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OFC. OF ENVIRONMENTAL
QUALITY CONTROL

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT
P. O. BOX 90
HONOLULU, HAWAII 96809

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OFC. OF ENVIRONMENTAL
QUALITY CONTROL
July 2, 1990

Dr. Marvin T. Miura
Director
Office of Environmental
Quality Control
465 South King Street
Kekuaaoa Building, Room 104
Honolulu, Hawaii 96813

Dear Dr. Miura:

Job No. 17-OW-A, Makakilo Exploratory Wells
Ewa, Oahu, Hawaii

Pursuant to Section 11 of the Environmental Impact Statement Rules, transmitted for processing are four (4) copies of the Environmental Assessment and Notice of Determination (Negative Declaration) for the subject project. Also attached is a completed OEQC Bulletin Publication Form.

If there are any questions on this matter, please have your staff contact Mr. Gordon Akita of the Planning Branch at Extension 8-7496.

Sincerely,

MANABU TAGOMORI
Manager-Chief Engineer

AM:lc

Attach.

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FILE COPY

ENVIRONMENTAL ASSESSMENT

AND

NEGATIVE DECLARATION

Job No. 17-OW-A

* Makakilo Exploratory Wells *

Ewa, Oahu, Hawaii

State of Hawaii
Department of Land and Natural Resources
Division of Water and Land Development
April 1990

NOTICE OF DETERMINATION: Negative Declaration

**FOR: Job No. 17-OW-A
Makakilo Exploratory Wells
Ewa, Oahu, Hawaii**

**BY: Division of Water and Land Development
Department of Land and Natural Resources**

The proposed action will have no significant effect on the environment and therefore does not require the preparation of an Environmental Impact Statement. This Notice of Determination and Environmental Assessment are being filed as a Negative Declaration.

ENVIRONMENTAL ASSESSMENT

For

Job No. 17-OW-A
Makakilo Exploratory Wells
Ewa, Oahu, Hawaii

I. Proposing Agency

Division of Water and Land Development
Department of Land and Natural Resources

II. Parties Consulted

Honolulu Board of Water Supply
Division of Forestry, DLNR
Historic Preservation Program, DLNR

III. Project Description

This project involves the drilling, casing and testing of four (4) caprock brackish wells to provide additional water sources for the State's demonstration desalting plant, in the district of Ewa, Island of Oahu. These wells are proposed to be drilled at two sites, Well Site "A" is located on TMK: 9-1-15:12 with 8-inch diameter wells approximately 100 feet deep, and Well Site "B" is located on TMK: 9-1-15:1 with 8-inch diameter wells approximately 120 feet deep. The parcels are owned by the Estate of James Campbell. See Figures 1 and 2.

Funds for this project are available under Act 216, SLH 1987, Item A-33.

The objective of the project is to drill and test four exploratory brackish wells for the demonstration desalting plant. Assessments of Oahu's water supply indicates that by the turn of the century, all available surface and ground water supplies will be fully committed. Thus, to meet demands beyond the year 2000, alternate sources of water must be developed. Development of alternate sources such as desalting, recycling, blending, exchange and coastal reservoirs requires years of lead time to effectuate.

Should these wells exploration prove successful, they will be connected to the desalting plant. A separate environmental assessment for the development of these wells will be prepared at that time.

In the event that the exploration is not successful, the wells will be sealed and the areas restored, as much as practical to its natural conditions.

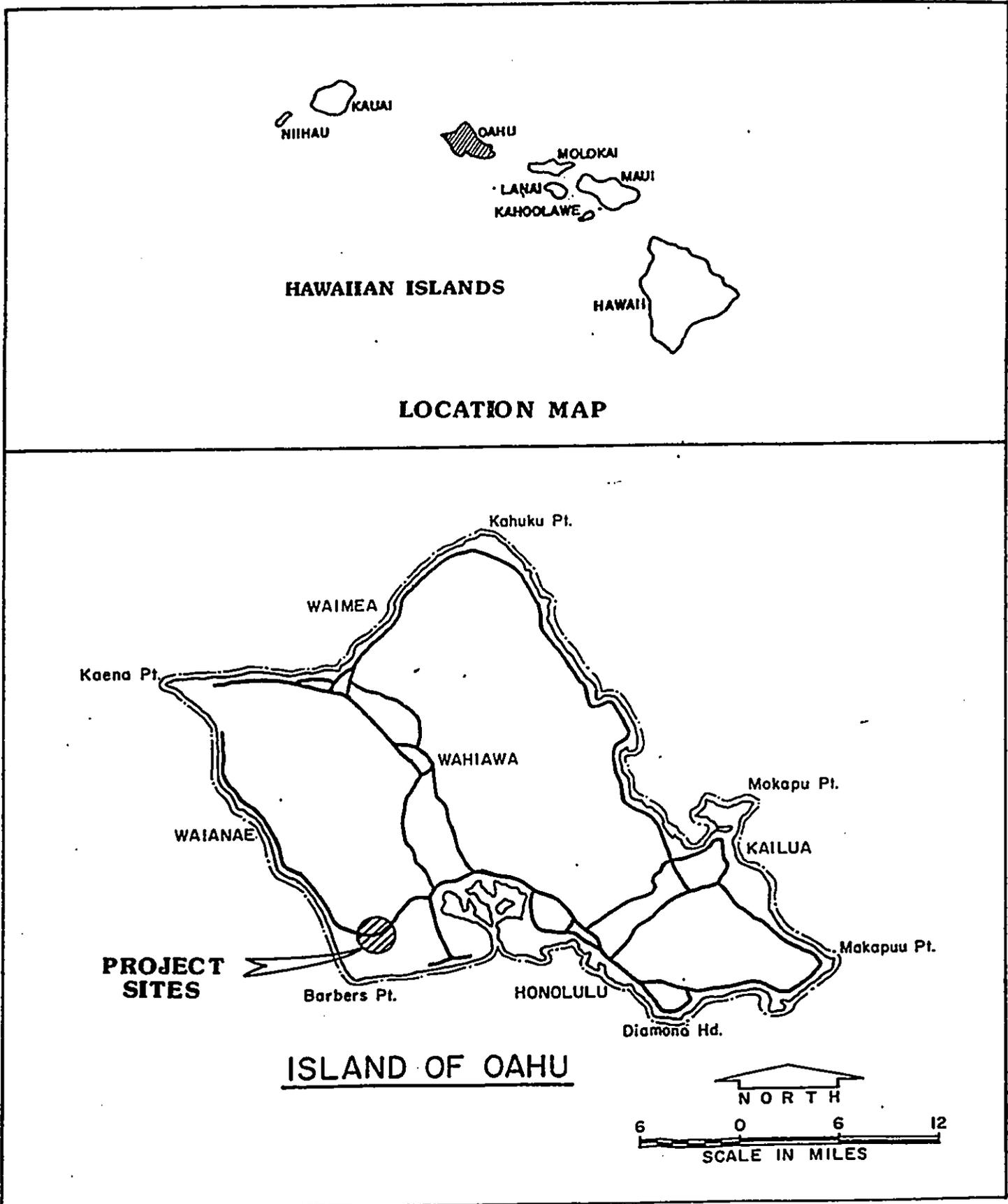


FIGURE 1

The technical characteristics of the proposed exploratory wells are as follows:

	<u>Well Site "A"</u>	<u>Well Site "B"</u>
No. of Wells:	to be determined in field	to be determined in field
Ground Elevation:	50 feet	70 feet
Casing Diameter:	8 inches	8 inches
Length of Solid Casing:	50 feet	70 feet
Length of Screen Casing:	20 feet	20 feet
Length of Open Hole:	30 feet (to be determined in field)	30 feet (to be determined in field)
Total Depth:	100 feet	120 feet
Duration of Pump Test:	24 to 150 hours	24 to 150 hours
Proposed Pump Test Range:	80 to 200 gallons per minute	80 to 200 gallons per minute

Length of Project: 6 months
Estimated Construction Cost: \$323,000

IV. The Assessment Process

A geo-hydrologic study of the Ewa area was conducted to identify the potential areas for brackish groundwater exploration. This was followed by engineering analysis to determine the improvement requirements and costs of various alternate well sites and associated environmental and social impacts. A field reconnaissance of the project site was conducted to investigate the physical environment and confirm the earlier conclusions made from researching reference materials.

V. Description of the Environment

The project sites are located along Kalaeloa Boulevard (the main access road into the Campbell Industrial Park). These sites are north of the Campbell Industrial Park and northwest of the Barbers Point Naval Air Station.

The study area consists of several established and planned communities located near sugar cane fields. Two prominent developments include the Barbers Point Naval Air Station and Campbell Industrial Park. Ewa Beach, the air station and Makakilo are the primary residential areas.

Facilities under construction or planned include the deep draft harbor, West Beach Resort and the Villages of Kapolei. The harbor is expected to eventually generate more than 1,000 additional jobs. Also, one recent report indicates that the industrial park provides more than 2,100 local jobs.

Agriculture is another major commercial enterprise in the area with sugar cane being the major crop. It seasonally employs several hundred people in the Barbers Point area.

The Waianae and Koolau Ranges are made up of two large shield volcanoes. The Waianae range was built by lavas from the Waianae volcano, the older of the two. Later, the outpouring of lavas from the Koolau volcano built the Koolau Range and the Schofield Plateau. The coastal plane, which was built after the cessation of major volcanic activity, is underlain by terrestrial and marine sedimentary deposits and by lava flows and pyroclastic deposits of the late post-erosional volcanic activity.

The bulk of the two major ranges was built of thinly bedded basaltic lava flows with original surfaces dipping at three to ten degrees. The Waianae Volcanics are divided into the lower, middle, and upper members because of their transition from tholeiitic to alkalic basalts.

The high permeability of the unweathered thinly bedded basalt flows is attributed to the clinker layers between lava flows, lava tubes, irregular openings within and between the surface of flows, and contraction joints. Vesicles, which make up a large part of the total volume of rock, contribute greatly to porosity, but they are seldom interconnected and have little effect of permeability.

The deposition of sediments formed by the erosion of the Waianae and Koolau domes helped to build the flat coastal plain. Changes in sea level caused by flacial building and melting greatly influenced the construction of the coastal plain. Fossil coral reefs and marine terrestrial alluvial sediments constitute the bulk of the relatively impermeable coastal plain deposits. This relatively impermeable zone overlying the highly permeable lavas of the original domes is known as the caprock.

The caprock forms a wedge that retards the seaward movement of fresh ground water from the underlying basaltic aquifers. The permeability of the terrestrial alluvium, marine sediments, calcareous reef deposits, pyroclastic flows, and weathered basalts varies widely from almost impervious, in the compacted old alluvium, to the relatively high permeability of the cavernous reef rock. The caprock contains large quantities of water, ranging in salinity from nearly fresh to saline.

The State Land Use designation of the project sites is Urban. The County's zoning designation of the sites is General Industrial. Wells are a permitted use under both State and County designations.

It is unlikely that these sites have archaeological or historical values. Well Site "A" is presently vacant, however, the area was at one time in cultivation. Well Site "B" is presently in sugar cane cultivation.

No endangered species of fauna or flora is expected to be in these sites.

VI. Probable Impacts and Mitigative Measures

The anticipated impacts of the project will be from the construction work involved in site preparation, drilling and pump testing of the exploratory wells.

A working pad, approximately 5,000 square feet in area for each well, will need to be cleared and graded for the drilling equipment and materials storage. An access road to the sites may also need to be cleared and graded. The impacts of dust from clearing and grading work can be minimized by conscientious efforts of the Contractor and by the strict adherence to the erosion and sediment control provisions included as part of the contract specifications.

Drilling equipment to be used include a drilling rig, drilling bits and rods, generators and pipe racks. The contractor is allowed 180 days to complete the work.

Noise generated during the drilling work may at times be in excess of 95 decibels. Therefore, drilling work will be restricted to eight (8) hours during the day and as specified in Chapter 44B, Public Health Regulations. No work will be permitted during weekends and holidays without the prior consent of the Department.

After the wells have been drilled to the specified depth and cased, a temporary pump will be installed in each well to test the groundwater aquifer for yield and water quality. The pump test will be conducted over a continuous 24 to 150 hour period. The pump motor will generate a droning sound and the noise may, at times, be heard during the night. The Contractor will be required to use mufflers or other sound attenuating devices, as needed to meet applicable noise restriction regulations of the Department of Health.

VII. Alternatives

There are two possible options to the proposed project: a "no action" alternative and an alternate well site.

A "no action" alternative would preclude the investigation of brackish groundwater sources and the possibility of locating new water sources for the desalting plant. This alternative would not meet the objectives of the project.

Alternative sites were considered for the proposed wells. However, based on geo-hydrologic and topographic conditions, cost, risk and environmental and social impacts, the selected sites were considered to be superior to the alternative sites.

VIII. Determination

Adverse impacts resulting from the drilling and testing of the exploratory wells at Ewa, Oahu, Hawaii, are insignificant and temporary. Based on the findings of this environmental assessment, an Environmental Impact Statement is not required and is hereby being filed as a Negative Declaration.

REFERENCES

1. State of Hawaii, Department of Land and Natural Resources, Division of Water and Land Development, Proposed Demonstration Desalting Plant, August 1985.
2. Stearns, H.T., Geologic Map and Guide of Oahu, Hawaii, Bulletin 2, Hawaii Division of Hydrography, August 1939.
3. State of Hawaii, Department of Land and Natural Resources, Division of Water and Land Development, Environmental Assessment, Notice of Determination, Negative Declaration, for the Drilling Feedwater Wells, Demonstration Desalting Plant, Oahu, Hawaii, July 1987.
4. State of Hawaii, Department of Land and Natural Resources, Environmental Assessment and Negative Declaration for Demonstration Desalting Plant Honolulu, Hawaii, Tax Map Key 9-1-015:12, March 1988.