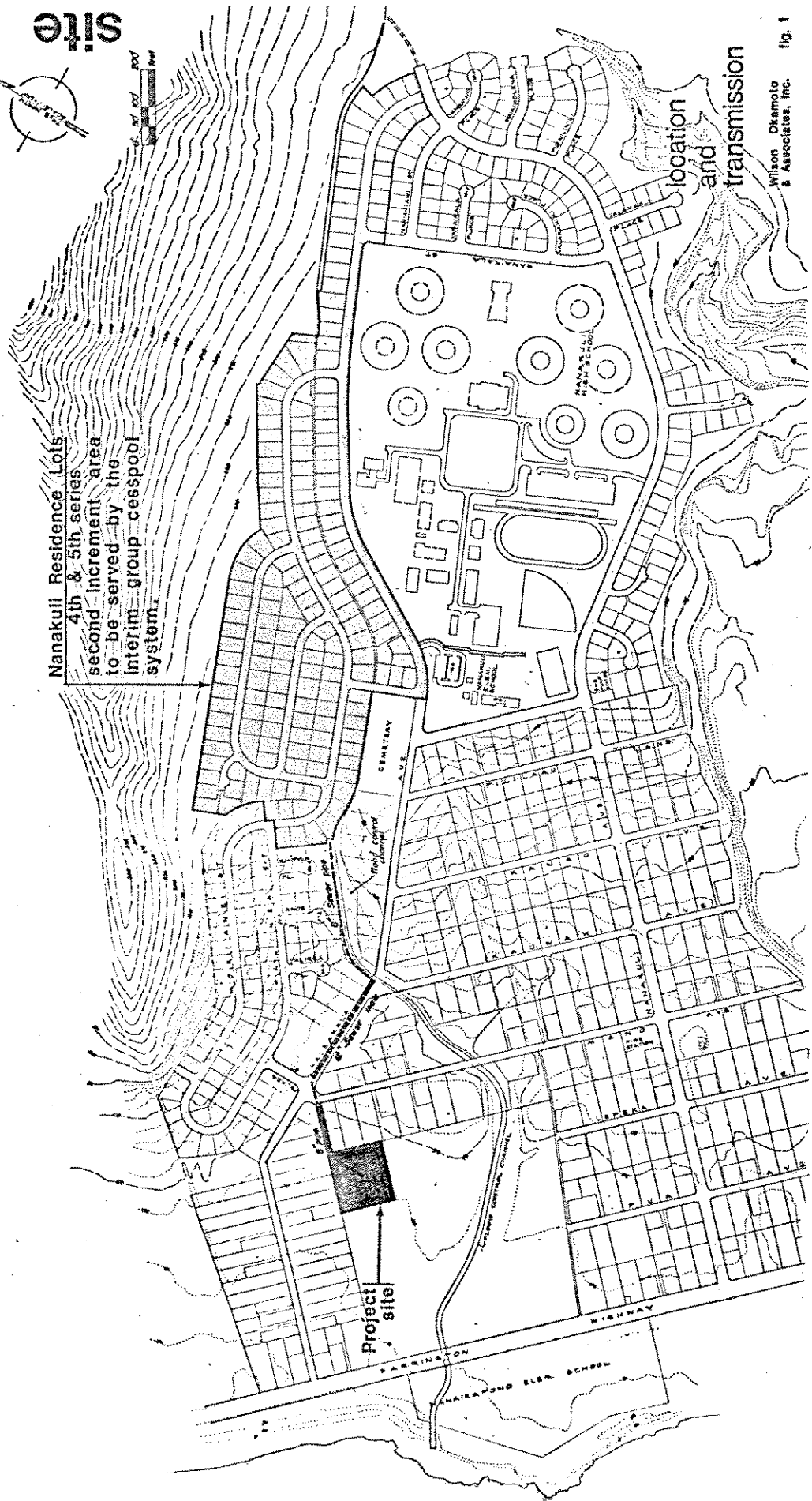


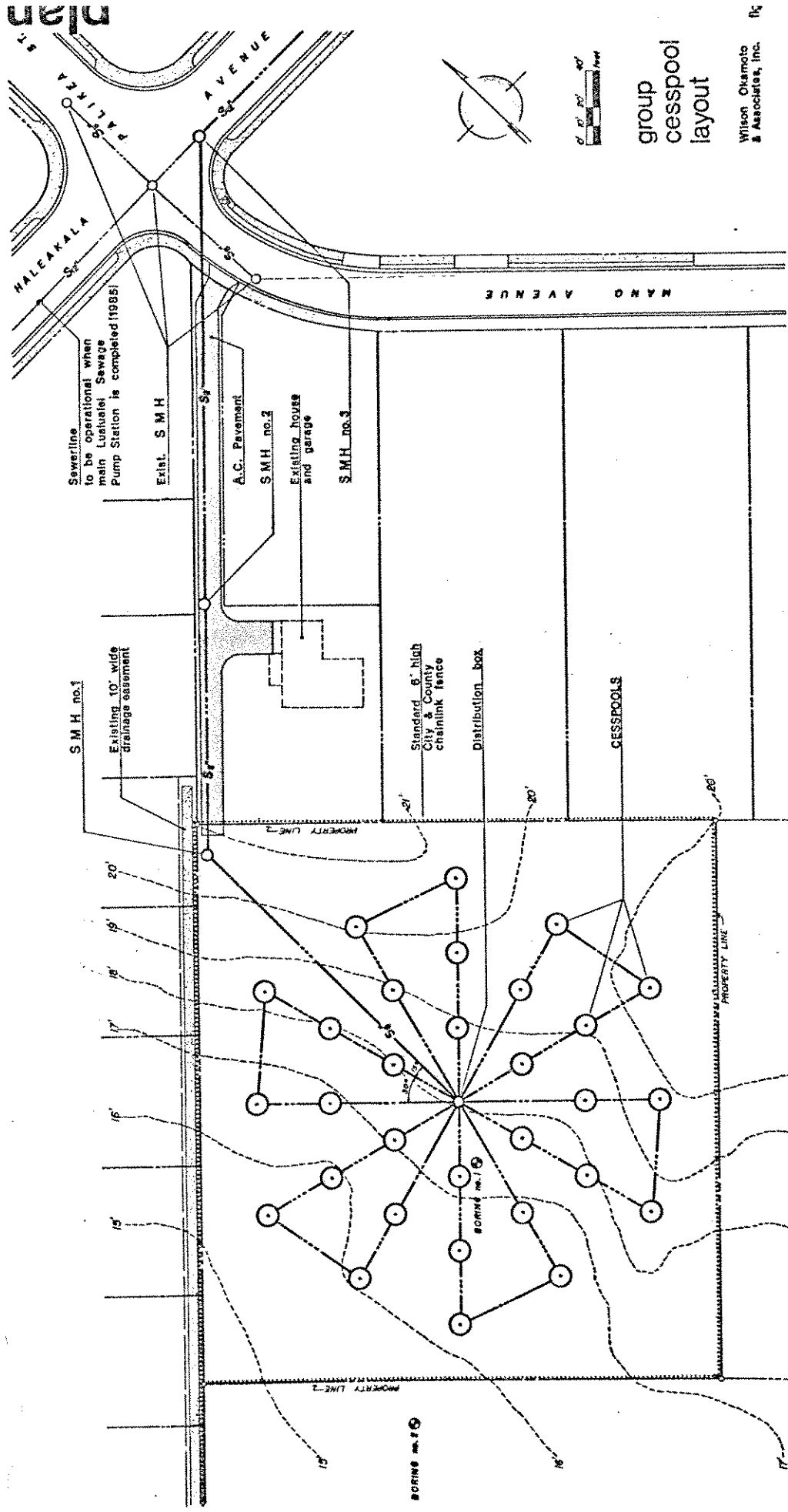
Nanakuli Residence Lots
4th & 5th series
second increment area
to be served by the
interim group cesspool
system.

Project
site

location
and
transmission

Wilson Okamoto
& Associates, Inc. fig. 1



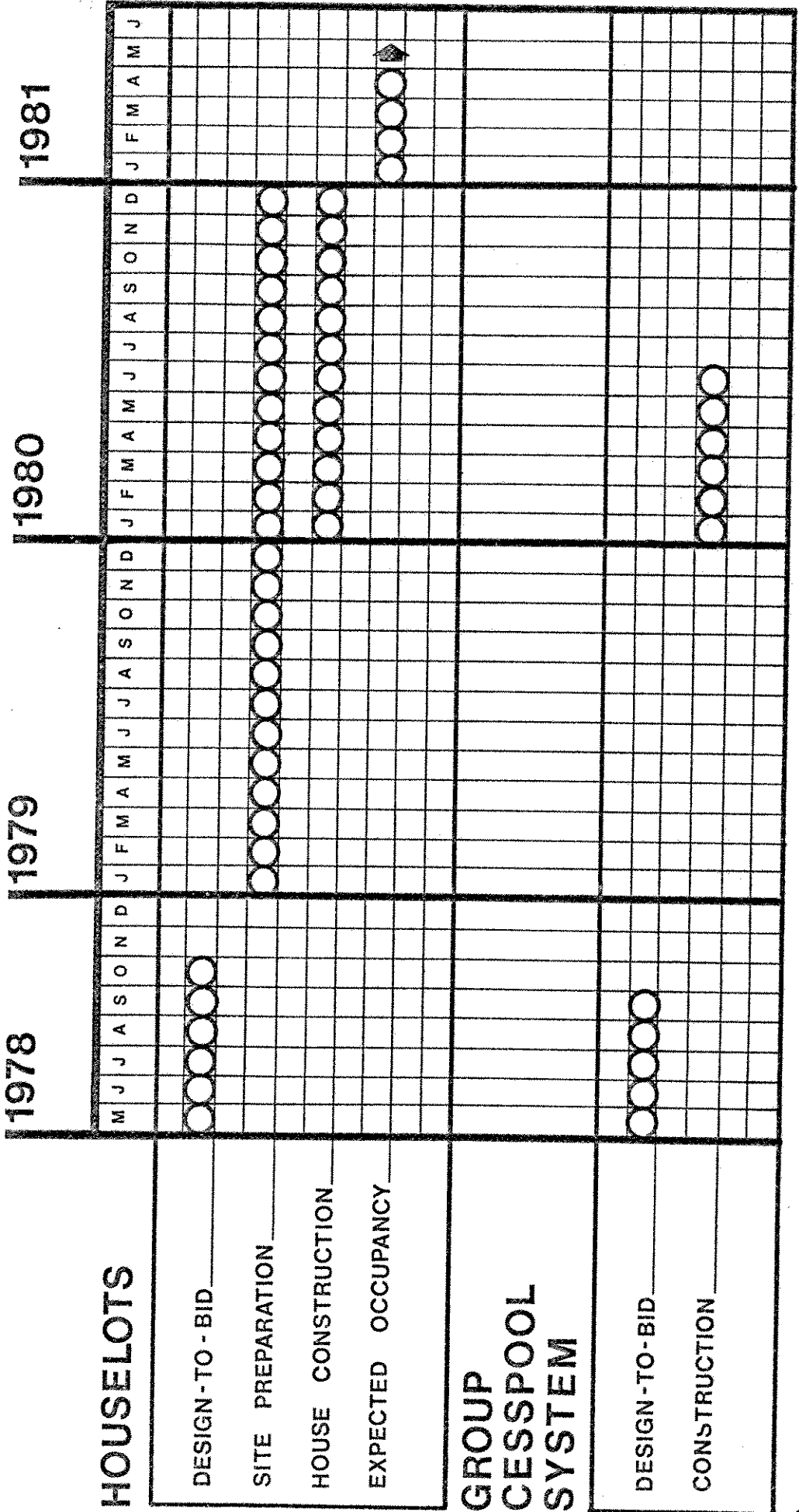


group
cesspool
layout

Wilson Okamoto
& Associates, Inc. NC

Plan

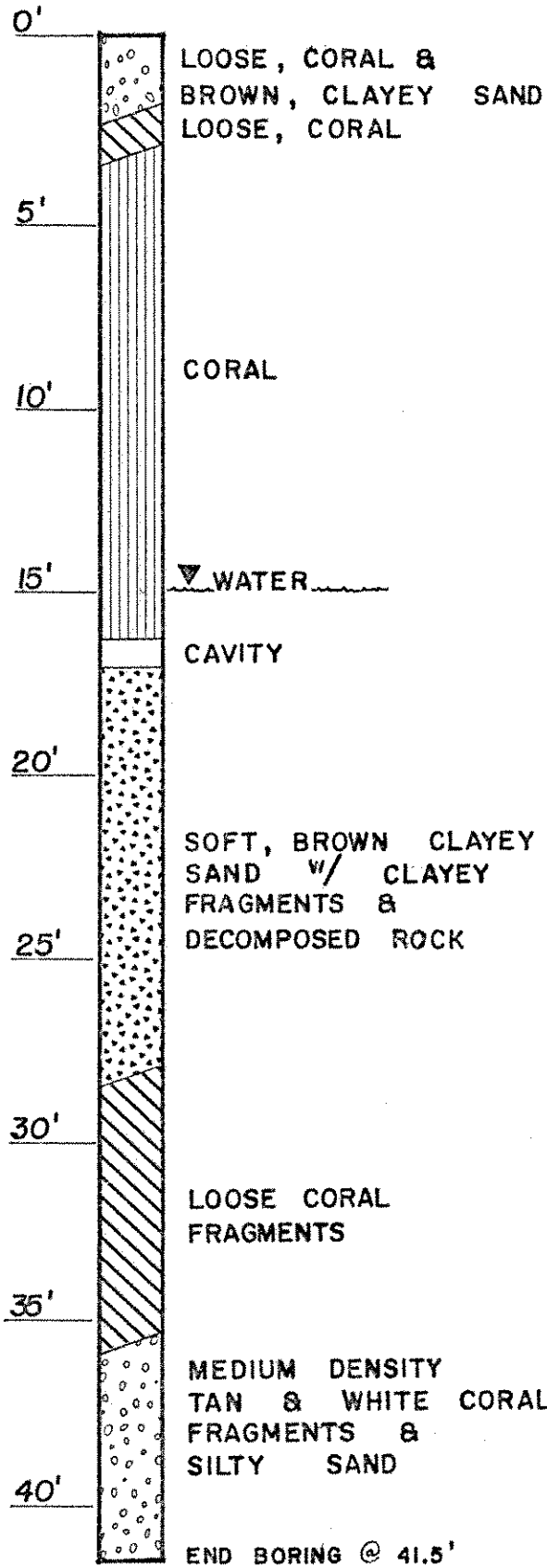
PRELIMINARY PROJECT DEVELOPMENT SCHEDULE :



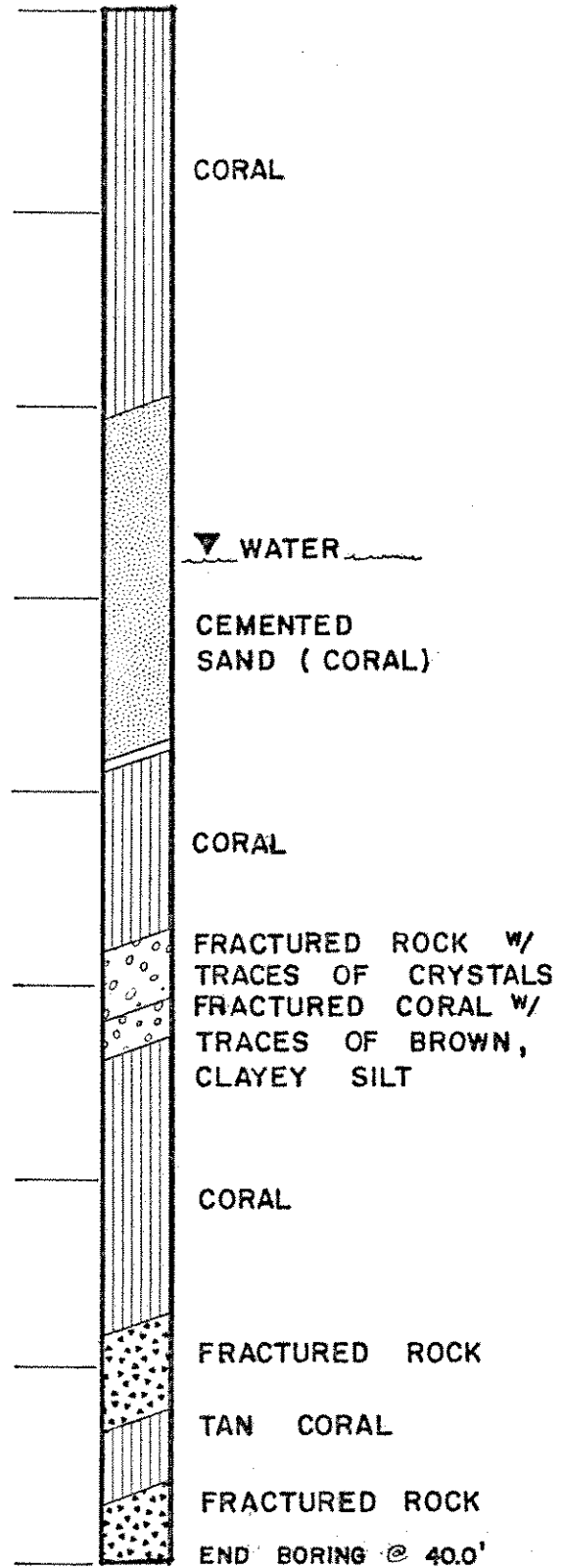
schedule

fig. 3

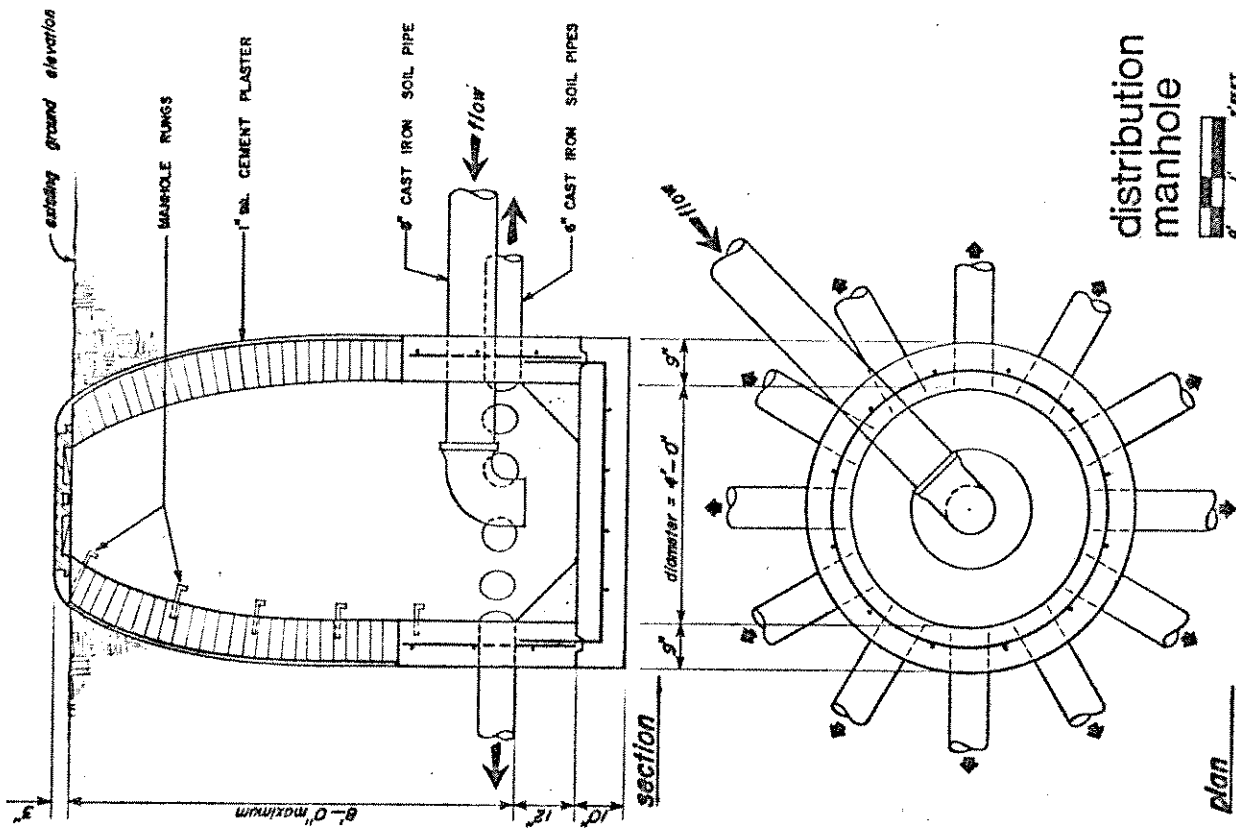
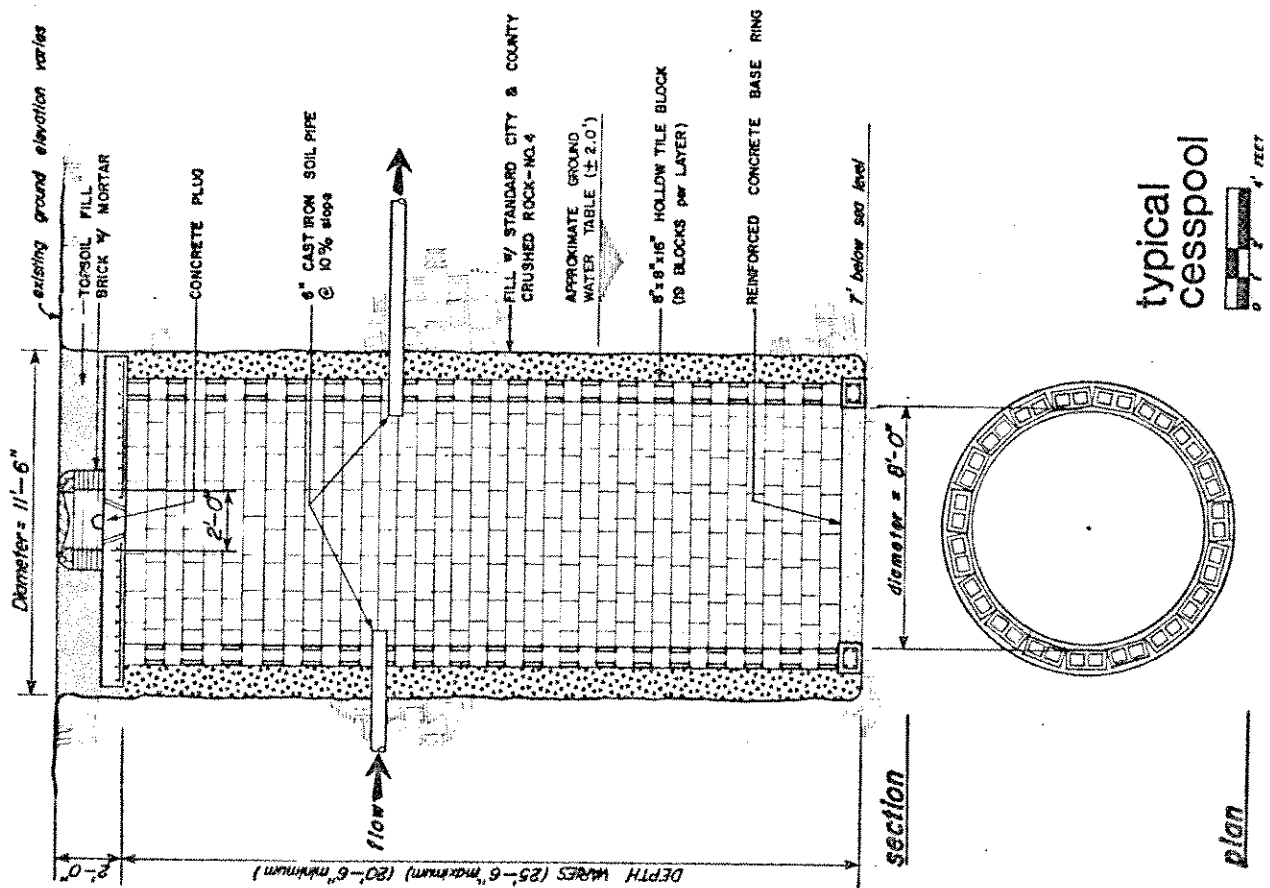
boring logs



BORING 1



BORING 2



Details

fig. 5

Wilson Okamoto & Associates, Inc.

CONSULTATION PERIOD
WRITTEN COMMENTS AND RESPONSES

State of Hawaii

Office of Environmental Quality Control
University of Hawaii, Environmental Center
University of Hawaii, Water Resources Research Center
*Department of Land and Natural Resources
*Department of Transportation

City and County of Honolulu

Department of Public Works
Department of General Planning
Department of Transportation Services
*Department of Land Utilization

*Comments not requiring responses

GEORGE R. ARIYOSHI
GOVERNOR



RICHARD L. O'CONNELL
DIRECTOR
TELEPHONE NO.
548-6915

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

November 6, 1978

MEMORANDUM

TO: Merwyn Jones, Acting Director
Department of Hawaiian Home Lands

FROM: Richard L. O'Connell, Director *R. L. O'Connell*
Office of Environmental Quality Control

SUBJECT: SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR
PROPOSED INTERIM GROUP CESSPOOL SYSTEM, NANAKULI
RESIDENCE LOTS 4TH AND 5TH SERIES AND FLOOD CONTROL,
NANAKULI, WAIANAE DISTRICT, OAHU

We have reviewed the subject statement and offer the following comments for your consideration:

1. Page 4

The proposed site for the group cesspool system is located at Camp Andrew which is under the jurisdiction of the Department of Land and Natural Resources. Has this State land been made available to DHHL for this project use?

2. Page 17 Alternatives

The section on alternatives is inadequate. Have other locations on Hawaiian Home Lands or other parcels been considered as a site for the group cesspool system? Would placing the cesspools further from the ocean alleviate some of the water quality problem?

3. Page 16 Impact to Beach

The supplemental statement states, "Health contamination will be minimized because pathogenic or fecal coliforms will be killed due to the salinity of the ground water and the long travel time." Since the sewage will not be chemically treated, there should be a discussion of the fate of sewage-borne viruses.

Mr. Merwyn Jones, Acting Director

Page 2

November 6, 1978

4. Camp Andrew

The statement should also include information regarding any historic sites, flora and fauna, and mitigating measures.

5. Procedures for and costs of abandonment of the cesspools when they are no longer needed should be discussed.

6. Since all the cesspools will be drilled to groundwater level, discussion should include the potential for and need for control of hydrogen sulfide and other odors due to anaerobic decomposition of sulfate in the saline groundwaters.

An attached sheet lists the responding agencies and/or organizations. We did not attempt to summarize other comments. Instead, we recommend that careful consideration be given to each comment.

We thank you for the opportunity to review the supplemental statement.

Attachment



RECEIVED

FEB 7 1979

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P. O. BOX 1879

HONOLULU, HAWAII 96805

WILSON OKAMOTO & ASSOCIATES

February 6, 1979

MEMORANDUM

TO: Richard L. O'Connell, Director
Office of Environmental Quality Control

FROM: (Ms.) Georgiana K. Padeken, Director
Department of Hawaiian Home Lands

SUBJECT: Proposed Interim Group Cesspool System
Nanakuli Residence Lots 4th and 5th Series and
Flood Control Channel
Nanakuli, Waianae District, Oahu

Reference is made to your letter dated November 6, 1978, commenting on the subject Supplemental Environmental Impact Statement. Your concerns are addressed in the order in which they were presented.

1. Comment

Has the Department of Land and Natural Resources made their Camp Andrew site available to the Department of Hawaiian Home Lands for this project?

Response

The Department of Land and Natural Resources is conveying the Camp Andrew site to the Department of Hawaiian Home Lands in a land exchange (see attached copy of letter dated October 24, 1978).

2. Comment

Have other locations on the Department of Hawaiian Home Lands area been considered as a site for the group cesspool system? Would placing the cesspools further from the ocean alleviate some of the water quality problem?

Response

The site for the proposed group cesspool system is most appropriate. It is the only open underdeveloped area near the proposed Nanakuli Residence Lots, 4th and 5th Series, Second Increment and allows for the gravity flow of sewage (no lift station and force main is required). The site is not subject to flooding and the underlying soils of sand and coral are conducive to moderate percolation, as compared to other areas of Nanakuli Valley, which have expansive soils and slow permeability. The site is 1,400 feet from

the ocean. Due to the distance of the facility from the ocean, the proposed cesspool depth, soil characteristics, and the apparent dilution factor, we anticipate minimal effect on the coastal waters.

3. Comment

Since the sewage will not be chemically treated, there should be a discussion of the fate of sewage-borne viruses.

Response

No dye injection test or tests or travel time estimates have been made. No documentation is available pertaining to the effectiveness of saline waters in killing pathenogenic or fecal coliforms. The basic action that can be expected to reduce sewage-borne pathogens in the coastal waters, is the dilution of the sewage and natural filtering capacity of the underlying soils. Presently the coliform counts in the nearshore waters are extremely low, as indicated by the following table.

Type of Coliform (MPN/100 m.)	1974	1975	1976	1977	Dept. of Health State of Hawaii Standards
Total	5	3	6	3	230
Fecal	2	2	3	3	400

4. Comment

The statement should also include information regarding any historic sites, flora and fauna, and mitigating measures.

Response

It is not anticipated that there are any endangered or rare plant species in the Camp Andrew site. Nanakuli Valley has been extensively disturbed in the past and the Camp Andrews site in particular was cleared by the Navy. The project site is situated within an urbanized area.

The lack of archaeologically significant sites in Nanakuli Valley was pointed out in a letter by Billie Beamer - Department of Hawaiian Home Lands dated June 17, 1975, and concurred by Christopher Cobb - Department of Land and Natural Resources in a letter dated July 3, 1975. These letters are included in B. Supportive Material, VIII. Appendix, of the Final Environmental Impact Statement - Nanakuli Residence Lots 4th and 5th Series and Flood Control Channel.

5. Comment

Procedures for and costs of abandonment of the cesspools when they are no longer needed should be discussed.

Response

The Department of Hawaiian Home Lands will obtain all the necessary permits from the Department of Health, and will be responsible for the removal of sludge from the cesspools. There are six sites designated by the Department of Public Works for cesspool waste disposal by private companies on Oahu. These sites all feed into sewage treatment plants. The one site on the Leeward coast is located at Pokai Bay Street, one block makai of Farrington Highway.

The following is a cost estimate for sludge removal and filling of the group cesspools and landscaping of the grounds, based on today's cost.

a. Sludge Removal Cost

$$\frac{5.264 \text{ gallon/ cesspool} \times 30 \text{ cesspools}}{2,500 \text{ gallon/truck}} @ \$35/\text{truck}^1$$

$$= \$2,210.88$$

say \$ 2,250

b. Removal of cesspool covers

$$(31 \text{ with distribution manhole}) (\$100/\text{cover})^2 \quad \$ 3,100$$

c. Filling of cesspools

$$(26 \text{ CY/cesspool}) (31) (\$20/\text{CY})^2 \quad \$16,120$$

say \$16,200

d. Landscaping

$$(84,000 \text{ SF}) (\$0.20/\text{SF})^2 \quad = \quad \underline{\$16,800}$$

$$\text{Total Cost for Restoring Site} = \quad \$38,350$$

¹P&S Sanitary Hauling Inc., 12/78.

²Wilson Okamoto and Associates, Engineering Estimate.

6. Comment

Since all the cesspools will be drilled to groundwater level, discussion should include the potential for and need for control of hydrogen sulfide and other odors due to anaerobic decomposition of sulfate in the saline groundwaters.

Response

The distribution manhole and the group cesspools will be covered with concrete or metal plugs, which will not be open to the

Richard L. O'Connell

-4-

February 6, 1979

atmosphere. This will prevent undesirable odors from escaping and becoming a nuisance to the surrounding community.

Thank you for your review comments.



(Ms.) Georgiana K. Padeken
Chairman

SW:kt

cc: Wilson Okamoto & Associates, Inc.



University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

Office of the Director

November 6, 1978

RE:0264

Mr. Merwyn S. Jones, Director
Department of Hawaiian Home Lands
550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Mr. Jones:

Supplemental Environmental Impact Statement
Proposed Interim Group Cesspool System
Nanakuli Residence Lots 4th & 5th Series

The Environmental Center has reviewed the above cited Environmental Impact Statement with the assistance of Michael Chun, Public Health Sciences; Gordan Dugan, Reginald Young, and Edward Siwak, Water Resources Research Center; and Jacquelin Miller, Barbara Vogt, and Caryn Woodhouse of the Environmental Center.

The EIS addresses most of the significant environmental impacts that would result from the project. Our reviewers, however, have expressed concerns in the following areas:

- 1) The ultimate disposition of the cesspools and their contents are not specified.
- 2) Page 2-3. This EIS addresses the use of "ganged" cesspools for the 4th and 5th Series of the Nanakuli Residence Lots. We note that individual cesspools are in use for the 1st-3rd series of residence lots. What are the maintenance requirements and what is the cost of this system? Does the system function adequately? Have any drainage problems, such as clogging or overflow occurred? If so, how often? Has there been any change in the nearby coastal water quality since the inception of this sewage system? If so, what types of changes have occurred and under what circumstances? Have there been any structural failures in existing cesspools in the area due to flooding or specific soil conditions?
- 3) Who will bear the cost of the change over to sewer lines?
- 4) Page 3. How was the lack of archaeological significance determined?
- 5) Page 8. A schematic diagram of the information presented in paragraph b. should be included in the final EIS. What is the present elevation at the cesspool site?

6) Page 6-8. The discussion on these pages continually refers to 8' diameter cesspools. We note, however, in figure 5 that the interior diameter is 6'6". Since the figures on pages 6 and 7 for the number of cesspools required for a given volume of waste are based on an 8' diameter cesspool it would appear that these estimates may be low by about 19%.

7) Page 12 and 31. We note the intention to install overhead utilities. This is not in compliance with the City and County Ordinances with regard to overhead versus underground utilities (Revised Ordinances of Honolulu, 1969, section 22-5.1). We also note that the installation of cesspools as a means of sewage disposal is contrary to the intentions and aims of the statewide 208 plan. We recognize the need for austerity in the design and construction of low cost housing, but complete disregard of aesthetic considerations, as shown in the design of the utilities system, is unfortunate. More unfortunate than the lack of aesthetic consideration is the possibility of health hazard resulting from using a cesspool system in an area subject to flooding and located so closely to the coastal waters.

8) Page 14. What assurance is there that the brackish ground water in this area could not be developed using some desalination technique and thus be a valuable alternate supply resource? What is the expected dilution of any cesspool seepage, and what are the concentrations of potential contaminants in the coastal receiving waters?

9) Page 15. If the cesspools function properly there seems to be little evidence that there will not be nutrient contamination of the coastal receiving waters. We suggest that the discussion of this topic be more complete in the final EIS, with more substantive evidence presented. If the cesspools do not function properly, there will be the danger of flooding with the resultant health hazard, aesthetic affront, and maintenance problem. We suggest that the final EIS discuss what measures will be taken if the system were to malfunction, and include a discussion of the environmental effects that such a malfunction will have. Are diversion systems for maintenance incorporated in the design?

10) Page 15. The statement is made that pathogenic and fecal coliforms will be killed due to high salinity and long travel time. Have any estimates of travel time been made? Any documentation supporting salinity per se as a disinfectant? Some recent studies have strongly suggested that salinity may not be a significant factor in dieoff of pathogenic organisms; that sunlight and other factors may account for the short $t_{90}'_s$ in marine waters.

11) Page 16. Regarding maintenance, who will be charged with this responsibility? Who will be financially responsible for the cost of any required pumping or chemical treatment? Who will pay for the final filling (as specified in HRS 38:03:1) of cesspools when the area is sewerred? Has the City and County of Honolulu agreed on this matter? We strongly recommend that some appropriate agency be charged with this responsibility inasmuch as this is a treatment/disposal facility much like any other sewage treatment facility.

12) Given the high rate of cesspool failure in this area (208-Water Quality Management Plan for the City and County of Honolulu, volume 1, page 10-2), it seems

November 6, 1978

that the alternative cost comparison is unrealistically low with regard to the cost of operating and maintaining the proposed system. If the maintenance costs of the existing systems (in lots 1 - 3) are assumed to be an indicator of what can be expected for these cesspools, what will be the maintenance costs? Are there more precise estimates for the cost of operating and maintaining the alternative systems mentioned?

13) Are there characteristic qualities of the sediments which may lead to structural failure of instabilities in the cesspools? If the soils in the project area are of the Lualualei series, consideration must be given to the fact that these soils are stoney clays having slow permeability rates and a high shrink swell potential.

14) Page A-11 item 11. The "unit" is incorrect if the "amount" refers to total cost.

15) Page A-6 and A-7. The engineers' comments on limitations is a very unusual statement for an EIS. It seems as if the engineer is not sure of the appropriateness of the proposed design.

16) We have some questions on the system design:

a) Is it allowable within design standards to transmit flow in a collection system from larger to smaller pipe (12" to 8")?

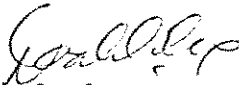
b) Why was there no allowance for volume reduction in stored sludge?

c) Why were surface overflow rates instead of some percolation rates for cesspool design used? If seepage/infiltration is not considered a factor, might not a septic tank or settling tank design be utilized with a leeching field or evaporation bed for effluent disposal? Such a design might be less cost effective but could have some desirable environmental benefits (effluent reuse, less impact on aquifer/receiving waters).

We feel that these are important considerations and that the EIS could be strengthened by addressing these concerns and by including more supportive documentation.

Thank you for the opportunity to review this EIS.

Yours truly,


Doak C. Cox
Director

DCC:def

cc: Office of Environmental Quality Control
Michael Chun
Gordan Dugan
Reginald Young
Edward Siwak
Jacquelin Miller
Caryn Woodhouse/Barbara Voot



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FEB 13 1979

MAUI OFFICE
P. O. BOX 22
KAHULUI, MAUI 96732

PROJECT OFFICES

WAIMEA OFFICE
P. O. BOX 125
WAILUA, HAWAII 96743

KEAUKAHA OFFICE
P. O. BOX 833
HILO, HAWAII 96720

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

WILSON OKAMOTO & ASSOCIATES

MOLOKAI OFFICE
P. O. BOX 198
MOOLEHUA, MOLOKAI 96729

KAUAI OFFICE
P. O. BOX 332
LIHUE, KAUAI 96768

February 7, 1979

Mr. Doak C. Cox, Director
Environmental Center
University of Hawaii at Manoa
Crawford 317, 2550 Campus Road
Honolulu, Hawaii 96822

Dear Mr. Cox:

SUBJECT: Proposed Interim Group Cesspool System
Nanakuli Residence Lots 4th and 5th Series and
Flood Control Channel
Nanakuli, Waianae District, Oahu

Reference is made to your letter dated November 6, 1978, commenting on the subject Supplemental Environmental Impact Statement. Your concerns are addressed in the order in which they were presented.

1. Comment

The ultimate disposition of the cesspools and their contents are not specified.

Response

The Department of Hawaiian Home Lands will have the sludge removed and the cesspools filled. The grounds will be landscaped and restored back to original or better condition. The cost will be borne by the Department of Hawaiian Home Lands.

2. Comment

For the individual cesspools in the 1st-3rd series of the residence lots, what is the cost, what maintenance is required, does the system function adequately, is there a drainage problem, has there been any change in the nearby coastal water quality and has there been structural cesspool failures due to flooding or soil condition?

Response

Each cesspool cost approximately \$1500 to construct. The individual cesspools require occasional pumping, but function satisfactorily. Cesspool covers have been designed to keep out storm water. There has been no change in the nearby coastal water quality due to the existing cesspools. No known structural

5-20
3-70

cesspool failure has occurred due to flooding or soil conditions.

3. Comment

Who will bear the cost of the change over to sewer lines?

Response

The Department of Hawaiian Home Lands will bear the cost.

4. Comment

How was the lack of archaeological significance determined?

Response

The lack of archaeological significant sites in Nanakuli Valley was indicated in a letter by Billie Beamer, Director, Department of Hawaiian Home Lands dated June 17, 1975, and concurred by Christopher Cobb, Director, Department of Land and Natural Resources in a letter dated July 3, 1975 (copies attached). These letters are included in B. Supportive Material, IX. Appendix of the Final Environmental Impact Statement for the Nanakuli Residence Lots 4th and 5th Series and Flood Control Channel.

5. Comment

A schematic diagram of the information presented in paragraph b., page 8 should be included. What is the present elevation at the cesspool site?

Response

Please refer to schematic diagrams, figures 2 and 5. The elevation at the cesspool site ranges from 15 to 21 feet above MSL.

6. Comment

The interior diameter of the cesspool shown on figure 5 is 6'6", whereas the discussion refers to 8' diameter cesspools.

Response

The interior diameter of the typical cesspool shown on figure 5 is incorrect. It should be 8 feet. The dimension has been corrected (see attached figure 5).

7. Comment

The proposed overhead electrical system for Haleakala Avenue is not in compliance with the City and County Ordinance, which requires underground electrical systems. The installation of cesspools as a means of sewage disposal is contrary to the intentions and aims of the statewide 208 plan. There is a possibility of health hazard resulting from using a cesspool system in an area subject to flooding and located so closely to the coastal waters.

Response

Existing Haleakala Avenue presently has an overhead electrical (electric, telephone and street light) system. The proposed Haleakala Avenue Improvements include the relocation of existing utility poles and the replacement of existing mercury vapor luminaires with high pressure sodium luminaires. For the proposed Nanakuli Residence Lots 4th and 5th Series, the electrical system will be installed underground.

The Nanakuli Residence Lots 4th and 5th Series, Flood Control Channel should be completed in March, 1979. With the drainage systems for the Haleakala Avenue Improvements and the Nanakuli Road Improvements (Mano, Kauwahi, Kawao and Pililaau Avenues), the flooding of the area should be greatly alleviated.

The proposed group cesspool system is only temporary, until the gravity sewer system can be connected to the Waianae Sewerage System.

The area selected for the group cesspool system is not subject to flooding and lies approximately 1400 feet away from the shoreline.

8. Comment

What assurance is there that the brackish ground water in this area could not be developed using some desalination technique and thus be a valuable alternate supply resource? What is the expected dilution of any cesspool seepage, and what are the concentrations of potential contaminants in the coastal receiving waters?

Response

Presently, desalination of brackish ground water is not feasible as an alternate for retrieving potable water, due to high capital, operation and maintenance cost. According to Water Desalting in Hawaii (Nuclear and Systems Sciences Group, June, 1974), "In situations where adequate basal or high level ground water supplies can be developed within about 20 miles of the area of need, without exceeding 1000 feet of pumping head, it is unlikely that desalting brackish water will provide an economically competitive alternative." The Waianae area has this relationship with Nanakuli Valley.

Due to the distance of the facility from the coastal waters, the proposed cesspools depth, soil characteristics, and the apparent dilution factors, the coliform level of cesspool seepage should be greatly reduced and have minimal effect on the coastal water quality.

The Department of Health has taken coliform sampling in the near-shore waters off Nanakuli Beach, from 1974 to 1977. Below is a

summary of that data; note that coliform levels were far below those set by the Department of Health for Class A waters.

Type of Coliform (MPN/100 ml)	Years				Dept. of Health State of Hawaii Standards
	1974	1975	1976	1977	
Total	5	3	6	3	230
Fecal	2	2	3	3	400

9. Comment

What measures will be taken, if the system was to malfunction and are diversion systems for maintenance incorporated in the design?

Response

The group cesspool system was overdesigned, in terms of number of cesspools, to accommodate any possibility of flooding or system malfunction. Based on the design analysis with the cesspool depth set at 16 feet below the pipe invert, a minimum of 21 cesspools would be required for sludge storage. The proposed system is composed of 24 cesspools and six additional cesspools to insure adequate percolation, in case the 24 cesspools become clogged with sludge. Should there be evidence of a possible malfunction, the Department of Hawaiian Home Lands would remove the sludge and prevent such an occurrence. In case of a malfunction, there is enough land available in the disposal area to construct seepage pits or similar facilities, if the situation warrants it.

10. Comment

Have studies been made to support the statement that pathogenic and fecal coliforms will be killed due to the salinity of the ground water and the long travel time?

Response

No dye injection test or travel time estimates have been made. No documentation of salinity as a disinfectant for sewage is available.

11. Comment

Who will be responsible for the maintenance, pumping or chemical treatment of the facility and the final filling of the cesspools?

Response

The Department of Hawaiian Home Lands will be directly responsible for the maintenance, pumping or chemical treatment and the final filling of the group cesspool system. The Department of

Hawaiian Home Lands has contacted and discussed the possibility of the City and County of Honolulu, Department of Public Works, Wastewater Management Division performing the cesspool pumping and chemical treatment. If the City is not willing to perform the services, the Department of Hawaiian Home Lands may have to contract cesspool pumping and chemical treatment with a private firm.

12. Comment

Is the maintenance of the existing cesspools in Nanakuli, an indicator of what is expected for the group cesspools? What will be the maintenance cost? Are there more precise cost estimates for operating and maintaining the alternative systems mentioned?

Response

The individual cesspools that require frequent maintenance in Nanakuli are probably those early ones that were constructed by the lessees without Department of Health certification. The underlying soils for these cesspools are probably expansive clay. The group cesspools will be constructed approximately 1400 feet from the shoreline in an area not subjected to flooding and composing of subsurface material, primarily sand and coral. The present cost for pumping accumulated sludge is \$35 per truck load (up to 2500 gallons). More detailed maintenance cost for alternative systems are not available.

13. Comment

Are the soils in the project area stoney clay with slow permeability rates and a high shrink swell potential, which may lead to structural failure of the cesspools?

Response

The soils underlying the project area are Mamala stony silty clay loan (MnC) and Coral outcrop (CR); not the Lualualei series. Permeability is moderate. This soil is formed of alluvium over coral limestone and calcareous sand. It is not felt that there will be any structural instabilities due to the soils.

14. Comment

Page A-11, item 11. The "unit" is incorrect if the "amount" refers to total cost.

Response

"Unit" is changed to "Cost/Unit" and "Amount" to "Total Cost" and the table is corrected as follows:

Item No.	Contract Items	Quantity	Cost/Unit	Total Cost
1	(on page A-11)	2 Ac	\$2,000/Ac	\$ 4,000
2	"	84,000 SF	0.10/SF	8,400
3	"	848 LF	10/LF	8,480
4	"	1	250	250
5	"	455 SY	8/SY	3,640
6	"	1,501 LF	18/LF	27,018
7	"	570 LF	20/LF	11,400
8	"	1	2,500	2,500
9	"	2	1,000	2,000
10	"	1	1,500	1,500
11	"	30	4,000	<u>120,000</u>
Total Estimated Construction Cost				\$189,188
Use				\$200,000

15. Comment

The soils engineer's comments on limitations appears as if he is not sure of the appropriateness of the proposed design.

Response

The soils engineer's typical standard statements on limitations are to minimize his liability to the extent that it is consistent with his responsibilities and compensation for the project.

16. Comments

Questions on the system design:

- a. Why is a larger pipe (12") flowing to a smaller pipe (8") in the collection system?
- b. Why was there no allowance for volume reduction in stored sludge?
- c. Why were surface overflow rates instead of some percolation rates for cesspool design used? A septic tank or settling tank design utilized with a leeching field or evaporation bed for effluent disposal might be less cost effective, but could have some desirable environmental benefits.

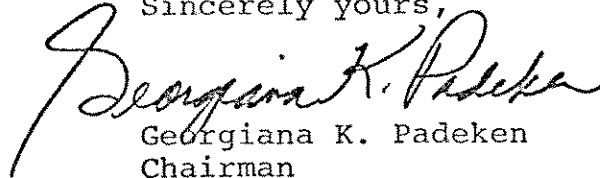
February 7, 1979

Response

- a. The interim group cesspool system will service only the 184 lots, Nanakuli Residence Lots, 4th and 5th Series, Second Increment. An 8" sewer line is adequate to handle the incoming flows from this project. The 12" sewer line in Haleakala Avenue is the "trunk line" of the overall gravity sewer system, which when connected to the Nanakuli interceptor sewer Section 3 in 1985, will service not only the Nanakuli Residence Lots, 4th and 5th Series, Second Increment, but also, a major portion of the existing homes and schools in Nanakuli Valley, Mauka of Farrington Highway. Once the connection has been made to the Waianae sewerage system, the group cesspool system will be disconnected.
- b. No allowance was made for stored sludge, since accumulated sludge could easily be pumped out, if necessary. Enough land is available in the area to construct additional cesspools, if the need arises.
- c. The governing factor for the design of the number of cesspools required was the sludge holding capacity and not the percolation rates. A septic tank with a leeching field would cost 2 to 2.5 times the cost of the group cesspool system. The facility would be adjacent to a predominantly existing residential area and would be less receptive to the residents. Because of the temporary nature and economics, the group cesspool system was selected as the best alternate.

Thank you for your review comments.

Sincerely yours,


Georgiana K. Padeken
Chairman

SW:kt

Attachment

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.





File

MAUI OFFICE
P. O. BOX 22
HAOLE, HI. 96732

MOLOKAI OFFICE
P. O. BOX 128
MOOLEHUA, MOLOKAI 96729

KAUAI OFFICE
P. O. BOX 322
LOHE, KAUAI 96755

STATE OF HAWAII

DEPARTMENT OF HAWAIIAN HOME LANDS

P. O. BOX 1879

HONOLULU, HAWAII 96805

June 17, 1975

MEMORANDUM

TO: Christopher Cobb, Chairman of the Board
Department of Land and Natural Resources

FROM: Mrs. Billie Beamer, Chairman

SUBJECT: Archaeological Survey
Nanakuli Residence Lots, Series 4 & 5

The Department of Hawaiian Home Lands has been informed through its consultant Wilson Okamoto & Associates that an archaeological survey of the project area is necessary before the project can proceed. Subsequently, Mr. Gordon Wong of DHHL contacted Beth Walton of your staff and informed her that the project area was once improved for pasture purposes and any archaeological or cultural evidence would have been inadvertently destroyed. She requested that documentation substantiating that fact be submitted. Accordingly, you will find enclosed the following:

1. Letter to Tongg Ranch dated December 8, 1970, authorizing pasture improvements;
2. Letter from Tongg Ranch dated May 29, 1975, confirming pasture improvements.

On this basis, the Department requests that the Historical Preservation Officer provide "clearance" of this project without further archaeological survey as required under chapter 6, Hawaii Revised Statutes. Your concurrence is appreciated.

Billie Beamer
(MRS.) BILLIE BEAMER, CHAIRMAN

Encl.

WB:kg

cc: Gordon Wong

YABUYOSHI
OFFICE OF HAWAII



C 450-01

CHRISTOPHER COSS, 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

July 3, 1975

Mrs. Billie Beamer
Chairman, Department of
Hawaiian Home Lands
P. O. Box 1879
Honolulu, Hawaii 96805

RECEIVED
JUL 23 1975

BRUCE, KIMOTO & ASSOCIATES

Dear Mrs. Beamer,

Subject: Nanakuli Residence Lots, Series 4 and 5

Thank you for your letter of June 17, 1975 concerning the Nanakuli Residence Lots, Series 4 and 5, and the letters authorizing and confirming earlier pasture improvements.

These letters indicate that the lands in question were substantially altered in 1970. This, plus other current information, make it very unlikely that any archaeological sites remain on the properties. An archaeological survey prior to construction, therefore, will not be required.

Because this area is believed to have been utilized by early Hawaiians, please inform me if any artifacts are uncovered in the course of the development that appear to be of an archaeological nature.

Very truly yours,

CHRISTOPHER COSS
Chairman and Member,
Board of Land and Natural Resources

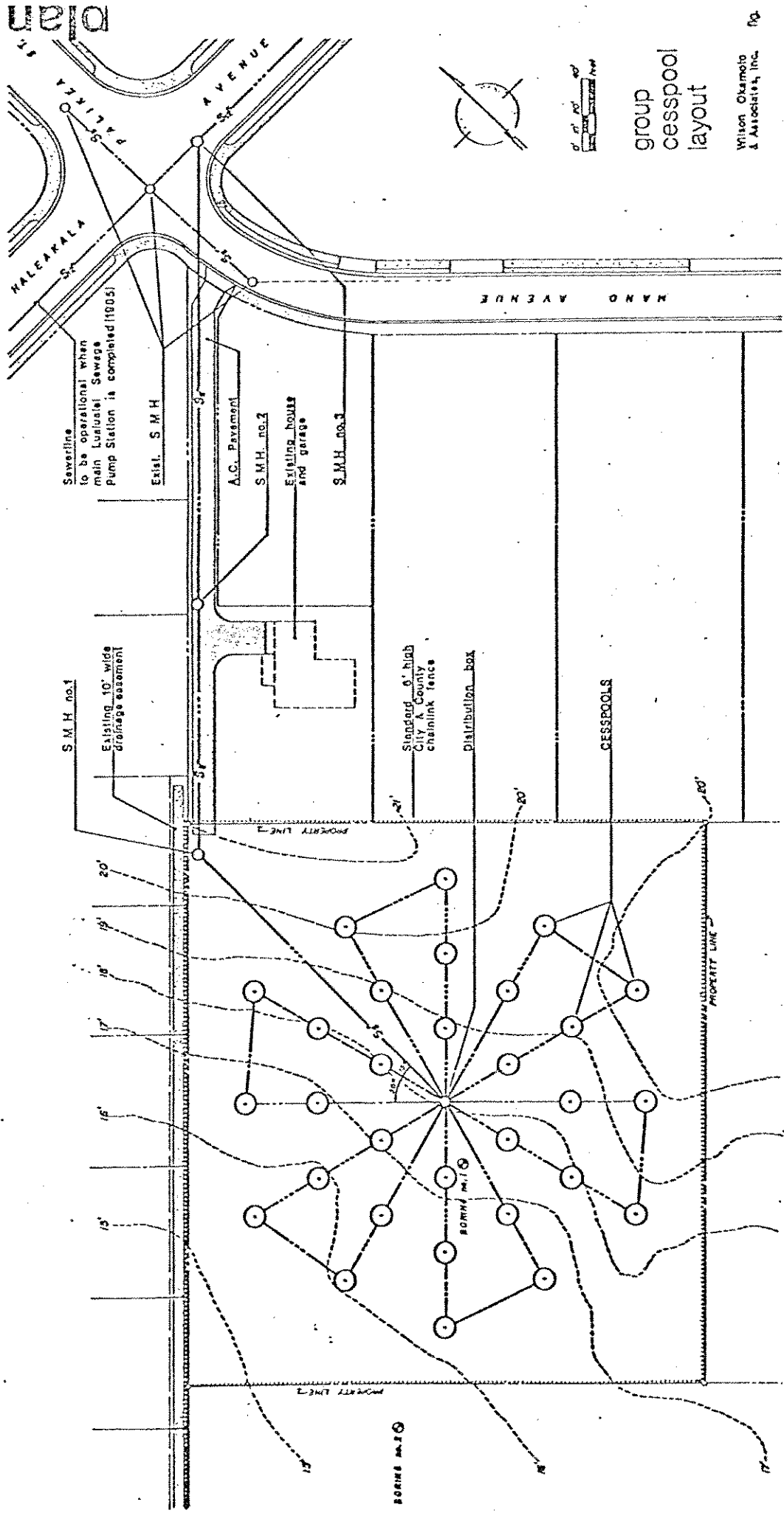
GC:jsm

*Rec'd Billie Beamer 7-21-75
cc: to Wilson Beamer*

JUL 15 2 21 PM '75

SONNENBLONNE
NUTRITION CENTER

*0-110
C-110*



Sewerline to be operational when main Lualaba Sewage Pump Station is completed (1905)

Exisl. S.M.H.

A.C. Pavement

S.M.H. no.2

Existing house and garage

S.M.H. no.3

S.M.H. no.1

Existing 10' wide drainage easement

Standard 6' high City & County chainlink fence

Distribution box

CESSPOOLS

group cesspool layout

Wilson Okamoto & Associates, Inc. No.

FORM NO. 20

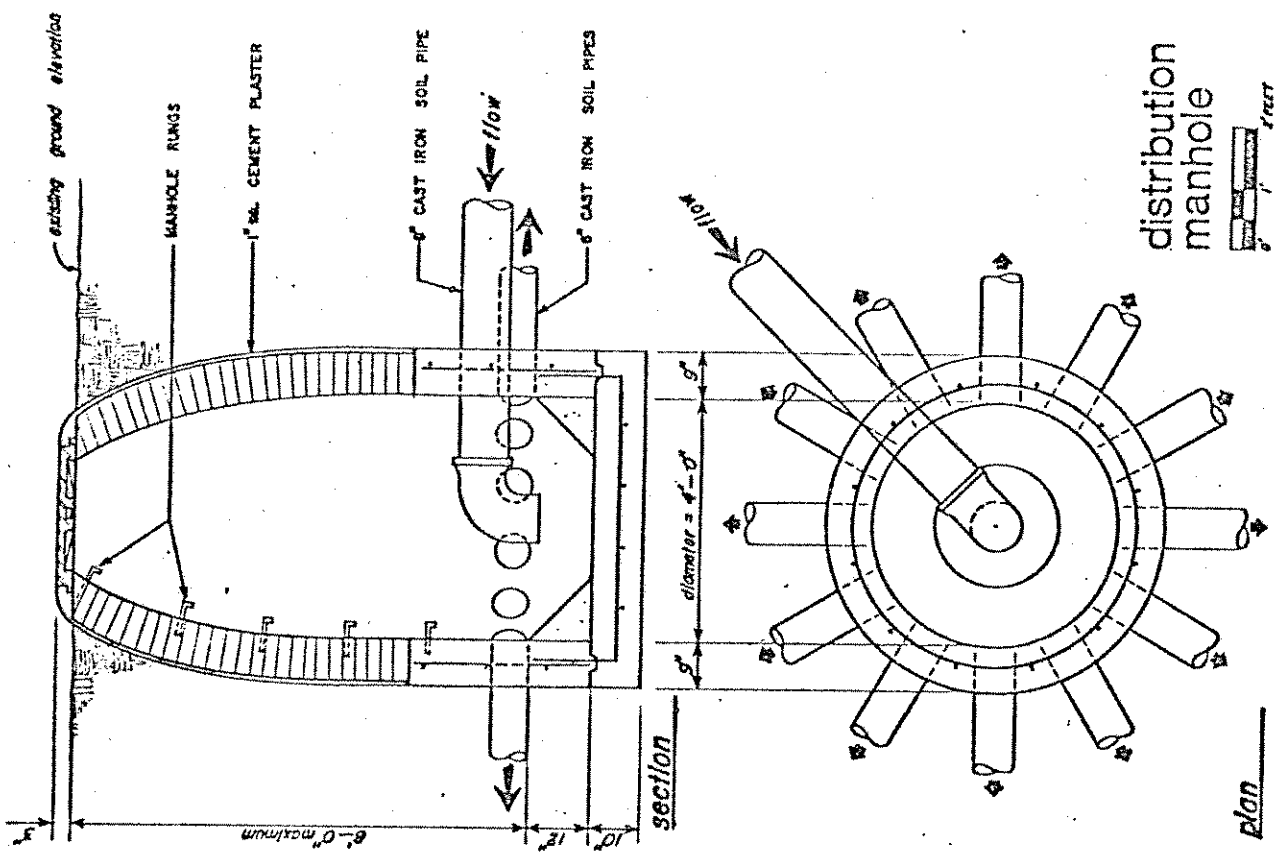
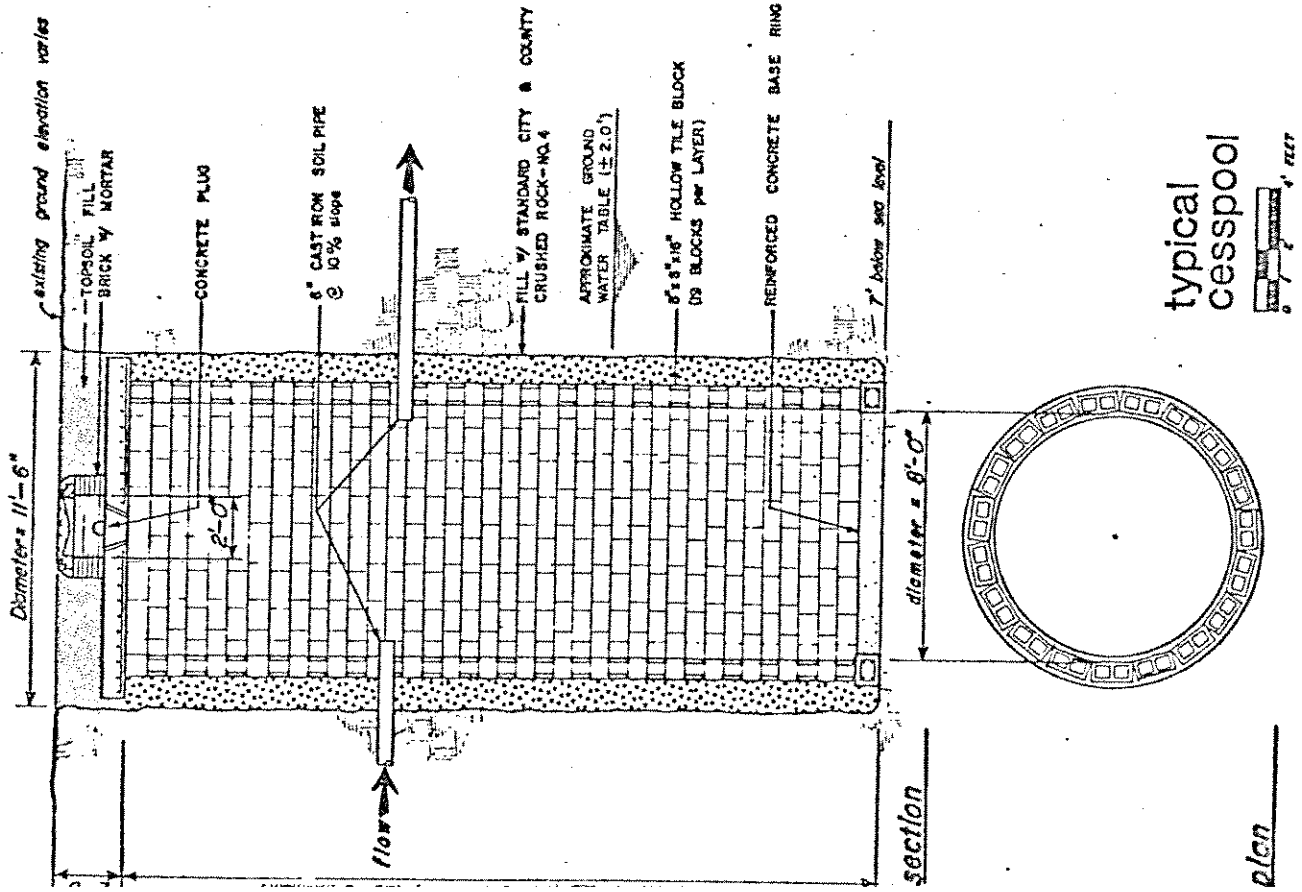


fig.

Wilson Okamoto & Associates, Inc.

UNIVERSITY OF HAWAII

Water Resources Research Center

October 31, 1978

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NOV 15 1978

WILSON OKAMOTO & ASSOCIATES

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

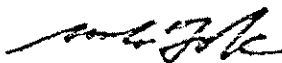
Dear Sir:

Subject: Review of Supplemental EIS Interim Group
Cesspool System - Nanakuli Residence Lots

Thank you for sending the subject Supplemental EIS for our review. The EIS has not addressed the ultimate fate of the cesspool system. We would like to offer the following comments for your consideration:

1. As indicated, there will be thirty 8-foot cesspools filled with sludge by 1985. What are the plans for sludge disposal?
2. If the sludge will be removed from these cesspools, what are the removal costs, the filling costs, and the sealing cost for phasing out these cesspools?
3. Maintenance plans for these cesspools should be included in this EIS.

Sincerely,



Yu-Si Fok, Professor
Faculty Coordinator of EIS Review

YF:jm

cc: Department of Hawaiian Home Lands
H. Gee
G. Dugan
R. Young
E. Murabayashi



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FEB 7 1979

MAUI OFFICE
P. O. BOX 22
KAHULUI, MAUI 96732

PROJECT OFFICES

WAIMEA OFFICE
P. O. BOX 125
MOELA, HAWAII 96743

MOLOKAI OFFICE
P. O. BOX 196
HOOLEHUA, MOLOKAI 96729

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805
ALSON OKAMOTO & ASSOCIATES

KAUAI OFFICE
P. O. BOX 833
HILO, HAWAII 96720

KAUAI OFFICE
P. O. BOX 332
LIHUE, KAUAI 96766

February 6, 1979

Professor Yu-Si Fok
Faculty Coordinator of EIS Review
Water Resource Research Center
University of Hawaii
2540 Dole Street
Honolulu, Hawaii 96822

Dear Professor Fok:

SUBJECT: Proposed Interim Group Cesspool System
Nanakuli Residence Lots 4th and 5th Series and
Flood Control Channel
Nanakuli, Waianae District, Oahu

Reference is made to your letter dated October 31, 1978, commenting on the subject Supplemental Environmental Impact Statement. Your concerns are addressed in the order in which they were presented.

1. Comment
What are plans for the sludge disposal?

Response

The Department of Hawaiian Home Lands will contract the removal and hauling of the sludge from the cesspools to a disposal site on Pokai Bay Street, one block makai of Farrington Highway, on the Leeward coast. This site is designated for cesspool waste disposal by the Department of Public Works, City and County of Honolulu. The sludge will then be processed through the Waianae sewage treatment plant.

2. Comment
What is the cost for the removal of the sludge and the filling and sealing of the cesspool?

Response

Today's estimated cost is as follows:

Removal of the sludge	\$ 2,300
Fill cesspools	19,300
Landscaping	16,800
Total estimated cost	<u>\$38,400</u>

Professor Yu-Si Fok

-2-

February 6, 1979

3. Comment

Maintenance plans for these cesspools should be included.

Response

The Department of Hawaiian Home Lands will maintain the system, which will include periodic inspection, monitoring the sludge depths in the cesspools, sludge removal, if necessary, and clearing and maintaining of the grounds.

Thank you for your review comments.

Sincerely yours,



Georgiana K. Padeken
Chairman

SW:kt

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.





GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

W. Y. THOMPSON, 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

October 24, 1978

Honorable George R. Ariyoshi
Governor
State of Hawaii
550 Halekauwila Street
Honolulu, HI 96813

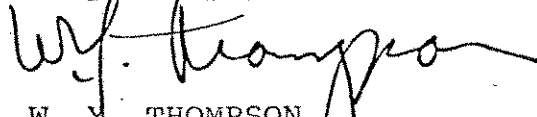
Dear Sir:

We have reviewed the EIS Supplement covering the group cesspool for the Nanakuli Residential Lots -- Series 4 and 5.

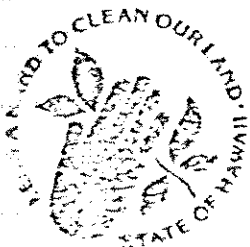
We are conveying the old Camp Andrews site to Hawaiian Homes in a land exchange for this project.

We believe the project to be a reasonable approach to meet interim sanitary needs until a sewer system reaches this area in February, 1984. We expect the system will require periodic pumping service by the City over the next six years.

Very truly yours,



W. Y. THOMPSON
Chairman of the Board



E. R. ARIYOSHI
GOVERNOR OF HAWAII

PROJECT OFFICES



STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

MAUI OFFICE
P. O. BOX 22
KAHULUI, MAUI 96732

MOLOKAI OFFICE
P. O. BOX 196
HOOLEHUA, MOLOKAI 96729

KAUAI OFFICE
P. O. BOX 332
LIHUE, KAUAI 96766

PROJECT OFFICES

MAUI OFFICE
P. O. BOX 125
KAHULUI, MAUI 96743

KAUAI OFFICE
P. O. BOX 833
LIHUE, KAUAI 96720

February 22, 1979

MEMORANDUM

TO: Mr. Susumu Ono, Chairman
Board of Land and Natural Resources

FROM: Georgiana K. Padeken, Chairman

SUBJECT: Proposed Interim Group Cesspool System
Nanakuli Residence Lots 4th and 5th Series and
Flood Control Channel
Nanakuli, Waiānae District, Oahu

Reference is made to your letter dated October 24, 1978 commenting on the subject Supplemental Environmental Impact Statement.

Comment

We expect the system will require periodic pumping service by the City over the next six years.

Response

On May 11, 1978, William Blaisdell, Planning Director, Department of Hawaiian Home Lands, contacted and discussed the possibility of the City performing the cesspool pumping or chemical treatment, if necessary, with the Department of Public Works, Wastewater Management Division. If the City is not willing to perform the service, the Department of Hawaiian Home Lands may be forced to contract the cesspool pumping and chemical treatment with a private firm.

Thank you for your review comments.

Handwritten signature of Georgiana K. Padeken in cursive script.

Georgiana K. Padeken
Chairman

SW:emj
cc: Office of Environmental Quality Control
Wilson, Okamoto & Associates, Inc.



BRUNNEN - HIGASHI
CENTRAL

DEPUTY DIRECTOR:
WALLACE ADKINS
CLAUDE S. SAKAMOTO
CHARLES O. SWANSON

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
669 PUNCHBOWL STREET
HONOLULU HAWAII 96813

IN REPLY REFER TO

October 16, 1978

STP 8.5119


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

Gentlemen:

Subject: Supplemental EIS for Proposed
Interim Group Cesspool System
Nanakuli Residence Lots, 4th & 5th Series
Nanakuli, Waianae District, Oahu

Thank you very much for giving us the opportunity to
review and comment on the above-captioned document. We do
not have any comments to offer which might improve the
document.

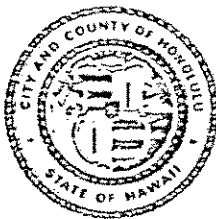
Very truly yours,


R. Higashionna

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 95813

RANK F. FASI
MAYOR



WALLACE MIYAHIRA
DIRECTOR AND CHIEF ENGINEER

ENV 78-275

October 25, 1978

Office of Environmental Quality Control
Office of the Governor
State of Hawaii
550 Halekauwila Street
Honolulu, Hawaii 96813

Gentlemen:

Subject: Supplemental EIS for Proposed Interim
Group Cesspool Systems, Nanakuli
Residence Lots, 4th & 5th Series,
Nanakuli, Waianae, Oahu

We have reviewed the subject EIS and have the following comments.

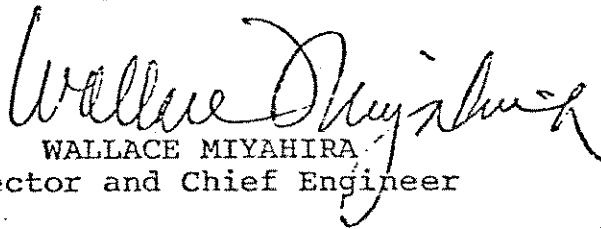
1. The Waianae sewerage system should be used in place of the "Leeward Sewage Disposal System" which is a misnomer.
2. The completion dates for Section 3 of the Nanakuli interceptor sewer and Lualualei sewage pump station (February 1984 and 1985, respectively) should be considered the earliest possible dates when construction of these proposed facilities can be accomplished. Delays in the completion dates should be anticipated.
3. The historical records of cesspool failures in Nanakuli showed that there are 57 cesspools that are treated chemically and 40 cesspools that are pumped. The area makai of Farrington Highway appears to be the area most susceptible for failure.

The cesspools that have failed or are failing are individual household cesspools, i.e., one per home. The group cesspools are designed on the basis of 30 cesspools for 182 homes or 6 homes per cesspool. The diameter and depth of the cesspools are not unlike those that would be normally required for one household. On that basis, the risk for failure is apparent.

Office of Environmental Quality Control
October 25, 1978
Page 2

4. Were the alternatives of using a septic tank or an Imhoff tank and seepage pits or fields considered?
5. The EIS implies that the proposed group cesspool facility will be maintenance free for the first five years (page 9). We do not think that there is a rational basis for such optimism. The Department of Health variance document states that "the Department of Hawaiian Home Lands will be responsible for maintenance and for taking corrective action that may be necessary to the 'ganged' cesspool disposal system." We interpret this condition to mean that the City will not be requested to provide pumping or chemical treatment services for the life of the proposed installation. If this interpretation is correct, we have no objection to the proposed project. The provisions of Section 11-7.3, Revised Ordinances of Honolulu, 1969, as amended, relating to cesspool service charge, will be applicable in any event.

Very truly yours,



WALLACE MIYAHIRA
Director and Chief Engineer

cc: Hawaiian Home Lands, State
Div. of Wastewater Management
Dept. of Health, State



STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

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FEB 11 1979

WILSON OKAMOTO & ASSOCIATES

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P. O. BOX 22
KAHULUI, MAUI 96732

MOLOKAI OFFICE
P. O. BOX 198
HOOLEHUA, MOLOKAI 96729

KAUAI OFFICE
P. O. BOX 332
LIHUE, KAUAI 96768

OBJECT OFFICES

MAIEA OFFICE
P. O. BOX 125
ELA, HAWAII 96743

KAUAI OFFICE
P. O. BOX 833
LIHUE, HAWAII 96720

February 7, 1979

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: Proposed Interim Group Cesspool System
Nanakuli Residence Lots 4th and 5th Series and
Flood Control Channel
Nanakuli, Waianae District, Oahu

Reference is made to your letter dated October 25, 1978, commenting on the subject Supplemental Environmental Impact Statement. Your concerns are addressed in the order in which they were presented.

- 1. Comment
The Waianae sewerage system should be used in place of the "Leeward Sewage Disposal System" which is a misnomer.

Response
"Waianae sewerage system" is acknowledged as the correct name for the sewerage system.

- 2. Comment
The completion dates for Section 3 of the Nanakuli interceptor sewer and Lualualei sewage pump station (February 1984 and 1985, respectively) should be considered the earliest possible dates when construction of these proposed facilities can be accomplished. Delays in the completion dates should be anticipated.

Response
The completion dates for Section 3 of the Nanakuli interceptor sewer and Lualualei sewage pump station (February 1984 and 1985, respectively) are acknowledged as the earliest dates those facilities can be constructed.

3. Comment

The group cesspools are designed on the basis of 30 cesspools for 182 homes or six homes per cesspool. The diameter and depth of the cesspools are not unlike those that would be normally required for one household. Based on the size, the historical records of cesspool failures in Nanakuli and the area makai of Farrington Highway being most susceptible to cesspool failure, the risk for failure is apparent.

Response

The 30 cesspools in the group cesspool system will be eight-foot diameter cesspools, 20-25 feet deep, as compared to an individual lot cesspool, six-foot diameter, 15-20 feet deep. The individual cesspools that require frequent maintenance are probably those early ones that were built by the lessees without Department of Health certification and in areas where the soils are expansive and have low permeable rates. The group cesspools will be constructed 1,000 feet mauka of Farrington Highway in an area composing of subsurface soils, primarily sand and coralline material. The proposed group cesspool system was designed more conservatively than what is required by the State Department of Health. Therefore, risk for failure is not considered apparent.

4. Comment

Were the alternatives of using a septic tank or an Imhoff tank and seepage pits or fields considered?

Response

A septic tank or an Imhoff tank alternate would cost from 2 to 2.5 times the cost of the group cesspool system. Because of the temporary nature and economics, the group cesspool system was selected as the best alternate.

5. Comment

Interprets the Department of Health variance document "that the Department of Hawaiian Home Lands will be responsible for maintenance and for taking corrective action that may be necessary to the 'ganged' cesspool disposal system", to mean that the City will not be requested to provide pumping or chemical treatment services for the life of the proposed installation. The City's cesspool service charge will in any event be applicable.

Response

On May 11, 1978, William Blaisdell, Planning Director, Department of Hawaiian Home Lands, contacted and discussed the possibility of the City performing the cesspool pumping or chemical treatment, if necessary, with the Department of Public Works,

Mr. Wallace Miyahira

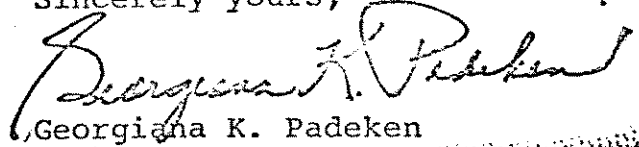
-3-

February 7, 1979

Wastewater Management Division. If the City is not willing to perform the services, the Department of Hawaiian Home Lands may be forced to contract the cesspool pumping and chemical treatment with a private firm.

Thank you for your review comments.

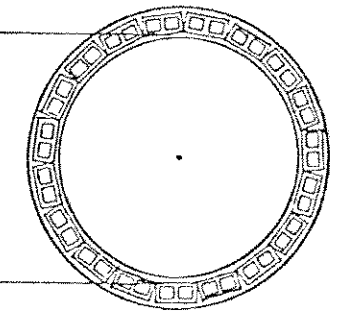
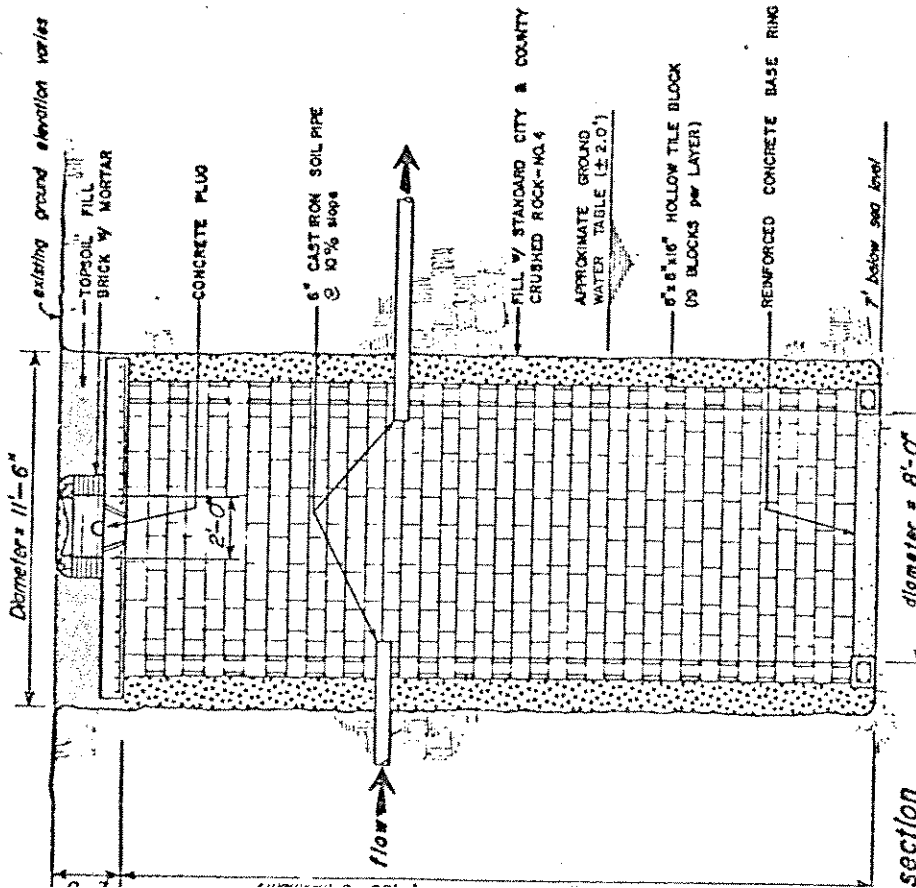
Sincerely yours,



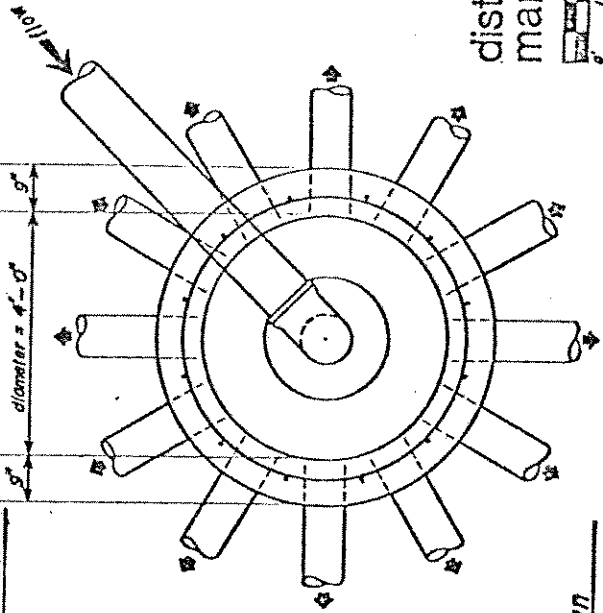
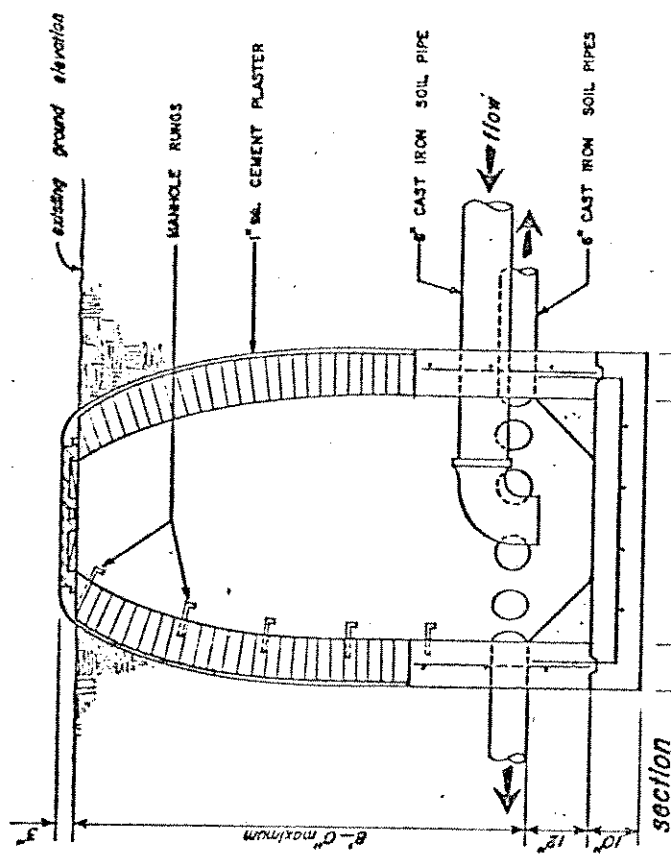
Georgiana K. Padeken
Chairman

SW:kt

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.



typical cesspool



distribution manhole



fig.

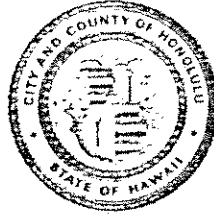
Wilson Okamoto & Associates, Inc.

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

GEORGE S. MORIGUCHI
~~XXXXXXXXXX~~
CHIEF PLANNING OFFICER

FRANK F. FASI
MAYOR



DGP10/78-3760 (CT)

October 31, 1978

Mr. Richard L. O'Connell, Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii

Dear Mr. O'Connell:

Supplemental EIS for Proposed Interim Group
Cesspool System, Nanakuli Residence Lots,
Waianae, Oahu, Dated September 1978
Comments Requested October 1978

We offer the following comments:

1. Disposition of Cesspools

The proposed cesspool field will cover nearly two acres of land. The supplemental EIS does not indicate what will happen to the area after the need for the cesspools is eliminated. By law, the cesspools cannot be merely abandoned; they must be filled. This will involve some expense.

2. Package Sewage Lift Station (p. 15)

Under this section it is indicated:

"Another alternative is to construct a package sewage lift station at the old Camp Andrew site, and install 11,000 linear feet of 6-inch force main in Farrington Highway to Maile (sic) Beach Park at the terminus of the existing gravity sewer line. However, this alternative is very expensive and is contrary to the Waianae Sewerage Master Plan, which will connect the Nanakuli Valley system to the Leeward system by 1985."

The discussion here is confused. The City proposes to service Nanakuli Valley as part of the Waianae Disposal System. As far as we know, there are no plans for connecting Nanakuli to the Honouliuli Disposal System or to any other Leeward system other than the Waianae Disposal System. Extension of the interceptor from Maili to Nanakuli Valley is consistent with the City's plan for the area.

3. Comparative Costs (p. 16)

The discussion of comparative costs does not include the cost of filling the cesspools once the interceptor reaches Nanakuli Valley. Also, while the cost of a package secondary sewage treatment plant is higher initially than the proposed group cesspool system, it should be possible to relocate the package treatment plant to some other Hawaiian Homes Land Commission project elsewhere. The cesspool field cannot be relocated to another project site. The initial higher cost of the package treatment plant may be offset by its recoverable value at the end of the interim use, such that, upon consideration, the package plant may be more economical. There should be more discussion on this, as well as the environmental consequences of the alternatives.

4. Project Coordination

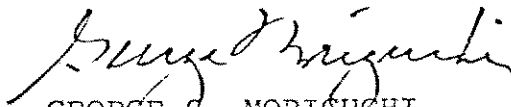
The Appendix of the Supplemental EIS includes a copy of the variance granted by the Department of Health to the Department of Hawaiian Home Lands for use of the "ganged" cesspool disposal system. One of the conditions of the variance is that the "Department of Hawaiian Home Lands will be responsible for maintenance and for taking any corrective action that may be necessary to the "ganged" cesspool disposal system" (p. A-3). Inasmuch as the department does not presently own any cesspool pumping equipment, it is likely that the City's Department of Public Works will be called upon for any cesspool pumping.

There is no indication that this has been discussed with the responsible City staff. The Department of Public Works staff have indicated that receipt of the supplemental EIS was their first knowledge of the proposal.

Mr. Richard L. O'Connell
Page 3

We hope our comments will help you in determining the adequacy of the supplemental EIS. Thank you for affording us the opportunity of reviewing it.

Sincerely,



GEORGE S. MORIYUCHI
Chief Planning Officer

GSM:fmt



STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

RECEIVED

FEB 11 1979

WILSON OKAMOTO & ASSOCIATES

PROJECT OFFICES

MAUI OFFICE
P. O. BOX 22

KAHULUI, MAUI 96732

MOLOKAI OFFICE
P. O. BOX 198

HOOLEHUA, MOLOKAI 96729

KAUAI OFFICE
P. O. BOX 332

LIHUE, KAUAI 96766

PROJECT OFFICES

WAIMEA OFFICE
P. O. BOX 125

KAHAELE, HAWAII 96743

KEAUKAHA OFFICE
P. O. BOX 833

HILO, HAWAII 96720

February 7, 1979

Mr. George S. Moriguchi
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Moriguchi:

SUBJECT: Proposed Interim Group Cesspool System
Nanakuli Residence Lots 4th and 5th Series and
Flood Control Channel
Nanakuli, Waianae District, Oahu

Reference is made to your letter dated October 31, 1978, commenting on the subject Supplemental Environmental Impact Statement. Your concerns are addressed in the order in which they were presented.

1. Comment

What is the disposition of the cesspools after they are no longer needed?

Response

The Department of Hawaiian Home Lands will have the sludge removed, the cesspools filled and the grounds landscaped.

2. Comment

The discussion on the alternative package sewage lift station and 11,000 feet, 6-inch force main and the Leeward system is confusing.

Response

The intent of the discussion was to emphasize that the City's Waianae sewerage system provides service for Nanakuli Valley (which you clearly explained); that the alternative package sewage lift station and 11,000 feet of 6-inch force main would be temporary and uneconomical, and also would be inconsistent with the City's planned facilities, that of extending the interceptor (gravity trunk sewer) from Maile to Nanakuli Valley.

[Handwritten signature]

February 7, 1979

3. Comment

The discussion of comparative cost does not include cost of filling the cesspools when the interceptor reaches Nanakuli Valley. While the cost of a package secondary sewage treatment plant is higher initially than the proposed group cesspool system, it should be possible to relocate the package treatment plant to some other Department of Hawaiian Home Lands project and offset the initial higher cost with the recoverable value to make the package plant more economical. There should be more discussion on the environmental consequences of the alternatives.

Response

Today's estimated cost for sludge removal, filling cesspools and restoring the grounds is as follows:

Removal of the sludge	\$ 2,300
Fill cesspools	19,300
Landscaping	16,800
Total estimated cost	<u>\$38,400</u>

Salvaging of a package secondary sewage treatment plant can be quite expensive, because of its underground emplacement and the temporary nature of the installation. The equipment would require reconditioning, if used on another project, that may require such a facility with similar design flows. If the plant cannot be readily used, then it must be stored. The cost for salvaging, reconditioning and storing the castings, covers and slotted structural rings of the group cesspools is significantly lower than that for a package secondary sewage treatment plant.

The environmental concerns of the proposed interim group cesspool system are covered under V Impacts of The Proposed Interim Group Cesspool System pages 12-15 of the subject Supplemental EIS. The environmental impacts for the package sewage lift station and force main and the package secondary sewage treatment plant are insignificant, except for noise, which probably could be adequately muffled. Individual cesspools for each lot are unacceptable, because of the soils poor permeability and high shrinkage and swell potential.

4. Comment

The Department of Hawaiian Home Lands will be responsible for maintenance and for taking any corrective action that may be necessary to the "ganged" cesspool system and inasmuch as the Department of Hawaiian Home Lands does not presently own any cesspool pumping equipment, it is likely that the City's

Mr. George S. Moriguchi

-3-

February 7, 1979

Department of Public Works will be called upon for any cesspool pumping. There is no indication that this has been discussed with the City.

Response

On May 11, 1978, William Blaisdell, Planning Director, Department of Hawaiian Home Lands contacted and discussed the possibilities of the City performing the cesspool pumping and chemical treatment, if necessary, with the Department of Public Works, Wastewater Management Division.

Thank you for your review comments.

Sincerely yours,



Georgiana K. Padeken
Chairman

SW:kt

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.

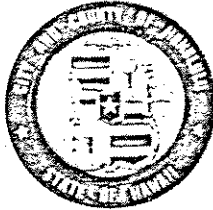
DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

WCA

Attn: Kasha

FRANK F. FASI
MAYOR



KAZU HAYASHIDA
DIRECTOR

TE10/78-4068

OCT 23 1978

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OCT 30 1978

WILSON OKAMOTO & ASSOCIATES

Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Gentlemen:

Supplemental Environmental Impact Statement for
Proposed Interim Group Cesspool System
Nanakuli Residence Lots, 4th & 5th Series

We have reviewed the supplemental Environmental Impact Statement for the project and suggest that provisions for providing advance construction notice to this department and MTL, Inc. be included in the section on impacts. This notification will enable the department and MTL to plan temporary detours and relocation of bus routes and stops.

Very truly yours,

KAZU HAYASHIDA
Director

cc: OEQC
Dept. of Hawaiian Home Lands

C-ono
C-418

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

PROJECT OFFICES

WAIMEA OFFICE

P. O. BOX 125
WAIMEA, HAWAII 96743

KEAUKAHA OFFICE

P. O. BOX 833
HILO, HAWAII 96720



STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

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WILSON OKAMOTO & ASSOCIATES

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KAHULUI, MAUI 96732

MOLOKAI OFFICE
P. O. BOX 198
HOOLEHUA, MOLOKAI 96729

KAUAI OFFICE
P. O. BOX 332
LIHUE, KAUAI 96766

February 6, 1979

Mr. Robert Way, Director
Department of Transportation
Services
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Way:

SUBJECT: Proposed Interim Group Cesspool System
Nanakuli Residence Lots 4th and 5th Series and
Flood Control Channel
Nanakuli, Waianae District, Oahu

Reference is made to your letter dated October 23, 1978, commenting on the subject Supplemental Environmental Impact Statement.

As suggested, the State Department of Hawaiian Home Lands will provide advance construction notice to the City and County of Honolulu, Department of Transportation Services, and MTL, Inc. This notification will enable the Department of Transportation Services and MTL, Inc. to plan temporary detours and relocation of bus routes and stops.

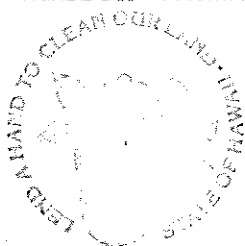
Thank you for your review comment.

Sincerely yours

Georgiana K. Padeken
Chairman

SW:kt

cc: Office of Environmental Quality Control
Wilson Okamoto & Associates, Inc.

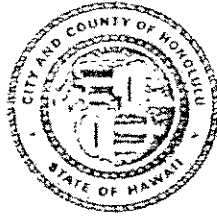


DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

WOA
Koshu

FRANK F. FASI
MAYOR



Tyrone T. Kusao
~~GEORGE S. MORICUCHI~~
DIRECTOR

75/EC-8(SE)
LU10/78-4796

October 31, 1978

RECEIVED

NOV 8 1978

WILSON OKAMOTO & ASSOCIATES

Office of Environmental
Quality Control
State of Hawaii
550 Halekauwila Street,
Room 301
Honolulu, Hawaii 96813

Gentlemen:

Supplemental EIS for Proposed
Interim Group Cesspool System
Nanakuli Residence Lots, 4th and 5th
Series and Flood Control Channel
Nanakuli, Oahu

We have reviewed the above and have no comments to offer at this time. We would like to remind you that the proposed cesspool system lies within the Special Management Area, and therefore will require a Shoreline Management Permit.

Should you have any questions concerning requirements of the Shoreline Management Permit, please contact Mr. Scott Ezer of our staff at 523-4077.

Very truly yours,

A handwritten signature in black ink, appearing to read "Tyrone T. Kusao".

TYRONE T. KUSAO
Director of Land Utilization

TTK:sl

cc: Dept. of Haw'n Home Lands ✓

6.11.78
J. KH