Honoyliuli Water Reclamation Facility & Demonstration

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

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WPP 97-804

December 22, 1997

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OFC. OF ENVIRONMENTAL QUALITY CONTROL

Mr. Gary Gill, Director
Office of Environmental Quality Control
Leiopapa A Kamehameha, Suite 702
235 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Gill:

Subject: Final Environmental Assessment (EA) and
Finding of No Significant Impact (FONSI) for
Honouliuli Water Reclamation Facility and Demonstration Project
TMK: 9-1-13:07 and 9-1-69:04

The City and County of Honolulu, Department of Wastewater Management, has reviewed the comments received during the 30-day public comment period, which began on November 8, 1997. The Department of Wastewater Management has determined that this project will have no significant environmental effect and has issued a Finding of No Significant Impact (FONSI) determination. Please publish a notice of this determination in the January 8, 1998 edition of *The Environmental Notice*.

We have enclosed four copies of the Final EA/FONSI, a completed OEQC Bulletin Publication Form, a draft cover letter to participants and the Final EA/FONSI distribution list. Please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159 or our consultant Mr. Kenneth Ishizaki of Engineering Concepts, Inc. at 591-8820 should you have any questions.

Sincerely,

Cheryl K. Okuma-Sepe

KENNETH E. SPRAGUE
Director

Enclosure

cc: Kenneth Ishizaki - Engineering Concepts, Inc.

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HONOULIULI WASTEWATER TREATMENT PLANT
EFFLUENT REUSE PROJECT
Ewa, Oahu, Hawaii
Tax Map Key: 9-1-13:7 and 9-1-69:4

WATER RECLAMATION FACILITY AND DEMONSTRATION PROJECT

Final Environmental Assessment and Finding of No Significant Impact (FONSI)

This environmental document has been prepared pursuant to Chapter 343, Hawaii Revised Statutes

Proposing Agency:

DEPARTMENT OF WASTEWATER MANAGEMENT
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Prepared by:

ENGINEERING CONCEPTS, INC.
250 Ward Avenue, Suite 206
Honolulu, Hawaii 96814

December 1997

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Proposing Agency:

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City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Responsible Official:

Cheryl K. Okuma-Spze for Kenneth E. Sprague, Director

DEC 2 4 1997
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December 1997

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CORRECTION

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CHAPTER 1

INTRODUCTION AND SUMMARY

1.1 PURPOSE OF THIS DOCUMENT

The purpose of this Final Environmental Assessment (EA)/ Finding of No Significant Impact (FONSI) is to identify potential environmental impacts associated with construction and operation of the proposed water reclamation facility and reclaimed water demonstration project at the Honouliuli Wastewater Treatment Plant (WWTP). This document was prepared following a period of public review of a Draft EA. Public comments and applicant responses have been incorporated in the document.

This environmental document has been prepared in accordance with Chapter 343, Hawaii Revised Statutes (HRS). The City and County of Honolulu Department of Wastewater Management (WWM) is the proposing agency. Mr. Robert Miyasaki of the Division of Planning and Service Control (527-5159) is the point of contact at WWM for the project.

1.2 PROJECT BACKGROUND

The Honouliuli WWTP occupies two adjacent parcels on Geiger Road in Ewa, Oahu, Hawaii. All proposed improvement are located within the 48.63-acre parcel (TMK: 9-1-13:7). The original WWTP was constructed between 1979-1984, for primary treatment of 25 MGD of wastewater. Expansion of the original WWTP has proceeded in phases, described below:

Phase I, Part A (April 1990). Upgrade of the overall plant capacity to 38 MGD, with influent pump station and primary clarifiers expanded to 51 MGD. Odor control facilities were also added.

Phase I, Part B (October 1990). Two brackish water wells were drilled for in-plant nonpotable water use.

Unit 1A, Increment 1 (August 1994). Addition of secondary treatment facilities to treat 13 MGD.

Unit 1A, Increment 2. Presently under design, this increment will upgrade the solids treatment capacity to raise the overall plant capacity to 51 MGD.

Presently, WWM is pursuing two projects which would further expand the treatment capabilities at Honouliuli to provide reclaimed water for nonpotable

water use. These projects, the "proposed action" and focus of this EA, are described in **Section 1.4**.

1.3 PROJECT OBJECTIVES

The primary objective of this project is to reduce reliance on the potable water supply and the caprock aquifer (brackish water) for nonpotable water uses while encouraging the beneficial use of a valuable resource (reclaimed water).

A secondary objective is to evaluate the potential of using reclaimed water to recharge the caprock aquifer. Aquifer recharge provides an indirect means for public use of reclaimed water by supplementing the available ground water source. However, aquifer recharge will only be a beneficial use of reclaimed water if there are no adverse impacts to the water resource.

1.4 PROJECT DESCRIPTION

In order to achieve the project objectives, the following actions are proposed:

(1) Construction and operation of a water reclamation facility to treat up to 13 MGD of secondary effluent to R-1 quality to provide a reliable source of reclaimed water for future use within the WWTP and for use by customers within the Ewa Plain.

(2) Construction and implementation of a demonstration project utilizing up to 3 MGD of disinfected secondary effluent to supply nonpotable water for use within the WWTP and recharge the caprock aquifer.

1.5 ALTERNATIVES CONSIDERED

Two other alternatives to the proposed action were considered. The "no action" alternative was dismissed because it failed to meet the project objectives. The second alternative, design of a water reclamation facility to R-2 standards, could be constructed and operated at a lower cost than the proposed project. However, the R-2 alternative would place additional restrictions on the use of the reclaimed water, making it a less attractive alternative for potential users.

In addition, two alternatives were considered for the filtration system and ultraviolet light (UV) disinfection system treatment components within the proposed water reclamation facility. Filtration system alternatives included travelling bridge filtration and contact sand filtration. Ultraviolet light (UV)

disinfection system alternatives included in-pipe, medium pressure, low-pressure, and medium-pressure open channel systems.

1.6 SUMMARY OF POTENTIAL IMPACTS AND MITIGATION MEASURES

Erosion

An erosion control plan will be prepared during the design phase which will include appropriate measures to minimize soil erosion and sediment transport.

Ground Water

A ground water monitoring program will be undertaken to assess the impact of the demonstration project on the water quality of the underlying aquifer.

Air Quality

The contractor will be required to comply with State and City and County air quality regulations to minimize generation and impact of fugitive dust during construction.

Noise

The contractor will be required to comply with State and City and County regulations to minimize construction noise. In addition, operation of the new facilities will be in compliance with the applicable regulations.

Archaeology/Historic Sites

In the unlikely event that any archaeological sites are unearthed during excavation, work will be halted and the State Historic Preservation Division will be contacted for instructions.

Social Environment

Health concerns and other perceived negative impacts will be mitigated by education programs focusing on both workers and the general public.

1.7 PERMITS AND APPROVALS REQUIRED

Permits and approvals which will be required for construction of the proposed project are listed on **Table 1**. There are no federal permits or approvals

anticipated. Applications for permits and approvals will be prepared as planning and design of the proposed project proceeds.

TABLE 1

REQUIRED PERMITS AND APPROVALS

PERMIT/APPROVAL	AUTHORITY
Construction plan approval	City & County Department of Wastewater Mgmt. City & County Department of Public Works State Department of Health
Engineering Reports and Submittals for Reclamation Treatment Facility	State Department of Health
Engineering Reports and Submittals for Water Reclamation Reuse Projects	State Department of Health
National Pollutant Discharge Elimination System (NPDES) General Permit Coverage for Discharges of Hydrotesting Waters	State Department of Health
Community Noise Permit	State Department of Health
Water Use Permits in Water Management Areas	State Commission on Water Resource Management
Building Permit for Building, Electrical, Plumbing, Sidewalk/Driveway, and Demolition Work	City & County Building Department
Grubbing, Grading, and Stockpiling Permit	City & County Department of Public Works

CHAPTER 2

PROJECT DESCRIPTION

2.1 NEED FOR THE PROJECT

Land use in the Ewa Plain has drastically changed over the last ten years. Agricultural lands that were previously used to cultivate sugar cane have been phased out and replaced with residential, commercial and industrial developments and golf courses. This land use change has affected the utilization and sustainable yield of the shallow limestone aquifer underlying the area.

For decades, the sugar companies relied on water from the underlying caprock aquifer and imported water from basal wells to irrigate their sugar cane fields. When applied to the fields, both sources of irrigation water would percolate through the substrata, replenishing the caprock water supply. Water from the caprock aquifer is generally brackish and not suitable for potable use. However, percolation of imported basal well water applied for sugar cane irrigation provided dilution, improving both the caprock water quantity and quality. Now that sugar cane is no longer grown in the area, water from basal wells is no longer imported for irrigation, resulting in a decrease of return flow to the caprock. As a result, there has been a decline in the sustainable yield of the caprock aquifer.

Presently, permits are issued by the State Department of Land and Natural Resources Commission on Water Resource Management to extract water from the caprock aquifer. The water is used for landscape irrigation, agricultural irrigation, and other nonpotable purposes. Active water use permits as of August 1997 (excluding salt water wells used for cooling) totalled 18.365 MGD for the three aquifer sectors. Due to the deterioration of the caprock water quality, the Commission has recently adopted an individual well management plan. Under the plan, a maximum chloride limit of 1,000 mg/l will define the sustainable capacity of each irrigation well. Permit holders may need to reduce their consumption or seek alternative sources of water.

As the population in the Ewa Plain increases, there will be a concomitant increase in the demand on the limited ground water resources available in the caprock aquifer. Reclaimed water has been identified as a possible source to replace agricultural flows in recharging the aquifer. The Department of Wastewater Management (WWM) has proposed a demonstration project to investigate the possibility of recharging the caprock aquifer with effluent from the Honouliuli WWTP. In addition, WWM has also proposed construction of water reclamation facilities within the plant to allow direct reuse of reclaimed water in an effort to conserve the ground water resources of the region.

2.2 PROJECT SITE

The Honouliuli WWTP occupies two adjacent parcels (TMK: 9-1-13:7 and 9-1-69:4) situated along Geiger Road in Ewa, Oahu, adjacent to the Barbers Point Naval Air Station (NAS BPT). The proposed action will be located entirely within the 48.63-acre parcel, 9-1-13:7. The project vicinity is depicted on **Figure 2.1** and the existing WWTP facilities are illustrated on **Figure 2.2**. Refer to **Chapter 3** for an expanded description of the affected environment at the project site.

2.3 PROPOSED ACTION

The proposed action is construction of improvements within the Honouliuli WWTP to meet the project objectives. These improvements include construction of a water reclamation facility and implementation of a demonstration project utilizing reclaimed water. Specific tasks are described in the following sections and illustrated on **Figure 2.3**.

2.3.1 Water Reclamation Facility

The proposed water reclamation facility will treat secondary effluent to the R-1 level for nonpotable water use. The initial phase will be designed to treat up to 6.5 MGD with expansion capabilities up to 13 MGD.

The "R-1" designation by the Hawaii State Department of Health (DOH), *Guidelines for the Treatment and Use of Reclaimed Water*, is given to reclaimed water which meets the most stringent criteria, resulting in significant reduction in viral and bacterial pathogens. At a minimum, secondary effluent must be coagulated, filtered and disinfected to be considered of R-1 quality.

Components of the water reclamation facility include construction of an influent pump station, contact filtration system, ultraviolet light (UV) disinfection system, effluent pump stations and chemical storage building. Each of these components is described below.

2.3.1.1 Reuse Pump Station

The proposed reuse (influent) pump station will house the pumps necessary to convey secondary effluent into the sand filters and allow gravity flow through the subsequent treatment components. A single wet well will be provided for flows up to 13 MGD. The proposed reuse pump station will consist of an open tank design with no building over the wet well. In the initial phase (up to 6.5 MGD), four 2.17 MGD submersible pumps will be installed (three to meet the pumping requirements and the fourth as a standby unit). Two additional 2.17 MGD submersible pumps will be installed to meet the pumping requirements when the

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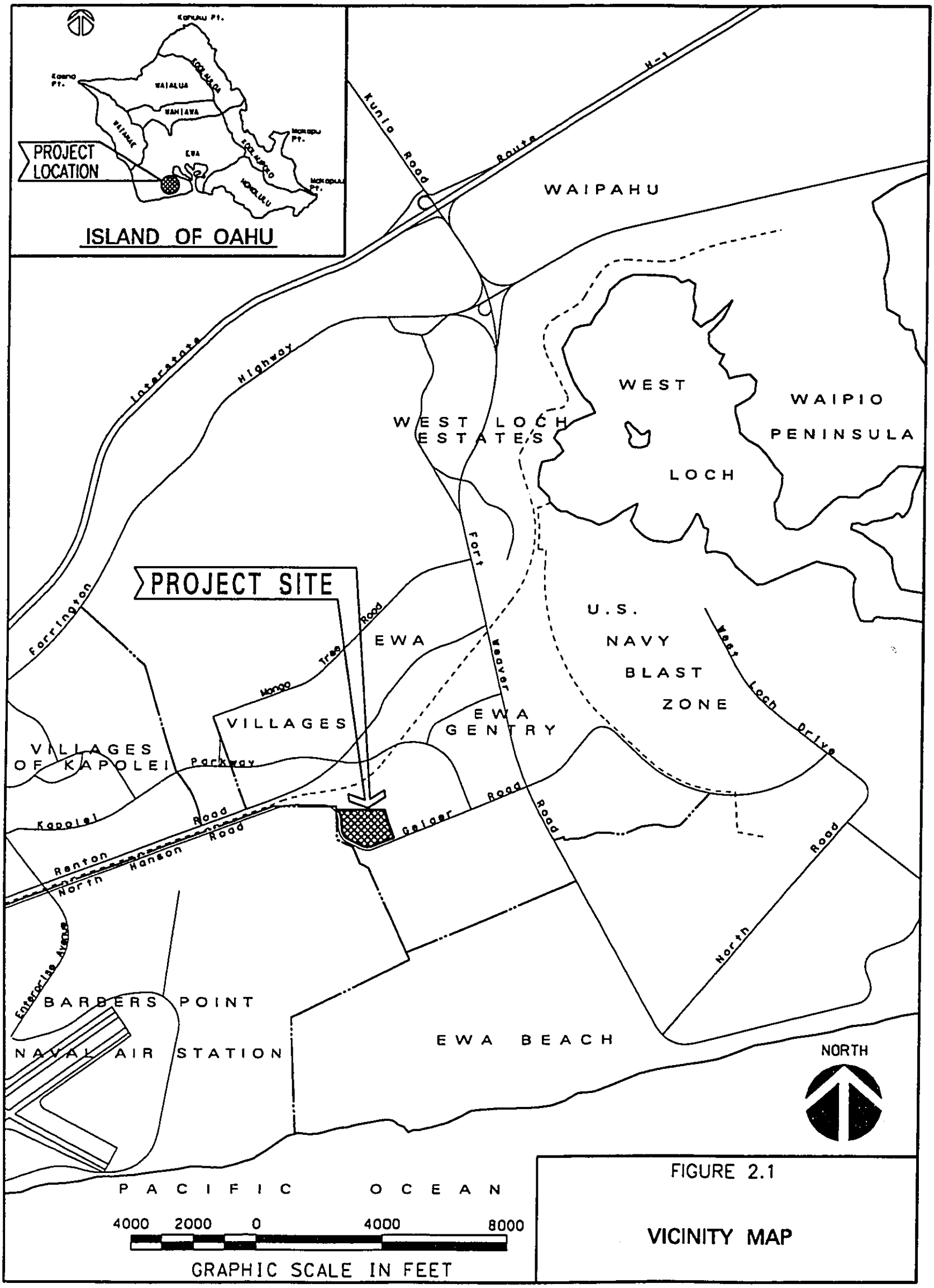

FIGURE 2.1

VICINITY MAP

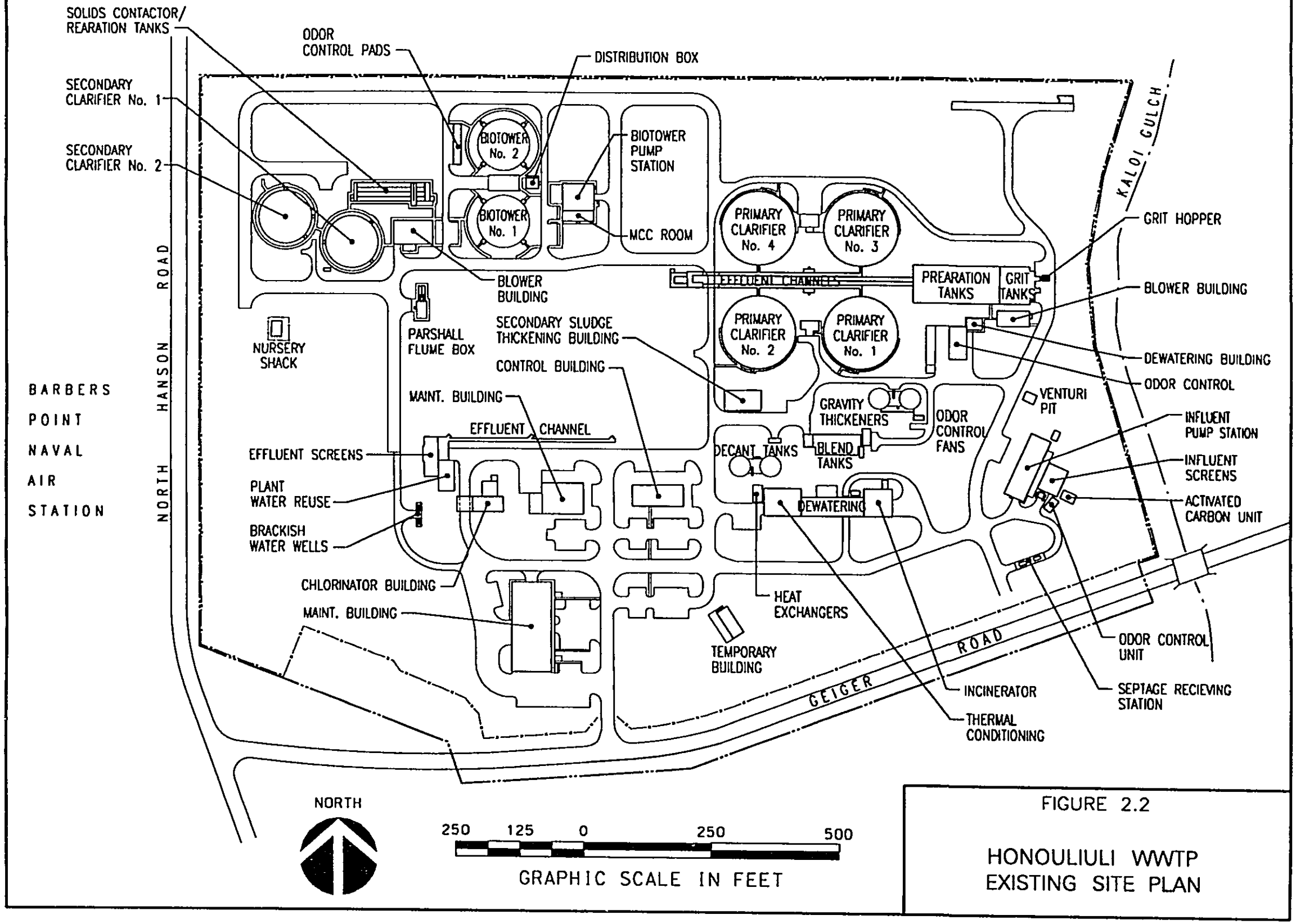

FIGURE 2.2

HONOULIULI WWTP
EXISTING SITE PLAN

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R-1 RECLAMATION FACILITY

DEMONSTRATION PROJECT

CONTROL LYSIMETER & CONTROL MONITORING WELL

PARSHALL FLUME BOX

TEMPORARY VERTICAL TURBINE PUMPS

36" EFFLUENT LINE

NURSERY SHACK

TEMPORARY 12" EFFLUENT LINE

TEMPORARY RECHARGE TRENCH

REUSE PUMP STATION

CHEMICAL STORAGE BUILDING

TEMPORARY HYPOCHLORITE INJECTION SYSTEM

TEMPORARY 12" EFFLUENT LINE

EFFLUENT CHANNEL

14" BACKWASH LINE

EFFLUENT SCREENS

FILTRATION SYSTEM

PLANT WATER REUSE

BRACKISH WATER WELLS

MAINT. BUILDING

CONTROL BUILDING

BACKWASH PUMP STATION

CHLORINATOR BUILDING

36" EFFLUENT LINE

UV DISINFECTION

100 50 0 100 200

GRAPHIC SCALE IN FEET

NORTH

R-1 PUMP STATION

TRANSFORMER PAD

FIGURE 2.3

HONOULIULI WWTP
PROPOSED IMPROVEMENTS

facility is expanded to 13 MGD. A seventh submersible pump will be purchased and stored for use as a backup unit, to be positioned within the wet well for use as the need arises.

2.3.1.2 Contact Filtration System

The proposed method of filtration is by a continuous backwash upflow filtration system consisting of a bank of four sand filters with provisions to add three additional filters. Each filter will have a production capacity of 2 MGD (2 MGD of product water plus 0.10 to 0.17 MGD of backwash water). The filters will be independent of each other, allowing any combination of filters to be operated at any given time. The current design will allow capacities of 2, 4, or 6 MGD using one, two or three filters, respectively. The fourth filter will serve as a redundant unit. When the filter bank is expanded to seven units, five filters will provide the interim target capacity of 13 MGD, with the sixth and seventh filters serving as redundant units.

The continuous backwash filter typically consists of a deep sand bed divided into multiple modules. Each module has an air lift assembly and sand washer that operates continuously. The greatest advantage of this filter type is its small footprint. A typical 6.5 MGD filter is about 33 feet wide and 65 feet long (about 33 feet by 16 feet per 2 MGD of flow). This filter type is also easily expanded by building the concrete tankage needed for future flow rates but installing only the filter equipment needed at present. Disadvantages of this type of filter are its capital cost and the rate of reject water flow. The backwash rate is typically 4 percent of the product water flow rate and can be as high as 8 percent.

Construction of a backwash pump station and dedicated force main are proposed to convey the reject water to the existing grit/preaeration tanks or the existing Influent Pump Station at the head of the WWTP. The reject water will eventually reach the primary clarifiers for treatment.

2.3.1.3 Ultraviolet Light (UV) Disinfection System

A medium-pressure open-channel UV disinfection system with two channels is proposed. Each channel will be sized for 6.25 MGD with the UV internal components sized for 3 MGD per channel, or 6 MGD for the pair. Sizing the channels for 6.25 MGD but installing only 6 MGD of internal components reduces the cost of the UV disinfection system. Baffles will be installed in the channels as part of the initial construction to achieve the initial capacity, and adequate space will be provided for future installation of the UV system electronics. When the reclaimed water demand increases, the capacity of the UV disinfection system can be easily expanded by removing the baffles and installing additional internal components.

2.3.1.4 R-1 Pump Station

The proposed R-1(effluent) pump station will contain the pumps necessary to convey the R-1 reclaimed water to onsite and offsite customers. A single wet well will be provided, with provisions for a second wet well in a future expansion. The pump station will be a closed tank design with a building over the wet well. For the initial capacity, five 2.08 MGD vertical turbine pumps will be provided. Two pumps will be variable speed while the other three pumps will be fixed speed. The fixed-speed pumps will distribute R-1 water throughout Honouliuli WWTP. When the reclamation facility is expanded to 13 MGD, three 2.08 MGD fixed speed vertical turbine pumps will be added.

2.3.1.5 Chemical Storage Building

The proposed Chemical Storage Building will be a single-story slab-on-grade structure with adequate maneuvering room for loading and unloading delivery trucks. The building will contain the automatic coagulant feed system and air compressor system for the sand filters. Two automatic feeders will be provided, one for normal operation and one redundant unit. Mixing of the coagulant into the bulk flow will be achieved using an in-line static mixer.

A small office area and an electrical room will also be located within the Chemical Storage Building. The office will provide a staging and records storage area for the operators. The electrical room will contain the motor control center and electrical panels needed to support the reuse system.

2.3.1.6 Electrical System

The additional electrical load associated with the proposed project, including provisions for future spare capacity of 15 percent, amount to 3,944 kVA. The loads associated with the proposed project are primarily induction motor loads. Total connected new motor load with provision for future spare capacity of 15 percent is approximately 2,328 HP. Two new pad-mounted 1,500 kVA substation transformers will be supplied.

2.3.2 Demonstration Project

The proposed demonstration project will be designed to produce and utilize up to 3 MGD of disinfected secondary treated effluent, functioning independently of the water reclamation facility portion of the project described in **Section 2.3.1**, above.

The focus of the demonstration project will be the pilot-scale aquifer recharge system, designed to test recharge theory and monitor water quality impacts on the caprock aquifer and nearshore waters. Disinfected secondary effluent will be applied to the recharge trench at varying flow rates over set time periods.

Reclaimed water migration within the caprock aquifer will be monitored through a series of wells and lysimeters. Baseline water quality conditions will be established under a separate contract, to be coordinated with the demonstration project.

System components will include a temporary influent pump station, temporary hypochlorination disinfection system, temporary conveyance and connection to the existing in-plant nonpotable water system, pilot-scale recharge trench system, and groundwater monitoring facilities. A description of each component of the demonstration project is presented below.

2.3.2.1 Temporary Vertical Turbine Pumps

A temporary conveyance system is proposed to convey up to 3 MGD of secondary effluent for reclamation. Two turbine pumps will be installed within the Parshall flume channel to withdraw secondary effluent. Each pump will be designed to convey 2 MGD at 225 feet of head, individually; and 3 MGD at 260 feet of head when operating together. The design will also incorporate two 16-inch diameter steel pipe stilling wells within the Parshall flume channel to protect the turbine pumps from turbulence from the flowing effluent.

2.3.2.2 Temporary Hypochlorination Disinfection System

Chlorination by injection of liquid hypochlorite into the turbine pump discharge pipe line is the proposed method of disinfection. The system will require a mixing tank, chemical feed pump, associated piping, valves and appurtenances. Upon termination of the hypochlorination system, the system components will be dismantled and may be reused within the Honouliuli WWTP or other facilities operated by WWM.

2.3.2.3 Temporary Pilot-Scale Recharge Trench System

The proposed pilot-scale recharge trench system will consist of a transmission line, flow splitting manhole, observation ports and perforated pipe encased in a 5-foot wide, crushed rock-filled trench. Trench depth will vary between 9 and 12 feet below grade. An overall trench length of 450 feet is proposed, with a 24-inch diameter perforated pipe to distribute the flow. The flow splitting manhole will be centrally located along the trench length, to allow the flow to be conveyed to both ends of the trench. Flow measuring manholes and piezometers are proposed, to be spaced along the trench, two on each side of the flow splitting manhole. The flow measuring manholes will be used to measure flow and infiltration, while the piezometers will be used to measure the level of standing water within the trench. The trench will be covered for safety and to prevent algae growth. A typical trench section is illustrated on **Figure 2.4**.

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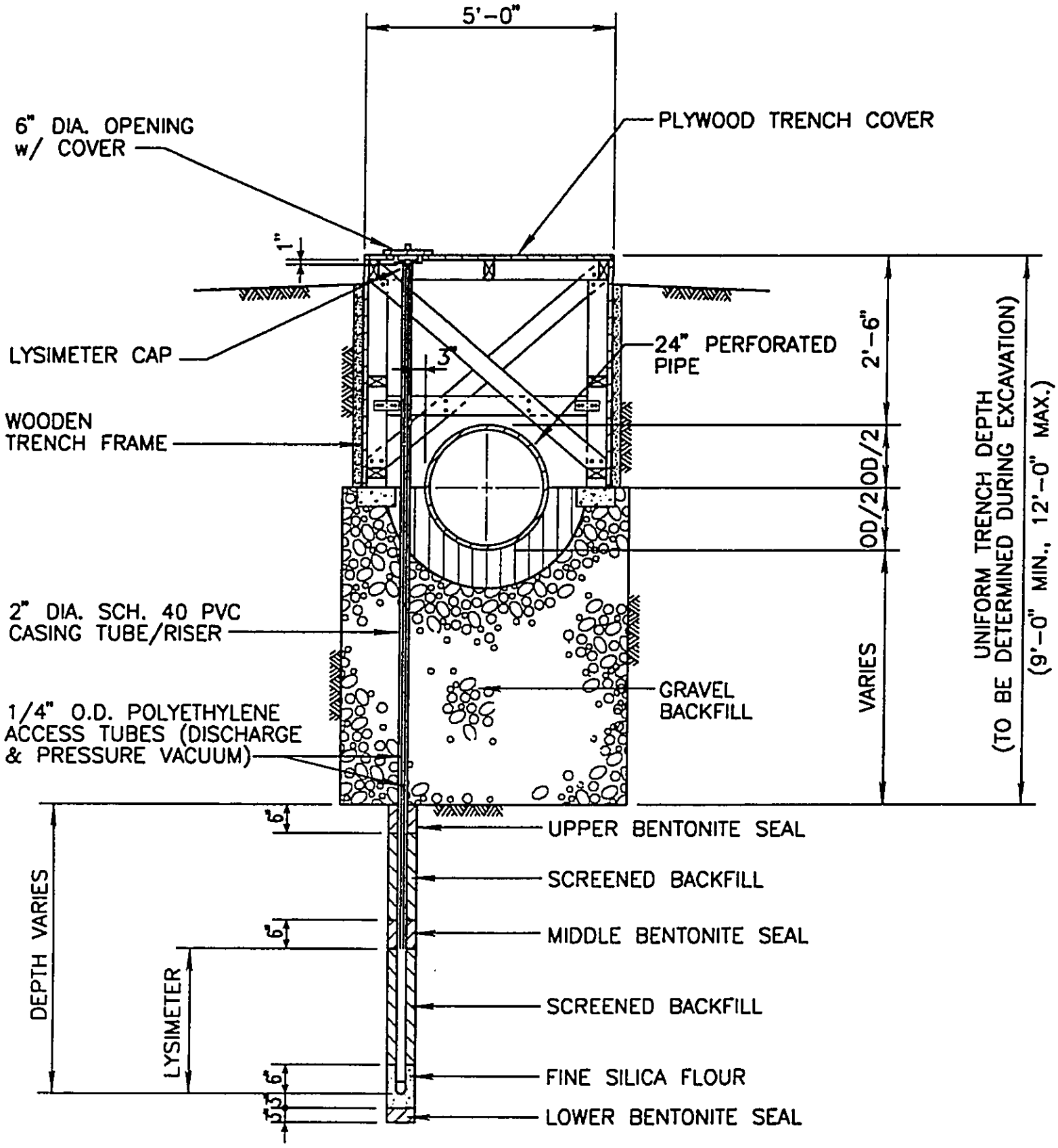

FIGURE 2.4

RECHARGE TRENCH TYPICAL SECTION

2.3.2.4 Ground Water Monitoring Facilities

A total of eleven lysimeters will be installed below the recharge trench for collection of percolate. Five lysimeters will be located on each side of the discharge port, spaced five feet apart. The eleventh lysimeter will function as a control station, to be located approximately 100 feet upgradient from the trench.

Four monitoring wells will be drilled to record ground water levels and allow sample collection. Locations of the four wells are described below:

(1) *Under the trench, next to the flow splitting manhole;*
(2) 10 feet away (downgradient) from the first monitoring well;
(3) 20 feet away (downgradient) from the second monitoring well; and
(4) 100 feet away (upgradient) from the trench, next to the control lysimeter.

In addition, water will be pumped from the two existing brackish water wells within the WWTP. Water samples will be analyzed to determine the impact of the recharge trench on the aquifer.

2.4 PROJECT SCHEDULE AND CONSTRUCTION COST

The estimated cost to implement the proposed project is approximately $11.9 million (1997 dollars), itemized below:

Water Reclamation Facility	$ 9.9 million
Demonstration Project	$ 2.0 million

Construction of the water reclamation facility will be phased. The first phase, to provide up to 6.5 MGD of R-1 water is anticipated to begin in February 1998 and will require 15 months for completion. Construction of the second phase, to provide up to 13 MGD of R-1 water will be scheduled to meet future reclaimed water demands.

Construction of the demonstration project, including temporary disinfection of secondary effluent and pilot-scale recharge trench is anticipated to begin in February 1998 and will require five months for completion.

CHAPTER 3

DESCRIPTION OF THE AFFECTED ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES

The intent of this chapter is to describe the existing environment and potential impacts to the environment which may result from the proposed action. Mitigation measures which will be employed to minimize negative impacts will also be discussed in this chapter.

Potential impacts may be classified as "short term" or "long term". Short term impacts are generally associated with construction activities while long term impacts are those that are lasting, resulting from the presence or operation of the project after it is constructed.

3.1 PROJECT SITE

The proposed project is located within the Honouliuli WWTP site in the community of Ewa on the island of Oahu (TMK: 9-1-13:7 and 9-1-69:4). However, the proposed improvements are limited to the area within TMK 9-1-13:7. The proposed R-1 treatment facilities will be located on the western side of the WWTP, in an area formerly used as a plant nursery. The caprock recharge demonstration project will be located within the open field in the central portion of the WWTP, north of the large trees.

3.2 CLIMATE

The climate of the project area is constant and relatively dry, with prevailing tradewinds coming out of the northeast. Wind data gathered from Naval Air Station Barbers Point (located southwest of the project site) reveals the dominant wind regime is the northeast tradewinds which blow 85 percent of the time at an average speed of nine knots. Winds from the south are infrequent occurring only a few days during the year and mostly in winter in association with Kona storms.

Average annual monthly minimum and maximum temperatures in the Ewa Plain area are 67°F to 85°F, respectively. Climate data (1962 to 1997) taken from Honolulu Observatory (Station 702.2, located southeast of the project site) reveals the average maximum temperature for the warmest month is 89°F, while the average minimum temperature for the coolest month is 62°F. Extreme temperatures were recorded at 94°F as the highest temperature and 47°F as the lowest temperature.

The Ewa Plain experiences light rainfall amounts of approximately 21 inches per year. Most of this rainfall occurs between the months of November and April.

3.3 TOPOGRAPHY

The terrain within the WWTP site ranges from flat to slightly sloping. Overall elevations range from 33 feet to 45 feet above mean sea level (MSL). According to a topographic survey of the site prepared for GMP Associates, Inc. (January 25, 1997), the project site ranged in elevation from 33 feet to 40 feet MSL. The land slopes from the northwest to the southeast at about 2 percent.

The proposed project will involve minimal grading to divert storm runoff around the proposed facilities.

3.4 GEOLOGY/SOILS

Information on the project site soils is based on the USDA Soil Conservation Service *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. Three soil classifications exist within the WWTP site. The prevalent soil type, Mamala stony silty clay loam, 0-12 percent slope (MnC), encompasses the area proposed for development. According to the Soil Survey, the soils in the Mamala series are characterized as shallow, well-drained soils found along the coastal plains of Oahu and formed in alluvium deposited over coral limestone and consolidated calcareous sand. Coral rock fragments and stones are common in the surface layer and profile of MnC. The MnC classification is also characterized as having moderate permeability, very slow to medium runoff rate, and slight to moderate erosion hazard.

Other soil classifications present within the WWTP site include Ewa silty clay loam, moderately shallow, 0-2 percent slope (EmA); and Waialua silty clay, 0-3 percent slope (WkA). These soils are characterized as having slow runoff rate, no more than slight erosion hazard and moderate permeability.

3.4.1 Potential Impacts

Soil erosion potential will increase during construction and decrease after development of the proposed project. Increase in soil erosion potential will result from clearing, grubbing, grading and other earth moving operations during the construction period. The reduction in soil erosion potential expected after development will be due to establishment of permanent landscaping and increased impervious surfaces (buildings, equipment slabs, pavement).

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3.4.2 Mitigation Measures

Erosion control plans will be prepared during the design phase and included in the construction documents. The erosion control plan will identify specific best management practices (BMPs) which will be employed to minimize erosion and offsite sediment transport from the site. In addition, construction activities will be subject to conditions of the National Pollutant Discharge Elimination System (NPDES) permit for discharge of storm water associated with construction activities. Minimization of soil erosion and associated sediment transport to state waters is a primary objective of this permit. Proposed mitigation measures may include: temporary berm or swale to direct runoff around the construction area; hydromulch or grass to stabilize exposed surfaces; installation of silt fences to minimize sediment transport; and construction of a graveled ingress/egress for use by construction vehicles at the entrance of the work area to minimize tracking debris onto paved roads.

3.5 GROUND WATER

The Ewa Plain is composed of successive layers of marine and terrestrial sediments in the form of a wedge known locally as "caprock". Porous limestone strata within the Ewa caprock sequence comprise the primary aquifers in Ewa. The uppermost limestone stratum, extending from the surface to approximately 80 feet below mean sea level at the WWTP, is the only exploitable aquifer (Limestone Aquifer 1) in the caprock. This aquifer is tapped primarily for irrigation water because of its brackish quality. A clay aquiclude, approximately 50 feet thick, resides below Limestone Aquifer 1 and separates it from underlying Limestone Aquifer 2. This aquiclude minimizes any co-mingling of waters between Limestone Aquifers 1 and 2. Limestone Aquifer 2 is saline, restricting its use to cooling and washdown water.

Recharge of the upper limestone aquifer occurs by infiltration of rainfall, seepage from the basalt aquifer and excess irrigation water. However, rainfall in the Ewa area is light and irrigation has diminished due to the decline of sugar cane cultivation.

Two wells have been drilled to provide nonpotable water for use within the Honouliuli WWTP (State well no. 1902-03 and -04). The wells are located 20 feet apart and drilled to a depth of 15 feet below sea level (within the upper limestone aquifer). The Commission on Water Resource Management has limited pumpage from the wells to a total of 500,000 gallons per day.

3.5.1 Potential Impacts

The proposed project should have a positive effect on the ground water quantity since use of reclaimed water within the WWTP will decrease pumpage of the two onsite brackish water wells and provide a means for aquifer recharge.

Aquifer water quality will be monitored to minimize the potential for contamination or degradation due to the proposed demonstration project. A monitoring program, including establishment of pre-construction baseline conditions, will be implemented as part of the demonstration project.

3.5.2 Mitigation Measures

If detrimental impacts to ground water quality are detected during monitoring, discharge of reclaimed water to the trench will be terminated to minimize long-term impacts to the aquifer.

3.6 FLOOD AND TSUNAMI HAZARD

According to the Flood Insurance Rate Map, the Honouliuli WWTP site is located entirely within Zone D, areas in which flood hazards are undetermined (see **Figure 3.1**).

The project site is not located within a tsunami inundation area as depicted in Tsunami Evacuation Oahu Map 17 (Kahe Point to Ewa Beach) or Map 18 (Ewa Beach to Airport), contained in the Civil Defense Information section of the GTE Hawaiian Tel telephone directory.

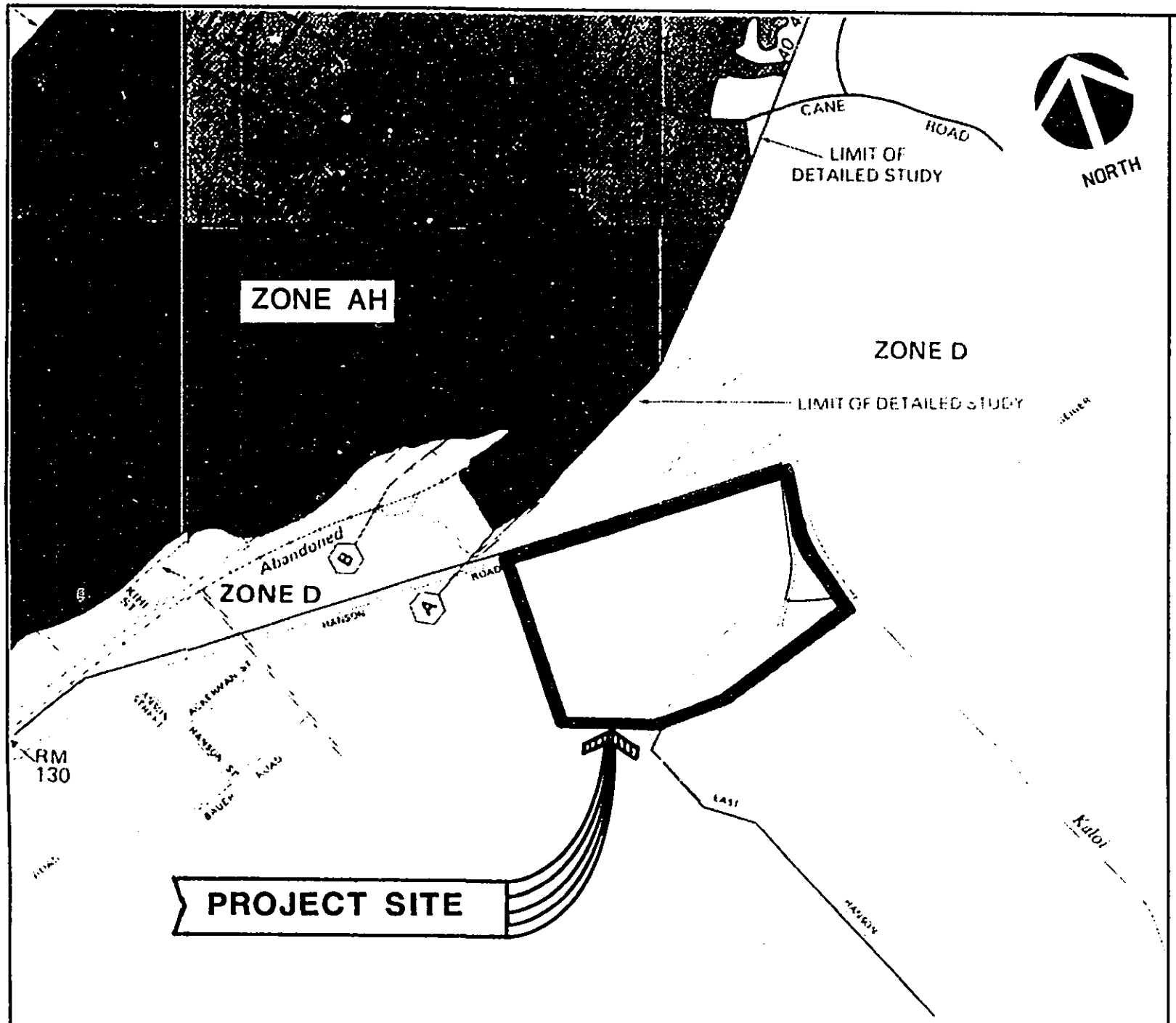
There are no anticipated impacts to the proposed project or as a result of the proposed project related to flooding or tsunami hazards.

3.7 STATE AND COUNTY LAND USE DESIGNATION

The Honouliuli WWTP site is designated Urban and Agricultural on the State Land Use Map (see **Figure 3.2**). However, the proposed action is located in the portion of the WWTP with an Urban designation.

The City and County Development Plan Zoning Map designation for the WWTP site is Residential (R-5) and Restricted Agricultural (AG-1) (see **Figure 3.3**). The proposed action is located in the R-5 zoned area.

The entire WWTP site is designated as a Public Facility on the City and County Development Plan Land Use Map (see **Figure 3.4**).



REFERENCE:
FEDERAL EMERGENCY MGMT. AGENCY
FLOOD INSURANCE RATE MAP
COMMUNITY PANEL NUMBER
150001 0110D, 150001 0130C &
150001 0135C

1000 500 0 1000 2000
GRAPHIC SCALE IN FEET

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** — No base flood elevations determined
- **ZONE AE** — Base flood elevations determined
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined
- **ZONE A99** — To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- **ZONE V** — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** — Coastal flood with velocity hazard (wave action); base flood elevations determined

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside 500-year flood plain.
- **ZONE D** — Areas in which flood hazards are undetermined.

- Flood Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line, Elevation in Feet*
- D — D — Cross Section Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone*
- $RM7_X$ — Elevation Reference Mark

*Referenced to the National Geodetic Vertical Datum of 1929

FIGURE 3.1

FLOOD HAZARD MAP

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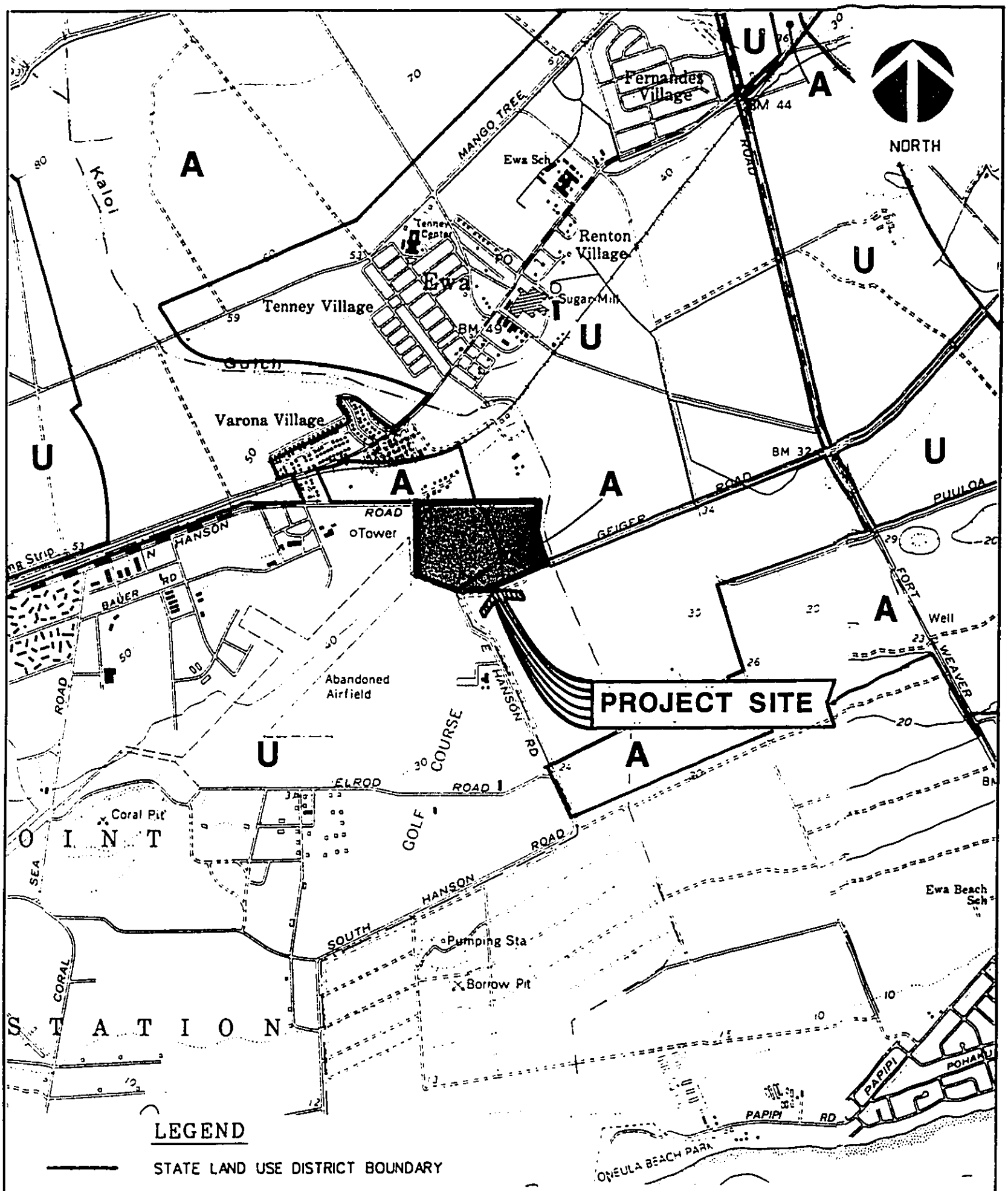

LEGEND

———	STATE LAND USE DISTRICT BOUNDARY
A	AGRICULTURAL DISTRICT
U	URBAN DISTRICT

2000 1000 0 2000 4000

GRAPHIC SCALE IN FEET

REFERENCE: STATE LAND USE COMMISSION

FIGURE 3.2

STATE LAND USE MAP

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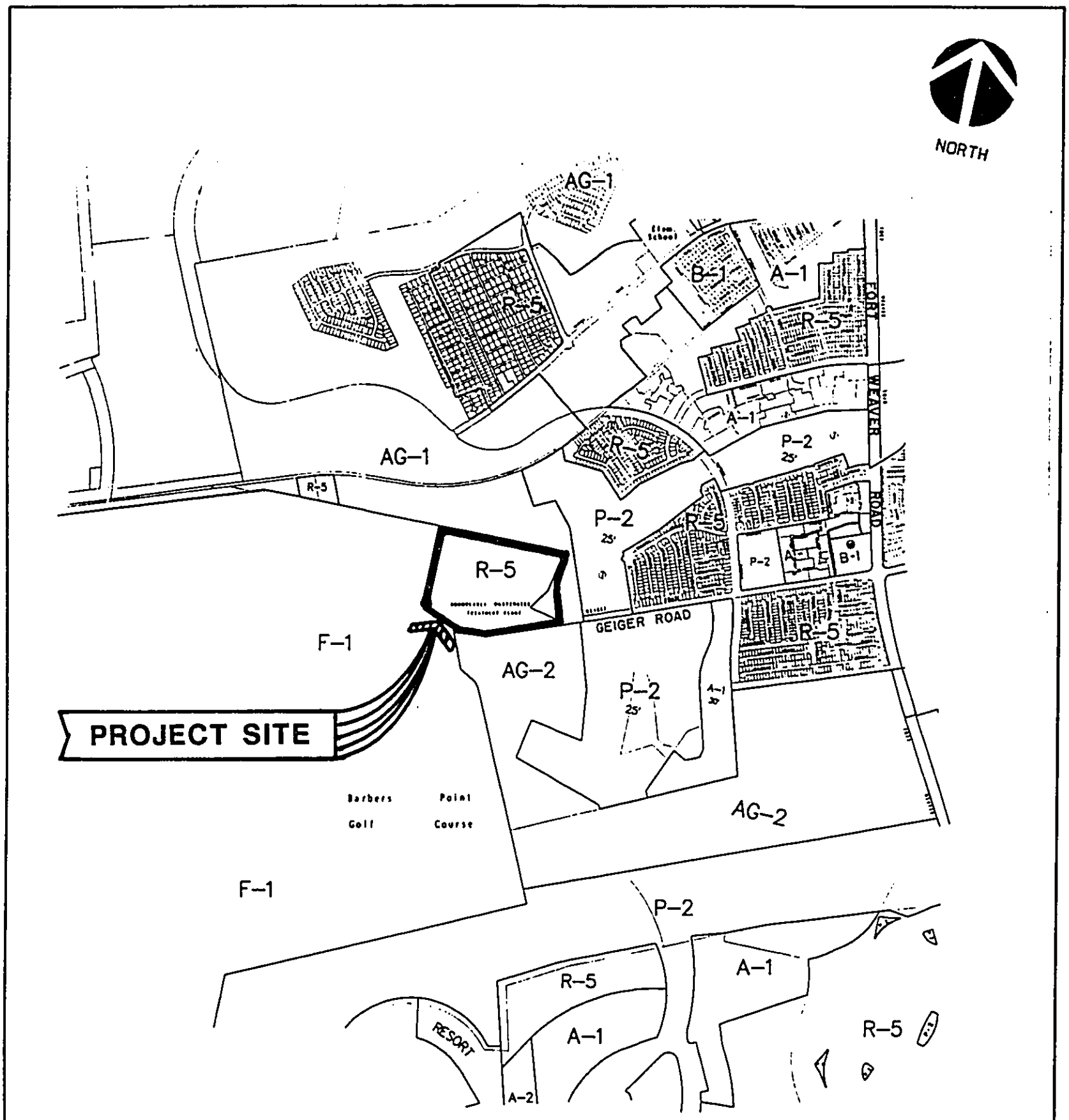


LEGEND

P-2	GENERAL PRESERVATION ZONE
F-1	MILITARY AND FEDERAL PRESERVATION ZONE
R-5	RESIDENTIAL ZONE
AG-1	RESTRICTED AGRICULTURAL ZONE
AG-2	GENERAL AGRICULTURAL ZONE
B-1	NEIGHBORHOOD BUSINESSZONE
A-1	LOW-DENSITY APARTMENT ZONE

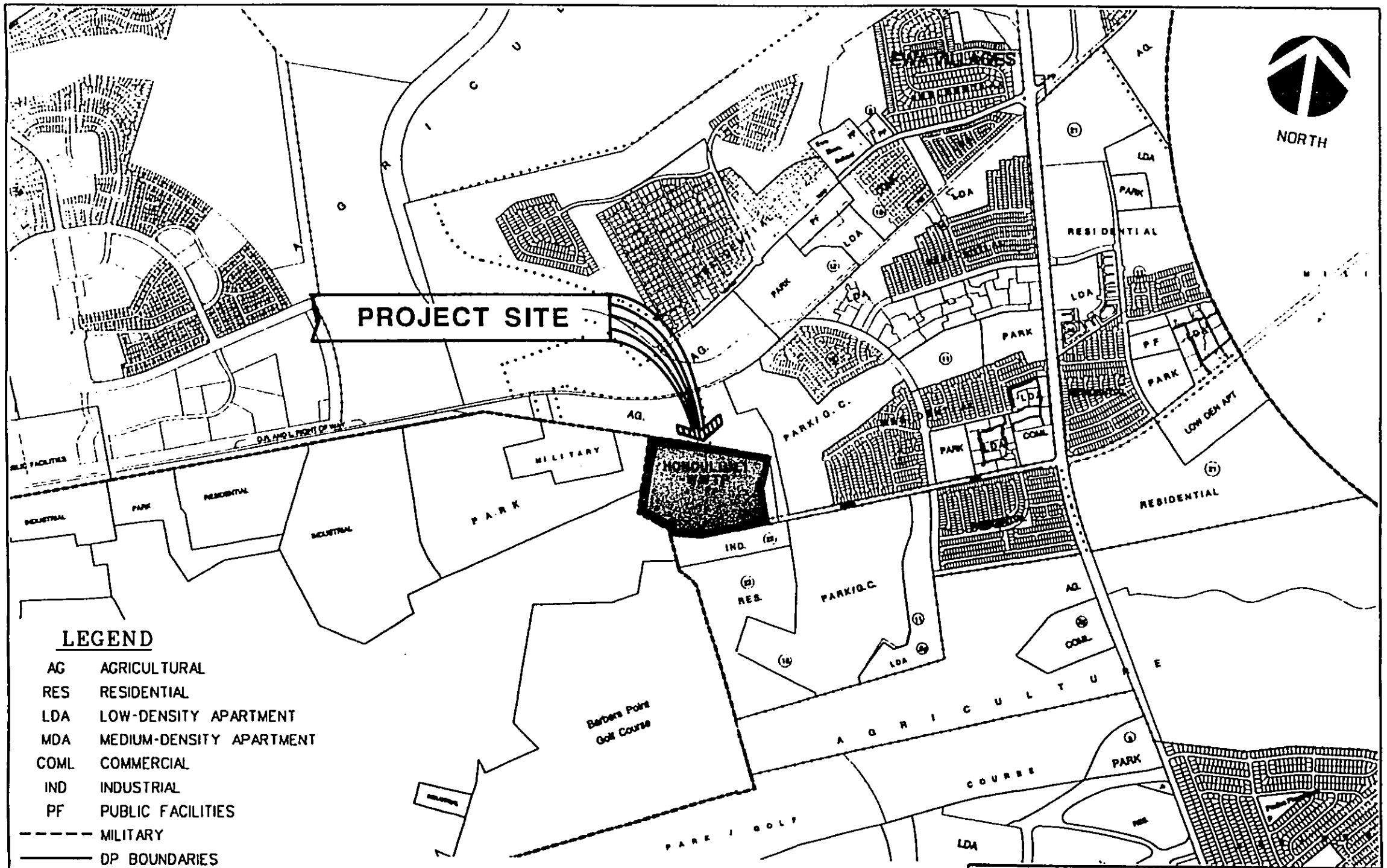
2000 1000 0 2000 4000

GRAPHIC SCALE IN FEET

REFERENCE: CITY & COUNTY OF HONOLULU
ZONING MAP NO. 12
EWA BEACH-IROQUOIS POINT

FIGURE 3.3

DEVELOPMENT PLAN ZONING MAP



LEGEND

AG	AGRICULTURAL
RES	RESIDENTIAL
LDA	LOW-DENSITY APARTMENT
MDA	MEDIUM-DENSITY APARTMENT
COML	COMMERCIAL
IND	INDUSTRIAL
PF	PUBLIC FACILITIES
- - - - -	MILITARY
———	DP BOUNDARIES

REFERENCE:
CITY & COUNTY OF HONOLULU
EWA DEVELOPMENT PLAN
LAND USE MAP

2000 1000 0 2000 4000
GRAPHIC SCALE IN FEET

FIGURE 3.4

DEVELOPMENT PLAN
LAND USE MAP

3.8 FLORA

The Honouliuli WWTP site has been extensively cleared and graded during previous construction phases. Construction of the reclamation facility is proposed in the southwestern portion of the WWTP in an area formerly used by the City and County Department of Parks and Recreation as a temporary plant nursery. The area proposed for development of the demonstration project is a large lawn in the center of the WWTP consisting of well maintained grass and weeds.

There are no endangered, threatened or important flora known to exist within the project site. The proposed project is not anticipated to have an adverse impact on botanical resources.

3.9 FAUNA

Due to extensive development within the WWTP parcel, onsite fauna is anticipated to be typical of other developed areas. There are no impacts anticipated or mitigation measures proposed.

3.10 AIR QUALITY

Air quality in the vicinity of the project site is believed to be in compliance with State and Federal standards.

An application for a covered source air permit was submitted to DOH in November 1995, addressing all emissions from the WWTP, including emergency generators, diesel pumps and odor control systems. Although it remains inactive, potential emissions from the onsite incinerator are also addressed in the permit application.

3.10.1 Potential Impacts

During construction, generation of fugitive dust during demolition, earth moving and other activities may result in a temporary impact on air quality. However, the impact of fugitive dust generated during construction is not anticipated to affect the neighboring properties.

There are no long-term air emissions or air quality impacts anticipated due to construction of the proposed project. No changes to the existing covered source permit application are required.

3.10.2 Mitigation Measures

To ensure compliance with DOH regulations, an effective dust control plan will be implemented during construction. Dust control measures may include watering the work area, use of wind screens, keeping adjacent roadways clean, and covering open-bodied trucks. Other dust control measures may include mulching or stabilizing inactive exposed areas, and scheduling permanent paving or landscaping early in the construction schedule.

3.11 NOISE

3.11.1 Potential Impacts

The proposed project is anticipated to generate noise during construction activities and as a result of day to day operation after construction. However, there are no significant acoustical impacts anticipated.

3.11.2 Mitigation Measures

Short-term mitigation measures to reduce the impact of construction noise include compliance with Hawaii Administrative Rules, Chapter 11-46 "Community Noise Control". The contractor will also be required to comply with the City and County noise regulations, including those specified in the grading permit.

3.12 ARCHAEOLOGY/HISTORIC SITES

There are no known archaeological or historic sites within the Honouliuli WWTP parcel on record with the State Historic Preservation Division (SHPD). Due to extensive development within the parcel and surrounding areas, it is unlikely that excavation activities associated with the proposed project will unearth any archaeological sites. Work will be halted and the SHPD will be contacted for instructions if the excavations uncover any archaeological sites.

3.13 ODORS

Under existing conditions, odors are evident at the WWTP, primarily due to the solids treatment processes.

The proposed project is not anticipated to generate odors. Both the water reclamation facility and demonstration project will utilize secondary effluent (wastewater which has been biologically oxidized).

3.14 VISUAL IMPACT

The proposed project is not anticipated to affect views from the surrounding areas. Most of the facilities will be situated low to the ground or underground. The proposed chemical storage building will be a single story, slab on grade structure.

3.15 EMPLOYMENT

Development of the proposed project will increase staffing requirements at Honouliuli WWTP in the long range.

GMP Associates, Inc. has prepared estimated staffing requirements associated with operation of the water reclamation facility portion of the proposed project. During the initial phase of development, which will produce up to 6.5 MGD of R-1 water, approximately 7,900 man-hours per year will be needed to operate the water reclamation portion of the project. This manpower requirement translates to 5 or 6 additional staff positions.

The demonstration project will be temporary, operational for a few years at most. It is anticipated that operation and maintenance procedures for the demonstration project will be performed by existing WWTP personnel.

3.16 TRAFFIC/PARKING

Due to the minimal increase in manpower required for operation of the proposed project, impacts to traffic congestion and parking are anticipated to be negligible. There is adequate parking available within the Honouliuli WWTP to accommodate the additional employees. However, five standard parking stalls and one handicapped parking stall will be added in compliance with the Land Use Ordinance due to construction of the Chemical Storage Building and R-1 Pump Station.

3.17 SOCIAL ENVIRONMENT

The proposed project is not anticipated to have a direct impact on the social environment. All activity will be located within the Honouliuli WWTP which will not be in direct contact with the general public. However, the community opinion of the project may impact the social environment.

3.17.1 Potential Impacts

The proposed action may be perceived as a negative impact by the community due to health concerns surrounding the use of reclaimed water/wastewater effluent.

3.17.2 Mitigation Measures

Any perceived negative impacts will be addressed and mitigated by implementing educational programs as outlined in the Department of Health reuse guidelines. These programs include:

A public education program to inform and educate persons likely to come in contact with reclaimed water. The program may provide a means for the community and concerned groups to voice concerns and have questions answered.

A management reuse plan to establish and delineate responsibilities for operation and maintenance of the reuse system, including contingency measures to protect public health in the event of a non-approved use.

An employee training plan to educate workers directly involved or exposed to reclaimed water.

Descriptions of these educational programs will be submitted to the Department of Health for approval.

CHAPTER 4

ALTERNATIVES TO THE PROPOSED ACTION

This chapter discusses alternatives against which the proposed action was evaluated. The alternatives were rejected due to their inability to meet the project objectives, or attainment of the objectives to a less desirable degree. To restate, these objectives are:

(1) To reduce reliance on the potable water supply and the caprock aquifer (brackish water) for nonpotable water uses while encouraging the beneficial use of a valuable resource (reclaimed water); and

(2) To evaluate the potential of using reclaimed water to recharge the caprock aquifer.

4.1 NO ACTION

Without construction of the water reclamation facility for production of reclaimed water suitable for nonpotable uses, there would be no regional alternative to reduce demands on the potable water supply and caprock aquifer. In addition, without construction of the demonstration project, it would not be possible to evaluate the potential to recharge the caprock aquifer with wastewater effluent.

The "no action" option is not acceptable since it fails to meet the project objectives.

4.2 PROPOSED PROJECT

The two components of the proposed project will meet the objectives stated above. Specifically, construction of the water reclamation facility to treat up to 13 MGD of secondary effluent to R-1 quality will provide a reliable source of reclaimed water for future use within the WWTP and for use by customers in the Ewa Plain. Use of reclaimed water will reduce reliance on potable water and the caprock aquifer.

4.3 R-2 WATER RECLAMATION FACILITY

An alternative to the proposed project was construction of all or a portion of the 13 MGD water reclamation facility to meet the R-2 reclaimed water criteria instead

of R-1. Under the less stringent R-2 designation, secondary effluent would be disinfected typically with chlorine or UV exposure, but not coagulated or filtered.

There would be a cost savings in design, construction and operation of the reclamation facility to the lower R-2 standard. However, associated restrictions on use of the lower quality water would be imposed to protect public health. These restrictions would reduce the demand and flexibility for use of reclaimed water by the public.

4.4 FILTRATION SYSTEM ALTERNATIVES

Two main filter types were investigated: travelling bridge and upflow continuous backwash (contact sand filtration). Both systems, equivalent to R-1 reclaimed water criteria, meet California's wastewater reclamation criteria (California Code of Regulations, Title 22).

The travelling bridge filter typically consists of a shallow sand bed divided into multiple cells and a travelling operations platform connected to the backwashing system. The platform travels along the filter and backwashes the sand filter cells. Advantages of the travelling bridge filter over contact sand filtration are its lower capital cost and relatively low reject water rate. Disadvantages are the large footprint, the need for a flocculation basin, and higher operation and maintenance costs.

Design of a travelling bridge filter was a less desirable alternative primarily due to the limited space within the WWTP.

4.5 ULTRAVIOLET LIGHT (UV) DISINFECTION SYSTEM ALTERNATIVES

Two other types of UV disinfection systems were evaluated for the R-1 water reclamation facility prior to selection of the medium-pressure open channel system. These two systems are: in-pipe medium-pressure system and low-pressure system.

The medium-pressure in-pipe system is similar to the selected system in terms of operation and maintenance requirements and treatment capability. In addition, the in-pipe system is the most compact alternative. This system also incorporates an automatic lamp cleaning feature and has the capability to adjust the UV intensity as required for varying wastewater quantity or quality. However, it may be difficult to implement this option since it has not obtained California Title 22 approval. Consequently, a demonstration project may be required to satisfy the DOH reuse guidelines.

The low-pressure system is typical for wastewater applications and is in use locally at the Fort Kamehameha WWTP, municipal treatment facilities at Kihei and Lahaina, and a private WWTP serving Laie. Low-pressure systems have obtained California Title 22 approval. Disadvantages of this system are the operation and maintenance requirements since more lamps are required in a low-pressure system than a medium-pressure design, manual lamp cleaning is required, and there is no dose-pacing capability.

4.6 OTHER ALTERNATIVES

Although other alternatives exist to reduce demands on the potable water supply and the caprock aquifer (i.e. water conservation, ocean water desalinization), these alternatives do not beneficially reuse wastewater effluent. In addition, implementation of measures such as water conservation and desalinization would extend beyond the jurisdiction of the Department of Wastewater Management.

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CHAPTER 5

DETERMINATION, FINDINGS AND REASONS SUPPORTING DETERMINATION

5.1 DETERMINATION

The Department of Wastewater Management has concluded that the proposed project does not have the potential to generate significant environmental impacts, and the need to prepare an environmental impact statement is not foreseen. This Final EA has been submitted with a Finding of No Significant Impact (FONSI) determination.

5.2 FINDINGS AND REASONS SUPPORTING DETERMINATION

The overall and cumulative effects of the proposed action were evaluated with respect to Hawaii Administrative Rules (HAR) Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 11-200-12 "Significance Criteria". The following findings and conclusions were made in support of the FONSI determination:

(1) The proposed project will not involve an irrevocable commitment to loss or destruction of any natural or cultural resource.

(2) The proposed project will not curtail the range of beneficial uses of the environment. Instead, the proposed project will encourage reclamation and reuse of wastewater effluent as a nonpotable water source to preserve the caprock aquifer.

(3) The proposed project will not conflict with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.

(4) The proposed project will not substantially affect the economic or social welfare of the community or state.

(5) The proposed project will not substantially affect public health.

(6) The proposed project will not involve substantial secondary impacts such as population changes or effects on public facilities. However, the project will benefit the public by increasing effluent quality and evaluating the efficacy of recharging the caprock aquifer with reclaimed water.

(7) The proposed project will not involve a substantial degradation of environmental quality. The proposed pilot-scale recharge trench is a short-term demonstration project which will monitor groundwater to assess the impact of recharge utilizing disinfected secondary effluent. The project can be terminated if significant negative impacts to the aquifer are noted.

(8) The proposed project will not have a considerable cumulative effect upon the environment or involve a commitment for larger actions in itself. Rather, as a pilot study, the feasibility of utilizing reclaimed water will be evaluated. Should the results of the demonstration project suggest viability for long-term application, long range plans could be developed and an Environmental Impact Statement would be prepared to address potential long-term impacts.

(9) The proposed project will not have a substantial affect on any rare, threatened, or endangered species or its habitat.

(10) The proposed project will not cause long-term detrimental effects on air or water quality or ambient noise levels. The demonstration project is short-term in nature and can be terminated if detrimental effects result.

(11) The proposed project will not affect and is unlikely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

(12) The proposed project will not substantially affect scenic vistas and view planes identified in county or state plans or studies.

(13) The proposed project will not require substantial energy consumption. Electrical power requirements will coordinated with Hawaiian Electric Company.

CHAPTER 6

CONSULTATION

6.1 PARTICIPANTS

This Final EA/FONSI was prepared for the Department of Wastewater Management, City and County of Honolulu, by Engineering Concepts, Inc. The following individuals and organizations were also involved in the preparation of this document.

Individual/Organization	Area of Expertise
GMP Associates, Inc.	Water Reclamation Facility
James S. Kumagai	Recharge Trench
Shimabukuro, Endo & Yoshizaki, Inc.	Recharge Trench

6.2 PARTIES CONSULTED DURING PREPARATION OF THE FINAL EA

Fifty three (53) copies of the Draft EA were mailed to agencies, organizations and other interested parties. A complete listing of these consulted parties is included in Sections 6.2.1 through 6.2.5.

Availability of the Draft EA was published in the November 8, 1997 edition of *The Environmental Notice* by the Office of Environmental Quality Control. A total of 16 comment letters were received as of December 19, 1997 (the public review period ended on December 8, 1997. Agencies and organizations responding to the request for comments are marked with an asterisk (*) in the lists which follow. Those who responded with no comments are marked with a plus (+).

6.2.1 Federal Government

Department of Agriculture, Natural Resources Conservation Service
Department of Commerce National Marine Fisheries Service
Department of the Interior:
- Fish and Wildlife Service
- Geological Survey

Department of the Navy, Naval Base Pearl Harbor

6.2.2 State Government

State Legislature:
- Senator Brian Kanno, District 20
- * Representative Paul Oshiro, District 41

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Representative Mark Moses, District 42
+ Department of Accounting and General Services
+ Housing Finance & Development Corporation
Department of Business, Economic Development and Tourism:
* Land Use Commission
State Energy Office
+ Office of Planning
* Department of Land and Natural Resources
Department of Health, Environmental Planning Office
* Office of Environmental Quality Control
* Office of Hawaiian Affairs
University of Hawaii:
Environmental Center
Water Resources Research Center

6.2.3 City and County Government

Council Member John DeSoto, District IX
Council Member Steve Holmes, District II
* Board of Water Supply
+ Building Department
Department of Land Utilization
* Planning Department
+ Department of Public Works
* Department of Parks and Recreation

6.2.4 Other Interested Parties

+ American Lung Association
Ewa Neighborhood Board No. 23
Makakilo/Kapolei/Honokai Hale Neighborhood Board No. 34
* Hawaiian Electric Company
The Estate of James Campbell
Gentry Homes, Ltd.
Haseko (Ewa), Inc.
* Hawaii Prince Golf Course
New Ewa Beach Golf Club
Coral Creek Golf Course
Tom Nance Water Resource Engineering

6.2.5 Libraries

State Main Library
University of Hawaii, Hamilton Library
Pearl City Regional Library

Ewa Beach Public & School Library
Waipahu Library

6.3 COMMENTS ON THE DRAFT EA

Comment letters received during public review of the Draft EA and responses prepared by the applicant have been included in **Appendix B.**

CHAPTER 7

REFERENCES

Engineers Surveyors Hawaii, Inc., *Offsite Water System for Ewa Development Projects Final Environmental Impact Statement*, prepared for the Department of Housing and Community Development, City and County of Honolulu, December 1995.

GMP Associates, Inc., *Honouliuli Wastewater Treatment Plant Secondary Effluent Reuse Facility Engineering Design Report, Preliminary Submittal*, prepared for the Department of Wastewater Management, City and County of Honolulu, February 1997.

Hawaii State, Department of Health, *Hawaii Administrative Rules*, "Chapter 42: Vehicular Noise Control For Oahu", October 24, 1981.

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Hawaii State, Department of Health, *Hawaii Administrative Rules*, "Chapter 200: Environmental Impact Statement Rules", August 20, 1996.

Hawaii State, Department of Health, Wastewater Branch, *Guidelines for the Treatment and Use of Reclaimed Water*, November 22, 1993.

Honolulu, City and County of, Planning Department, *Ewa Development Plan*, March 1996.

Mink & Yuen, Inc., *Ewa Caprock Study: An Evaluation of the Effect on the Quality of Nearshore Waters Due to the Injection of Sewage Effluent into the Ewa Caprock*, prepared for the Department of Wastewater Management, City and County of Honolulu, December 1994.

R.M. Towill Corporation, *Ewa Villages Master Plan Final Environmental Impact Statement, Ewa, Oahu, Hawaii*, prepared for the Department of Housing and Community Development, City and County of Honolulu, February 1991.

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U.S. Federal Emergency Management Agency, National Flood Insurance Program, "Flood Insurance Rate Map, City and County of Honolulu, Community Panel Number 150001 0135C", revised September 28, 1990.

University of Hawaii, Department of Geography, *Atlas of Hawaii*, Second Edition, 1983.

Woodward-Clyde Consultants, *Work Plan for Baseline Water Quality Monitoring and Flow Modeling: Ewa Plain, Southern Oahu, Hawaii*, prepared for the Department of Wastewater Management, City and County of Honolulu, September 17, 1996.

Appendix A

DEFINITIONS

APPENDIX A

DEFINITIONS

R-1 Water (Significant reduction in viral and bacterial pathogens) means reclaimed water that is at all times oxidized, then filtered, and then exposed, after the filtration process to:

A. A disinfection process that has been shown to the satisfaction of DOH to reliably reduce the number of plaque-forming units of F-specific bacteriophage MS2 per unit volume of water, added to the filter effluent in a demonstration project, to one ten-thousandth (1/10,000) of the initial concentration in the filter effluent throughout the range of qualities of effluent that will occur at the reclamation facility and that might influence efficacy of disinfection, or have been shown to the satisfaction of DOH to likewise reliably reduce the number of plaque-forming units of other virus added to the filter effluent, to one ten-thousandth (1/10,000) of the initial concentration when such other virus has been shown to the satisfaction of DOH to be at least as resistant to the form of disinfection being demonstrated as F-specific bacteriophage MS2;

B. A disinfection process that limits the concentration of fecal coliform bacteria to the following criteria:

(1) The median number of fecal coliform values shall not exceed 1 per 100 milliliters as determined from the bacteriological results of the last seven days for which analyses have been completed; and

(2) Any one sample shall not exceed a fecal coliform value of 4 per 100 milliliters.

R-2 Water (Disinfected Secondary-4 Reclaimed Water) means reclaimed water that is at all times oxidized, and then exposed to a disinfection process that:

A. Limits the concentration of fecal coliform bacteria in the production of R-2 reclaimed water to the following criteria:

(1) The median number of fecal coliform values shall not exceed 4 per 100 milliliters as determined from the bacteriological results

of the last seven days for which analyses have been completed; and

(2) Any one sample shall not exceed a fecal coliform value of 50 per 100 milliliters.

Appendix B

DRAFT EA COMMENTS AND RESPONSES

HOUSE OF REPRESENTATIVES
THE NINETEENTH LEGISLATURE

STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

December 8, 1997

Mr. Robert Miyasaki
City and County of Honolulu
Department of Wastewater Management
650 S King Street
Honolulu HI 96813

Dear Mr. Miyasaki:

Thank you for the opportunity to comment on the Hono'uli'uli Water Reclamation Facility and Demonstration Project. The concept of recycling waste water holds many positive benefits for both the preservation of Hawaii's fresh and ocean water resources. In addition to providing a new source of non-potable water, this endeavor will further minimize the impact of our sewage disposal effluent upon our ocean waters. After careful review of this environmental assessment report, I believe that several health concerns should be addressed before this project is initiated.

While I understand that this treated water will be used for non-potable purposes an indepth analysis on the impact of the recycled waste water to the human body is essential. Any adverse reaction that this treated water would have should it be ingested or come in contact with one's skin must be thoroughly evaluated prior to the start of this project. There is also concern on the impact this treated water would have on animals should they ingest it or vegetation that is treated with this water. Lastly, the possibility of any adverse odors from this treated water that might affect neighboring residential areas is of paramount concern.

Your assistance in addressing the above mentioned items is greatly appreciated.

Should you have any questions regarding the above, please contact me at 586-6360.

Very truly yours,

PAUL T. OSHIRO
State Representative
District 41

PTO:wmt

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHERYL R. ORUMA SEPE
DEPUTY DIRECTOR

WPP 97-800

December 22, 1997

The Honorable Paul T. Oshiro
Vice Speaker, House of Representatives
State Capitol, Room 404
Honolulu, Hawaii 96813

Dear Vice Speaker Oshiro:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of December 8, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and offer the following response to your comment

Comment 1: *...an in-depth analysis on the impact of the recycled waste water to the human body is essential. Any adverse reaction that this treated water would have should it be ingested or come in contact with one's skin must be thoroughly evaluated prior to the start of this project.*

Response 1: The State of Hawaii, Department of Health (DOH) has jurisdiction over public health issues. As such, the State Department of Health has developed "Guidelines for the Treatment and Use of Reclaimed Water" to address public health issues posed by reclaimed water. Wastewater undergoes various treatment processes prior to its being reused. The guidelines define the level of treatment required to meet one of three classification of reclaimed water quality and restrict the way the various qualities of reclaimed water may be used to minimize health risks.

The State of Hawaii DOH Guidelines are similar to regulations in the states of California and Florida where the application of reclaimed water for irrigation and other uses have been ongoing for over 30 years. The California and Florida regulations have also been enacted to address public health and safety concerns.

This project has been coordinated closely with the State Department of Health. Their approval is required prior to construction and operation of the reclaimed water facilities. If you would like further information on the DOH reuse guidelines, please contact Mr. Dennis Tulang, DOH Wastewater Branch Chief, at 586-4294.

Comment 2: *There is also concern on the impact this treated water would have on animals should they ingest it or vegetation that is treated with this water.*

Response 2: Again, the State Department of Health's "Guidelines for the Treatment and Use of Reclaimed Water" has been developed to address public health concerns. Several studies have also been conducted both on the mainland and locally by the University of Hawaii to assess the potential impact reclaimed water may have on plants, animals, and humans.

It should be noted that the reuse activities, covered under this Draft Environmental Assessment, are confined within the Honouliuli Wastewater Treatment Plant grounds. Treatment Plant operators who may come in contact with the reclaimed water during their normal work activities will undergo educational training prior to operation of the reuse system. Warning sign and other precautions will also be taken in accordance with the "Guidelines for the Treatment and Use of Reclaimed Water".

Comment 3: *...the possibility of any adverse odors from this treated water that might affect neighboring residential areas is of paramount concern.*

Response 3: The secondary treatment units significantly reduce the odor causing constituents in the water. The sand filters in the R-1 Reclamation Facility further purify the water and reduce odor causing constituents. Therefore, no odors are anticipated to be attributed to the final R-1 quality reclaimed water product. Presently, odors emanating from the WWTP may be attributed to the existing solids treatment system and/or other intermediate liquid treatment processes.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

Cheryl K. Okuma-Sepe

for KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

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ENGINEERING CONCEPTS

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NOV 20 1997

Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attention: Mr. Robert Miyasaki

Gentlemen:

Subject: Honouliuli Water Reclamation Facility
and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 09-01-13:07 and 09-01-69:04
Draft Environmental Assessment

Thank you for the opportunity to review the subject document.
We have no comments to offer.

If there are any questions, please have your staff contact
Mr. Ronald Ching of the Planning Branch at 586-0490.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

RC:jy
c: OEQC
Engineering Concepts, Inc.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHERYL K. OKUMA SEPE
DEPUTY DIRECTOR

WPP 97-791

December 17, 1997

Mr. Gordon Matsuoka, Public Works Administrator
Department of Accounting and General Services
State of Hawaii
P.O. Box 119
Honolulu, Hawaii 96810

Dear Mr. Matsuoka:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of November 20, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and acknowledge that the Department of Accounting and General Services has no comments to offer at this time.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

97-2200 PL

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'97 DEC -5 P3:10
DEPT OF WASTEWATER MG
DIVISION OF PLANNING
& SERVICE CONTROL

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

ROY S. OSHIRO
EXECUTIVE DIRECTOR

IN REPLY REFER TO
97:PPE/5138

December 2, 1997

Mr. Robert Miyasaki
Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Miyasaki:

Re: Draft Environmental Assessment for the Honouliuli Water Reclamation Facility and Demonstration Project

Thank you for the opportunity to review the subject draft EA.

We have no housing related comments to offer at this time.

Sincerely,

Roy S. Oshiro
Executive Director

c: OEQC
Kenneth Ishizaki, Engineering Concepts, Inc.

HPDC

JEREMY HARRIS
MAYOR

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHERYL K. OKUMA SEPE
DEPUTY DIRECTOR

WPP 97-802

December 22, 1997

Mr. Roy S. Oshiro, Executive Director
Housing Finance and Development Corporation
677 Queen Street, Suite 300
Honolulu, Hawaii 96813

Dear Mr. Oshiro:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of December 2, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and acknowledge that the Housing Finance and Development Corporation has no housing related comments to offer at this time.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

Cheryl K. Okuma Sepe for
KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

BENJAMIN J. CAYETANO
GOVERNOR

ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, HI 96804-2359
Telephone 808-587-3822
Fax 808-587-3827

November 19, 1997

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ENGINEERING CONCEPTS

Mr. Kenneth E. Sprague, P.E.,
Ph.D., Director
Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Sprague:

Subject: Draft Environmental Assessment
Honouliuli Wastewater Treatment Plant Effluent Reuse Project
Water Reclamation Facility and Demonstration Project

We have reviewed the subject Draft Environmental Assessment as transmitted by your letter dated November 8, 1997, and have the following comments to offer:

1) We confirm that the project site, identified as TMKs: 9-1-13: 7 and 9-1-69: 4, are within the State Land Use Urban and Agricultural Districts.

   Specifically, the parcel identified as TMK: 9-1-13: 7, is within the State Land Use Urban District, and the parcel identified as TMK: 9-1-69: 4, is within the State Land Use Agricultural District.

2) We confirm that the proposed Water Reclamation Facility and Demonstration Project as depicted in Figure 2.3 of the Draft Environmental Assessment, will be located entirely within the parcel identified as TMK: 9-1-13: 7, therefore will be located within the State Land Use Urban District.

We have no further comments to offer at this time.

Thank you for the opportunity to provide comments on the Draft Environmental Assessment.

If you have any questions in regards to this matter, please feel free to contact me or Leo Asuncion of my staff at 587-3822.

Sincerely,

ESTHER UEDA
Executive Officer

EU:th

cc: OEQC
Engineering Concepts, Inc.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHERYL K. OKUMA SEPE
DEPUTY DIRECTOR

WPP 97-790

December 17, 1997

Ms. Esther Ueda, Executive Officer
Land Use Commission
Department of Business, Economic Development & Tourism
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Dear Ms. Ueda:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of November 19, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and acknowledge your comment that the proposed water reclamation facility and demonstration project is located entirely within parcel 9-1-13:07 which is within the State Land Use Urban District.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

0000 0022 2329

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

BENJAMIN J. CAYETANO, GOVERNOR
SEIJI F. NAYA, DIRECTOR
BRADLEY J. MOSSMAN, DEPUTY DIRECTOR
RICK EGGED, DIRECTOR OFFICE OF PLANNING

OFFICE OF PLANNING
235 South Beretania Street, 6th Flr., Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804
Tel.: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-7077

November 26, 1997

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Mr. Kenneth E. Sprague
Director
Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attn: Robert Miyasaki

Dear Mr. Sprague:

Subject: Draft Environmental Assessment for the Honouliuli Water Reclamation Facility and Demonstration Project

We have reviewed the draft environmental assessment and do not have any specific concerns or comments to offer at this time.

Should you have any questions, please contact Susan Feeney of our Coastal Zone Management Program at 587-2820.

Sincerely,

Rick Egged
Director
Office of Planning

cc: OEQC
✓Engineering Concepts, Inc.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS, MAYOR

KENNETH E. SPRAGUE, P.E., PH.D., DIRECTOR
CHERYL K. OKUMA SEPE, DEPUTY DIRECTOR

WPP 97-793

December 17, 1997

Mr. Rick Egged, Director
Office of Planning
Department of Business, Economic Development & Tourism
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Egged:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of November 26, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and acknowledge that the Office of Planning has no specific concerns or comments to offer at this time.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

for KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
ENGINEERING BRANCH
P O BOX 373
HONOLULU, HAWAII 96809

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT COLOMA-AGARAN

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Mr. Kenneth E. Sprague, P.E., Ph.D.
Director
Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attention: Mr. Robert Miyasaki

Dear Mr. Sprague:

Draft Environmental Assessment (DEA)
for Honouliuli Water Reclamation Facility
and Demonstration Project, Ewa, Oahu, Hawaii

In reference to your letter of November 8, 1997, requesting comments on the subject DEA.

We confirm that the proposed project site is located in Zone D. This is an area in which flood hazards are undetermined.

Thank you for the opportunity to review the DEA. Should you have any questions, please contact Mr. Eric Yuasa of the Project Planning Section at 587-0238.

Sincerely,

ANDREW M. MONDEN
Chief Engineer

DI:ek

c: OEQC
Engineering Concepts, Inc.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., PH.D.
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 97-792

December 17, 1997

Mr. Andrew M. Monden, Chief Engineer
Engineering Branch
Land Division
Department of Land and Natural Resources
P.O. Box 373
Honolulu, Hawaii 96809

Dear Mr. Monden:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of November 25, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and acknowledge your comment that the project site is located in Zone D, an area in which flood hazards are undetermined.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

GARY GILL
DIRECTOR

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ENGINEERING CONCEPTS

December 3, 1997

Mr. Robert Miyasaki
Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, Hawai'i 96813

Dear Mr. Miyasaki:

We submit for your response our comments on a draft environmental assessment (DEA) for the Honouliuli Water Reclamation Facility and Demonstration Project, TMK: 09-01-13:07 and 09:01-69:64. The Office of Environmental Quality Control published notice of availability of this DEA in the November 8, 1997, edition of the *Environmental Notice*.

1. **GROUND WATER QUALITY PARAMETERS.** Please discuss in lay language the parameters for monitoring ground water quality and the basis for their selection.

2. **CURRENT DATA.** Please provide current data on aquifer ground water quality in the final environmental assessment.

3. **DISCHARGE OF RECLAIMED WATER TO THE TRENCH.** Section 3.5.2 notes as a mitigative measure that "[i]f detrimental impacts to groundwater quality are detected during monitoring, discharge of reclaimed water will be terminated to minimize long-term impacts to the aquifer." Please discuss where discharge of reclaimed water will take place if impacts are detected.

Please include this letter and your response to it in the final environmental assessment for this project. If there are any questions, please call Mr. Leslie Segundo, Environmental Health Specialist, at 586-4185. Thank you for the opportunity to comment.

Sincerely,

GARY GILL
Director

c: Kenneth Ishizaki, Engineering Concepts

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHERYL K. OKUMA SEPE
DEPUTY DIRECTOR

WPP 97-818

December 23, 1997

Mr. Gary Gill, Director
Office of Environmental Quality Control
Leiopapa A Kamehameha, Suite 702
235 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Gill:

Subject: Draft Environmental Assessment (EA) for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of December 3, 1997 regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and offer the following response to your comments.

Comment 1: *Ground Water Quality Parameters: Please discuss in lay language the parameters for monitoring ground water quality and the basis for their selection.*

Response 1: Ground Water Quality Parameters. Ground water quality will be monitored by collecting reclaimed water and ground water samples and performing chemical analyses for the following parameters:

Parameter	*Basis for Parameter Selection*
effluent BOD soluble BOD soluble COD total organic carbon	These parameters provide a measurement of the organic compounds within the reclaimed water and groundwater.
total Kjeldahl nitrogen ammonia nitrogen nitrate-nitrite nitrogen total phosphorus ortho-phosphorus	These nutrients stimulate biological growth. DOH has water quality standards for these parameters.

Parameter	*Basis for Parameter Selection*
dissolved oxygen	In-situ measurements of reclaimed water and ground water detect potential cause of odors.
turbidity transmittance	Monitoring of turbidity in reclaimed water is required by DOH. Transmittance is an indicator of the effectiveness of the disinfection process.
total dissolved solids	TDS concentration impacts plant growth.
fecal coliform enterococcus heterotrophic plate count	Monitoring of these indicator organisms is required by DOH for public health concerns and to meet water quality standards.

Legend
BOD = biochemical oxygen demand
COD = chemical oxygen demand
UV = ultraviolet light.

Comment 2: *Current Data: Please provide current data on aquifer ground water quality in the final environmental assessment.*

Response 2: Baseline data to establish the aquifer ground water quality is presently being collected under a separate contract. It is not likely that the baseline information will be available for inclusion in the Final EA.

Comment 3: *Discharge of Reclaimed Water to the Trench: Section 3.5.2 notes as a mitigative measure that "if detrimental impacts to groundwater quality are detected during monitoring, discharge of reclaimed water will be terminated to minimize long-term impacts to the aquifer." Please discuss where discharge of reclaimed water will take place if impacts are detected.*

Response 3: In the event detrimental impacts to ground water quality are detected during monitoring, the aquifer recharge demonstration project will cease and the focus of the water reclamation effort will shift to direct delivery of reclaimed water to nonpotable water users. The direct delivery concept will involve conveyance of reclaimed water via nonpotable water pipelines to nearby golf courses, industry and/or other developments with nonpotable demand. Direct delivery will be addressed in a separate environmental document when potential users and pipeline routes are identified.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.

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ENGINEERING CONCEPTS

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813-5249
PHONE (808) 594-1888
FAX (808) 594-1865

November 25, 1997

Mr. Kenneth Ishizaki
Engineering Concepts, Inc.
250 Ward Avenue, Suite 206
Honolulu, HI 96814

Subject: Draft Environmental Assessment (DEA) for the Honouliuli Water Reclamation Facility and Demonstration Project, Ewa, Island of Oahu.

Dear Mr. Ishizaki:

Thank you for the opportunity to review the Draft Environmental Assessment for the Honouliuli Water Reclamation Facility and Demonstration Project, Ewa, Island of Oahu. The City and County of Honolulu Department of Wastewater Management (DWM) has prepared the DEA to address potential impacts stemming from proposed plans to (i) increment the existing water reclamation capacity to treat up to 13 million gallons per day of effluent to R-1 quality, and (ii) construct and implement a demonstration project aimed to monitor the impacts of using secondary effluent on the water quality of nearby water bodies.

Based on information contained in the DEA, the Office of Hawaiian Affairs (OHA) has no objections at this time to the proposed expansion of the water reclamation facility.

But OHA has some concerns pertaining to the demonstration project. It is unclear whether the project's scope is to (i) demonstrate the feasibility of using reclaimed water, or (ii) gather field data to study potential adverse impacts of using reclaimed water on the quality of nearby water bodies. OHA urges the applicant to clearly spell out the scope of the project. The narrative gives the impression that DWM has the technology to manage reclaimed water and wants to make it available for public use. But a closer look to the project's description indicates that DWM will be collecting field data to "test recharge theory effluent and monitor water quality impacts on the caprock aquifer and nearshore waters." (p. 2-7 of DEA).

Please contact Colin Kippen (594-1938), Officer of the Land and Natural Resources Division, or Luis A. Manrique (594-1758), should you have any questions on this matter.

Sincerely yours,

Randall Ogata
Administrator

Colin Kippen
Officer, Land and Natural Resources Division

cc Trustee Aiona
Trustee Akana
Trustee Apoliona
Trustee Beamer
Trustee DeSoto
Trustee Hee
Trustee Keale
Trustee Machado
Trustee Springer

DEPARTMENT OF WASTEWATER MANAGEMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D
DIRECTOR

CHERYL A. OKUMA SEPE
DEPUTY DIRECTOR

WPP 97-803

December 22, 1997

Mr. Randall Ogata, Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813-5249

Dear Mr. Ogata:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of November 25, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and offer the following response to your comments.

1. We acknowledge your comment that OHA has no objections to the proposed water reclamation facility portion of the project.

2. With regard to the demonstration project, the Final EA will be revised to clarify the project scope. As stated in your letter, there are two purposes for construction and implementation of the demonstration project:

   (1) to demonstrate the feasibility of using reclaimed water to recharge the aquifer; and

   (2) to gather field data to study the impacts of such aquifer recharge practice on ground water and coastal water resources.

   Aquifer recharge provides an indirect means for public use of reclaimed water by supplementing the available ground water source. However, aquifer recharge will only be a beneficial use of reclaimed water if there are no adverse impacts to the water resource.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

Cheryl K. Okuma-Sepe

KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU HAWAII 96843
PHONE (808) 527-6160
FAX (808) 533-2714

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ENGINEERING CONCEPTS

December 16, 1997

TO: KENNETH E. SPRAGUE, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

ATTN: ROBERT MIYASAKI

FROM: FOR RAYMOND H. SATO, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: YOUR TRANSMITTAL OF NOVEMBER 8, 1997 ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE HONOULIULI WATER RECLAMATION FACILITY AND DEMONSTRATION PROJECT, EWA, OAHU, TMK: 9-1-13: 07 AND 9-1-69: 04

Thank you for the opportunity to review the Draft Environmental Assessment for the proposed project. We have no objections to the project and support your reuse efforts.

We have the following comments to offer:

1. The existing off-site water system cannot provide adequate fire protection. Our Water System Standards require that a fire hydrant be located within 125 linear feet of the site. Therefore, the applicant is required to install a fire hydrant in front of the proposed facility. The construction drawings should be submitted for our review and approval.

2. The availability of water will be determined when the Building Permit Application is submitted for our review and approval. If water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

3. There are two existing six-inch siamese water meters with backflow preventers serving the project site.

4. If an additional three-inch or larger water meter is required, the construction drawings showing the installation of the meter should be submitted for our review and approval.

5. The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

6. Board of Water Supply approved reduced pressure principle backflow prevention assemblies are required to be installed immediately after all water meters serving the wastewater treatment plant.

If you have any questions, please contact Barry Usagawa at 527-5235.

cc: Office of Environmental Quality Control
Engineering Concepts, Inc.

Pure Water — our greatest need - use it wisely

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813

WPP 97-816

December 23, 1997

MEMORANDUM

TO: MR. RAYMOND H. SATO, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

FROM: KENNETH E. SPRAGUE, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR HONOULIULI WATER RECLAMATION FACILITY AND DEMONSTRATION PROJECT, EWA, OAHU, HAWAII, TMK: 9-1-13:07 AND 9-1-69:04

Thank you for your correspondence of December 6, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and offer the following response to your comments.

1. We will comply with Board of Water Supply's requirements for fire protection.

2. We acknowledge that the availability of water will be determined when the Building Permit Application is submitted for BWS review and approval.

3. We acknowledge that there are two existing six-inch siamese water meters with backflow preventers serving the project site.

4. The proposed project does not include installation of additional water meters.

5. Onsite fire protection requirements will be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

6. No new water meters are proposed, therefore, no backflow prevention assemblies will be provided.

A copy of your correspondence and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

10-26-1997 07:43 FROM WASTEWATER MGMT PESC/E&C TO 95919010 P.03

BUILDING DEPARTMENT
CITY AND COUNTY OF HONOLULU
HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET, 2ND FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4564 • FAX: (808) 523-4567

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'97 NOV 20 A9:37

97-2095 PL
97-1420

JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI
DIRECTOR AND BUILDING SUPERINTENDENT

ISIDRO M. BADUCAN
DEPUTY DIRECTOR AND BUILDING SUPERINTENDENT

PB 97-606

November 18, 1997

MEMO TO: KENNETH E. SPRAGUE, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

FROM: RANDALL K. FUJIKI
DIRECTOR AND BUILDING SUPERINTENDENT

SUBJECT: HONOULIULI WATER RECLAMATION FACILITY AND DEMONSTRATION PROJECT, EWA, OAHU, HAWAII
TAX MAP KEY: 9-1-13:07 AND 9-1-69:04
DRAFT ENVIRONMENTAL ASSESSMENT

We have reviewed the subject document and have no comments to offer. Thank you for the opportunity to review the material.

Should there be any questions, please have your staff call Douglas Collinson at ext. 6375.

RANDALL K. FUJIKI
Director and Building Superintendent

RECEIVED
'97 NOV 20 A6:51
DEPT. OF
WASTEWATER
MANAGEMENT

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHERYL K. OKUMA-SEPE, ESQ.
DEPUTY DIRECTOR

WPP 97-789

December 17, 1997

MEMORANDUM

TO: MR. RANDALL K. FUJIKI, DIRECTOR AND BUILDING SUPERINTENDENT
BUILDING DEPARTMENT

FROM: KENNETH E. SPRAGUE, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR HONOULIULI WATER RECLAMATION FACILITY AND DEMONSTRATION PROJECT, EWA, OAHU, HAWAII
TMK: 9-1-13:07 AND 9-1-69:04

Thank you for your correspondence of November 18, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and acknowledge that the Building Department has no comments to offer at this time.

A copy of your correspondence and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

0000 0022 2336

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 8TH FLOOR • HONOLULU HAWAII 96813-3017
PHONE (808) 523-4711 • FAX (808) 523-4950

JEREMY HARRIS
MAYOR

PATRICK T ONISHI
CHIEF PLANNING OFFICER

DONA L HANAIKE
DEPUTY CHIEF PLANNING OFFICER

GW 11/97-2204

December 4, 1997

TO: KENNETH E. SPRAGUE, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

ATTN: ROBERT MIYASAKI

FROM: PATRICK T. ONISHI
CHIEF PLANNING OFFICER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR HONOULIULI WATER RECLAMATION FACILITY AND DEMONSTRATION PROJECT, EWA, OAHU, HAWAII

We have reviewed the above-referenced DEA, and have no objection to the proposed project. The proposed actions are consistent with provisions of the General Plan and support implementation of the vision set forth in the Ewa Development Plan.

We offer the following comments you may wish to address in your Final Environmental Assessment for this project.

1. Section 2.1 discusses the loss of caprock aquifer recharge due to the decline of large-scale agriculture. Consider expanding this discussion to include estimates of the volume of lost recharge, and the amount of recharge the proposed water reclamation facility will contribute to the caprock aquifer.

2. Section 3.1 indicates the proposed R-1 treatment facilities will be located in an area presently used as a plant nursery. The FEA should indicate if and to where the nursery will be relocated.

3. Section 3.4 discusses the project soils. It may be useful to expand this discussion to indicate whether the project soils are typical of the soils overlying the caprock aquifer recharge area, as a means of evaluating the efficacy of the proposed demonstration project as an indicator of anticipated recharge performance elsewhere over the caprock aquifer.

4. Section 4.1 discusses the "No Action" alternative, and concludes that that alternative is unacceptable because it does not meet the project goals. It is stated that "there would be no regional alternative to reduce demands on the potable water supply and caprock aquifer." In fact, alternatives do exist that could be used to meet the stated project goals, although the relative feasibility of those alternatives (such as enhanced water conservation measures or ocean-water desalination) may not compare favorably with the proposed actions. The spirit and intent of the environmental assessment process demands serious consideration of alternatives to proposed actions. This section of the FEA should indicate that such alternatives have been seriously considered and should discuss the bases for rejection of those alternatives.

5. Sections 4.4 and 4.5 should indicate why California Code of Regulations, Title 22 is cited.

6. Subsections 5.2(2) and (6) should be revised to be consistent with the intent to use the proposed demonstration project to evaluate the efficacy of reclaimed water for caprock aquifer recharge.

7. The FEA should indicate the proposed disposition of the reclaimed water in the event that the demonstration project fails.

Should you have any questions, please call Gordon Wood of the Planning Department staff at 527-6073.

PTO:lh

c: Office of Environmental Quality Control
Kenneth Ishizaki, Engineering Concepts, Inc.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR
CHERYL K. OKUMA BEPC, 660
DEPUTY DIRECTOR

December 23, 1997

WPP 97-822

MEMORANDUM

TO: MR. PATRICK T. ONISHI, CHIEF PLANNING OFFICER
PLANNING DEPARTMENT

FROM: for KENNETH E. SPRAGUE, DIRECTOR CHOR
DEPARTMENT OF WASTEWATER MANAGEMENT

SUBJECT: **DRAFT ENVIRONMENTAL ASSESSMENT FOR HONOULIULI WATER RECLAMATION FACILITY AND DEMONSTRATION PROJECT, EWA, OAHU, HAWAII**
TMK: 9-1-13:07 AND 9-1-69:04

Thank you for your correspondence of December 4, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document. We acknowledge that the Planning Department has no objection to the proposed project, and that the proposed actions are consistent with provisions of the General Plan and support implementation of the Ewa Development Plan. We also offer the following responses to your comments:

1. It is difficult to estimate the volume of caprock aquifer recharge lost due to the decline of large-scale agriculture. Various reports written by different hydrogeologists estimate different volumes of loss. However, the decline in aquifer recharge is significant as indicated by a corresponding rise in chloride levels. In comparison, the demonstration project may contribute up to 3 MGD of recharge water to the caprock aquifer.

2. According to the Department of Parks and Recreation, their Beautification Division has already removed the temporary plant nursery from the proposed reclamation facility site. We have been informed that plants have been relocated to other Department of Parks and Recreation nurseries including Waipahu, Kapiolani, and Nuuanu. Section 3.1 of the Final EA will state:

   "The proposed R-1 treatment facilities will be located on the western side of the WWTP, in an area formerly used as a plant nursery."

3. Soils investigations will be scheduled during design of the demonstration recharge trench to provide a more detailed characterization of the soils underlining the project site. Soil borings will also be a requirement in the future for the design of recharge trenches at other locations. The information gathered from these borings will provide a means of evaluating the anticipated recharge performance of new sites compared to the demonstration project.

4. While we concur that other alternatives exist to meet the project goals to "reduce demands on the potable water supply and caprock aquifer" on a regional level, the alternatives do not utilize wastewater effluent. The Final EA will include the following statement:

   "Although other alternatives exists to reduce demands on the potable water supply and the caprock aquifer (i.e. water conservation, ocean water desalination), these alternatives do not beneficially reuse wastewater effluent. In addition, implementation of measures such as water conservation and desalinization would extend beyond the jurisdiction of the Department of Wastewater Management."

5. The California Code of Regulations, Title 22, has been referenced by the Department of Health as the basis for many of the DOH reuse guidelines and requirements. California's Title 22 program has served as a model for other states due to its high standards and experience in the administration and use of reclaimed water.

6. With regard to Section 5.2 (2): the demonstration project is only one part of the proposed action addressed in this EA. We do not believe revision is warranted.

   With regard to Section 5.2 (6), the Final EA will include the following statement:

   "The proposed project will not involve substantial secondary impacts such as population changes or effects on public facilities. However, the project will benefit the public by increasing effluent quality and evaluating the efficacy of recharging the caprock aquifer with reclaimed water."

7. In the event the demonstration project fails and recharge of the caprock aquifer is not feasible, reclaimed water will be conveyed to potential users through a direct delivery system. Nonpotable water pipelines will be used to convey reclaimed water to nearby golf courses, industries and other nonpotable water users. The direct delivery system will be addressed in a separate environmental document when more information on potential users and pipeline alignments is available.

A copy of your correspondence and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning & Service at 527-5159.

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813

JEREMY HARRIS
MAYOR

JONATHAN K. SHIMADA, PhD
DIRECTOR AND CHIEF ENGINEER
ROLAND D LIBBY, JR
DEPUTY DIRECTOR

ENV 97-265

December 2, 1997

RECEIVED
DEC 4 1997
ENGINEERING CONCEPTS

MEMORANDUM:

TO: KENNETH E. SPRAGUE, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

ATTENTION: ROBERT MIYASAKI

FROM: FOR JONATHAN K. SHIMADA, PhD
DIRECTOR AND CHIEF ENGINEER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (DEA)
HONOULIULI WATER RECLAMATION FACILITY
AND DEVELOPMENT PROJECT
TMK: 9-1-13: 7

We have reviewed the subject DEA and have no comments to offer at this time.

Should you have any questions, please contact Alex Ho at Local 4150.

cc: OEQC
Engineering Concepts, Inc., (Kenneth Ishizaki)

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E SPRAGUE, P.E., Ph.D
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

WPP 97-794

December 17, 1997

MEMORANDUM

TO: DR. JONATHAN K. SHIMADA, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: KENNETH E. SPRAGUE, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR
HONOULIULI WATER RECLAMATION FACILITY AND
DEMONSTRATION PROJECT, EWA, OAHU, HAWAII
TMK: 9-1-13:07 AND 9-1-69:04

Thank you for your correspondence of December 2, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and acknowledge that the Department of Public Works has no comments to offer at this time.

A copy of your correspondence and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 10TH FLOOR • HONOLULU HAWAII 96813
PHONE (808) 523-4182 • FAX (808) 523-4054

JEREMY HARRIS
MAYOR

WILLIAM D. BALFOUR JR
DIRECTOR

MICHAEL T. AMII
DEPUTY DIRECTOR

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December 9, 1997

TO: KENNETH E. SPRAGUE, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

ATTENTION: ROBERT MIYASAKI

FROM: WILLIAM D. BALFOUR, JR., DIRECTOR

SUBJECT: WATER RECLAMATION FACILITY AND DEMONSTRATION PROJECT DRAFT ENVIRONMENTAL ASSESSMENT

We have reviewed the referenced environmental assessment. Based upon the information provided in the document, there should be no significant adverse impact to the nearby City and County park facilities. The Beautification Division within our department has already removed their temporary plant nursery from the proposed reclamation facility site.

Please have your staff contact Mr. Terry Hildebrand, Planner, of our Advance Planning Branch at extension 4246 if you need further information.

W. D. Balfour Jr.

WILLIAM D. BALFOUR, JR.
Director

WDB:ei

cc: Office of Environmental Quality Control
✓Kenneth Ishizaki, Engineering Concepts, Inc.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D
DIRECTOR

CHERYL R. OKUMA BEPE, ESQ.
DEPUTY DIRECTOR

WPP 97-801

December 22, 1997

MEMORANDUM

TO: MR. WILLIAM D. BALFOUR, JR., DIRECTOR
DEPARTMENT OF PARKS AND RECREATION

FROM: KENNETH E. SPRAGUE, DIRECTOR
DEPARTMENT OF WASTEWATER MANAGEMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR HONOULIULI WATER RECLAMATION FACILITY AND DEMONSTRATION PROJECT, EWA, OAHU, HAWAII
TMK: 9-1-13:07 AND 9-1-69:04

Thank you for your correspondence of December 9, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and offer the following responses to your comments.

(1) We acknowledge that there should be no significant impact to the nearby City and County park facilities.

(2) The Final EA will state that the proposed reclamation facility site will be located in an area formerly used as a plant nursery by the Department of Parks and Recreations.

A copy of your correspondence and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

American Lung Association of Hawaii
245 N. Kukui Street
Suite 100
Honolulu, HI 96817-3951
Fax: (808) 537-5971
Phone: (808) 537-5966

AMERICAN LUNG ASSOCIATION.
of Hawaii

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NOV 13 1997
ENGINEERING CONCEPTS

10 November, 1997

Robert Miyasaki
Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu HI 96813

RE: Draft Environmental Assessment for:
Honouliuli Water Reclamation Facility and Demonstration Project.

Dear Mr. Miyasaki:

Thank you for the opportunity to provide comments on the above referenced Draft Environmental Assessment. The American Lung Association of Hawaii (ALAH) has reviewed this document and has no comments at this time.

Respectfully,

Allison M. Beale
Environmental Toxicologist
Director of Environmental Health

Copied to:
1. Office of Environmental Quality Control
Lelopapa A Kamehameha, Suite 702
235 South Beretania Street
Honolulu, HI 96813

2. Kenneth Ishizaki
Engineering Concepts, Inc.
250 Ward Avenue Suite 206
Honolulu, HI 96814

When You Can't Breathe, Nothing Else Matters®

Founded in 1904, the American Lung Association includes affiliated associations throughout the U.S., and a medical section, the American Thoracic Society.

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHERYL K. OKUMA SEPE
DEPUTY DIRECTOR

WPP 97-787

December 17, 1997

Ms. Allison M. Beale
Director of Environmental Health
American Lung Association of Hawaii
245 North Kukui, Suite 100
Honolulu, Hawaii 96817-3951

Dear Ms. Beale:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of November 10, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and acknowledge that the American Lung Association of Hawaii has no comments at this time.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

Patricia Uyehara Wong, Esq
Manager
Environmental Department

December 11, 1997

Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, Hi 96813

Attention: Robert Miyasaki

Subject: **Honouliuli Wastewater Treatment Plant**

Thank you for the opportunity to comment on your October 1997 Draft EA for the Honouliuli Wastewater Treatment Plant, as proposed by the Department of Wastewater Management, City and County of Honolulu. We have reviewed the subject document and noticed that this DEA does not address electrical service. HECO does have a nearby substation but there is no information on the project electrical requirements.

I suggest your staff and consultants deal directly with our Customer Installations Department to coordinate HECO's continuing input on this project. Our point of contact for this project, and the originator of these comments, is Bill Muench (543-5657) senior customer engineer.

Sincerely,

cc: Engineering Concepts, Inc.
250 Ward Ave., Suite 206
Honolulu, HI 96814
Attn: Kenneth Ishizaki

OEQC
Leiopapa A Kamehameha, Suite 702
235 South Beretania Street
Honolulu, HI 96813

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHERYL K. OKUMA SEPE
DEPUTY DIRECTOR

WPP 97-817

December 23, 1997

Ms. Patricia Uyehara Wong, Esq.
Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

Dear Ms. Wong:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of December 11, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and offer the following response to your comment

Comment 1: *We have reviewed the subject document and noticed that this DEA does not address electrical service. HECO does have a nearby substation but there is no information on the project electrical requirements.*

Response 1: The Final EA will include the following discussion on the electrical infrastructure requirements:

"2.3.1.6 Electrical System

The additional electrical load associated with the proposed project, including provisions for future spare capacity of 15 percent, amount to 3,944 kVA. The loads associated with the proposed project are primarily induction motor loads. Total connected new motor load with provision for future spare capacity of 15 percent is approximately 2,328 HP. Two new pad-mounted 1,500 kVA substation transformers will be supplied."

Comment 2: *I suggest your staff and consultants deal directly with our Customer Installation Department to coordinate HECO's continuing input on this project.*

Response 2: GMP Associates is the design consultant coordinating the electrical requirements for the proposed project with HECO staff. Most recent correspondence by GMP was addressed to Mr. Stanley Batula on December 2, 1997.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

Cheryl K. Okuma-Sprague

KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control

RECEIVED 97-2266

97 DEC -8 A9:30

HAWAII PRINCE GOLF CLUB

December 4, 1997

Mr. Robert Miyasaki
Department of Wastewater Management
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

RE: Comments on the Draft EA for the Honoullull Water Reclamation Facility and Demonstration Project

Dear Mr. Miyasaki:

Thank you for the opportunity to comment on the Draft Environment Assessment. The Hawaii Prince Golf Club (HPGC) supports the reuse of wastewater for irrigation and non-potable industrial uses. We hope, ultimately, to be able to benefit through the implementation of this project. Toward this end, we offer the following comments on the Draft EA:

Section 1-3 Project Objectives
The stated primary objection "... is to reduce reliance on the potable water supply and the caprock aquifer (brackish water) for non-potable water uses while encouraging the beneficial use of a valuable resource (reclaimed water)." We think this section should be expanded to identify and prioritize categories of potential uses of reclaimed water based on resource management objectives and economics. Four such categories of users are:

1. Replace Non-Potable Use of the Honolulu Board of Water Supply (BWS) System. This group of users includes cogeneration facilities and refineries in Campbell Industrial Park which currently use 2 to 3 MGD from the BWS system. Replacing these uses would increase the available drinking water supply on a 1:1 basis. Based on avoided cost, this group of users is also the best able to afford the full cost of reclaimed water.

2. Replace Non-Potable Use of the Waipahu-Waiau and Ewa-Kunia (Basalt) Aquifers. This group of users includes the City's two golf courses (West Loch and Ewa Villages), the Barbers Point Naval Air Station Golf Course and the Ko Olina Golf Course. Providing reclaimed water to this category of users would free up an identical amount of basalt aquifer water for other, higher uses, including drinking water supply.

3. Provide Non-Potable Supply For New Development on the Ewa Plain. There are a number of projects in various stages of planning and/or implementation which are in need of non-potable water supply. Use of reclaimed water would be preferable to the possible use of the basalt or caprock aquifers. The basalt aquifer should be reserved for higher uses. The caprock aquifer is a more limited resource following Oahu Sugar Company's closing.

4. Supplement and/or Replace Present Use of the Caprock with Reclaimed Water. Termination of Oahu Sugar Company's cultivation on the Ewa Plain has resulted in the loss of OSCO's irrigation return flow recharge, thereby reducing the sustainable yield of the caprock. However, it has also meant that OSCO's 13 to 16 MGD of caprock usage has also been removed. Use of the caprock by present owner/operators of caprock wells is relatively modest and is likely to be within the post-OSCO, reduced sustainable yield of the resource. Because of the cost of this use is so low in comparison to the cost of reclaimed water, these users are likely to limit use of reclaimed water as a supplement to improve water quality in order to keep the cost affordable, rather than to completely replace their caprock sources.

Section 2.1 Need For the Project
This section of the EA, which speculates on possible action by the Water Commission to reduce caprock water use permits is incorrect. It should be updated to reflect the actual action taken by the Commission at its May 14, 1997 meeting. In recognizing that the unique attributes of the caprock aquifer, the Commission adopted an individual well management plan based on the level of chlorides of water pumped rather than managing the aquifer by a single sustainable yield figure. The staff report, portions of which are excerpted below, was adopted by the Commission.

> Sustainable yields for the Pearl Harbor and other aquifer systems were derived using John Mink's Robust Analytical Model (RAM), which assumes an initial and equilibrium head to calculate a sustainable yield. However, in light of the above findings, which show the Ewa Caprock Aquifer is substantially different from other basal ground water aquifers, the staff is recommending that the Commission adopt an interim management plan that sets a 1,000 mg/l chloride cap for individual irrigation wells instead of a sustainable yield number. This would define a sustainable capacity for each irrigation well. The current actual total aggregate of pumpage should not degrade the aquifer further. Management by individual well capacities is an attempt to refine management and an additional factor to consider in water resources regulation. Reasonable and beneficial use quantities would still be used to set allocations. After about one (1) to two (2) years of data collection, the benefits of this methodology may be assessed and reviewed by the Commission.

The staff feels that the chloride level of water pumped by each well is the best available indicator of source sustainability; it is also one of the criteria identified by the Water Code for regulating water use. Further, since this aquifer will only be used for irrigation purposes and not drinking water, a chloride cap would allow self-regulation of the wells. A minimum chloride standard should be established for industrial use wells to ensure industrial withdrawals, that do not require irrigation-quality water, will not impact irrigation wells in the designated water management area.

Page 5 of the Staff Submittal which was adopted by the Commission on March 14, 1997

Finally, it is worth noting that the Puuloa Caprock Users Group, which comprised of current users of the Puuloa sector of the caprock aquifer, is on record with its preference for the direct use of R-1 quality reclaimed wastewater rather than recharging the caprock with R-2 wastewater. Toward that end, we look forward to reviewing the next phase of the project on the distribution of reclaimed R-1 wastewater to users. Thank you again for the opportunity to present these comments.

Sincerely,

Garrick K. Iwamuro
Director of Golf Operations

GKI/sy

DEPARTMENT OF WASTEWATER MANAGEMENT
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WPP 97-825

December 24, 1997

Mr. Garrick K. Iwamuro
Director of Golf Operations
Hawaii Prince Golf Club
91-1200 Fort Weaver Road
Ewa Beach, Hawaii 96706

Dear Mr. Iwamuro:

Subject: Draft Environmental Assessment for
Honouliuli Water Reclamation Facility and Demonstration Project
Ewa, Oahu, Hawaii
TMK: 9-1-13:07 and 9-1-69:04

Thank you for your letter of December 4, 1997, regarding the Draft EA for the subject project. We appreciate your efforts in reviewing the document and offer the following response to your comments.

Section 1.3 Project Objectives

We agree that identification and prioritization of potential reclaimed water use categories based on resource management objectives and economics is important. However, these issues are more appropriately addressed in a master planning document rather than in this environmental document. The focus of this environmental assessment is the construction of the reclamation facility and limited to reclaimed water use within the Honouliuli Wastewater Treatment Plant.

Section 2.1 Need for the Project

The Final EA will include the following revision to reflect the individual well management plan which was recently adopted by the Commission on Water Resource Management:

> "Presently, permits to extract water from the Ewa caprock aquifer are issued by the State Department of Land and Natural Resources, Commission on Water Resource Management. The water is used for landscape irrigation, agricultural irrigation, and other nonpotable purposes. Active water use permits as of August 1997 (excluding salt water wells used for cooling) totaled 18.365 MGD for the three aquifer sectors. Due to the deterioration of water quality in the caprock aquifer, the Commission on Water Resource Management recently adopted an individual well management plan. Under the plan, a maximum chloride limit of 1,000 mg/l will define the sustainable capacity of each irrigation well. Permit holders may need to reduce their consumption or seek alternative sources of water to satisfy nonpotable water needs while complying with permit requirements."

We also acknowledge your comment that the Puuloa Caprock Users Group prefers the direct use of R-1 quality water rather than recharge of the caprock aquifer with R-2 water. Development of transmission systems to convey reclaimed water to potential users will be addressed at a later date.

A copy of your letter and this response will be included in the Final EA. Should you have any questions, please contact Mr. Robert Miyasaki of the Division of Planning and Service Control at 527-5159.

Sincerely,

KENNETH E. SPRAGUE
Director

cc: Kenneth Ishizaki - Engineering Concepts, Inc.
Leslie Segundo - Office of Environmental Quality Control