BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833

March 7, 1997

Mr. Gary Gill, Director
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
STATE OF HAWAII
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Subject: **FINAL ENVIRONMENTAL ASSESSMENT FOR THE GAC TREATMENT FACILITY AT NAPIL WELL "A" NAPILI, MAUI, HAWAII (TMK 4-3-01:06)**

Dear Mr. Gill:

The County of Maui, Department of Water Supply (DWS) has reviewed the comments to the Draft Environmental Assessment (EA) for the GAC Treatment Facility at Napili Well "A" during the 30-day comment period which began on December 8, 1996. The DWS has determined that this project will not have significant environmental effects and has issued a "finding of no significant impact (FONSI)." Please publish the notice of availability for the subject project in the March 23, 1997 OEQC bulletin.

Should you have any questions, please contact our Engineering Division at 243-7835. Thank you for your time and attention.

Sincerely,

David R. Craddick
Director

HK:as
Enclosures

30

1997-03-23-MA-FEA-Napili Well "A" GAC Treatment Facility

FINAL ENVIRONMENTAL ASSESSMENT FOR THE GAC TREATMENT FACILITY AT NAPILI WELL "A" NAPILI, MAUI, HAWAII (TMK: 4-3-01: 06)

Proposing Agency:
County of Maui
Department of Water Supply

ASSOCIATES, INC.
Engineers/Architects

MARCH 1997

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INTRODUCTION

SECTION 1

INTRODUCTION

Napili Well "A" in Napili, Maui provides potable drinking water to the community in West Maui. The pump system was installed in 1979 and has a capacity of 700 gallons per minute (gpm). Pumping operations from this well have been discontinued since 1992 when high levels of dibromochloropropane (DBCP) were detected in water samples from the well. DBCP is a soil fumigant that was formerly applied as a pesticide to agricultural lands devoted to pineapple production.

The purpose of this project is to construct a Granular Activated Carbon (GAC) water treatment facility at the Napili Well "A" site to reduce the concentration of DBCP below an acceptable detection level. This will allow Napili Well "A" to be placed back into operation, where it can continue to supply safe drinking water to the Napili community.

1.1 PROJECT

Napili Well "A" GAC Treatment System.

1.2 APPLICANT/PROPOSING AGENCY

Board of Water Supply, County of Maui.

1.3 APPROVING AGENCY

Board of Water Supply, County of Maui.

1.4 AGENCIES CONSULTED IN MAKING THE ASSESSMENT

UNITED STATES GOVERNMENT

- Regulatory Branch, U.S. Army Corps of Engineers
- Soil Conservation Service, U.S. Department of Agriculture

STATE OF HAWAII

- Clean Water Branch, Department of Health
- Commission of Water Resources, Department of Land and Natural Resources
- Department of Agriculture
- Department of Business, Economic Development and Tourism
- Department of Land and Natural Resources
- Division of Aquatic Resources - Maui Department of Land and Natural Resources
- Environmental Center, University of Hawaii
- Environmental Management Division, Department of Health
- Office of Environmental Quality Control
- Office of State Planning

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- Division of Aquatic Resources - Maui Department of Land and Natural Resources
- Environmental Center, University of Hawaii
- Environmental Management Division, Department of Health
- Office of Environmental Quality Control
- Office of State Planning

- Safe Drinking Water Branch, Department of Health
- State Historic Preservation Division, Department of Land and Natural Resources
- Water Resources Research Center, University of Hawaii

COUNTY OF MAUI

- Planning Department
- Department of Public Works
- Department of Water Supply
- Economic Development Agency

OTHER

- Maui Land and Pineapple Company

SECTION 2
PROJECT DESCRIPTION

SECTION 2

PROJECT DESCRIPTION

2.1 PROJECT SITE

The Napili Well "A" pump system and reservoir tank were installed in 1979 by the State Department of Land and Natural Resources (DLNR). Operation and maintenance is carried out by the current owner of the well, the Maui County Department of Water Supply (DWS). Well "A," operating with a capacity of 700 gpm and a 100,000 gallon storage reservoir, was intended to serve West Maui communities with potable water.

Water from the Napili Well "B", Napili Well "C", Honokahua Well "A" and Honokahua Well "B" passes through the Napili Well "A" site during transport to the Alaeloa Reservoir, which serves as the distribution storage reservoir for the Napili area.

Concentrations of dibromochloropopane (DBCP) at 0.28 micrograms/liter (μg/l) have been detected at Napili Well "A." A Granular Activated Carbon (GAC) treatment facility will be constructed at the well site to bring the concentration of DBCP below its maximum contaminant level (MCL) of 0.04 μg/l (H.A.R. 11-20-4).

2.1.1 Project Location

The Napili Well "A" site is located in Napili, Maui as shown in Figure 2-1. A deep gulch borders the northern side of the well site, while pineapple fields surround the rest of the project area. The property is identified by Tax Map Key (TMK) 4-3-01:06. The well is 893 feet deep and drilled to a depth of approximately 33 feet below mean sea level (MSL). The existing site plan of the project is shown in Figure 2-2.

2.1.2 Land Ownership

The Napili Well "A" site is owned by the State of Hawaii, while the surrounding pineapple fields are owned by the Maui Land and Pineapple Company.

2.1.3 Land Use

Land use surrounding the project site is primarily agricultural, with pineapple being the primary crop.

2.2 PROPOSED FACILITIES

The proposed project involves the construction of a GAC water treatment facility. The facility will include two GAC contact vessels, contactor pad and piping, backwash tank, backwash filter, booster pumps, upgrades to the Motor Control Center (MCC) room, flow meter, control and lighting systems and operating

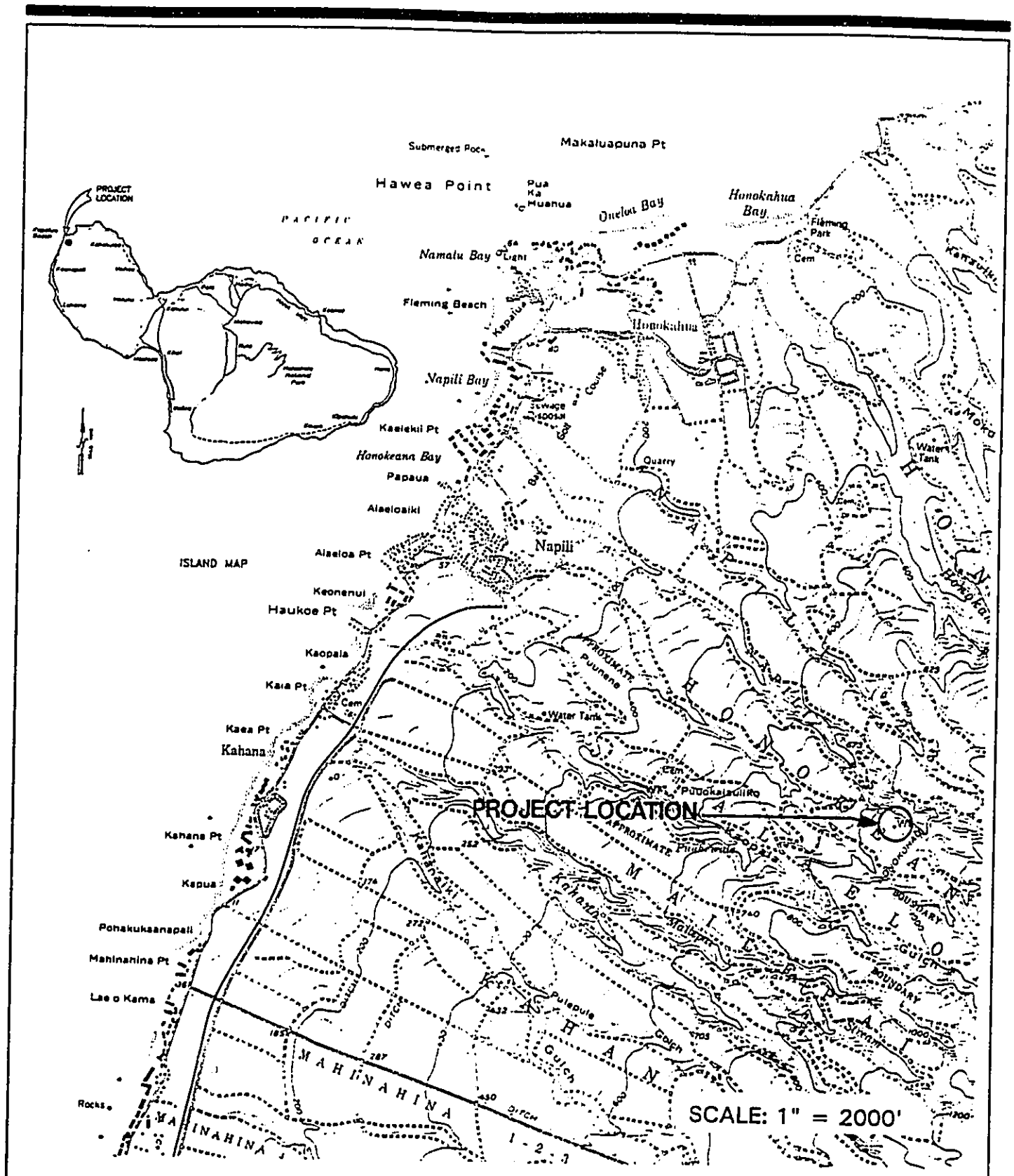

FIGURE 2-1
LOCATION MAP OF NAPILI WELL "A"

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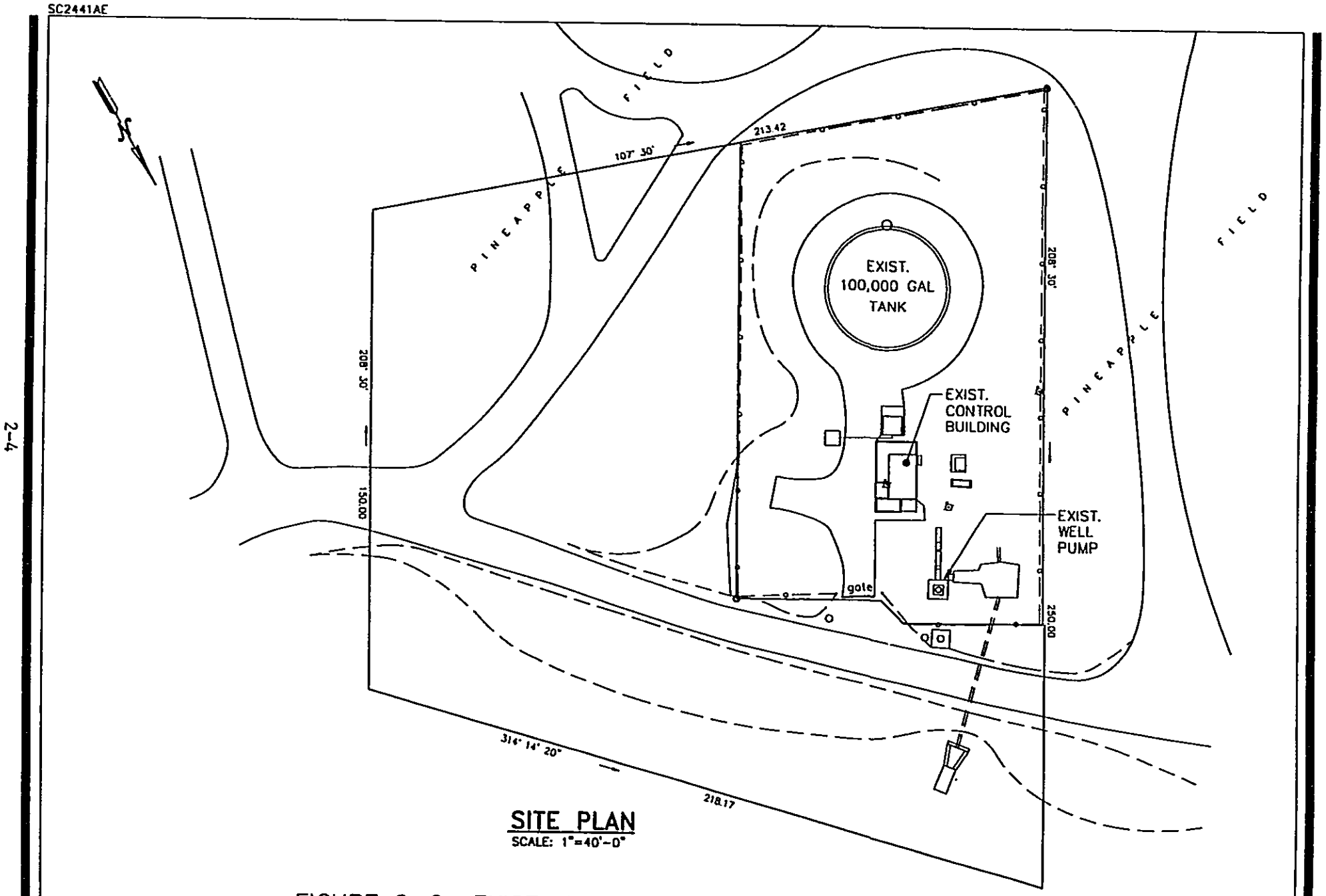


SITE PLAN
SCALE: 1"=40'-0"

FIGURE 2-2 EXISTING SITE PLAN OF NAPILI WELL "A"

platforms to access the contact vessels. The proposed site plan of Napili Well "A" is shown in Figure 2-3.

Each of the two contact vessels measures 12 feet in diameter and approximately 14.5 feet in height with an 8-foot carbon bed. Typically, untreated water will enter at the top of the GAC contactors, flow down through the carbon bed and collect in the underdrain system. The GAC contactors may be operated singly or as pairs in series. For each pair of contactors, either contactor can be operated as the lead unit with the remaining vessel as the lag unit.

Because the contactors must be shut down periodically for maintenance, each individual contactor is designed to achieve the required treatment for an extended period. When the carbon bed of the lead unit has been exhausted, the lag unit can continue to produce water with non-detectable contaminant concentrations. Such an arrangement maximizes carbon use and also allows the treatment system to maintain an acceptable water quality even when one of the contactors is off-line for maintenance.

The carbon contactors will have provisions for carbon removal and replacement. Compressed air can be used to remove the spent carbon as a slurry. Common practice involves pressurizing the vessel with air, which in turn forces the carbon slurry through a drain line and into a tanker truck standing by. The carbon slurry is dewatered in the tank, and the decanted water is pumped back into the backwash tank from the truck. The tanker truck can then transport the carbon to a landfill for burial. The contactors can also be filled with carbon by pumping the carbon as a slurry

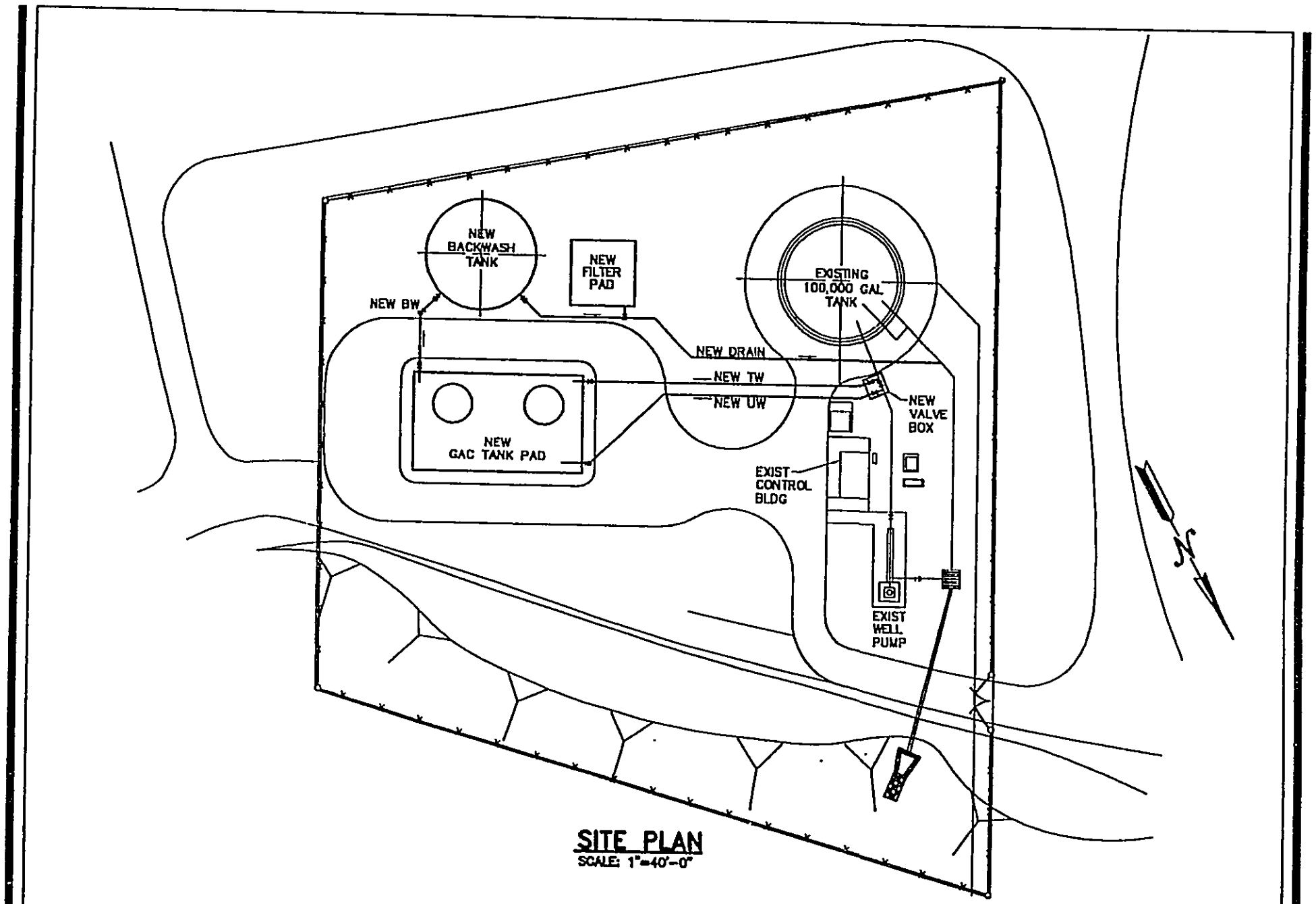


FIGURE 2-3 PROPOSED SITE PLAN FOR NAPILI WELL "A"

through a pipe or manually depositing dry carbon through a hatch at the top of the vessel.

After a new carbon bed is installed, the contactor must be backwashed to remove the carbon fines. The carbon beds may also require periodic backwashing to remove accumulated material and to expand the carbon bed, which tends to compress over time. Backwashing involves passing water upwards through the carbon bed at a relatively high rate for a period of 5 to 15 minutes. The procedure generates a large quantity of water which is impounded in a 50,000 gallon backwash tank and then slowly drained. Since contaminated carbon could be entrained in the discharge, the backwash water is filtered before it is released into the environment.

Spent carbon from the Honolulu Board of Water Supply's (BWS) existing GAC facilities on Oahu has never been classified as a hazardous waste based on the results of a toxicity characteristic leaching procedure (TCLP) test. The TCLP test is used to determine the "mobility of both organic and inorganic analytes present in liquid, solid and multiphasic wastes." (40 CFR 261, Appendix II). Thus, the spent carbon from the Napili Well "A" GAC treatment facility could be disposed of through burial at a landfill.

The "Preliminary Engineering Report for GAC Treatment Facility at Napili Well 'A,' July 1996" by GMP Associates estimated annual operational costs for three different carbon disposal alternatives. These alternatives included: (1) shipping spent carbon to Oahu for incineration at a cement kiln, (2) shipping spent carbon to a secure landfill in California for burial and (3) landfilling spent carbon at the Central Maui Sanitary Landfill.

Incineration at the cement kiln is no longer a viable alternative since the cement kiln has recently closed on Oahu. Shipping the spent carbon to a landfill in California was based on a worst case scenario and is the most costly alternative. Therefore, disposal at the Central Maui Sanitary Landfill appears to be the best option for the spent carbon from the Napili Well "A" GAC facility.

2.3 DEVELOPMENT SCHEDULE AND COST

The capital costs for the project are estimated at $1.5 million at 1996 prices.

The project schedule has yet to be determined. Commencement of the project is contingent upon satisfying license and permit requirements, and upon the acquisition of equipment and materials.

2.4 APPLICABLE GOVERNMENTAL PERMITS

The following permits and approvals will be required for the proposed project:

- State Department of Health NPDES General Permit for Hydrotesting Waters.
- State Department of Health NPDES Individual Permit.
- Department of Land and Natural Resources, Commission on Water Resource Management - Pump Installation Permit.

2.5 NEED FOR THE PROJECT

The Napili Well "A" has a capacity of 1 million gallons per day (mgd) and serves the population of West Maui. In 1992, an analysis of water samples from this well showed the presence of DBCP in concentrations of 0.28 μg/l that exceeded the maximum contaminant level (MCL) of 0.04 μg/l recommended by the State Department of Health (DOH). Consequently, the Department of Water Supply, County of Maui discontinued the use of water from this well to avoid the potential health hazards posed by DBCP.

The 1991 "West Maui Water Master Plan" has indicated reliance on the Napili Well "A" as a source of potable water before DBCP contamination was detected. Thus, in order to meet the growing demand for potable water in this region, the Board of Water Supply, County of Maui determined that a water treatment facility is necessary to reduce the concentrations of DBCP below detection levels. The water treatment facility would allow the Napili Well "A" to be placed back into operation and help supply safe drinking water to the West Maui community.

SECTION 3
EXISTING CONDITIONS

SECTION 3

EXISTING CONDITIONS

3.1 LAND USE DESIGNATIONS

The land use designations of the proposed site are governed by the State of Hawaii and the County of Maui as follows:

1) State Land Use District Boundary Designation: Agricultural
2) Maui Community Plan Designation: Agricultural
3) Maui County Zoning Designation: Interim

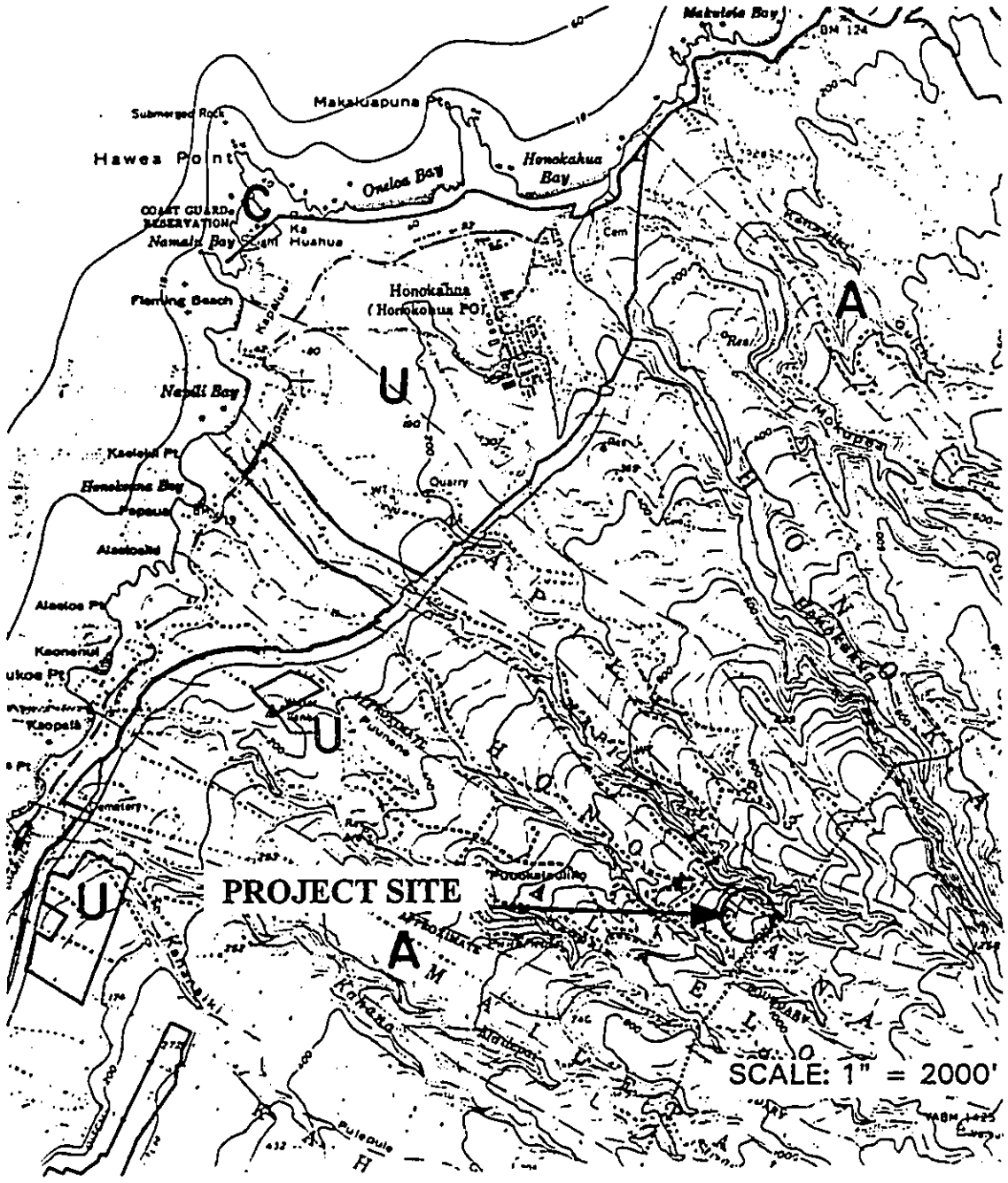
The State Land Use District Boundary map is shown in Figure 3-1.

3.2 SURROUNDING LAND USE

The land surrounding the project area is primarily agricultural. Pineapple fields border most of the well site.

3.3 TOPOGRAPHY

The project is located on the northwest coastal flank of the West Maui shield volcano. Land in the vicinity of the project site is well graded, sloping gently from east to west in a manner consistent with the surrounding lands. The ground elevation is estimated at 860 feet above mean sea level (MSL). A detailed topography of the project site is shown in Figure 2-2.



KEY: U = URBAN
A = AGRICULTURAL
C = CONSERVATION

FIGURE 3–1 STATE LAND USE DISTRICT BOUNDARY MAP

3.4 SOILS

Soil Conservation Service maps (1972) identify one soil type occurring over the site: Honolua Silty Clay (HwC) as shown in Figure 3-2. This strongly acid soil derived from igneous rock, consists of a dark brown surface layer and a reddish-brown subsoil. Well drained, with moderately rapid permeability, Honolua Silty Clay typically demonstrates slow to medium runoff with an erosion hazard ranging from slight to moderate.

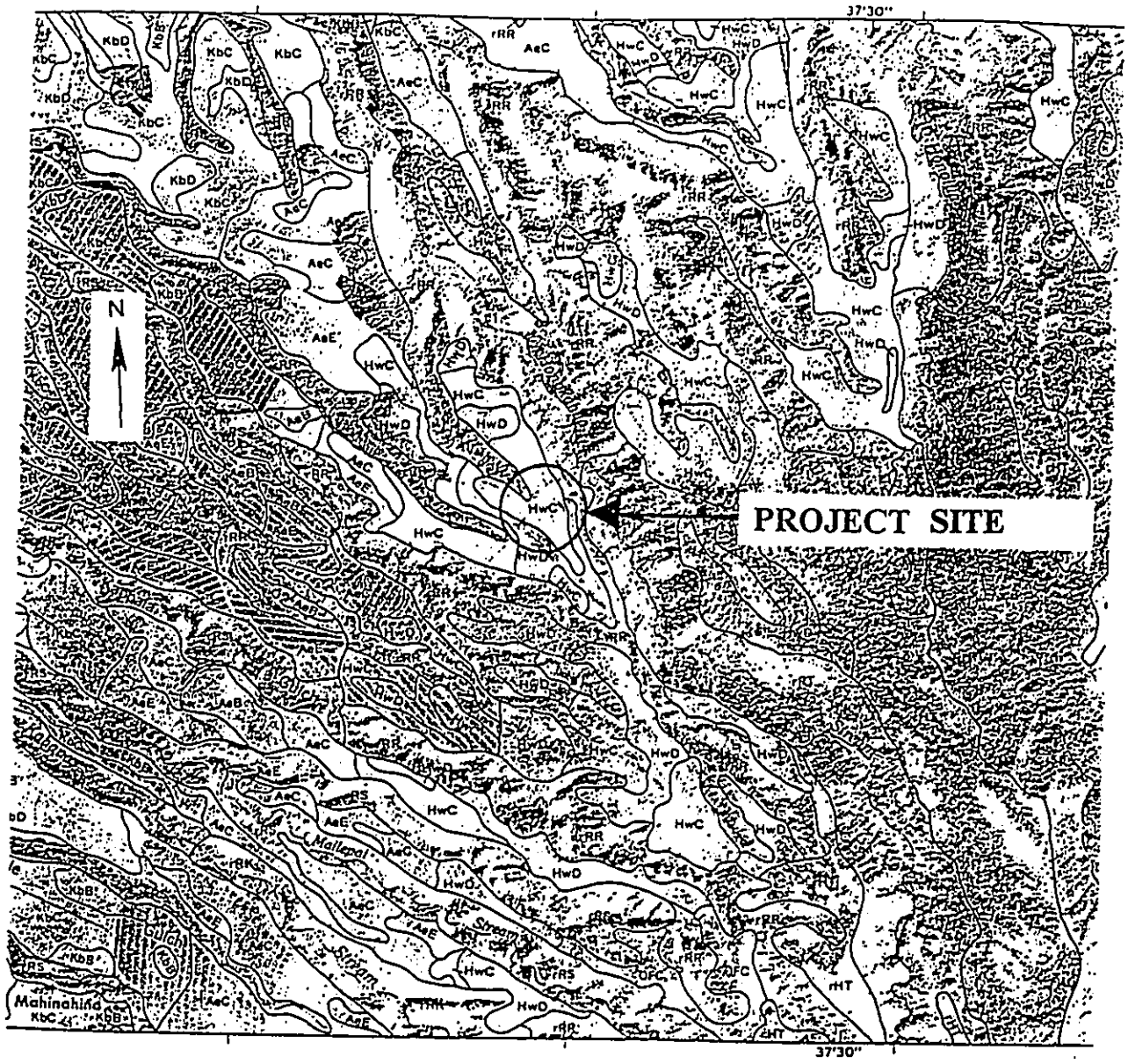
3.5 FLOOD HAZARDS

The project site is located in a hazard Zone C flood area on the National Flood Insurance Rate Map (community-panel #150003 0138 B). The Federal Emergency Management Agency uses Zone C to describe "areas of minimal flooding." (FEMA, 1989).

No flood hazard conditions are expected to be created as a result of the proposed project since runoff from the site is not expected to increase significantly.

3.6 EARTHQUAKE HAZARDS

The island of Maui is classified as Seismic Zone 2B according to the Uniform Building Code, 1991. In this system, Zone 0 names areas with the least seismic activity while Zone 4 names the areas with the greatest seismic activity.



SCALE: 1" = 2000'

FIGURE 3–2 SOIL CLASSIFICATION

3.7 FLORA AND FAUNA

Pineapple is the dominant crop of this largely agricultural area. Other recorded vegetation includes the introduced species such as guava, koa hoale, christmas berry, and eucalyptus.

Avian species are the primary inhabitants of the vicinity. Birds likely to be observed are introduced species such as: ricebirds, cardinals, Japanese white-eyes, linnets, barred doves, and lace necked doves. The only indigenous birds present are the migratory Pacific Golden plover and Ruddy turnstone. Game birds, such as pheasant and francolins, may also be present. (Fish & Game, 1978).

3.8 ARCHAEOLOGY

According to the State Historic Preservation Division, it is unlikely that any significant historic sites are still present at the project site since the land has been used for pineapple cultivation in the past. However, should evidence of historic sites be encountered during construction, all work will be stopped and mitigative measures will be implemented in coordination with the State Historic Sites Preservation Office.

3.9 GEOLOGY

The volcanic rocks of west Maui can be divided into three series: the Wailuku Volcanic Series, the Honolua Volcanic Series, and the Lahaina Series. The Napili project area is comprised of the two older types, the Wailuku and Honolua Volcanic Series.

The Wailuku series consist of basaltic lava flows and associated pyroclastic and intrusive rock that formed the West Maui shield volcano. The bulk of these thin, highly permeable pahoehoe and a'a flows of tholeiite, olivine tholeiite, and oceanite are covered by a relatively thin and discontinuous layer of andesitic and trachytic rock from the Honolua Volcanic Series.

3.10 HYDROLOGY

Groundwater in the central mountainous area of West Maui, is impounded by high-level dike compartments. Makai of the dike-held water, groundwater occurs in the basal aquifer of the Wailuku basalts. The basal lens is relatively thin due to the high permeability of the Wailuku basalts and the lack of significant caprock along the coast. At Napili Well "A," the top of the basal lens is no higher than five feet above mean sea level.

The basal water body is recharged largely by underflow from the high-level dike impounded water, in addition to percolation from rainfall, streamflow, and irrigation water. Discharge occurs by underflow of the basal water body to the ocean and by pumpage from other wells in the area.

3.11 CLIMATE

The Napili area typically experiences relatively mild weather with minimal seasonal and diurnal temperature variations. Temperatures range from 65-85° F in the coolest months (February and March) to 70-90° F in the warmest months (August and September). The average rainfall ranges between 40-60 inches annually, and the prevailing winds are northeasterly tradewinds.

SECTION 4
ENVIRONMENTAL IMPACTS

SECTION 4

ENVIRONMENTAL IMPACTS

4.1 SHORT TERM IMPACTS

Short term impacts are those impacts that are of a temporary nature and are typical of site preparation and other construction activities. These are temporary conditions that can be mitigated through compliance with regulations and standards.

4.1.1 Construction Impacts

The proposed project will generate impacts typical of site preparation and construction activities. These impacts include air quality, noise, and traffic impacts.

4.1.1.1 Noise Impacts

Noise impacts from construction activities are expected during site preparation and excavation. The absence of any homes in the vicinity, together with the use of muffled construction equipment, will result in a minimal level of disturbance. Since the project site is located in an agricultural area, bounded by pineapple fields, it is highly improbable that any noise related to construction activity will reach the surrounding community. Also,

no additional noise that is in excess of the existing Napili Well "A" pump noise will be created by the proposed GAC treatment facility.

4.1.1.2 Air Quality

Dust from vehicle movement and soil excavation, along with emissions from construction equipment and trucks may result in short term air pollution and degradation in air quality. The location and elevation of this site, however, localizes the disturbance and thus prevents the degradation of air quality on the surrounding community. Watering of the construction site should substantially reduce dust emissions. Emissions from construction equipment with diesel engines are expected to be low and relatively insignificant.

4.1.1.3 Traffic Impacts

Slow moving construction vehicles may impede normal flow of traffic on roadways leading to and from the construction site. However, these impacts are of a temporary nature and may be mitigated by moving heavy construction equipment during periods of low traffic volume. By restricting vehicle movement between 9:00 a.m and 3:00 p.m., peak hour traffic may be avoided.

4.1.1.4 Discharge Impacts

Discharge impacts associated with start-up of the treatment facility are the discharges from hydrotesting procedures. These discharges will be short term, occurring only during the initial start-up of the facility. An NPDES Hydrotesting Permit is required for the site and will be obtained by the contractor prior to the discharge of the hydrotesting water.

4.2 LONG TERM IMPACTS

The long term environmental impacts of the water treatment facility are those effects that are of a permanent nature. These include impacts on public facilities, visual impacts, impacts on the groundwater, and impacts from pump blow-off and backwash water discharge.

4.2.1 Impacts on Public Facilities

The public facilities that may be impacted by the proposed project include water, wastewater, and electrical utilities.

4.2.1.1 Water

The water distribution system in the West Maui area is part of the overall distribution system operated by the Maui Board of Water Supply. A system of wells that include Napili Well "A",

Napili Well "B", Napili Well "C", Honokahua Well "A", and Honokahua Well "B" transport water to the Alaeloa Reservoir, which is the distribution storage reservoir for the Napili area.

Since the Napili Well "A" was taken out of service, the other wells in the system were required to pump greater quantities to meet the overall demand. The proposed GAC water treatment facility would put the Napili Well "A" back into operation, allowing it to supplement the existing water supply and therefore ease the demand on the other wells and pumping stations serving the Napili area.

4.2.1.2 Wastewater

The proposed development does not plan for any toilets or restrooms at the project site. Hence, this development is not expected to generate any wastewater at the project site.

4.2.1.3 Electricity

Power is already being supplied at the project site for lighting and pump operations. Additional power requirements for the installation of the water treatment facility are estimated at 20 KW, which is not expected to be significant.

4.2.2 Visual Impacts

No adverse visual impacts are expected on the surrounding community since the project site is located in a hilly terrain,

surrounded by pineapple fields. The proposed GAC contactors will be approximately 20 feet in height, which is roughly the same height as the existing water reservoir. Thus, the visual impacts created by the existing reservoir should not be worsened by the addition of the GAC facility.

4.2.3 Impacts on Groundwater

The current project pertains to the treatment of water that is withdrawn from an existing well. The effects of pumpage from the well on the groundwater will have been analyzed at the time of well installation and is beyond the scope of the present project. The current project does not increase the quantity of water that is pumped from the well. Development of a water treatment facility will not create any additional impacts on groundwater in the region.

4.2.4 Impacts From Pump Blow-off And Backwash Water

Two kinds of discharges are associated with the potable water system at this site. The first one results during pump maintenance and start-up. Whenever the pump is shut down for maintenance or repair, there will be standing water in the pump shaft. This would be discharged through a blow-off line by running the pump for a few minutes before water is pumped to the reservoir or to the transmission mains. The blow-off discharge lasts for 3-5 minutes and a small quantity of water is discharged. Furthermore, this discharge is of potable quality and is not expected to

deteriorate the surface water or groundwater in the vicinity. This discharge associated with routine operations and maintenance may be included in the State Department of Health individual NPDES permit.

The second discharge associated with the treatment facility involves backwash and forward flush waters that are generated from carbon change-out procedures. Backwashing removes the carbon fines and stratifies the newly installed carbon bed. The backwashing procedure can generate as much as 50,000 gallons of water which is stored in a 50,000 gallon backwash tank. Prior to discharge from the tank, the backwash water is filtered to remove any carbon particles and treated with muriatic acid to obtain an acceptable pH level. The treated backwash water will be discharged through the same 12-inch drain line that disposes the blow-off water in the adjoining gulch. Following backwashing procedures, forward flushing is performed to help settle the carbon bed and to remove any remaining impurities. Forward flushing is done at rates up to 700 gpm and can use approximately 320,000 gallons of water per contactor. The forward flush water enters the backwash tank and is monitored for turbidity and pH levels prior to discharge through the tank's overflow line. All discharge of backwash and forward flush waters will require an Individual NPDES permit, that will contain the necessary provisions to limit any adverse impacts to the receiving waters and surrounding environment.

No new development affecting highly erodible slopes which drain into streams within or adjacent to the project will occur. All backwash and forward flushing waters anticipated from carbon replacement procedures will be discharged through an existing drainage outlet. This outlet currently empties into the gulch

adjacent to the project site. Unlike the discharge rate of backwash water that can be controlled, the discharge rate of water from the forward flushing and pump blow-off procedures may be high due to the large volume of water that is generated. High discharge rates could potentially damage any vegetation near the outlet structure. However, discharge of forward flushing waters will be infrequent and should occur only a few times per year (when new carbon is installed). Thus, if vegetation is damaged, it can grow back during the time period between discharge occurrences.

4.3 SOCIO-ECONOMIC IMPACTS

Socio-Economic Impacts involve impacts on the island's economy and population.

4.3.1 Economic Conditions

The Napili Well "A" water treatment facility will have both long-term and short-term cumulative benefits. The construction activity is expected to generate employment of limited duration. In addition, operation and maintenance of the facility will result in long-term employment. Furthermore, a safe and clean source of water will result in a healthier community. The health hazards and subsequent medical expenses that could be associated with a contaminated water supply will be reduced.

The development of the GAC water treatment facility will allow the Napili Well "A" to be put back into operation. Since an adequate water supply is necessary for future economic growth,

supplementing the existing water supply will help to promote the long-term development of the island's economy.

4.3.2 Population

The Board of Water Supply is responsible for providing safe drinking water to the people of the County of Maui. As the population in a region increases, BWS water systems and services must increase accordingly to meet the water demands. Limitation on the BWS water system or its inability to provide necessary services will severely constrain population growth and direction.

SECTION 5
ALTERNATIVES TO PROPOSED PLANS

SECTION 5

ALTERNATIVES TO PROPOSED PLANS

5.1 NO ACTION

The proposed project is intended to provide safe drinking water and increase the municipal water supply to meet the growing demands on the island. A no-action alternative would prevent the Napili Well "A" from being used as a source of potable water due to the presence of contaminants. If this water program is curtailed, the future water needs of the island community would not be adequately supported. As a result, new development around the Napili area could be restricted and regional water shortages may occur.

5.2 DELAYED ACTION

The intent of the project is to supplement the existing potable water supply in the West Maui region by treating the contaminated water from Napili Well "A" and putting the well back in to service. Restoring Napili Well "A" will also help to ensure continued water supply when the other wells are shut down for repair or renovation. Delaying this action will result in increasing the stress on existing water resources.

5.3 ALTERNATIVE WATER TREATMENT METHODS

Some of the current technologies used in the treatment of contaminated waters include granular activated carbon (GAC), powdered activated carbon (PAC), synthetic adsorbents, air-stripping (packed tower aeration), adsorbent exchange resins and membrane technology (nanofiltration). Each of these methods is described in the following pages.

5.3.1 Granular Activated Carbon (GAC)

Granular activated carbon (GAC) is one of the most effective treatment methods available for removal of contaminants such as organic substances and synthetic organic chemicals. The contaminants are adsorbed on to the activated carbon surface by natural attractive forces existing between them. The adsorption capacity of GAC can be affected by the polarity of the contaminant. Strongly polar compounds tend to limit the adsorptivity of the carbon. The synthetic organic chemical, DBCP is a non-polar compound and can therefore be effectively adsorbed onto the carbon granules.

GMP pilot-scale tests used in the design of treatment facilities at Mililani and Waipahu Wells for the Board of Water Supply (BWS), City and County of Honolulu demonstrated that GAC treatment was able to produce waters with undetectable levels of EDB and DBCP.

The downflow fixed bed system is most commonly used for GAC water treatment applications. A typical unit is shown in Figure 5-1. In this system, the contaminated water enters the top of a pressurized vessel and flows downwards through the bed of activated carbon. The treated water is then collected at the bottom of the vessel by an underdrain which also serves as a backwash distributor.

5.3.2 Powdered Activated Carbon (PAC)

Powdered activated carbon (PAC) is smaller in size than GAC and is added to the process stream rather than passing the process water through the carbon bed. The spent carbon must be removed from the water through filtration. The use of two technologies in conjunction will require pilot testing to determine the optimum dosage of PAC. PAC is more widely used for controlling odors and taste rather than for water purification and is less efficient than GAC in the removal of synthetic organic chemicals such as pesticides. The main disadvantages of a PAC system include the extra separation step required to remove the spent PAC from the effluent and the inability to regenerate the spent carbon (whereas spent GAC can be regenerated).

5.3.3 Air Stripping (Packed Tower Aeration)

The air stripping process involves desorption of the contaminants from solution to the atmosphere. This process is

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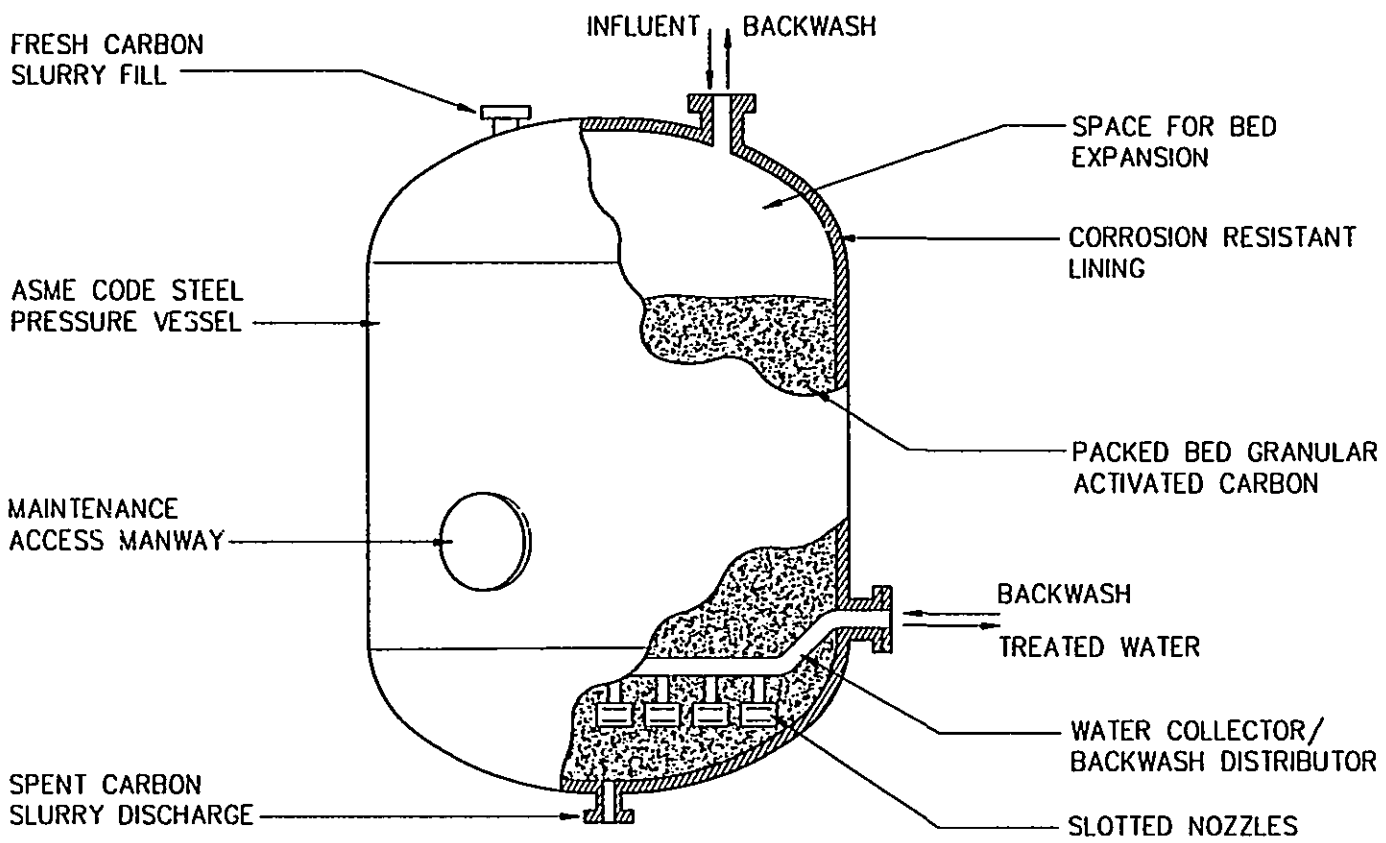

FIGURE 5-1 TYPICAL DOWNFLOW FIXED-BED ADSORBER TANK

SCALE: NONE

extremely efficient in removal of most volatile organic compounds (VOC).

A packed tower is typically made of a cylindrical shell filled with packing material as shown in Figure 5-2. The operation involves a countercurrent flow pattern, wherein the contaminated feed water enters the tower from the top and travels down through the packing while air is simultaneously forced upward from the tower's bottom.

A major disadvantage of the air stripping process is that the contaminants are transferred from water to air. If contaminants are directly released to the atmosphere, it poses an air quality problem. Since DBCP is listed as a Hazardous Air Pollutant under the Hawaii Administrative Rules 11-60.1-172, a permit may be required to comply with these rules. Another disadvantage is that any variation in the concentrations of the contaminants affects the efficiency of the air stripping process.

5.3.4 Synthetic Adsorbents

Synthetic adsorbents are easier to regenerate as compared to the effort required to handle, transport and dispose of the spent GAC. Synthetic adsorbents can be regenerated by means of steam or solvent extraction methods.

Adsorbent resins are typically comprised of small beads that are treated to selectively adsorb certain contaminants. The two main types of synthetic adsorbents are adsorbent resins and synthetic carbonaceous adsorbents. In an adsorbent resin process, water is continually passed through the resin until the adsorbent

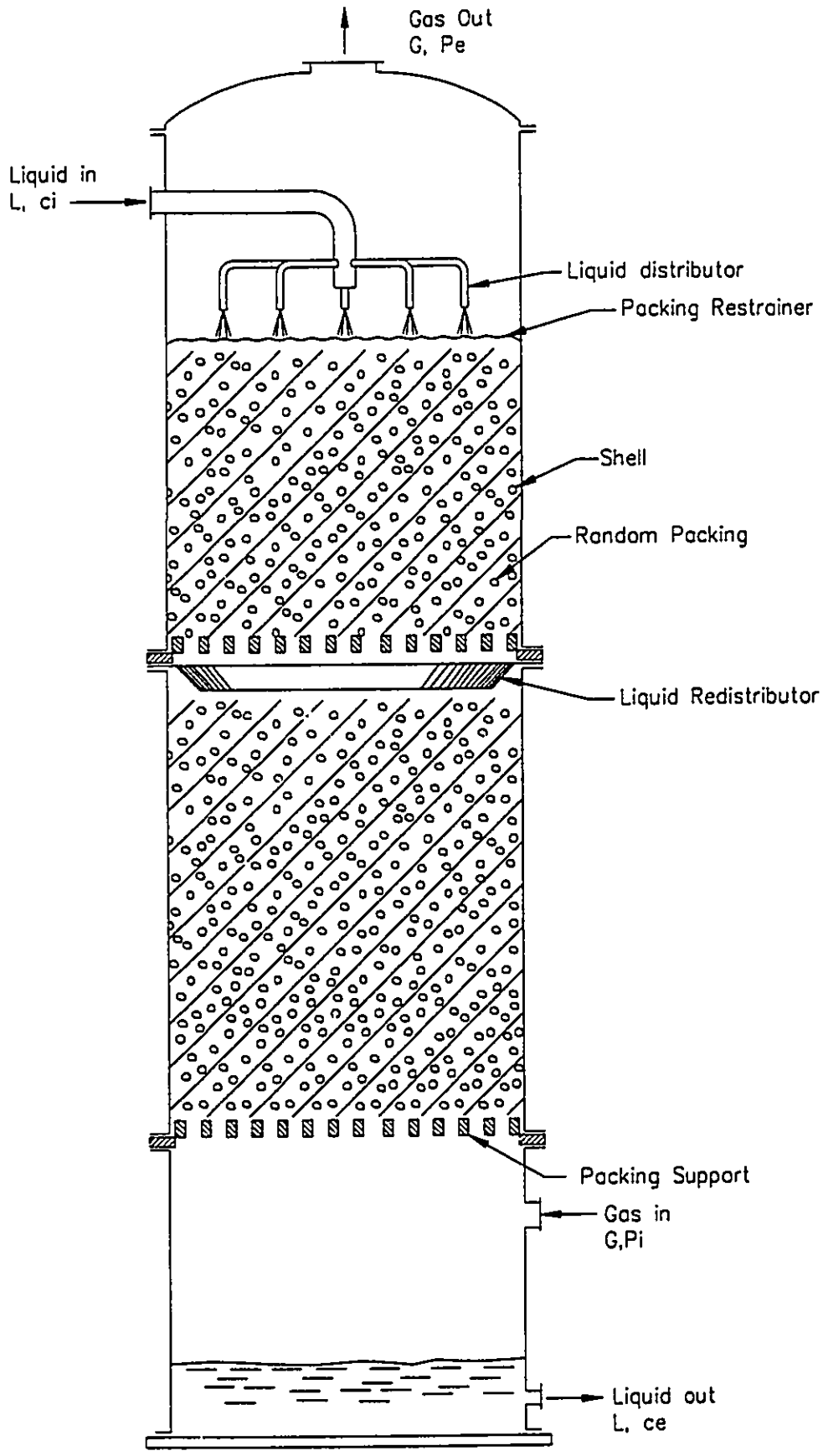

FIGURE 5-2 TYPICAL AIR STRIPPING TOWER
SCALE: NONE

SC2441AC

capacity of the beads is exhausted. Although resins can be regenerated using a chemical solution, they produce a contaminated waste stream that needs proper disposal. Synthetic carbonaceous adsorbents were developed in the late 1970's but were limited by the lack of large-scale production. Improved versions that are commercially available in large quantities are being developed.

Though synthetic adsorbents have been shown to be effective in the removal of organic compounds, specific information for the removal of DBCP is not available. This will require extensive pilot testing prior to the use of this system at Napili Well "A".

5.3.5 Membrane Technology (Nanofiltration)

Membrane filtration is capable of providing more efficient and superior treatment than conventional water treatment systems, but is often more costly. This treatment method involves the pressurized flow of contaminated water through a membrane filter, which consists of a thin, highly porous membrane that can selectively separate suspended, colloidal or dissolved solids from water. As the treated water passes through the membrane, the concentrated reject stream travels across the membrane to exit the system. A simplified illustration of the nanofiltration process is shown in Figure 5-3.

Nanofiltration is a type of membrane filtration that can be applied to the removal of synthetic organic chemicals such as DBCP. Membrane processes such as nanofiltration are often rated based on nominal pore size, or on the smallest size of contaminant

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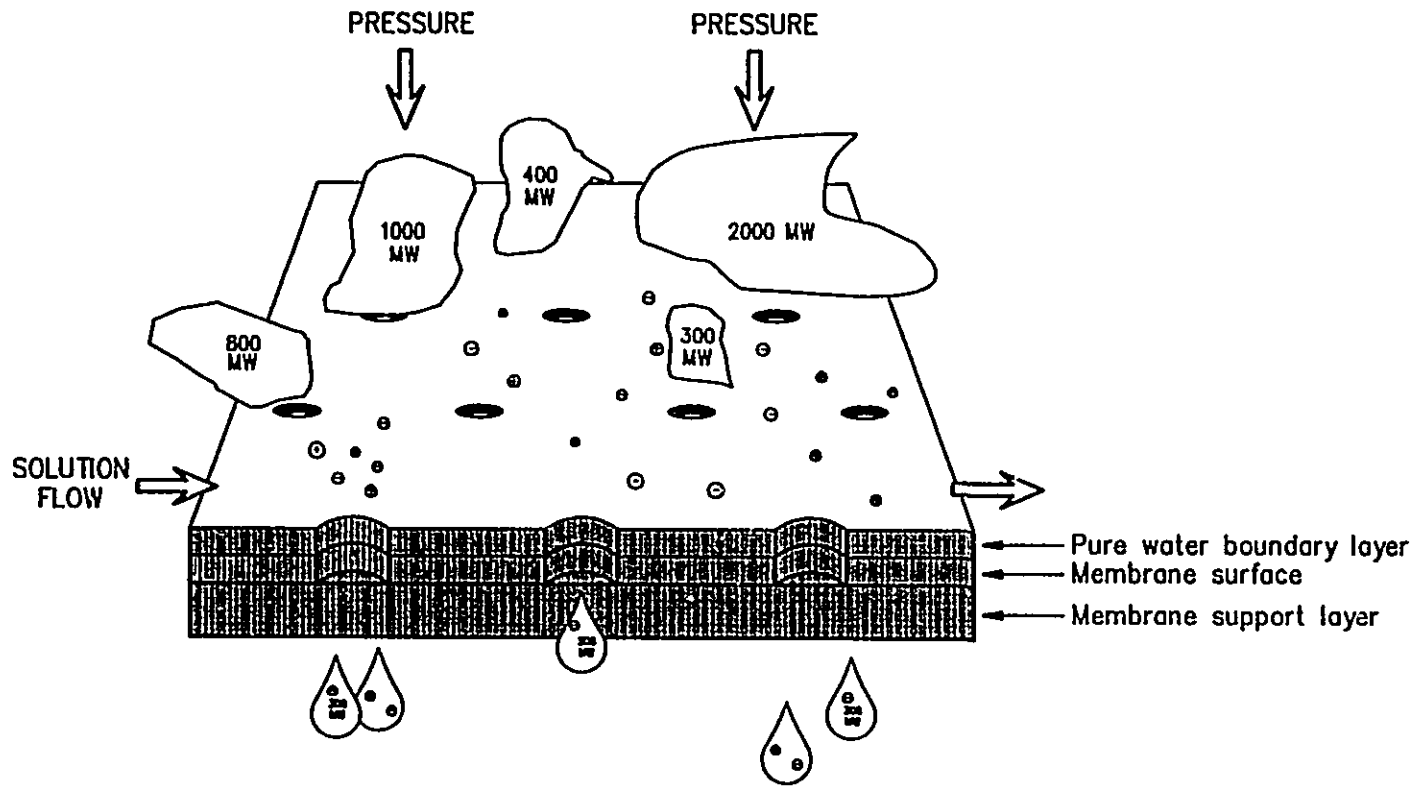

FIGURE 5–3 NANOFILTRATION PROCESS

that the membrane will effectively remove (also known as the molecular weight cut-off [MWC]). MWCs for nanofilter membranes range approximately from 200 to 500. Since DBCP has a molecular weight of 263.36, a nanofilter membrane with a very small MWC would be needed to effectively remove the contaminant.

A disadvantage of nanofiltration is that the process may not effectively remove other contaminants with MWCs smaller than 200 that could potentially appear in the future. Though nanofiltration has proven successful in pilot studies with certain pesticides, pilot tests have not been carried out specifically for DBCP. Hence, pilot testing at the Napili Well "A"site will be required to ensure the efficient removal of DBCP through nanofiltration.

5.3.6 Performance Evaluation

Based on the criteria of proven effectiveness, the GAC treatment process is considered to be the best alternative for the removal of DBCP at Napili Well "A". GAC systems have proven to be effective in the specific removal of DBCP. Currently, the four GAC treatment plants on Oahu are successfully removing their target contaminants, which includes DBCP. A main advantage of the GAC treatment system is its ability to remove other contaminants in the water which have not been determined or which may appear in the future. Other advantages include operational ease, performance stability under varying influent conditions, enclosed treatment, no air emissions, and system reliability.

SECTION 6
MITIGATIVE MEASURES

SECTION 6

MITIGATIVE MEASURES

Environmental protection and mitigative measures will be implemented during the design, construction and post-construction phases of the project. These measures are listed as follows:

- Since the construction will be confined to the existing project site, vegetation removal will be negligible.
- The use of muffled construction equipment, in addition to limiting construction activities to standard working hours, will help mitigate the noise impacts. Construction noise is expected to be minimal since work will be confined to or adjacent to the pineapple fields and away from homesites. All operations will be carried out in compliance with the State Department of Health's rules and regulations on noise control.
- Impacts from dust created by the movement of construction equipment, construction vehicles and excavation activities will be mitigated through the frequent watering of the site.
- Traffic impacts on the roadways leading to the site would be mitigated by moving any heavy construction equipment during periods of low traffic volumes.

- The appropriate NPDES permits will be obtained for any discharge resulting from pump blow-off or backwashing procedures. The discharge will be filtered or treated as needed so that the water quality of the receiving waters can be maintained.
- Temporary soil erosion control measures will be implemented during construction to minimize soil loss.
- The State Historic Preservation Division shall be notified if evidence of historic sites are encountered during construction. The Division shall be provided sufficient time to assess the situation and recommend appropriate mitigation measures. Any archaeological data recovery work that may be recommended by the Division shall be completed by a qualified archaeologist prior to the commencement of work. Completion of mitigation work shall be confirmed by the Division, and a report of the findings shall be prepared and submitted to the Division for review and acceptance.

SECTION 7
FINDING OF NO SIGNIFICANT IMPACT DETERMINATION

SECTION 7

FINDING OF NO SIGNIFICANT IMPACT DETERMINATION

This document constitutes a "Finding of No Significant Impact (FONSI)," and as a result, an Environmental Impact Statement will not be required for the proposed Napili Well "A" project. This determination is in accordance with Hawaii Revised Statutes, Chapter 343.

Although several potential negative impacts are expected from the proposed project, these impacts are temporary and will be minimized through the mitigation measures identified previously in Section 6. The benefits that result from the proposed project far outweigh the short term negative impacts.

REFERENCES

REFERENCES

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APPENDIX A
AGENCY COMMENTS AND RESPONSES

USDA

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

P.O. Box 50004
Honolulu, HI
96850

Our People...Our Islands...In Harmony

December 11, 1996

Mr. Michael Miyahira
GMP Associates, Inc.
841 Bishop Street, Suite 1501
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

Subject: Draft Environmental Assessment (DEA) - GAC Treatment Facility,
Napili Well "A", Napili, Maui, Hawaii

We have reviewed the above-mentioned document and offer the following comment:

With regards to the backwash water, can this be utilized by the pineapple company or adjacent pasture, etc. besides being released into the gulch?

Thank you very much for the opportunity to review this document.

Sincerely,

KENNETH M. KANESHIRO
State Conservationist

cc:
Mr. Herb Kogasaka, Department of Water Supply, County of Maui, 200 South High Street, Wailuku, Hawaii 96793

BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833

February 25, 1997

Mr. Kenneth Kaneshiro, State Conservationist
U.S. Department of Agriculture
National Resources Conservation Service
P.O. Box 50001
Honolulu, Hawaii 96850

Dear Mr. Kaneshiro:

Subject: **RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE GAC TREATMENT FACILITY AT NAPILI WELL "A"**
NAPILI, MAUI, HAWAII **TMK 4-3-02:006**

Thank you for your comment letter, dated December 11, 1996, during the 30-day comment period on the proposed Napili Well "A" GAC Treatment Facility. We offer the following response to your comment:

COMMENT: "With regards to the backwash water, can this be utilized by the pineapple company or adjacent pasture, etc. besides being released into the gulch?"

RESPONSE: Backwashing as well as forward flushing procedures generate a significant amount of water that can be sued for the irrigation of the adjacent agricultural lands. However the reuse of these waters is dependent on whether Maui Land and Pineapple (adjacent property owner) desires to use the water for irrigation of their crops. Furthermore, backwash and forward flush waters would only be available when the spent carbon in the GAC contactors is replaced with new carbon (roughly a few times a year). Should Maui Land and Pineapple be interested in using the backwash and forward flush waters for irrigation, then coordination with the County of Maui, Department of Water Supply must occur. We have enclosed a copy of a letter sent to Maui Land and Pineapple (dated February 19, 1997) to inquire if they are interested in using the backwash and forward flush waters for irrigation.

We hope that our response has adequately addressed your comment. If you have any questions or require additional information, please contact me at 243-7816. Thank you for your time.

Sincerely,

David R. Craddick
Director

/HK:sc
Enclosure: GMP ltr dated 219/97

xc: GMP Associates, Inc.

GMP ASSOCIATES, INC.

February 19, 1997

Engineers/Architects

Mr. Wesley Nohara, Plantation Superintendent
Maui Land and Pineapple Company
4900 Honoapiilani Highway
Lahaina, Hawaii 96761

RE: GAC Treatment Facility at Napili Well "A"
Napili, Maui, Hawaii (TMK: 4-3-01:06)

Dear Mr. Nohara:

We are writing to see if you would be interested in using potable discharge waters associated with the proposed Napili Well "A" Granular Activated Carbon (GAC) treatment facility for irrigation of pineapple fields adjacent to the well site. The County of Maui, Department of Water Supply proposes to construct this water treatment facility at the drinking water well site of Napili Well "A" in Napili, Maui. The purpose of this facility is to reduce the concentration of the contaminant, dibromochloropropane (DBCP) below an acceptable detection level. The project site is identified by Tax Map Key (TMK) 4-3-01:06 and is shown in Exhibits "A" and "B."

Two types of discharges are associated with the potable water system at this well site. The first one results during pump maintenance and start-up. Whenever the pump is shut down for maintenance and repair, there will be standing water in the pump shaft. The pump is run for approximately 3-5 minutes, generating a considerable amount of potable quality water. The second discharge involves backwash and forward flush waters that are generated approximately twice a year when the spent carbon from the GAC tanks is replaced. Backwash water is stored in a 50,000 gallon backwash tank and is filtered and treated with muriatic acid to obtain acceptable pH levels before being discharged into the adjacent gulch. Following backwashing procedures, forward flushing is performed to help settle the carbon bed and to remove any remaining impurities. Forward flush water enters the backwash tank and is monitored for turbidity and pH levels prior discharge into the gulch. The amount of available potable water from both backwashing and forward flushing procedures is approximately 50,000 gallons and 320,000 gallons, respectively, per carbon change-out event.

Since this supply of water would only be available periodically (few times a year) it would not be a continuous irrigation source, but could serve as a supplemental source. Should you be interested in using these discharge waters, or have any questions, please contact me at 243-2233.

Sincerely,

GMP ASSOCIATES, INC.

Neal S. Fukumoto, P.E.
Project Manager

cc: Herb Kogasaka - County of Maui, Department of Water Supply

841 Bishop Street • Suite 1501 • Honolulu, Hawaii 96813-3915 • Telephone: (808) 521-4711 • Fax: (808) 538-3269

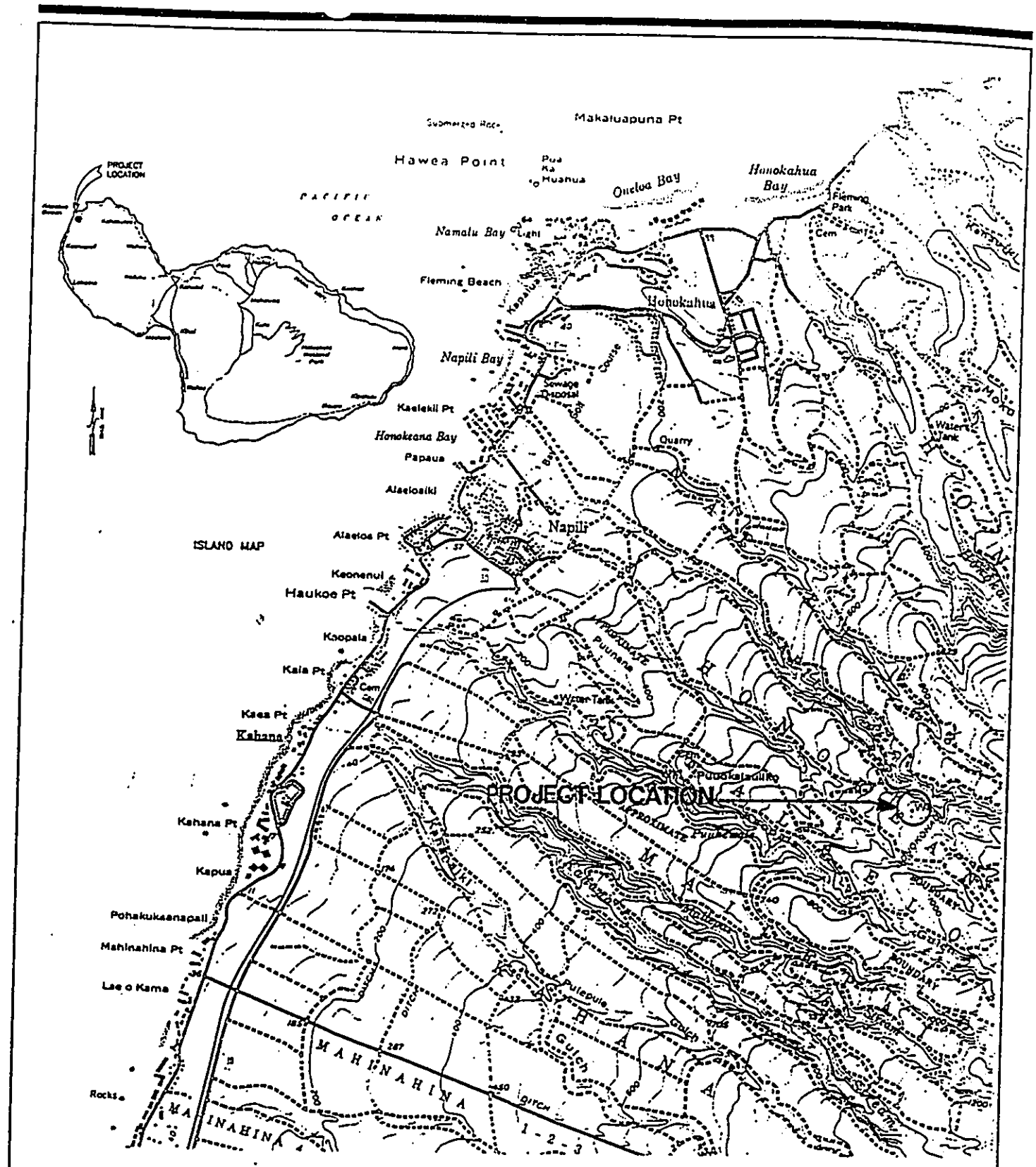

EXHIBIT A

LOCATION MAP OF NAPILI WELL "A"

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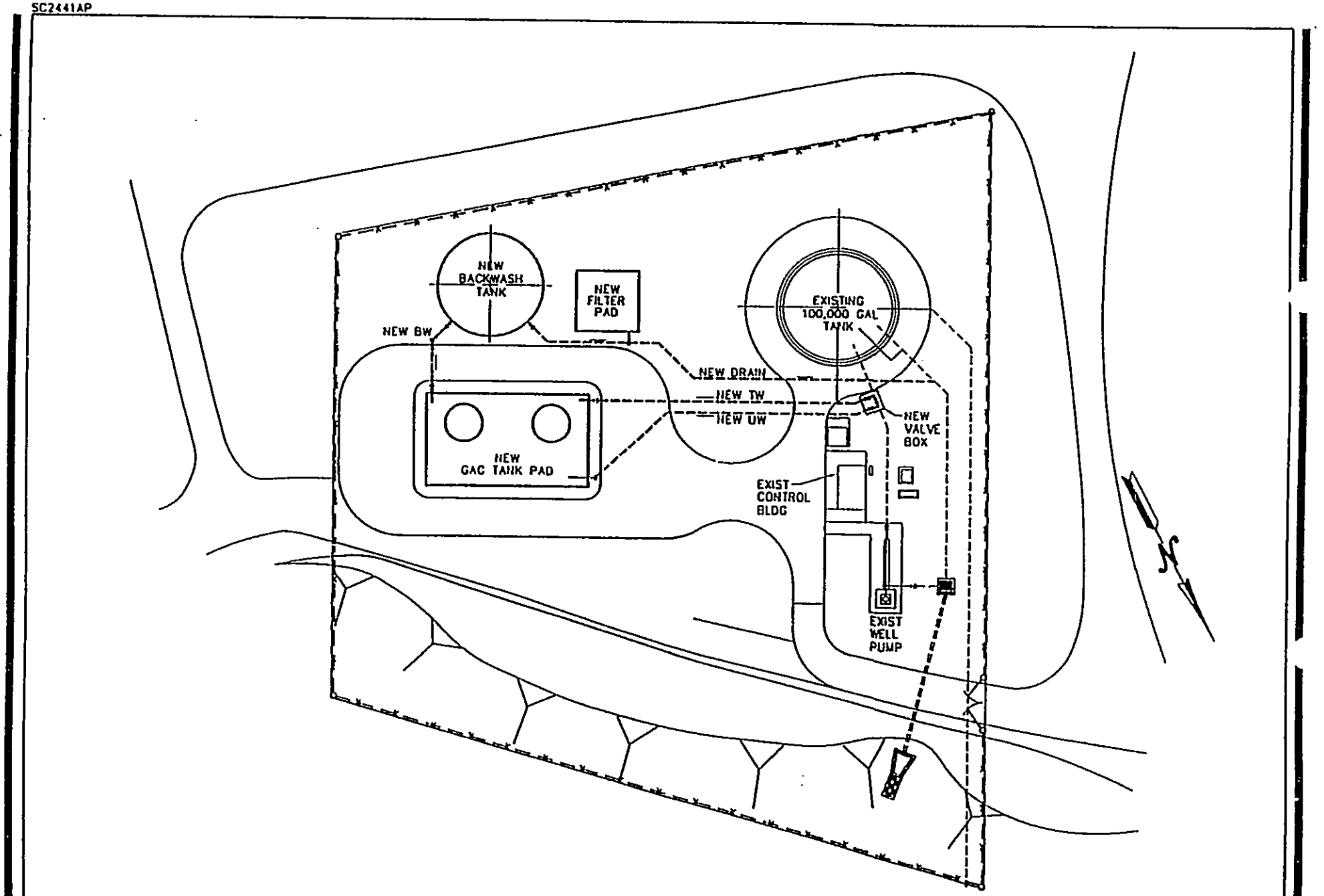

EXHIBIT B - PROPOSED NAPILI WELL "A" GAC TREATMENT FACILITY

GMP ASSOCIATES, INC.

Engineers/Architects

March 10, 1997

Mr. Kenneth Kaneshiro, State Conservationist
U.S. Department of Agriculture
National Resources Conservation Service
P.O. Box 50004
Honolulu, HI 96850

Re: GAC Treatment Facility at Napili Well "A"
Napili, Maui, Hawaii (TMK: 4-3-01:06)

Dear Mr. Kaneshiro:

On behalf of the County of Maui, Department of Water Supply we are writing in response to your letter, dated December 11, 1996, regarding the use of discharge waters for irrigation from the proposed Napili Well "A" GAC Treatment Facility.

Per a telephone conversation on March 7, 1997 (enclosed memorandum), the Maui Pineapple Company indicated that the use of backwash and forward flush water from the GAC treatment facility for irrigation of their adjacent pineapple fields would be unfeasible based on the infrequency of each discharge event. The Maui Pineapple Company also indicated that they do not have the available funds to construct a reservoir or new distribution lines for the irrigation water. Thus, the backwash and forward flush waters from the treatment facility would be discharged into the adjacent gulch.

Should you have any questions or require additional information, please contact me at 521-4711. Thank you for you time.

Sincerely,

GMP ASSOCIATES, INC.

Neal S. Fukumoto, P.E.
Project Manager

Enclosures

cc: Herb Kogasaka, Department of Water Supply

841 Bishop Street • Suite 1501 • Honolulu, Hawaii 96813-3915 • Telephone: (808) 521-4711 • Fax: (808) 538-3269

MEMORANDUM

Date: March 7, 1997

To: LMUW/File

From: NSF

Re: Napili "A" GAC Facility

I spoke with Wes Nohara of Maui Pineapple Company regarding our letter to him dated February 19, 1997 concerning the discharge of backwashing and forward flushing water.

Mr. Nohara stated that Maui Pineapple Company would like to use the backwash and forward flush water but, based on the quantity of water and frequency of each event, it would not be feasible for them to use it. New distribution lines to disburse the water throughout their site, a new reservoir in the vicinity of the well site to store the water, or a new pump to convey the water to existing reservoirs would need to be constructed to realize the benefits of the water. At this time Maui Pineapple Company does not have the funds available to construct any of these alternatives.

GMP ASSOCIATES, INC.

Engineers/Architects

March 10, 1997

Mr. Kenneth Kaneshiro, State Conservationist
U.S. Department of Agriculture
National Resources Conservation Service
P.O. Box 50004
Honolulu, HI 96850

Re: GAC Treatment Facility at Napili Well "A"
Napili, Maui, Hawaii (TMK: 4-3-01:06)

Dear Mr. Kaneshiro:

On behalf of the County of Maui, Department of Water Supply we are writing in response to your letter, dated December 11, 1996, regarding the use of discharge waters for irrigation from the proposed Napili Well "A" GAC Treatment Facility.

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Should you have any questions or require additional information, please contact me at 521-4711. Thank you for you time.

Sincerely,

GMP ASSOCIATES, INC.

Neal S. Fukumoto, P.E.
Project Manager

Enclosures

cc: Herb Kogasaka, Department of Water Supply

841 Bishop Street • Suite 1501 • Honolulu, Hawaii 96813-3915 • Telephone: (808) 521-4711 • Fax: (808) 538-3269

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University of Hawaii at Manoa

Water Resources Research Center
Holmes Hall 283 • 2540 Dole Street
Honolulu, Hawaii 96822

16 December 1996

Mr. Neal S. Fukumoto, P.E.
Project Manager
GMP Associates, Inc.
841 Bishop Street, Suite 1501
Honolulu, Hawaii 96813-3915

Dear Mr. Fukumoto:

Subject: Draft environmental assessment for the GAC treatment facility at Napiliwell "A" Napili, Maui, Hawaii (TMK: 4-3-01: 06)

This is a negative declaration based upon a finding of no significant environmental impacts associated with the proposed addition of a GAC treatment facility. This review contains specific comments on the report text but agrees with the negative declaration statement provided that the following comments are addressed.

The copy of the report we received has two instances where text is repeated on sequential pages (pp 2-2/2-5, 2-8/2-9) and one where text is missing (the transition between pp 2-7/2-8). All of the Figures should have a scale or other dimensioning to allow better understanding (i.e. Figures 2-1, 2-2, 2-3, 3-1, 3-2, 5-1, and 5-2).

Overall, the primary impacts of the proposed project are visual, economic, disposal of spent GAC, construction related, and effects of process discharges. These are discussed as follows:

1. Visual impacts. The report does not adequately address visual impacts. The project will result in a new manmade structure approximately 20 ft maximum height in a "natural" agricultural area where approximately three foot tall crops are grown. Consequently the new structures will be visible from long distances which will be a negative impact for which mitigative efforts should be proposed.

2. Economic impacts. The $1,500,000 capital plus unestimated/undisclosed annual operating costs for purchase of virgin replacement GAC, water sampling and analysis, carbon disposal fees, filtration system operation/maintenance, etc. are significant. The economic costs will likely be reflected in consumer water service rates which must be justified by a genuine need for additional water (they have been "getting by" without this well since 1992). Such a need may exist, but such need is not clearly established in this report nor is any other document referenced where

such a determination has been made. Is this project needed for current uses only, or is future growth anticipated? If it is only for current needs and future growth is anticipated, is it cost effective not to build facilities which will provide for already planned growth? If it is needed only for future growth, how much growth and are there resources available for other needed infrastructure such as wastewater treatment, electricity, landfills, roads, hospitals, etc.? Perhaps this is all spelled out in a Master Plan document which can be referenced.

3. Disposal of spent GAC disposal at the local landfill. This is the recommended option, but it is unknown from the document whether there is a landfill which has space available for the long term and which will accept the spent GAC. Also, the spent GAC is usually removed as a slurry (mostly water) to a tanker truck for transport. This slurry cannot be accepted at any landfill because it could not pass the "paint filter" test and would have to be dewatered first. Where/how would this be done?

4. Construction impacts . These temporary impacts such as noise, traffic, dust, etc. can be easily mitigated and are well addressed in the document.

5. Effects of process discharges. The document does not say what these impacts might be. Do these include erosion, surface water pollution, and/or something else? The discharge of 50,000 gallons of backwash water could be significant in terms of erosion depending upon the rate of discharge. It should be mentioned that the needed NPDES permit will likely contain provisions designed to limit any potential negative impacts.

The document should mention that no additional noise will be created by the proposed project in excess of that associated with the Napili Well pump noise.

Other specific comments are as follows:

1. Section 4.1.1. Why will there not be any impacts to the community? Is it because the homes are far away and at a lower elevation? How close is the nearest home? How far to the main part of town?

2. Section 5.3.2. Why would it be any more difficult to dispose of spent PAC than spent GAC which is apparently not difficult? Isn't the main disadvantage of PAC that a separation step is also needed (by the way it does not have to be a membrane filter, a sand filter would work also)?

3. Section 5.3.3. The report mentions that an air quality problem could be created. Could it really be a problem? Would the off-gas concentration of DBCP even be detectable? What are the air emission concentration limits for DBCP?

4. Section 5.3.5. The report indicates that molecules larger than 1 nanometer (= 0.001 micrometer or 10 Angstrom) are rejected by nanofilters which is an oversimplification. In general nanofilter membranes and reverse osmosis (RO) membranes are rated based upon molecular weight cutoff (MWC) which does not preclude passage of that size or even larger molecules (it simply implies effective removal and smaller MW molecules will also be removed to some extent). Membrane processes are more complex and involve mechanisms other than simple straining which would preclude any particle larger than the nominal pore diameter. RO membranes usually have MWCs of about 100 and nanofilter membranes have MWCs of 200-500 (Figure 5-3 shows MWC of 300). The MW of DBCP is 263.36. Previous work has been conducted using nanofiltration for removal of DBCP and other fumigants found in Mililani well water. There is a Masters of Civil Engineering Thesis dated 1995 available by D. Chaturvedula entitled "Treatment of Mililani I well water by nanofiltration." In that thesis, two nanofilter membranes were tested. The cellulose triacetate (CTA) membrane only achieved about 20% removal of DBCP. The thin film composite (TFC) membrane was able to achieve complete removal of approximately 20 ng/L of DBCP (detection limit unreported). The MWC's for each membrane tested were not reported but the TFC membrane was probably "tighter" than the CTA unit and may have had a MWC of about 200.

5. Section 5.3.6. Another important advantage of GAC is that it will effectively remove almost any other contaminant in the water now and not determined or which may potentially appear in the future (such as EDB, TCP, etc.) including undetermined organic matter measured as total organic carbon.

Sincerely,

Roger Babcock Jr.

Roger Babcock, Jr.
Asst. Professor, WRRC

BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833

February 20, 1997

Mr. Roger Babcock, Jr.
Water Resource Research Center
University of Hawaii at Manoa, Holmes Hall 383
2540 Dole Street
Honolulu, Hawaii 96822

Dear Mr. Babcock:

Subject: **RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE GAC TREATMENT FACILITY AT NAPILI WELL "A" NAPILI, MAUI, HAWAII TMK 4-3-01:006**

Thank you for your comment letter, dated December 27, 1996, during the 30-day comment period on the proposed Napili Well "A" GAC Treatment Facility. We offer the following responses to your comments:

COMMENT: "The copy of the report we received has two instances where text is repeated on sequential pages (pp2-2/2-5, 2-8/2-9) and one where text is missing (the transition between pp 2-7/2-8). All the Figures should have a scale or other dimensioning to allow better understanding (i.e. Figures 2-1, 2-2, 2-3, 3-1, 3-2, 5-1 and 5-2).

RESPONSE: The text on pages 2-2/2-5, 2-8/2-9, and 2-7/2-8 has been corrected. Figures 2-1, 2-2, 2-3, 3-1, 3-2, 5-1 and 5-2 have been edited to include a scale.

COMMENT: "Visual impacts. The report does not adequately address visual impacts. The project will result in a new manmade structure approximately 20 ft. maximum height in a "natural" agricultural area where approximately three foot tall crops are grown. Consequently, the new structures will be visible from long distances which will be a negative impact for which mitigative efforts should be proposed."

RESPONSE: The proposed GAC vessels will be approximately 20 feet in height, which

is roughly the same height as the existing water reservoir. Thus, the visual impacts created by the existing reservoir should not be worsened by the addition of the GAC facility.

COMMENT: "Economic impacts. The $1,500,0000 capital plus unestimated/undisclosed annual operating costs for purchase of virgin replacement GAC, water sampling and analysis, carbon disposal fees, filtration system operation/maintenance, etc. are significant. The economic costs will likely be reflected in consumer water service rates which must be justified by a genuine need for additional water (they have been 'getting by' without this well since 1992). Such a need may exist, but such need is not clearly established in this report nor is any other document referenced where such a determination has been made. Is this project needed for current uses only, or is future growth anticipated? If it is only for current needs and future growth is anticipated, is it cost effective not to build facilities which will provide for already planned growth? If it is needed only for future growth, how much growth and are there resources available for other needed infrastructure such as wastewater treatment, electricity, landfills, roads, hospitals, etc? Perhaps this is all spelled out in a Master Plan document which can be referenced."

RESPONSE: The Maui County Water Use and Development Plan (1992), and the West Maui Water Master Plan (April 1991), have both indicated reliance on the Napili Well "A" as a source of potable water before DBCP contamination was detected. Since then, the County has intended to either restore or replace the Napili Well "A" source. According to the County, constructing a GAC treatment facility would also be more economical than developing a new well in the region that would be connected to the existing water distribution system.

COMMENT: "Disposal of spent GAC disposal at the local landfill. This is the recommended option, but it is unknown from the document whether there is a landfill which has space available for the long term and which will accept the spent GAC. Also, the spent GAC is usually removed as a slurry (mostly water) to a tanker truck for transport. This slurry cannot be accepted at any landfill because it could not pass the 'paint filter' test and would have to be dewatered first. Where/how would this be done?"

RESPONSE: The recommended option for the disposal of the spent carbon is burial at the Central Maui Sanitary Landfill.. The spent carbon may also be shipped to California to be regenerated. Carbon regeneration may become a

reasonable option since regeneration carbon costs only slightly more than virgin carbon.

The spent GAC will be dewatered prior to being trucked to the landfill for disposal. After the carbon is removed from the contractor, it is deposited into a tanker truck as a slurry and allowed to dewater in the tank. Decanted water from the truck is pumped back into the backwash tank.

COMMENT: "Effects of process discharges. The document does not say what these impacts might be. Do these include erosion, surface water pollution, and/or something else? The discharge of 50,000 gallons of backwash water could be significant in terms of erosion depending upon the rate of discharge. It should be mentioned that the needed NPDES permit will likely contain provision designed to limit any potential negative impacts."

RESPONSE: Section 4.1.1.4 "Discharge Impacts" has been edited to include the effects of process discharges as follows:

"...All discharge of backwash and forward flush waters will require an Individual NPDES permit, that will contain the necessary provisions to limit any adverse impacts to the receiving waters and surrounding environment.

No new development affecting highly erodible slopes which drain into streams within or adjacent to the project will occur. All backwash and forward flushing waters anticipated from carbon replacement procedures will be discharged through an existing drainage outlet. This outlet currently empties into the gulch adjacent to the project site. Unlike the discharge rate of backwash water that can be controlled, the discharge rate of water from the forward flushing procedures may be high due to the large volume of water that is generated. High discharge rates could potentially damage any vegetation near the outlet structure. However, discharge of forward flushing waters will be infrequent and should occur only a few times per year (when new carbon is installed). Thus, if vegetation is damaged, it can grow back during the time period between discharge occurrences."

COMMENT: "The document should mention that no additional noise will be created by the proposed project in excess of that associated with the Napili Well pump noise."

RESPONSE: The text has been edited to include your comment in Section 4.1.1.1.

COMMENT: "Section 4.1.1. Why will there not be any impacts to the community? Is it because the homes are far away and at a lower elevation? How close is the nearest home? How far to the main part of town?"

RESPONSE: The nearest homes from the project site are located in the main town of Napili, roughly a mile away from the Napili Well "A" site. The outskirts of Napili town is at an elevation of approximately 120 feet MSL, while the project site is at an elevation of approximately 860 feet MSL.

COMMENT: "Section 5.3.2. Why would it be any more difficult to dispose of spent PAC than spent GAC which is apparently not difficult? Isn't the main disadvantage of PAC that a separation step is also needed (by the way it does not have to be a membrane filter, a sand filter would work also?"

RESPONSE: Section 5.3.2 has been edited to incorporate your comment as follows: "...The main disadvantage of a PAC system include the extra separation step required to remove the spent PAC from the effluent and the inability to regenerate the spent carbon, whereas GAC can be regenerated."

COMMENT: "Section 5.3.3. The report mentions that an air quality problem could be created. Could it really be a problem? Would the off-gas concentration of DBCP even be detectable? What are the air emission concentration limits for DBCP?"

RESPONSE: Air quality problems can be created if VOC emissions from the air stripper exceed the atmospheric discharge limits. In Hawaii, the State Department of Health lists DBCP as a hazardous air pollutant in H.A.R. 11-60.1-172. However, there is no specific emission standard for DBCP. According to the D.O.H., specific emission standards for hazardous air pollutants such ad DBCP would be specified in a permit for the air stripping facility.

COMMENT: "Section 5.3.5. The report indicates that molecules larger than 1 nanometer (= 0.001 micrometer or 10 Angstrom) are rejected by nanofilters which is an oversimplification. In general nanofilter membranes and reverse osmosis (RO) membranes are rated based upon molecular weight cutoff (MWC) which does not preclude passage of that size or even larger molecules (it simply implies effective removal and smaller MW molecules will also be removed to some extent). Membrane processes are more complex and involve mechanisms other than single straining which

would preclude any particle larger than the nominal pore diameter. RO membranes usually have MWCs of about 100 and nanofilter membranes have MWCs of 200-50 (figure 5-3 shows MWC of 300). The MW of DBCP is 263.36. Previous work has been conducted using nanofiltration for removal of DBCP and other fumigants found in Mililani well water. There is a Masters of Civil Engineering Thesis dated 1995 available by D. Chaturvedula entitled 'Treatment of Mililani I well water by nanofiltration.' In that thesis, two nanofilter membranes were tested. The cellulose triacetate (CTA) membrane only achieved about 20% removal of DBCP. The thin film composite (TFC) membrane was able to achieve complete removal of approximately 20 ng/L of DBCP (detection limit unreported). The MWC's for each membrane tested were not reported but the TFC membrane was probably 'tighter' than the CTA unit and may have had a NWC of about 200."

RESPONSE: Section 5.3.5 has been edited to include your comment as follows: "Membrane processes such as nanofiltration are often rated based on nominal pore size, or on the smallest size of contaminant that the membrane will effectively remove (also known as the molecular weight cut-off [MWC])..."

COMMENT: "Section 5.3.6. Another important advantage of GAC is that it will effectively remove almost any other contaminant in the water now and not determined or which may potentially appear in the future (such as EDB, TCP, etc.) including undetermined organic matter measured as total organic carbon."

RESPONSE: Section 5.3.6 has been edited to include your comment.

We hope that our responses have adequately addressed your comments. If you have any questions or require additional information, please contact me at 808-243-7816. Thank you for your time.

Sincerely,

David R. Craddick
Director
/HK:sc
xc: GMP Associates, Inc.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD / SDWB

December 23, 1996

Mr. Michael Miyahira
GMP Associates, Inc.
841 Bishop Street, Suite 1501
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE GAC TREATMENT FACILITY AT NAPILI WELL "A"
TMK: 4-3-01:06
NAPILI, MAUI, HAWAII

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the granular activated carbon (GAC) treatment facility at Napili Well "A". We have completed our review and have the following comments to offer:

1. Section 2.1, page 2-1, states that "Water from the Napili Well "B", Napili Well "C", Honokahua Well "A", and Honokahua Well "B" passes through the Napili Well "A" site during transport to the Alaeloa Reservoir..." Will any of the water from these wells pass through the GAC treatment plant? More detailed information must be provided on the operations.

2. Section 2.1, page 2-1, states that "Concentrations of dibromochloropropane (DBCP) at 280 micrograms/liter (ug/l) have been detected at Napili Well "A". A Granular Activated Carbon (GAC) treatment facility will be constructed at the well site to bring the concentration of DBCP below its maximum contaminant level (MCL) of 0.04 ug/l." Please verify the DBCP result. Was it detected at 280 ug/l or 0.28 ug/l? What is the latest DBCP result?

   Also, what is the rated efficiency of the GAC unit? Currently, the Honolulu Board of Water Supply uses GAC to remove DBCP concentration at levels much lower than the Napili Well "A". Will two GAC contactors be sufficent to remove this high concentration of DBCP without interruptions in service? What is the expected service life of the carbon when the contactors are operated in series, in parallel, or one at a time, with the other as backup?

3. Section 2.2, page 2-7, states that GMP Associates has prepared an engineering report for the Napili GAC treatment facility dated July 1996. Please send us a copy of this engineering report so that we can review the findings.

4. Please identify all sampling points. In general, sampling points should be located before and after each treatment unit.

5. What will be the regular monitoring frequency at the site? The high DBCP levels warrant frequent influent and effluent monitoring to prevent the breakthrough of contaminants.

If you should have any questions, please contact Ms. Queenie Komori of the Safe Drinking Water Branch at 586-4258.

Sincerely,

WILLIAM WONG, P.E., Chief
Safe Drinking Water Branch
Environmental Management Division

QK:la

c: Gordon Muraoka, Maui SDWB Sanitarian

BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833

February 20, 1997

Mr. William Wong, Chief
Safe Drinking Water Branch
Environmental Management Division
Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Wong:

Subject: **RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE GAC TREATMENT AT NAPILI WELL "A" NAPILI, MAUI, HAWAII** TMK 4-3-01:006

Thank you for your comment letter, dated December 23, 1996, during the 30-day comment period on the proposed Napili Well"A" GAC Treatment Facility. We offer the following responses to your comments:

COMMENT: "Section 2.1, page 2-1, states that 'Water from the Napili Well "B", Napili Well "C", Honokahua Well "A", and Honokahua Well "B" passes through the Napili Well "A" site during transport to the Alaeloa Reservoir...' Will any of the water from these wells pass thought the GAC treatment plant? More detailed information must be provided on the operations."

RESPONSE: Waters from the Napili Well "B", Napili Well "C", Honokahua Well "A", and the Honokahua Well "B" will not pass through the GAC treatment system. These water enter the reservoir at the Napili Well "A" site through an inlet separate from the Napili Well "A" water. The text has been edited to include this additional information.

COMMENT: "Section 2.1, page 2-1, states that 'Concentrations of dibromochloropropane (DBCP) at 280 micrograms/liter (ug/1) have been detected at Napili Well 'A'. A Granular Activated Carbon (GAC) treatment facility will be constructed at the well site to bring the concentration of DBCP below its maximum contaminant level (MCL) of 0.04 ug/l.' Please verify the DBCP result. Was it detected at 280 ug/l or 0.28 ug./l? What is the latest DBCP result?

Also, what is the rated efficiency of the GAC unit? Currently, the Honolulu Board of Water Supply uses GAC to remove DBCP concentration at levels much lower than the Napili Well 'A'. Will two GAC contactors be sufficient to remove this high concentration of DBCP without interruptions in service? What is the expected service life of the carbon when the contactors are operated in series, in parallel, or one at a time, with the other as backup?"

RESPONSE: The correct DBCP concentration detected at the well site is 0.28 micrograms/liter. The text has been edited to include this correction. The lab results from the DBCP sampling done by the County of Maui, Department of Water Supply has also been included in the Appendix of the report. The latest DBCP sampling was taken on 12/10/92, showing a concentration of 0.28 ug/l.

Carbon usage for the Napili Well "A" GAC facility was calculated in the GMP Associates Preliminary Engineering Report. Based on a 1994 report by Oki, et al. (Extending the Effective Life of the GAC used to Treat Well Water: Phase I of Evaluative Study at Mililani), carbon usage was found to be 130 lb. per one million gallons of the well water at the Mililani Wells I with DBCP and TCP present. Since DBCP has never been the breakthrough compound on Oahu, 0.130 lb/1000 gal. was assumed for the carbon usage rate for the Napili Well "A". Carbon usage for the Napili Well "A" water was calculated to be approximately 47,450 lb. carbon/year. The GAC system was therefore sized for two contactors with a 30,000 lb. carbon capacity each, which would eventually operate in a single-pass mode, with the other contactor serving as a back-up.

The Honolulu Board of Water Supply changes their carbon every six months for a single pass contactor arrangement. The expected service life of the carbon per contactor is approximately 6 months for the RWS wells on Oahu. In order to determine the service life of the carbon per contactor for the Napili Well "A", data of the effluent will be collected for approximately one year. During this time, the contactors will be operated in series until breakthrough can be estimated. Carbon replacement can occur without an interruption in service since the breakthrough will occur in the lead contactor and the lag contactor will be kept in service. Once breakthrough can be estimated, the contactors can be operated singly. Weekly monitoring of the effluent will be needed to ensure the safety of the drinking water.

COMMENT: "Section 2.2, page 2-7, states that GMP Associates has prepared an engineering report for the Napili GAC treatment facility dated July 1996. Please send us a copy of this engineering report so that we can review the findings."

RESPONSE: A copy of the engineering report of the Napili Well "A" GAC treatment system is enclosed. However, it should be noted that this engineering report should not be confused with a "preliminary engineering report" which is required by the D.O.H. as part of the new source approval process. The enclosed engineering report was prepared solely for the County of Maui, Department of Water Supply's benefit for a *comprehensive and technical understanding of the proposed project.*

COMMENT: "Please identify all sampling points. In general, sampling points should be located before and after each treatment unit."

RESPONSE: The effluent line of each GAC contactor will be furnished with a sample tap. A sample tap also exists at the well pump.

COMMENT: "What will be the regular monitoring frequency at the site? The high DBCP levels warrant frequent influent and effluent monitoring to prevent the breakthrough of contaminants."

RESPONSE: Initially, the contactors will be operated in series until breakthrough can be estimated. Once breakthrough can be estimated, one of the contactors will be operated singly, with the other serving as a back-up. Weekly monitoring of the influent and effluent will be performed during both of these operational modes to ensure the safety of the drinking water.

We hope that our responses have adequately addressed your comments. If you have any questions or require additional information, please contact me at 808-243-7816. Thank you for your time.

Sincerely,

David R. Craddick
Director
/HK:sc
Enclosure
xc: GMP Associates, Inc.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MICHAEL D. WILSON
CHAIRPERSON

ROBERT G. GIRALD
DAVID A. NOBRIGA
LAWRENCE H. MIIKE
RICHARD H. COX
HERBERT M. RICHARDS, JR.

RAE M. LOUI, P.E.
DEPUTY

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
HONOLULU, HAWAII 96809

DEC 27 1996

Mr. Neal S. Fukumoto
GMP Associates, Inc.
841 Bishop Street, Suite 1501
Honolulu, Hawaii 96813

Dear Mr. Fukumoto:

SUBJECT: Napili Well "A"
FILE NO.: DEACOMWP.COM

Thank you for the opportunity to review the subject document. Our comments related to water resources are *marked below.*

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas which are important for the maintenance of streams and the replenishment of aquifers.

[X] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

[ ] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[X] A Well Construction Permit and a Pump Installation Permit from the CWRM would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the CWRM would be required prior to use of this source.

[ ] Groundwater withdrawals from this project may affect streamflows. This may require an instream flow standard amendment.

[X] We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project.

[ ] If the proposed project diverts additional water from streams or if new or modified stream diversions are planned, the project may need to obtain a stream diversion works permit and petition to amend the interim instream flow standard for the affected stream(s).

[ ] Based on the information provided, it appears that a Stream Channel Alteration Permit pursuant to Section 13-169-50, HAR will be required before the project can be implemented.

[X] Based on the information provided, it does not appear that a Stream Channel Alteration Permit pursuant to Section 13-169-50, HAR will be required before the project can be implemented.

[ ] An amendment to the instream flow standard from the CWRM would be required before any streamwater is diverted.

[ ] Any new development that is permitted along a stream that is not yet channelized should be based on the express condition that no streams will be channelized to prevent flooding of the development. Development in the open floodplain should not be allowed; other economic uses of the floodplain should be encouraged.

[ ] OTHER:

If there are any questions, please contact Charley Ice at 587-0251.

Sincerely,

for: RAE M. LOUI
Deputy Director

Cl:ss

BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833

February 20, 1997

Ms. Rae Loui, Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Loui:

Subject: **RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE GAC TREATMENT FACILITY AT NAPILI WELL "A"**
NAPILI, MAUI, HAWAII TMK 4-3-01:006

Thank you for your comment letter, dated December 27, 1996, during the 30-day comment period on the proposed Napili Well "A" GAC Treatment Facility. We offer the following responses to your comments:

COMMENT: "We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan."

RESPONSE: The proposed project will be in accordance with the County of Maui's Water Use and Development Plan.

COMMENT: "A Well Construction Permit and a Pump Installation Permit for the CWRM would be required before ground water is developed as a source of supply for the project."

RESPONSE: The Napili Well "A" system was installed in 1979 by the State Department of Land and Natural Resources. Since the well is an existing structure, a Well Construction Permit will not be needed. Since a new pump will be installed, a pump Installation Permit will be obtained.

COMMENT: "We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project."

RESPONSE: No new development affecting highly erodible slopes which drain into streams within or adjacent to the project will occur. All backwash and forward flushing waters anticipated from carbon replacement procedures will be discharged through an existing drainage outlet. The outlet currently empties into the gulch adjacent to the project site. The additional discharge periodically generated from the GAC system should not affect the slopes which drain into the gulch since the drainage outlet is an existing structure.

COMMENT:: "Based on the information provided, it does not appear that a Stream Alteration Permit pursuant to Section 13-169-50 HAR will be required before the project can be implemented."

RESPONSE: The proposed project does not involve any development or construction in a stream. Thus, a Stream Alteration Permit is not anticipated.

We hope that our responses have adequately addressed your comments. If you have any questions or require additional information, please contact me at 808-243-7816. Thank you for your time.

Sincerely,

David R. Craddick
Director

/HK:sc

sc: GMP Associates, Inc.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MICHAEL D. WILSON
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

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

RECEIVED
GMP ASSOCIATES, INC.
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Ref.: DEACOMWP.RCO

Mr. Neal S. Fukumoto, P.E.
GMP Associates, Inc.
Attn: Mr. Michael Miyahira
841 Bishop Street Suite 1501
Honolulu, Hawaii 96813-3915

Dear Mr. Fukumoto:

SUBJECT: Review of Draft Environmental Assessment for County of Maui, Department of Water Supply's Napili Well "A" GAC Treatment Plant at Napili, Maui, TMK: 2nd/ 4-3-1: 6

The following is our Commission on Water Resource Management's comments related to the project and water resources.

1) We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

2) A Well Construction Permit and a Pump Installation Permit from the Commission on Water Resource Management would be required before ground water is developed as a source of supply for the project.

3) No development take place affecting highly erodible slopes which drain into streams within or adjacent to the project.

4) Based on the information provided, it does not appear that a Stream Alteration Permit is required (pursuant to Section 13-169-50, HAR) before the project can be implemented.

The Department of Land and Natural Resources has no other comments or objections to offer on the subject matter at this time. Should you have any questions, please contact Nick Vaccaro of the Land Division at 587-0438 or Charley Ice at 587-0251.

Aloha,

for MICHAEL D. WILSON

c: Maui Land Board Member
Colbert M. Matsumoto, Esq.

BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833

March 7, 1997

Mr. Michael D. Wilson, Chairperson
BOARD OF LAND & NATURAL RESOURCES
STATE OF HAWAII
P. O. Box 621
Honolulu, Hawaii 96809

Subject: **RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE GAC TREATMENT FACILITY AT NAPILI WELL "A", NAPILI, MAUI, HAWAII**
TMK 4-3-01:06

Dear Mr. Wilson:

Thank you for your comment letter dated December 27, 1996 during the 30-day comment period on the proposed Napili Well "A" GAC Treatment Facility. We offer the following responses to your comments:

COMMENT: "We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan."

RESPONSE: ***The proposed project will be in accordance with the County of Maui's Water Use and Development Plan.***

COMMENT: "A Well Construction Permit and a Pump Installation Permit for the CWRM would be required before ground water is developed as a source of supply for the project."

RESPONSE: ***The Napili Well "A" system was installed in 1979 by the State Department of Land and Natural Resources. Since the well is an existing structure, a Well Construction Permit will not be needed. Since a new pump will be installed, a Pump Installation Permit will be obtained.***

COMMENT: "We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project."

RESPONSE: No new development affecting highly erodible slopes which drain into streams within or adjacent to the project will occur. All backwash and forward flushing waters anticipated from carbon replacement procedures will be discharged through an existing drainage outlet. The outlet currently empties into the gulch adjacent to the project site. The additional discharge periodically generated from the GAC system should not affect the slopes which drain into the gulch since the drainage outlet is an existing structure.

COMMENT: "Based on the information provided, it does not appear that a Stream Alteration Permit pursuant to Section 13-169-50 HAR will be required before the project can be implemented."

RESPONSE: The proposed project does not involve any development or construction in a stream. Thus, a Stream Alteration Permit is not anticipated.

We hope that our responses have adequately addressed your comments. Should you have any questions or require additional information, please contact me at (808) 243-7816.

Thank you for your time.

Sincerely,

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

David R. Craddick
Director

HK:as
xc: GMP Associates, Inc.

BOARD OF WATER SUPPLY
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March 7, 1997

Mr. Michael D. Wilson, Chairperson
BOARD OF LAND & NATURAL RESOURCES
STATE OF HAWAII
P. O. Box 621
Honolulu, Hawaii 96809

Subject: **RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE GAC TREATMENT FACILITY AT NAPILI WELL "A", NAPILI, MAUI, HAWAII**
TMK 4-3-01:06

Dear Mr. Wilson:

Thank you for your comment letter dated December 27, 1996 during the 30-day comment period on the proposed Napili Well "A" GAC Treatment Facility. We offer the following responses to your comments:

COMMENT: "We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan."

RESPONSE: ***The proposed project will be in accordance with the County of Maui's Water Use and Development Plan.***

COMMENT: "A Well Construction Permit and a Pump Installation Permit for the CWRM would be required before ground water is developed as a source of supply for the project."

RESPONSE: ***The Napili Well "A" system was installed in 1979 by the State Department of Land and Natural Resources. Since the well is an existing structure, a Well Construction Permit will not be needed. Since a new pump will be installed, a Pump Installation Permit will be obtained.***

COMMENT: "We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project."

RESPONSE: *No new development affecting highly erodible slopes which drain into streams within or adjacent to the project will occur. All backwash and forward flushing waters anticipated from carbon replacement procedures will be discharged through an existing drainage outlet. The outlet currently empties into the gulch adjacent to the project site. The additional discharge periodically generated from the GAC system should not affect the slopes which drain into the gulch since the drainage outlet is an existing structure.*

COMMENT: "Based on the information provided, it does not appear that a Stream Alteration Permit pursuant to Section 13-169-50 HAR will be required before the project can be implemented."

RESPONSE: *The proposed project does not involve any development or construction in a stream. Thus, a Stream Alteration Permit is not anticipated.*

We hope that our responses have adequately addressed your comments. Should you have any questions or require additional information, please contact me at (808) 243-7816.

Thank you for your time.

Sincerely,

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

David R. Craddick
Director

HK:as
xc: GMP Associates, Inc.

187-C Hokulani Street
Hilo HI 96720

Jan. 3, 1997

'97 JAN. 6 AM 8 19

Mr. Neal S. Fukumoto, P.E.
GMP Associates, Inc.
841 Bishop St., Suite 1501
Honolulu HI 96813

Dear Mr. Fukumoto:

Subject: Draft Environmental Assessment for the GAC Treatment Facility, Napili Well "A"

Thank you so very much for forwarding the above-mentioned document to me for review. I do have several questions and comments. They are listed below.

Description of contaminants. On page 2-1, the statement is made that concentrations of DBCP up to 280 micrograms per liter have been detected at Napili Well A. Could you please verify this figure? It seems awfully high to me. My understanding is that the microgram/liter measure is roughly equivalent to a parts-per-billion standard. Material from the state Department of Health indicates that the Napili A well in 1993 (closed at the time) had a measured concentration of 0.090 ppb – in other words, a concentration that is several orders of magnitude smaller than the 280 µg/L concentration you mention. If indeed this measurement is correct, could you please state when it was made?

Proposed facilities. On page 2-2, mention is made of the "MCC" room. This is not further identified. Could you please provide a full reference to this room? In other words, please explain what MCC stands for.

Carbon Disposal Options. On pages 2-7 and 2-8, there appears a discussion of what to do with the spent carbon from the carbon filter system. The statement is made that the spent carbon from Napili Well A could be disposed of through burial at a landfill, based on the reported experience of the City and County of Honolulu Board of Water Supply. The BWS has never determined spent carbon to be hazardous, based on the TCLP test. For this comparison to be meaningful, however, shouldn't there be some comparison of the levels of contaminants in water treated by the BWS with the levels of contaminants at Napili A? In other words, it might be that higher levels of contaminants in the water could result in higher levels of contaminants in the carbon.

Also on pages 2-7 and 2-8, the conclusion of the discussion of spent carbon disposal appears interrupted. The last sentence on page 2-7 begins, "Therefore, disposal" and concludes, on page 2-8, "option for the spent carbon from the Napili Well 'A' GAC facility." I do not know what is meant here, since this sentence makes no sense. Is something omitted?

Finally, on this same subject, I would ask that the "Preliminary Engineering Report for GAC Treatment Facility at Napili Well 'A' July 1996," by GMP Associates, be included in the list of references that appears at the end of the Draft EA. In fact, I would be extremely interested in seeing this report and would imagine, on the basis of what is stated in the Draft EA, that it might be helpful to include more than a cursory discussion of the findings of this report in the final EA for this project.

Additional land needs. On page 2-2, it is stated that the state of Hawai'i owns the land used by the county for the well. On page 2-8, there is an implicit suggestion that the county may have to purchase land for the treatment facility. Maps included in the Draft EA show the treatment facility to be contained within the existing county-controlled parcel. Is this the case? If so, then why should there be the

suggestion that the county may need to purchase additional land? In any event, it would be helpful to have included in the EA a tax map showing land ownership of this and adjoining parcels.

Governmental permits. On page 2-8, there is a description of approvals needed for the facility. Two DOH permits are identified. However, since it seems that the expanded facility will be built on state-owned land, it might also be necessary to obtain approval of the Board of Land and Natural Resources. Perhaps such approval is not required under terms of what I suppose is a set-aside of the land to the county of Maui. If this is so, it should be stated clearly in the EA and the conditions of the set-aside should be detailed.

On pages 2-8 and 2-9, there appears to be a typographical problem, in that the last line of 2-8 is duplicated as the top line on 2-9.

Impacts on groundwater. On page 4-5, the statement is made that the proposed facility "will remove DBCP from the groundwater, and since this pesticide is banned from use, the aquifer would eventually be free from DBCP contamination. Consequently, the potential spread of the DBCP plume to other nearby production wells would also be reduced." While it is true that the proposed facility will remove DBCP from the water pumped at Napili A, it is not capable (contrary to the suggestion made in the quoted sentence) of cleansing the aquifer of DBCP. Such statements regarding the effect of one GAC facility on aquifer contamination should not be included in the EA, since they may give readers an altogether false impression of the impact of the facility.

On O'ahu, scientists with the Water Resources Research Center at the University of Hawai'i have spent years attempting to characterize contaminant plumes. Despite the operation of GAC filiters there, contaminants are continually migrating from the soil into the aquifer in quantities that today, more than a decade after DBCP and EDB have been banned from use, still exceed the minuscule quantities removed by GAC filtration. To my knowledge, there has not been nearly the same effort at plume characterization undertaken for West Maui aquifers.

Thus, I believe that the entire second paragraph in the "Impacts on Groundwater" statement should be omitted in the final EA. There is no scientific basis for the statements and claims that are made herein.

Thank you for the opportunity to comment on this document. May I please be sent a copy of the final EA?

Yours truly,

Patricia Tummons

Patricia Tummons

cc: OEQC

BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833

February 20, 1997

Ms. Patricia Tummons
187-C Hokulani Street
Hilo, Hawaii 96720

Dear Ms. Tummons:

Subject: **RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE NAPILI WELL "A"**
NAPILI, MAUI, HAWAII **TMK 4-3-01:006**

Thank you for your comment letter, dated January 3, 1997, during the 30-day comment period on the proposed Napili Well "A" GAC Treatment Facility. We offer the following responses to your comments:

COMMENT: "Description of contaminants. On page 2-1, the statement is made that concentrations of DBCP up to 280 micrograms per liter have been detected at Napili Well "A". Could you please verify this figure? It seems awfully high to me. My understanding is that the microgram/liter measure is roughly equivalent to a parts-per-billion standard. Material from the state Department of Health indicates that the Napili A well in 1993 (closed at the time) has a measured concentration of 0.090 ppb - in other words, a concentration that is several orders of magnitude smaller than the 280 micrograms/L concentration you mentioned. If indeed this measurement is correct, could you please state when it was made?"

RESPONSE: The correct DBCP concentration detected at the sell site is 0.28 micrograms/liter. The text has been edited to include this correction. The lab results from the DBCP sampling done by the County of Maui, Department of Water Supply has also been included in the Appendix of the report.

COMMENT: "Proposed facilities. On page 2-2, mention is made of the "MCC" room. This is not further identified. Could you please provide a full reference to this room? In other words, please explain what MCC stands for."

RESPONSE: The "MCC" room is the "motor control center" room. The text has been edited to include this reference.

COMMENT: "Carbon Disposal Options. On pages 2-7 and 2-8, there appears a discussion of what to do with the spent carbon from the carbon filter system. The statement is made that the spent carbon from Napili Well A could be disposed of through burial at a landfill, based on the reported experience of the City and County of Honolulu Board of Water Supply. The BWS has never determined spent carbon to be hazardous, based on the TCLP test. For this comparison to be meaningful, however, shouldn't there be some comparison of the levels of contaminants in water treated by the BWS with the levels of contaminants at Napili A? In other words, it might be that higher levels of contaminants in the water could result in higher levels of contaminants in the carbon.

Also on pages 2-7 and 2-8, the conclusion of the discussion of spent carbon disposal appears interrupted. The last sentence on page 2-7 begins, "Therefore disposal' and concludes, on page 2-8, 'option for the spent carbon from Napili Well 'A' GAC facility.' I do not know what is meant here, since this sentence makes no sense. Is something omitted?

Finally, on this same subject, I would ask that the 'Preliminary Engineering Report for GAC Treatment Facility at Napili Well 'A' July 1996' by GMP Associates, be included in the list of references that appears at the end of the Draft EA. In fact, I would be extremely interested in seeing this report and would imagine, on the basis of what is stated in the Draft EA, that it might be helpful to include more than a cursory discussion of the findings of this report in the final EA for this project."

RESPONSE: TCLP (Toxicity Characteristic Leaching Procedure) is a test that determines the "mobility of both organic and inorganic analyses present in liquid, solid, and multiphasic wastes" (40 CFR 261, Appendix II). The TCLP test is not dependent on the concentration of the contaminant, but rather on the adsorptive capacity of the carbon for DBCP. Different concentration levels of DBCP do not affect the ability of the contaminant to leach out of the carbon, but does affect the rate at which the carbon adsorbs the contaminant. Thus, the adsorptive capacity of the carbon will be reached sooner by water contaminated with a high concentration of DBCP than water that is contaminated with lower DBCP concentrations. TCLP tests done for the Honolulu Board of Water Supply prior to the disposal of their carbon have shown that the spent carbon is not a

hazardous waste since the adsorbed contaminants, which included DBCP, has not leached from the carbon.

The text has been corrected on pages 2-7 and 2-8.

A copy of the engineering report for the Napili Well "A" GAC treatment system is enclosed.

COMMENT: "Additional land needs. On page 2-2, it is stated that the state of Hawai'i owns the land used by the county for the treatment facility. Maps included in the Draft EA show the treatment facility to be contained within the existing county-controlled parcel. Is this the case? If so, then why should there be a suggestion that the county may need to purchase additional land? In any event, it would be helpful to have included in the EA a tax map showing land ownership of this and adjoining parcels."

RESPONSE: The text has been edited to include your comment. The project does not propose to encumber more land than was designated when the existing well was originally constructed. Portions of the county controlled parcel which is being used for pineapple cultivation will be used for the treatment facility. A map showing existing features of the proposed site has also been enclosed for your reference.

COMMENT: "Governmental permits. On page 2-8, there is a description of approvals needed for the facility. Two DOH permits are identified. However, since it seems that the expanded facility will be built on state-owned land, it might also be necessary to obtain approval of the Board of Land and Natural Resources. Perhaps such approval is not required under terms of what I suppose is a set-aside of the land to the county of Maui. If this is so, it should be stated clearly in the EA and the conditions of the set-aside should be detailed.

On pages 2-8 and 2-9, there appears to be a typographical problem, in that the last line of 2-8 is duplicated as the top line on 2-9."

RESPONSE: The County of Maui, Department of Water Supply intends to secure any necessary approvals from the Board of Land and Natural Resources.

The text has been corrected on pages 2-8 and 2-9.

COMMENT: "Impacts on groundwater. On page 4-5, the statement is made that the

proposed facility 'will remove DBCP from the groundwater, and since this pesticide is banned from use, the aquifer would eventually be free from DBCP contamination. Consequently, the potential spread of the DBCP plume to other nearby production wells would also be reduced.' While it is true that the proposed facility will remove DBCP from the water pumped at Napili A, it is not capable (contrary to the suggestion made in the quoted sentence) of cleansing the aquifer of DBCP. Such statements regarding the effect of one GAC facility on aquifer contamination should not be included in the EA, since they may give readers an altogether false impression of the impact of the facility.

On O'ahu, scientists with the Water Resources Research Center at the University of Hawai'i have spent years attempting to characterize contaminant plums. Despite the operation of GAC filters there, contaminants are continually migrating from the soil into the aquifer in quantities that today, more than a decade after DBCP and FDB have been banned from use, still exceed the minuscule quantities removed by GAC filtration. To my knowledge, there has not been nearly the same effort at plume characterization undertaken for West Maui aquifers.

Thus, I believe that the entire second paragraph in the 'Impacts on Groundwater' statement should be omitted in the final EA. There is no scientific basis for the statements and claims that are made herein."

RESPONSE: The second paragraph on page 4-5 has been deleted.

We hope that our responses have adequately addressed your comments. If you have any questions or require additional information, please contact me at 808-243-7816.

Sincerely,

David R. Craddick
Director

/HK:sc
Enclosures

xc: GMP Associates, Inc.

LINDA CROCKETT LINGLE
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

AARON SHINMOTO, P.E.
Chief Staff Engineer

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

EASSIE MILLER, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

Solid Waste Division

January 17, 1997

Mr. Neal Fukumoto, P.E.
GMP Associates, Inc.
841 Bishop Street, Suite 1501
Honolulu, Hawaii 96813-3915

Dear Mr. Fukumoto:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
NAPILI WELL A GAC TREATMENT FACILITY
TMK:(2) 4-3-001:006

We reviewed your November 21, 1996 letter and are requesting further information on the disposal of spent carbon from existing GAC facilities on Oahu and the TCLP test. Disposal options are incompletely discussed at the bottom of page 2-7 and top of page 2-8.

If you have any questions, please call our Solid Waste Division at 243-7875.

Sincerely,

CHARLES JENCKS
Director of Public Works
and Waste Management

AS:co/mt
xc: Engineering Division
Solid Waste Division
Wastewater Reclamation Division
G:\LUCA\CZM\GACFAC.WPD

BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833

February 27, 1997

Mr. Charles Jencks, Director
Dept. of Public Works and Waste Management
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mr. Jencks:

Subject: **DRAFT ENVIRONMENTAL ASSESSMENT FOR THE NAPILI WELL "A" GAC TREATMENT FACILITY**
NAPILI, MAUI, HAWAII **TMK 4-3-01:006**

We have received your letter dated January 17, 1997 regarding the Draft Environmental Assessment for the Napili Well "A" GAC Treatment Facility in Napili, Maui. We offer the following responses to your comments:

COMMENT: "We reviewed your November 21, 1996 letter and are requesting further information on the disposal of spent carbon from existing GAC facilities on Oahu and the TCLP test. Disposal options are incompletely discussed at the bottom of page 2-7 and top of page 2-8."

RESPONSE: The recommended option for the disposal of the spent carbon from the Napili Well "A" GAC treatment facility is burial at the Central Maui Sanitary landfill. Prior to being trucked to the landfill for disposal, the spent GAC is removed from the contractor as a slurry and deposited into a tanker truck where it is allowed to dewater. Decanted water from the truck is pumped back into the backwash tank. Another disposal option involves shipping the spent carbon to California for regeneration. Carbon regeneration can be a reasonable option since regeneration carbon costs only slightly more than virgin carbon.

TCLP (Toxicity Characteristic Leaching Procedure) is a test that determines the "mobility of both organic and inorganic analytes present in liquid, solid, and multiphasic wastes" (40 CFR 261, Appendix II). The TCLP test is not dependent on the concentration of the contaminant, but

rather on the adsorptive capacity of the carbon for DBCP. Different concentration levels of DBCP do not affect the ability of the contaminant to leach out of the carbon, but does affect the rate at which the carbon adsorbs the contaminant. TCLP tests done for the Honolulu Board of Water Supply prior to the disposal of their carbon have shown that the spent carbon is not a hazardous waste since the adsorbed contaminants, which included DBCP, has not leached from the carbon.

The text has been edited on pages 2-7 and 2-8.

We hope that our responses have adequately addressed your comments. If you have any questions or require additional information, please contact me at 243-7816. Thank you for your time.

Sincerely,

David R. Craddick
Director

/HK:sc
xc: GMP Associates, Inc.

LINDA CROCKETT LINGLE
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

AARON SHINMOTO, P.E.
Chief Staff Engineer

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

EASSIE MILLER, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

Solid Waste Division

March 6, 1997

MEMO TO: DAVID C. CRADDICK, DIRECTOR OF WATER SUPPLY

F R O M: CHARLES JENCKS, DIRECTOR OF PUBLIC WORKS AND WASTE MANAGEMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE NAPILI WELL "A" GAC TREATMENT FACILITY, NAPILI, MAUI, HAWAII

We have read your responses to our comments on the subject environmental assessment and find them acceptable.

DG:mt
cc: Solid Waste Division

LINDA CROCKETT LINGLE
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

AARON SHINMOTO, P.E.
Chief Staff Engineer

DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

EASSIE MILLER, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

Solid Waste Division

March 6, 1997

MEMO TO: DAVID C. CRADDICK, DIRECTOR OF WATER SUPPLY

F R O M: CHARLES JENCKS, DIRECTOR OF PUBLIC WORKS AND WASTE MANAGEMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE NAPILI WELL "A" GAC TREATMENT FACILITY, NAPILI, MAUI, HAWAII

We have read your responses to our comments on the subject environmental assessment and find them acceptable.

DG:mt
cc: Solid Waste Division

BENJAMIN J. CAYETANO
GOVERNOR

ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII

96 DEC -4 AM 10 05 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

December 2, 1996

Mr. Michael Miyahira
GMP Associates, Inc.
841 Bishop Street, Suite 1501
Honolulu, Hawaii 96813

Dear Mr. Miyahira:

Subject: Draft Environmental Assessment (DEA) for the GAC Treatment Facility at Napili Well "A," Napili, Maui, Hawaii, TMK 4-3-01: 6

We have reviewed the subject DEA transmitted by your letter dated November 26, 1996, and confirm that the project site, as represented on Figure 3-1, is located within the State Land Use Agricultural District.

We have no further comments to offer at this time. We appreciate the opportunity to comment on the DEA.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

Sincerely,

ESTHER UEDA
Executive Officer

EU:th

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

96 DEC 10 AM 7 59

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

In reply, please refer to:
EMD/CWB

December 5, 1996

P1207KP

Mr. Neal S. Fukumoto, P.E.
Project Manager
GMP Associates, Inc.
841 Bishop Street, Suite 1501
Honolulu, Hawaii 96813-3915

Dear Mr. Fukumoto:

Subject: Draft Environmental Assessment for the
GAC Treatment Facility at Napili Well "A"
Napili, Maui, Hawaii
TMK: 4-3-01:06

The Department of Health, Clean Water Branch has reviewed your submittal regarding the subject project. According to your draft environment assessment, you intend to apply for a National Pollutant Discharge Elimination System (NPDES) general permit for the discharge of hydrotesting effluent and a NPDES individual permit for the discharge of granular activated carbon (GAC) backwash waters.

Should you have any revisions to the subject project, please refer to our letter dated July 5, 1996 addressed to Mr. Narendra M. Bagade of your company regarding the types of permits required for various construction activities.

Should you have any questions, please contact Ms. Kris Poentis, Engineering Section of the Clean Water Branch, at 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:cr

LINDA CROCKETT LINGLE
Mayor

DAVID W. BLANE
Director

GWEN OHASHI HIRAGA
Deputy Director

COUNTY OF MAUI
PLANNING DEPARTMENT
250 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

96 DEC 23 PM 3 20

December 18, 1996

Mr. Neal S. Fukumoto, P.E.
GMP Associates, Inc.
841 Bishop Street, Suite 1501
Honolulu, Hawaii 96813

Dear Mr. Fukumoto:

RE: Draft Environmental Assessment for The GAC Treatment Facility at Napili Well "A"

Thank you for the opportunity to comment on the *Draft Environmental Assessment for the GAC Treatment Facility at Napili Well "A"*.

The proposed action is in keeping with the General Plan of the County of Maui, *Objectives and Policies, Section IV, Transportation, (B) Water, (2) To make more efficient use of our ground, surface and recycled water sources; (E) Public Utilities and Facilities, (1) To anticipate and provide public utilities which will meet community needs in a timely manner.*

The proposed action is also in keeping with the West Maui Community Plan: *Part III, Policy Recommendations, Implementing Actions, and Standards for the West Maui Region, Infrastructure, Water and Utilities, Objectives and Policies, (2) Improve the quality of domestic water. (6) Improve and expand the West Maui water development program projected by the County to meet future residential expansion needs and establish water treatment facilities where necessary.*

The review of the *Draft Environmental Assessment for the GAC Treatment Facility at Napili Well "A"*, has not identified any significantly adverse impacts based on the significance criteria

listed in §11-200-12 of the Environmental Impact Statement Rules. Therefore, the Planning Department has no further comments on this project.

If additional clarification is required, please contact Don Schneider of this office at 243-7735.

Very truly yours,

DAVID W. BLANE
Planning Director

DWB:DAS
cc: Clayton Yoshida, Planning Program Manager
Don Schneider, Planner
General File
(F:WellA.EA)

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

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
ENGINEERING BRANCH
PLANNING BRANCH
TECHNICAL & SUPPORT BRANCH
STATE PARKS
WATER RESOURCE MANAGEMENT

DEC 20 1996

Mr. Neal Fukumoto, P.E.
GMP Associates, Inc.
841 Bishop Street, Suite 1501
Honolulu, Hawaii 96822

Dear Mr. Fukumoto:

Draft Environmental Assessment for the
Napili Well "A" GAC Treatment Facility
Napili, Maui, Hawaii

This is in response to your letter of November 26, 1996, requesting comments on the subject draft Environmental Assessment (EA).

We have no additional comments to the EA.

Thank you for the opportunity to review the EA. Should you have any questions, please contact Mr. Dennis Imada at 587-0257.

Sincerely,

Andrew M. Monden

ANDREW M. MONDEN
Chief Engineer

DI:ek

APPENDIX B
LAHAINA WATER SYSTEM DBCP DATA

CAB.0194

JOHN WAIHEE
GOVERNOR OF HAWAII

JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD/SDWB

January 14, 1993

Mr. David Craddick, Director
Maui Department of Water Supply
P. O. Box 1109
Wailuku, HI 96793

Dear Mr. Craddick:

SUBJECT: TRANSMITTAL OF LAHAINA WATER SYSTEM DBCP DATA

Enclosed for your information are copies of the 1992 EDB/DBCP data for the Lahaina water system (PWS 214). The 1992 data is summarized in an enclosed table, and the laboratory data sheets for the 1992 routine samples are also attached.

Please note that the entry point to the distribution system is after the 1.0 MG tank, or at the Alaeloa Air Relief valve. The routine sample collected on October 14, 1992, had a DBCP concentration of 50 parts per trillion (ppt), while the routine sample collected on December 10, 1992, had a concentration in the non-quantifiable (NQ) range of between 20 and 40 ppt.

The Maximum Contaminant Level (MCL) for DBCP is 40 ppt. A violation occurs when the average over 4 consecutive quarters exceeds 40 ppt. The concentrations found after the reservoir, or at the air relief valve, in previous special samples fell in the range of 40 to 60 ppt, so DBCP data from this sample point will bear watching.

If you have any questions concerning these results please call Ann Zane at 586-4258 (Honolulu), or you may call toll-free from the neighbor islands at 1-800-468-4644, ext. 64258.

Sincerely,

THOMAS E. ARIZUMI, P.E., Chief
Environmental Management Division

AZ:la

Enclosures

c: Gordon Muraoka, SDWB Sanitarian, Maui
Cari Cerizo, DWB Maui

cc) Gary
Ellen
Dave (copies)
orig to Cari

214 Lahaina DBCP Data 1/8/93

Date	Samp Pt	Type	Location		Concentration, ppb
2/27/92	214-002	Rou	Honokohau Di	<	0.020
2/27/92	214-003	Rou	Kahana Well1	<	0.020
2/27/92	214-004	Rou	Kahana Well2	<	0.020
2/27/92	214-005	Rou	KanahaStream	<	0.020
2/27/92	214-006	Rou	Napili A		0.100
2/27/92	214-007	Rou	Napili B	<	0.020
2/27/92	214-008	Rou	Napili C	<	0.020
2/27/92	214-009	Rou	Waipuka W1	<	0.020
3/20/92	214	Special	After 1.0 MG		0.040
3/20/92	214-015	SPECIAL	Alaeloa AR		0.040
3/20/92		Special	EZ Store		0.040
3/30/92	214-015	SPECIAL	After 1.0 MG Tank (POE)	<	0.020
3/30/92		Special	EZ Store	<	0.020
3/30/92		Special	Honokeana Cove	<	0.020
5/11/92	214-015	SPECIAL	Alaeloa AR		0.060
5/13/92	214-015	SPECIAL	Alaeloa AR		0.050
5/25/92	214-001	Rou	Napili D	<	0.020
5/25/92	214-002	Rou	Honokohau D	<	0.020
5/25/92	214-003	Rou	Kanaha W1	<	0.020
5/25/92	214-007	Rou	Napili B	<	0.020
5/25/92	214-008	Rou	Napili C	<	0.020
5/26/92	214-015	SPECIAL	Alaeloa AR		0.050
6/2/92	214-004	Rou	Kanaha Well	<	0.020
6/2/92	214-010	Rou	Waipuka W2	<	0.020
6/15/92	214-015	SPECIAL	Alaeloa AR	<	0.040
6/25/92	214-015	SPECIAL	Alaeloa AR		0.040
7/16/92	214-015	SPECIAL	Alaeloa AR	<	0.040

Date	Samp Pt	Type	Location		Concentration ppb
8/6/92	214-002	Rou	Honokohau Di	<	0.020
8/6/92	214-007	Rou	Napili B	<	0.020
8/6/92	214-008	Rou	Napili C	<	0.020
8/6/92	214-015	ROUTINE	Alaeloa AR	<	0.020
8/19/92	214-003	Rou	Kanaha W1	<	0.020
8/19/92	214-004	Rou	Kanaha W2	<	0.020
8/19/92	214-005	Rou	Kanaha Strm	<	0.020
8/19/92	214-009	Rou	Waipuka W1	<	0.020
8/19/92	214-010	Rou	Waipuka W2	<	0.020
10/14/92	214-002	Rou	Honokohau Di	<	0.020
10/14/92	214-003	Rou	Kanaha W1	<	0.020
10/14/92	214-004	Rou	Kanaha W2	<	0.020
10/14/92	214-005	Rou	Kanaha Str	<	0.020
10/14/92	214-006	Rou	Napili A		0.160
10/14/92	214-007	Rou	Napili B	<	0.020
10/14/92	214-008	Rou	Napili C	<	0.020
10/14/92	214-015	ROUTINE	Alaeloa AR		0.050
10/14/92	214-016	Rou	Honokahua(E)	<	0.020
10/14/92	214-017	Rou	Napili A 0.1 MG Tank		0.060
10/15/92	214-010	Rou	Waipuka W2	<	0.020
12/10/92	214-006	Rou	Napili A		0.280
12/10/92	214-015	ROUTINE	Alaeloa AR	<	0.040
12/10/92	214-	Rou	EZ Store	<	0.040
12/10/92	214-	Rou	Honokeana Cove	<	0.020