Dear Mr. Creps:

Notice of Action
Revocation of Water Use Permit
Kapolei Ground Water Management Area, Oahu

This letter serves as your official notice of the action by the Commission on Water Resource Management (Commission) on March 19, 1999 to revoke the water use permit for Well Nos. 1904-02 & 03 (WUP Nos. 162 & 247).

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

EDWIN T. SAKODA
Acting Deputy Director

LN:ss
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAI'I 96809

STAFF SUBMITTAL
for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT
March 19, 1999
Honolulu, Oahu

Puu Makakilo, Inc.
REVOCATION OF WATER USE PERMIT
Makakilo GC Wells, Well Nos. 1904-02 & 03 (WUP Nos. 162 & 247)
Kapolei Ground Water Management Area, Oahu

LOCATION MAP: See Exhibit 1

BACKGROUND:
On March 15, 1990, the Commission on Water Resource Management (Commission) approved a permanent water use permit for 1.150 mgd for Well No. 1904-02 for irrigation of the Makakilo Golf Course (WUP No. 162). Because there were concerns regarding the application of the brackish water (580 - 600 ppm) over the basal aquifer, the applicant agreed to install a desalinization plant to treat the water prior to application. The desalinization plant was never built.

On April 21, 1991, a water use permit for Well No. 1904-03 as a backup source for Well No. 1904-02 was administratively approved (WUP No. 347).

Puu Makakilo, Inc. (Puu Makakilo) was a party in the Waiahole Ditch Contested Case Hearing. Puu Makakilo applied for a golf course use over the basal aquifer. Its request to use 0.750 mgd was granted (Decision and Order dated December 24, 1997).

On March 3, 1999, Puu Makakilo submitted an application to abandon/seal the wells.

ANALYSIS/ISSUES
Puu Makakilo was using water for golf course construction in 1992. Since then, the well has been unused. Partial or total nonuse of the water allowed by the permit for a period of four continuous years or more constitutes a ground for revocation of the permit, pursuant to §174C-58(4) Hawaii Revised Statutes (HRS). In this case, the entire 1.150 mgd allocation may be revoked.

This submittal fulfills the hearing requirement under §174C-58 HRS for revocation of a water use permit.

RECOMMENDATION:
Staff recommends that the Commission:

1. Revoke WUP Nos. 162 and 247.

Respectfully submitted,

EDWIN T. SAKODA
Acting Deputy Director

Exhibit(s): 1 (Location Map)
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State of Hawaii  
Department of Land and Natural Resources  
Division of Water and Land Development  
P.O. Box 373  
Honolulu, HI  96809  

Gentlemen:  

Subj: APPLICATIONS FOR WATER USE PERMITS PEARL HARBOR  
WATER MANAGEMENT AREA, OAHU, APPLICANT: FINANCE REALTY

The Navy is concerned that the proposed Makakilo Golf Course and the use of caprock water for irrigation may result in the contamination of our Barbers Point water shaft. The Barbers Point shaft provides about 2.5 million gallons per day of potable water for the Naval Air Station (NAS), Barbers Point.

U.S. Department of the Interior Geological Survey has concluded that the Barbers Point shaft is susceptible to any contaminant which might be applied to the area in the vicinity of the well. For example, it is suspected that the present high chlorides (250 parts per million) content in our Barbers Point shaft is attributable to sea spray and irrigation return water.

Our concern is that the development of the Makakilo Golf Course and the use of shallow caprock wells to irrigate the proposed golf course could result in contamination of our Barbers Point shaft. It has been documented that the caprock waters underlying lands cultivated with sugarcane contain the herbicide atrazine. Normal golf course maintenance uses large amounts of herbicides and fertilizers. Contaminating the Barbers Point shaft with any of the above mentioned chemicals could result in a State of Hawaii, Department of Health imposed requirement to install a treatment plant to remove the contaminant to their satisfaction. The liability for supplying water of unacceptable quality lies solely with the purveyor, which in this case is the Navy.

We are aware that the developer's consulting engineer does not consider the return irrigation water from the Makakilo Golf Course to be a threat to the Barbers Point shaft. Their plan to install a system of lysimeters to monitor the potential migration of any contaminated irrigation return water does not provide any assurance that contamination will not occur. At best, the monitoring system will only alert us to an impending contamination of our well.
We strongly urge you to consider the potential detrimental effects upon our Barbers Point shaft and the possible liabilities which may be incurred. We ask that any approval of a use permit include a provision that, should future out-of-compliance Barbers Point shaft contamination be attributed to the proposed golf course, the permittee and its successors be required to take actions required to restore compliance with the Department of Health requirements at no expense to the United States Government.

Sincerely,

E. TORNGREN, P.E.
Director
Utilities Division

Copy to:
Mr. Journ Yee
Finance Realty
195 S. King St.
Honolulu, HI 96813

Mr. Tom Nance
Belt Collins and Associates
680 Ala Moana 2nd Fl.
Honolulu, HI 96813
FACSIMILE TRANSMITTAL PAGE

Please deliver the following pages to:

Name: Rance Yoshida
Company: Finance Realty
From: Sharon Kokubun
Date: 2/26 Time: 

Message:

Total number of pages (including Transmittal Page): 2

If you do not receive all of the pages legibly, please call back: (808) 548-7625
Sending Facsimile Number: (808) 548-6052
Receiving Facsimile Number: (808) 548-0912

TRANSMISSION REPORT

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FACSIMILE TRANSMITTAL PAGE

Please deliver the following pages to:

Name: Lance Yoshida  
Company: Finance Realty  
From: Sharon Kokubun

Date: 2/16  Time: 

Message: __________________________________________________________
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Total number of pages (including Transmittal Page): 2

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If you do not receive all of the pages legibly, please call back: (808) 548-7533

Sending Facsimile Number: (808) 548-6052
Receiving Facsimile Number: ( ) 524-0912
State of Hawaii  
Department of Land and Natural Resources  
Division of Water and Land Development  
P.O. Box 373  
Honolulu, HI  96809  

Gentlemen:

Subj: APPLICATIONS FOR WATER USE PERMITS PEARL HARBOR WATER MANAGEMENT AREA, OAHU, APPLICANT: FINANCE REALTY

The Navy is concerned that the proposed Makakilo Golf Course and the use of caprock water for irrigation may result in the contamination of our Barbers Point water shaft. The Barbers Point shaft provides about 2.5 million gallons per day of potable water for the Naval Air Station (NAS), Barbers Point.

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Sincerely,

E. TORNGREN, P.E.
Director
Utilities Division
Mr. Manabu Tagomori  
Deputy Director  
Commission on Water Resource Management  
Division of Land and Natural Resources  
P. O. Box 373  
Honolulu, Hawaii 96806  
Dear Manabu:  

Subject: Comments on Water Use Permit Applications by City and County of Honolulu, Division of Wastewater Management and Finance Realty for Ewa Caprock Aquifer Water  

Thank you for giving us the opportunity to comment/object to the subject water use permit applications.  

Oahu Sugar Company, Limited (OSCo) does not have specific objections to the granting of water use permits for the subject projects. We do have general concerns that use of caprock water by non-traditional users will have an adverse impact on OSCo's operations and profitability. We would like to take this opportunity to comment on the general status of the Ewa caprock aquifer, which in turn we hope will have an effect on your consideration of the subject water use permits applications.  

Our first concern is in regards to the administration of the aquifer. The administration of the caprock aquifer by the commission has not been clearly defined or consistent. Strictly speaking, OSCo does not have any permits to use any water from the aquifer, yet it pumps water from the aquifer with the full knowledge and understanding of the commission and its staff. In years past, the rationale has been, "because the hydrology of the caprock sub-area has not been clearly established, hence the sustainable yield and hence the allowable pumpages cannot be established--existing uses would be allowed to continue without regulation until these limits have been established." Yet the Board of Land and Natural Resources and the Commission have issued permits to new users in the aquifer. Our concern is these new permits could be used to establish a higher, more vested right to use caprock water by the newcomers than the rights ascribed to OSCo under previous understandings. It should be pointed out that the caprock aquifer resource was created by OSCo and its predecessor, Ewa Plantation Company, and its continuance is solely dependent on
Ewa Plantation Company, and its continuance is solely dependent on OSCo (by its continued irrigation recharge). It would be grossly unfair that use of a resource created and maintained by sugar, should be usurped by non-sugar users. OSCo desires to be kept abreast of your plans and intentions for administration of the caprock aquifer, so that we can plan for a continued source of irrigation water.

Our other comment is in regard to the continuance of the caprock aquifer as a viable source of water, especially for non-potable municipal use. As you know, due to changes in land use, irrigation methods and related policies, the amount of recharge to the aquifer has decreased and the net draft from the aquifer has probably increased. In order to maintain the present quality of water, the present withdrawals and the further proposed withdrawals, recharge to the aquifer will have to be increased, immediately. The water commission must assign priority to increasing recharge to this aquifer, if as the commission desires, the aquifer is to become a major source of non-potable municipal water. We cannot overemphasize the urgency of this matter.

We urge the commission and staff in considering these water use permit applications to keep our comments in mind. You must carefully weigh the impacts of granting these permits on the existing users and on the overall hydrology of the caprock aquifer. Thank you for the opportunity to present our comments regarding the Ewa caprock aquifer. Please feel free to call me to discuss these concerns in further depth.

Very truly yours,

W. D. Balfour, Jr.
Vice President and Manager

WDB/HM:yk

xc: Mr. Bill Paty
Mr. William W. Paty, Chairperson  
Department of Land and Natural Resources  
State of Hawaii  
P. O. Box 621  
Honolulu, Hawaii 96809  

Dear Mr. Paty:

Subject: Your Letter Dated February 7, 1990 on Public Notice of Applications for Water Use Permits in the Pearl Harbor Water Management Area for the Honouliuli Wastewater Treatment Plant and for Finance Realty

Thank you for the opportunity to comment on these applications for water use permits.

We recommend approval of the permit for the caprock well to be used for plant use at the Honouliuli Wastewater Treatment Plant. Use of the caprock water in the plant will conserve potable water for other uses.

We recommend the application by Finance Realty to develop a caprock well for golf course irrigation mauka of the H-1 freeway be approved on the condition that the water will be used on the golf course only if the chloride is 160 ppm or less. Although we encourage use of caprock water for irrigation, the area of intended application would permit infiltration of the lower quality caprock water into the Waianae aquifer which supplies potable water to the Navy and the Board of Water Supply. This is simply a case where the use of brackish caprock water for irrigation should only be allowed if it does not harm the quality of...
Mr. William W. Paty  
Page 2  
February 20, 1990

the water in the aquifer beneath the area being irrigated. Otherwise, the developer should be required to desalinate the water so the chloride does not exceed 160 ppm.

If you have any questions, please contact Chester Lao at 527-5276.

Very truly yours,

FOR KAZU HAYASHIDA  
Manager and Chief Engineer
February 14, 1990

Mr. William W. Paty, Chairperson
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty,

Subject: Your Letter Dated February 7, 1990 on Public Notice of Applications for Water Use Permits in the Pearl Harbor Water Management Area

Thank you for the opportunity to comment on the City's Division of Wastewater Management and Finance Realty's applications for water use permits.

I have asked the Board of Water Supply to respond directly to your Commission on the permit applications.

Warm personal regards.

Sincerely,

[Signature]

FFF:do
3:50 p.m.

OUT

Date:

IN

WANTS TO SEE YOU

URGENT

RETURNING TIME CALL

Message: Call 2/4 9 a.m. They will not be in that area.

Name: Joe Morton

Wish Operator
§13-171-18 Objection to proposed water use permit. (a) Within ten working days after the last public notice of the pending permit application, a party may file with the commission, written objections to the proposed permit and a brief in support of such objections. Such party shall serve copies of the objections and brief upon the applicant.

(b) The written objection shall:

(1) Set forth questions of procedure, fact, law or policy, to which objections are taken; and

(2) State all grounds for objections to the proposed permit. The grounds not cited or specifically urged are waived.

(c) Within ten working days after the filing of an objection with the commission, any other party may file with the commission a brief in support of the proposed permit. Such party shall serve copies of the brief in support upon the objecting party.

(d) The support brief shall:

(1) Answer specifically the points of procedure, fact, law or policy to which objections were taken; and

(2) State the facts and reasons why the permit should be approved.


§13-171-19 Evaluation period. (a) In the event no statement of objections is filed, the commission may proceed to approve or reject the permit application.

(b) Upon the filing of any objections and briefs together with the briefs in support, the commission may render its decision or request further information from either the applicant or the objector before rendering its decision.

(c) An application shall be acted upon by the commission within ninety calendar days of an application not requiring a hearing, or within one hundred eighty calendar days of an application requiring a hearing. The time periods prescribed in this subsection shall not be deemed to run for any period in which an application is not complete in all material respects in the judgment of the commission.

(d) A permit user of water in an existing water management area, with a continuous reduced water usage, shall be given priority to reobtain its permitted level of water usage over any other application; provided that the use remains the same and is reasonable and beneficial and water is available.

(e) In acting upon any application, the commission need consider only those objections filed by a person who has some property interest in any land within the hydrologic unit from which the water sought by the applicant is to be drawn or who will be
State of Hawaii
Department of Land and Natural Resources
Division of Water and Land Development
P.O. Box 373
Honolulu, HI 96809

Gentlemen:

Subj: APPLICATIONS FOR WATER USE PERMITS PEARL HARBOR WATER MANAGEMENT AREA, OAHU. APPLICANT: FINANCE REALTY

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Sincerely,

E. TORNGREN, P.E.
Director
Utilities Division
FACSIMILE TRANSMITTAL PAGE

Please deliver the following pages to:

Name:  Glenn Yoshinaga  
Company:  Navy PACIFIC  
From:  Ed Saito, DLNR  
Date:  2/23/90  
Time:  10:12  
Message:  Please deliver to Glenn Yoshinaga  

Total number of pages (including Transmittal Page):  2

If you do not receive all of the pages legibly, please call back: (808) 548-7573  
Sending Facsimile Number:  (808) 548-6052  
Receiving Facsimile Number:  ( ) 471-5670

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Please deliver the following pages to:

Name:  Tzon Yee
Company:  Finance Realty
From:  Ed Sabol, DLNR
Date:  2/23/90  Time:  10:15

Message:  For information, Navy is sending you more material.

Total number of pages (including Transmittal Page):  2

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Sending Facsimile Number:  (808) 548-6032
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Dr. John C. Lewin
Director of Health
Department of Health
State of Hawaii
1250 Punchbowl Street
Honolulu, Hawaii 96813

Dear Dr. Lewin:

Public Notice for Water Use Permit Applications
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice which was published in the Star Bulletin.

If you have any comments, please submit them to us by February 22, 1990.

Very truly yours,

WILLIAM W. PATY

Enc.
REF: WL-KO

Honorable Frank F. Fasi
Mayor, City and County of Honolulu
City Hall
Honolulu, Hawaii 96813

Dear Mayor Fasi:

Public Notice for Water Use Permit Applications
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice which was published in the Star Bulletin.

If you have any comments, please submit them to us by February 22, 1990.

Very truly yours,

WILLIAM W. PATY

Enc.
PUBLIC NOTICE

Applications for Water Use Permits
Pearl Harbor Water Management Area, Oahu

Two applications for water use permits have been received and is hereby made public in accordance with Administrative Rules 13-171, "Designation and Regulation of Water Management Areas".

1. **Applicant:** City and County of Honolulu
   Division of Wastewater Management
   650 South King Street
   Honolulu, Hawaii 96813

   **Date Application Received:** November 17, 1989

   **Source of Water Supply:** Caprock aquifer, Pearl Harbor WMA

   **Location of Well:** Honouliuli Wastewater Treatment Plant (WWTP) at Tax Map Key: 9-1-13:7

   **Quantity Requested:** 0.5 million gallons per day

   **Proposed Water Use:** In-plant process water for the WWTP

   **Place of Water Use:** WWTP, located at East Hanson Road and Geiger Road, adjacent to Barbers Point NAS, Honouliuli, Ewa, Oahu

2. **Applicant:** Finance Realty
   P.O. Box 3979
   Honolulu, Hawaii 96812

   **Date Application Received:** January 12, 1990

   **Source of Water Supply:** Caprock aquifer, Pearl Harbor WMA

   **Location of Well:** Along access road to Barbers Point NAS at Tax Map Key: 9-1-16:1

   **Quantity Requested:** 1.15 million gallons per day

   **Proposed Water Use:** Golf course irrigation

   **Place of Water Use:** Makakilo Golf Course, located above H-1 Freeway east of Makakilo, Oahu

Written objections or other comments on the applications for water use may be filed by any person who has a property interest in any land within the hydrologic unit of the source of water supply or who will be directly and immediately affected by the proposed water use. Written objections shall: (1) state property or other interest in the matter; (2) set forth questions of
APPLICATIONS FOR WATER USE PERMITS
Pearl Harbor Water Management Area, Oahu

procedure, fact, law, or policy to which objections are taken; and (3) state all
grounds for objections to the proposed permits. Send written objections by
February 22, 1990, to the Division of Water and Land Development, P.O. Box
373, Honolulu, Hawaii 96809.

State of Hawaii
Commission on Water Resource Management

WILLIAM W. PATY, Chairperson

Dated: JAN 25 1990

Publish in the Honolulu Star Bulletin
issues of January 31 and February 7, 1990
February 6, 1990

Kalaeloa Partners, L.P.
c/o Energy Ventures, Inc.
104 Carnegie Center, Suite 201
Princeton, New Jersey 08540

Gentlemen:

Public Notice for Water Use Permit Applications

Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice concerning your application which was published in the Star Bulletin.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:ko
Enc.
February 6, 1990

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

Gentlemen:

Public Notice for Water Use Permit Applications
Pearl Harbor Water Management Area, Oahu

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Sincerely,

MANABU TAGOMORI
Deputy Director

ES:ko
Enc.
February 6, 1990

Mr. A.A. Tuzes  
Project Director  
Honolulu Resource Recovery Venture  
91-174 Hanua Street  
Ewa Beach, Hawaii  96707

Dear Mr. Tuzes:

Public Notice for Water Use Permit Applications  
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice which was published in the Star Bulletin.

If you have any comments, please submit them to us by February 22, 1990.

Sincerely,

MANABU TAGOMORI  
Deputy Director

ES:ko  
Enc.
February 6, 1990

Mr. Clinton Churchill
Chief Executive Officer
The Estate of James Campbell
828 Fort Street Mall, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Churchill:

Public Notice for Water Use Permit Applications
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice which was published in the Star Bulletin.

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MANABU TAGOMORI
Deputy Director

ES:ko
Enc.
February 6, 1990

Mr. William D. Balfour, Jr.
President and Manager
Oahu Sugar Company, Ltd.
P.O. Box "O"
Waipahu, Hawaii 96797

Dear Mr. Balfour:

Public Notice for Water Use Permit Applications
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice which was published in the Star Bulletin.

If you have any comments, please submit them to us by February 22, 1990.

Sincerely,

HARABU TAGOMORI
Deputy Director

ES:ko
Enc.
February 6, 1990

Harding Lawson Associates
Pearl City Business Plaza
803 Kamehameha Hwy., Room 404
Pearl City, Hawaii 96782

Gentlemen:

Public Notice for Water Use Permit Applications
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice which was published in the Star Bulletin.

If you have any comments, please submit them to us by February 22, 1990.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:ko
Enc.
February 6, 1990

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Dear Mr. Hayashida:

Public Notice for Water Use Permit Applications
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice which was published in the Star Bulletin.

If you have any comments, please submit them to us by February 22, 1990.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:ko
Enc.
February 6, 1990

GMP Associates, Inc.
841 Bishop Street, Ste. 1501
Honolulu, Hawaii 96813

Gentlemen:

Public Notice for Water Use Permit Applications
Pearl Harbor Water Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a public notice which was published in the Star Bulletin.

If you have any comments, please submit them to us by February 22, 1990.

Sincerely,

MANABU TAGOMORI
Deputy Director

RS:ko
Enc.
PUBLIC NOTICE

Applications for Water Use Permits
Pearl Harbor Water Management Area, Oahu

Two applications for water use permits have been received and is hereby made public in accordance with Administrative Rules 13-171, "Designation and Regulation of Water Management Areas".

1. **Applicant:** City and County of Honolulu
   Division of Wastewater Management
   650 South King Street
   Honolulu, Hawaii 96813

   **Date Application Received:** November 17, 1989

   **Source of Water Supply:** Caprock aquifer, Pearl Harbor WMA

   **Location of Well:** Honouliuli Wastewater Treatment Plant (WWTP) at Tax Map Key: 9-1-13:7

   **Quantity Requested:** 0.5 million gallons per day

   **Proposed Water Use:** In-plant process water for the WWTP

   **Place of Water Use:** WWTP, located at East Hanson Road and Geiger Road, adjacent to Barbers Point NAS, Honouliuli, Ewa, Oahu

2. **Applicant:** Finance Realty
   P.O. Box 3979
   Honolulu, Hawaii 96812

   **Date Application Received:** January 12, 1990

   **Source of Water Supply:** Caprock aquifer, Pearl Harbor WMA

   **Location of Well:** Along access road to Barbers Point NAS at Tax Map Key: 9-1-16:1

   **Quantity Requested:** 1.15 million gallons per day

   **Proposed Water Use:** Golf course irrigation

   **Place of Water Use:** Makakilo Golf Course, located above H-1 Freeway east of Makakilo, Oahu

Written objections or other comments on the applications for water use may be filed by any person who has a property interest in any land within the hydrologic unit of the source of water supply or who will be directly and immediately affected by the proposed water use. Written objections shall: (1) state property or other interest in the matter; (2) set forth questions of
APPLICATIONS FOR WATER USE PERMITS
Pearl Harbor Water Management Area, Oahu

procedure, fact, law, or policy to which objections are taken; and (3) state all
grounds for objections to the proposed permits. Send written objections by
February 22, 1990, to the Division of Water and Land Development, P.O. Box
373, Honolulu, Hawaii 96809.

State of Hawaii
Commission on Water Resource Management

WILLIAM W. PATY, Chairperson

Dated: JAN 25 1990

Publish in the Honolulu Star Bulletin
issues of January 31 and February 7, 1990
PUBLIC NOTICE

Application for Water Use Permits
Pearl Harbor Water Management Area, Oahu

Two applications for water use permits have been received and is hereby made public in accordance with Administrative Rules 13-171, "Designation and Regulation of Water Management Areas".

1. Applicant: City and County of Honolulu
   Division of Wastewater Management
   650 South King Street
   Honolulu, Hawaii 96813
   Date Application Received: November 17, 1989
   Source of Water Supply: Caprock aquifer, Pearl Harbor WMA
   Location of Well: Honouliuli Wastewater Treatment Plant (WWTP) at Tax Map Key: 9-1-13:7
   Quantity Requested: 0.5 million gallons per day
   Proposed Water Use: In-plant process water for the WWTP
   Place of Water Use: WWTP, located at East Hanson Road and Geiger Road, adjacent to Barbers Point NAS, Honolulu, Ewa, Oahu

2. Applicant: Finance Realty
   P.O. Box 3979
   Honolulu, Hawaii 96812
   Date Application Received: January 12, 1990
   Source of Water Supply: Caprock aquifer, Pearl Harbor WMA
   Location of Well: Along access road to Barbers Point NAS at Tax Map Key: 9-1-16:1
   Quantity Requested: 1.15 million gallons per day
   Proposed Water Use: Golf course irrigation
   Place of Water Use: Makakilo Golf Course, located above H-1 Freeway east of Makakilo, Oahu

Written objections or other comments on the applications for water use may be filed by any person who has a property interest in any land within the hydrologic unit of the source of water supply or who will be directly and immediately affected by the proposed water use. Written objections shall: (1) state property or other interest in the matter; (2) set forth questions of procedure, fact, law, or policy to which objections are taken; and (3) state all grounds for objections to the proposed permits. Send written objections by February 22, 1990, to the Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96809.

State of Hawaii
Commission of Water Resource Management
WILLIAM W. PATY, Chairperson

Dated: January 25, 1990
(Hon. S.-B.: Jan. 31; Feb. 7, 1990) (SB-0657)
January 18, 1990

Finance Realty Co., Ltd.
P.O. Box 3979
Honolulu, Hawaii 96812-3979

Gentlemen:

We have received your application and $25.00 filing fee for a water use permit for irrigation water for the Makakilo Golf Course from Well 2904-02.

We are reviewing your application for completeness and will contact you if we need further information.

If you have any questions, please contact Ed Sakoda at 548-7543.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:ko
DIVISION OF WATER RESOURCE MANAGEMENT

FROM: __________________ DATE: ___ FILE IN: __________________

TO: INITIAL: __________________

PLEASE: __________________

REMARKS: __________________

CHECK ATTACHED

REVIEW

L. Eng. 8/29
January 11, 1990

Mr. William Paty
Chairman
Commission on Water Resource Management
Division of Water Resource Management
Department of Land and Natural Resources
P. O. Box 373
Honolulu, Hawaii 96809

RE: Application for Water Use Permit

Chairman and Commissioners:

Enclosed herewith is an Application for Water Use Permit for irrigation water for the Makakilo Golf Course. We have enclosed a check for the filing fee of $25.00.

Well 1904-02 is within the Kapolei-BPNAS sector of the caprock aquifer on the Ewa plain. At present, there are no operating wells in this sector. Foreseeable users in the future, in addition to the Makakilo Golf Course, are Kapolei Village (State project) and Kapolei City (Campbell Estate project). The combined use of these three projects is less than the sector's sustainable yield proposed in the July 29, 1988 report by George A.L. Yuen and Associates for the Department of Land and Natural Resources.

We would appreciate your favorable consideration of our application at your earliest convenience. If you have any questions, please call me at 548-3347.

Thank you for your consideration.

Very truly yours,

Fred K. Kwock
President

FKK:jty/lyk
Enclosure
# Application for Water Use Permit

**State of Hawaii**
**Commission on Water Resource Management**
**Department of Land and Natural Resources**
**Division of Water Resource Management**

- **Application for Water Use Permit**
  - **Groundwater** or **Surface Water**

## Instructions
- Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 546-7543. Hydrology/Geology Section for assistance.

## 1. Water Management Area
- Pearl Harbor

## 2. (a) Well/Diversion Owner:
- **Firm Name**: Finance Realty
- **Contact Person**: Fred Kwock
- **Address**: P.O. Box 3979
- **Honolulu, HI 96812**
- **Phone**: 548-5166

(b) Landowner:
- **Firm Name**: The Estate of James Campbell
- **Contact Person**: Sam Keala
- **Address**: 820 Fort Street Mall, Suite 500
- **Honolulu, HI 96813**
- **Phone**: 536-1961

## 3. Source Type:
- [ ] Spring
- [ ] Dike-confined
- [ ] Stream
- [ ] Basal
- [ ] Perched
- [ ] Caprock

## 4. Source Name and Number
- Well No. 1904-02

## 5. Source Location:
- **Island**: Oahu
- **Tax Map Key**: 9-1-16: 01
- **Address**: Along access road to Barbers Point Naval Air Station

(Attach a USGS map (scale 1"=2000') and property tax map showing source location referenced to established property boundaries.)

## 6. Location of Proposed Water Use (if different from #5)
- Makalilo Golf Course

(Indicate location of water use on same map showing source location.)

## 7. Quantity of Water Requested
- 1,150,000 gallons per day

## 8. Quality of Water Requested
- [ ] Fresh
- [ ] Brackish
- [ ] Salt
- [ ] Potable
- [ ] Non-Potable

## 9. Proposed Use
- [ ] Municipal (including hotels, stores, etc)
- [ ] Military
- [ ] Domestic (individual, noncommercial water sys.)
- [ ] Industrial
- [ ] Irrigation (specify) Golf Course
- [ ] Other (specify)

## 10. Describe Any Potential Restrictions on Use (i.e., instream standards, seasonal variations)
- None That Are Known

## 11. Proposed Time of Water Withdrawal or Diversion
- Continuously as Needed

(Indicate hours of operation)

## 12. Proposed Method of Taking the Water
- [ ] Artesian Flow
- [ ] Diverted Flow
- [ ] Centrifugal Pump
- [ ] Submersible Pump
- [ ] Vertical Turbine Pump

## 13. No. of Residential or Commercial Units to Be Served (specify)
- None

## 14. Total Acres Proposed for Irrigation
- 150

Type of Crop: Bermuda Grass

## 15. Remarks, Explanations
- See Back Side

(If more space is needed, continue on back side)

---

**Owner (print)**: Finance Realty

**Signature**: 

**Date**: 1/10/85

---

**Landowner (print)**: The Estate of James Campbell

**Signature**: 

**Date**: 1/10/85

---

For Official Use Only:

- **Date Received**
- **Hydrologic Unit**
- **Diversion Works No.**
- **Date Accepted**
- **State Well No.**
15. REMARKS, EXPLANATIONS

Well 1904-02 is within the Kapolei-BPNAS sector of the caprock aquifer on the Ewa plain. At present, there are no operating wells in this sector. Foreseeable users in the future, in addition to Makakilo Golf Course, are Kapolei Village (State project) and Kapolei City (Campbell Estate project). The combined use of these three projects is less than the sector's sustainable yield proposed in the July 29, 1988 report by George A. L. Yuen and Associates for the Department of Land and Natural Resources.
Figure 2
December 5, 1988

Mr. Tom Nance  
Belt Collins & Associates  
680 Ala Moana Blvd., Suite 200  
Honolulu, Hawaii 96813

Dear Mr. Nance:

We are returning the Water Use Permit application you submitted for Finance Realty Co. for "Makakilo Golf Course irrigation wells" because it is incomplete until your proposed drilling and testing is completed and the data submitted with your application. As discussed with you, the $25.00 filing fee sent with the Water Use Permit application has been deposited and will be applied toward your application for a well construction permit (form enclosed).

If you have any questions, please contact Dan Lum at 548-7619.

Sincerely,

[Signature]

Nanabu Tagochori  
Deputy Director

MT:ko  
Enc.
November 3, 1988

MEMORANDUM FOR THE RECORD

FROM: Roy Hardy

SUBJECT: Meeting with Finance Realty Co. and Housing Finance & Development Corporation (HFDC (DBED)) on Water Use and Kapolei/Makakilo Developments.

MEMBERS PRESENT: Journ Yee Finance Realty Co.
Fred Kwock Finance Realty Co.
Kerry Komastubara Attorney for Finance Realty Co.
Roland Kim HFDC
Lloyd Haraguchi HFDC
Tom Nance Belt Collins & Associates
Dan Lum DOWALD
Roy Hardy DOWALD

Dan and I met with representatives from FRCo and HFDC to discuss the progress of:

1) Their impending land and necessary water developments in Kapolei and Makakilo and;

2) DLNR's action on related water use permit applications.

Discussion also addressed the "Groundwater Resources and Sustainable Yield for the Ewa Plain Caprock Aquifer" Report by George Yuen & Associates.

To date, only one water use application for caprock water, by FRCo, for the development of the Makakilo Golf Course, has been submitted and is still pending. The location of the proposed wells are just north of the Barbers Point Naval Air Station within the Kapolei sector described in Mink's report. Desalting of the proposed brackish source is necessary (by order of DOH & BWS) since the water will be applied over the Waianae basal aquifer. Brine waste from this treatment is estimated to be about 20-25%, or roughly 0.25 mgd, and disposal may be a problem. Due to desalting, the geography of the sloping Makakilo hills, and windy climatic conditions, the requested water use is for 1 mgd. Funding for this caprock water development is provided by Campbell Estate & FRCo and four exploratory wells are already underway, with four more are planned, to assess the final location of the source wells.
The state housing project by HFDC in Kapolei has not applied for a water use permit but shall do so soon. They anticipate a demand of about 0.3 mgd for housing and 0.7 mgd for a golf course for a total of 1 mgd. The Land Use Permit for the Kapolei city specified a 1 mgd demand.

Dan explained that DOWALD intends to expedite the permit process within months but made it clear that there are other high priority items, such as the registration of existing ground and surface water developments and the reallocation of authorized use in the Koolau and Waianae basal aquifers for the Pearl Harbor Water Management Area, which need to be completed as soon as possible. Also, we are finalizing our review of the Yuen & Assoc. report concerning the Ewa caprock aquifer.
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dan Lum</td>
<td>DOWARD</td>
<td>548-7643</td>
</tr>
<tr>
<td>Journ Yee</td>
<td>Finance Realty Co.</td>
<td>5/51-184</td>
</tr>
<tr>
<td>Kelvin Kim</td>
<td>HPDC</td>
<td>848-6778</td>
</tr>
<tr>
<td>Fred Archer</td>
<td>Fin Realty</td>
<td>5469-766</td>
</tr>
<tr>
<td>Tom Name</td>
<td>Belt Collins &amp; Assoc</td>
<td>521-5361</td>
</tr>
<tr>
<td>Kerry Komatsu</td>
<td>Finance Realty</td>
<td>528-1000</td>
</tr>
<tr>
<td>Lloyd Havquel</td>
<td>HPDC</td>
<td>848-3240</td>
</tr>
</tbody>
</table>
Commission on Water Resource Management  
Division of Water Resource Management  
Department of Land and Natural Resources  
P. O. Box 373  
Honolulu, Hawaii 96809

Dear Sirs:

Groundwater Use Permit for the Makakilo Golf Course

On behalf of Finance Realty Co., Ltd., we are pleased to submit the enclosed water use permit application for golf course irrigation wells to be located in the Ewa Caprock Aquifer, Kapolei Sector. The included map identifies prospective well locations. Small diameter test borings are presently being conducted to determine the exact well location.

Please let me know if you require additional information in order to act on the application.

Sincerely,

Tom Nance

Tom Nance

TN:It  
Enclosures  
cc: Finance Realty Co.
DIVISION OF WATER RESOURCE MANAGEMENT

FROM: J. S. DATE: 6/29 FILE IN: 

TO: INITIAL: 

PLEASE: REMARKS:

- M. TAGOMORI (Check attached)
- D. Lum
- G. Matsumoto
- G. Akita
- L. Chang
- Y. Shiroma

- See Me
- Take Action By
- Route to Your Branch
- Review & Comment
- Draft Reply
- Acknowledge Receipt
- Xerox copies
- File
- Mail
- For Information

E. Sakoda REV 11/7/88
D. Nakano
S. Miyamoto
S. Samuels
P. Matsuo
H. Young
R. Suzuki
N. Kaneshiro

S. Kokubun
D. Hamada
L. Nanbu
F. Ching

Ed, Jack, rest but don't forget about the water. Write Ed.
Update P.H. land use map.
Commission on Water Resource Management
Division of Water Resource Management
Department of Land and Natural Resources
P. O. Box 373
Honolulu, Hawaii 96809

Dear Sirs:

Groundwater Use Permit for the Makakilo Golf Course

On behalf of Finance Realty Co., Ltd., we are pleased to submit the enclosed water use permit application for golf course irrigation wells to be located in the Ewa Caprock Aquifer, Kapolei Sector. The included map identifies prospective well locations. Small diameter test borings are presently being conducted to determine the exact well location.

Please let me know if you require additional information in order to act on the application.

Sincerely,

Tom Nance

TN:It

Enclosures

cc: Finance Realty Co.
APPLICATION FOR WATER USE PERMIT

GROUNDWATER or SURFACE WATER (check appropriate box)

1. WATER MANAGEMENT AREA
Pearl Harbor Ground Water Control Area, Ewa Caprock Aquifer, Kapolei Sector

2. (a) WELL/DIVERSION OWNER:
Firm Name Finance Realty Co.
Contact Person Fred Kwok
Address P.O. Box 3979, Honolulu, HI 96812-3979
Phone 548-3347

(b) LANDOWNER:
Firm Name Campbell Estate
Contact Person Sam Keala
Address 828 Fort St. Mall, Suite 500 Honolulu, HI 96813
Phone 536-1961

3. SOURCE TYPE:
Spring Dike-confined Stream Perched Basal Caprock

4. SOURCE NAME AND NUMBER
New Wells (Refer to Explanation on Back Side)

5. SOURCE LOCATION:
Island Oahu Tax Map Key 9-1-16:25
Within Oahu Sugar Company fields; address available

6. LOCATION OF PROPOSED WATER USE (if different from #5)
Same as in No. 5 above

7. QUANTITY OF WATER REQUESTED
1,180,000 gallons per day (year-round average)

8. QUALITY OF WATER REQUESTED (check appropriate box)
Fresh Brackish Salt Potable Non-Potable

9. PROPOSED USE
Municipal (including hotels, stores, etc) Military
Domestic (individual, non-commercial water sys.) Industrial
Irrigation (specific) Golf Course Other (specify)

10. DESCRIBE ANY POTENTIAL RESTRICTIONS ON USE (i.e., stream standards, seasonal variations) Variation in use will occur as a result of rain and wind conditions

11. PROPOSED TIME OF WATER WITHDRAWAL OR DIVERSION
Typically from 7:00 pm through 8:00 am

12. PROPOSED METHOD OF TAKING THE WATER
Artesian Flow Diverted Flow Centrifugal Pump
Submersible Pump Vertical Turbine Pump

13. NO. OF RESIDENTIAL OR COMMERCIAL UNITS TO BE SERVED (specify) None

14. TOTAL ACRES PROPOSED FOR IRRIGATION
161 Type of Crop Turf Grass

15. REMARKS, EXPLANATIONS
Refer to the Back Side

For Official Use Only:
Date Received 10/27/88 Hydrologic Unit
Date Accepted 11/1/88
**15. REMARKS, EXPLANATIONS**

**Well(s) Location:** Small test bore holes will be undertaken by Fewell Geotechnical beginning October 24, 1988 to establish the exact location of the new source well(s) that will be developed. The location will either be along the east side of the Barbers Point Naval Air Station access road or just east of the HFDC housing project to be known as "Kapolei Village" (refer to the attached map). A decision to drill one or two wells has not been made yet. If a second well is installed, its primary function would be to increase reliability in the event of a pump malfunction. This second well would be near to the first; both would be located within a parcel of about one acre in size.

**Available Supply:** The new source would be located in the Kapolei-BPNAS Sector of the Caprock Aquifer. The July 1988 Mink, Yuen, and Chang report indicates that this sector's yield is 5 MGD currently and will be less than 5 MGD when sugarcane is withdrawn. At present, no wells utilize this resource. However, Campbell Estate's Kapolei Town Center and HFDC's Kapolei Village, which will encompass essentially all of the Kapolei Sector, have plans to use it at a future time. Based on the best available information, projected future use is 3.25 MGD:

<table>
<thead>
<tr>
<th>Development</th>
<th>Projected Use (MGD)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Kapolei Town Center</td>
<td>0.88</td>
<td>Ewa Water Master Plan (Revised August 1987)</td>
</tr>
<tr>
<td>(3) Finance Realty Golf Course</td>
<td>1.18**</td>
<td>Current Golf Course Plans</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3.25</strong></td>
<td></td>
</tr>
</tbody>
</table>

* Includes irrigation of an onsite golf course.

** Estimate by Coates Irrigation, the project's irrigation consultant.
Mr. William C. Moore  
Beylik Drilling, Inc.  
91-259A Olai Street  
Kapolei, Hawaii 96707  

Dear Mr. Moore:  

Well Abandonment Report for Well Nos. 1904-02 & 03  

We have received your Well Abandonment Report for the Makakilo Golf Course Wells (Well Nos. 1904-02 & 03) and acknowledge that they are complete.  

If you have any questions, please contact Lenore Nakama of the Commission staff at 587-0218.  

Sincerely,  

LINNEL T. NISHIOKA  
Deputy Director  

LN:ss
To:
STATE OF HAWAII
COMMISSION ON WATER RESOURCE MGMT
DEPARTMENT OF LAND & NATURAL RESOURCES
P.O. BOX 621
HONOLULU, HI 96809

DATE: 9-28-99
ATTENTION: MITCH OHYE
RE: MAKAKILO GOLF COURSE
1904-02/1904-03

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via __________ the following items:
☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐

<table>
<thead>
<tr>
<th>COPIES</th>
<th>DATE</th>
<th>NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>WELL ABANDONMENT REPORT 1904-03</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>WELL ABANDONMENT REPORT 1904-02</td>
</tr>
</tbody>
</table>

 THESE ARE TRANSMITTED as checked below:
☐ For approval ☐ Approved as submitted ☐ Resubmit ______ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit ______ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return ______ corrected prints
☐ For review and comment ☐

☐ FOR BIDS DUE ________________________________ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS ____________________________________________

COPY TO 1122R/C FILE

SIGNED:      ________________________________
             T. MICHAEL HOPKINS

If enclosures are not as noted, kindly notify us at once.
WELL ABANDONMENT REPORT

Instructions: Please print or type and submit completed report within 30 days after sealing completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 587-0225.

1. State Well No. 1904-03 Well Name WELL #3 IRRIGATION
2. Location/Address MAKAKILO GOLF COURSE
3. Contractor BEYLK DRILLING, INC.
4. Contractor's C-57 License No. AC-21896
5. Name of driller who performed work T. MICHAEL HOPKINS
6. Type of Rig/Construction FORD CRANE
7. Date of well sealing completion 8-19-99

(NOTE: Report must be submitted within 30 days after this completion date)

Finished Grade Elevation -2 ft.
Casing Diameter 12 in.

Measured Depth of Blank Casing 50 ft.
Measured Depth of Perforated Casing 20 ft.
Measured Depth of Open Hole 70 ft.

Total Measured Depth 70 ft.

Check Material Used
Grout Seal: ☑️ Cement
☑️ Sand/Cement Ratio /

Remarks: PUMPED MEET CEMENT FROM 70' TO 2' BELOW GROUND

If more space is needed, continue on back.

Contractor (print) BEYLK DRILLING, INC.
Signature William O. Moore
Title VICE PRESIDENT
Date 9-27-99

For Driller's Use:
Job Name Job No.

For Official Use:
Well No. Longitude
Latitude
WELL ABANDONMENT REPORT

Instructions: Please print or type and submit completed report within 30 days after sealing completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 887-0225.

1. State Well No. 1904-2
2. Well Name. WELL # 3 IRRIGATION
3. Location/Address. MAKAKILO GOLF COURSE
4. Contractor. BEYLİK DRILLING, INC.
5. Contractor's C-57 License No. AC-28196
6. Name of driller who performed work. T. MICHAEL HOPKINS
7. Type of Rig/Construction. FORD CRANE
8. Date of well sealing completion. 8-19-99

(NOTE: Report must be submitted within 30 days after this completion date)

Finished Grade Elevation -2 ft.
Casing Diameter 12 in.

Check Material Used
Grout Seal:
X Cement
☐ Sand/Cement Ratio 1

Total Measured Depth 77 ft.

Measured Depth of Blank Casing 57 ft.
Measured Depth of Perforated Casing 77 ft.
Measured Depth of Open Hole 77 ft.

Remarks: PUMPED NEET CEMENT FROM 77' TO 2'
(If more space is needed, continue on back.)

Contractor (print) BEYLİK DRILLING, INC.
Signature William O. Pope
Title VICE PRESIDENT
Date 9-27-99

For Driller's Use:
Job Name
Job No.

For Official Use:
Well No.
Longitude
Latitude
FACSIMILE TRANSMITTAL

DATE: SEPTEMBER 27, 1999

TO: COMMISSION ON WATER RES. MGMT.

FROM: T. MICHAEL HOPKINS

REF: MAKAKILO GOLF COURSE WELL ABANDONMENT - WELL NOS. 1904-02/1904-3

ATTN: MITCH OYHE

FAX: 587-0219

# OF PAGES TO FOLLOW: 5

ORIGINAL WELL ABANDONMENT REPORTS TO FOLLOW IN THE MAIL.
WELL ABANDONMENT REPORT

1. State Well No: 1904-03
2. Well Name: WELL #3 IRIGATION
3. Location/Address: MAMAKILO GOLF COURSE
4. Contractor: REYLIK DRILLING, INC.
5. Contractor’s C-57 License No: AC-21896
6. Name of driller who performed work: T. MICHAEL HOPKINS
7. Type of Rig/Construction: FORD CRANE
8. Date of well sealing completion: 8-19-99

Finished Grade Elevation: -2 ft
Casing Diameter: 12 in.
Total Measured Depth: 70 ft
Measured Depth of Blended Casing: 50 ft
Measured Depth of Perforated Casing: 20 ft
Measured Depth of Open Hole: 70 ft

Remarks: PUMPED WET CEMENT FROM 70' TO 2' BELOW GROUND

If more space is needed: continue on back.

Contractor (print): REYLIK DRILLING, INC.
Signature: [Signature]
Title: VICE PRESIDENT
Date: 9-27-99

For Contractor's Use:
Job Name: 
Job No: 
For Official Use:
Well No: 
Latitude: 
Longitude: 

Page 1 of 1
# WELL ABANDONMENT REPORT

**Instructions:** Please print or type and submit completed report within 30 days after sealing completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96806. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 808-586-3025.

1. **State Well No.** 1904-2  
   **Well Name.** WELL # 3 IRRIGATION  
   **Island.** OAHU  
   **Tax Map Key.** 3-9-1-016-001
2. **Location/Address.** MAKAKILO GOLF COURSE
3. **Contractor.** BETLIK DRILLING, INC.
4. **Contractor’s C-57 License No.** AC-28106
5. **Name of driller who performed work.** T. MICHAEL HOPKINS
6. **Type of Rig/Construction.** FORD CRANE
7. **Date of well sealing completion.** 3-19-99

(NOTE: Report must be submitted within 30 days after this completion date)

<table>
<thead>
<tr>
<th>Depth Parameter</th>
<th>Measurement</th>
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<tbody>
<tr>
<td>Finished Grade Elevation</td>
<td>-2 ft.</td>
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<tr>
<td>Casing Diameter</td>
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<tr>
<td>Measured Depth of Blank Casing</td>
<td>57 ft.</td>
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<td>Total Measured Depth</td>
<td>77 ft.</td>
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<tr>
<td>Measured Depth of Perforated Casing</td>
<td>77 ft.</td>
</tr>
<tr>
<td>Measured Depth of Open Hole</td>
<td>77 ft.</td>
</tr>
</tbody>
</table>

**Remarks:** PUMPED MORT CEMENT FROM 77' TO 2'

(If more space is needed, continue on back.)

**Contractor (print):** BETLIK DRILLING, INC.  
**Title:** VICE PRESIDENT  
**Signature:** [Signature]  
**Date:** 9-27-99

**For Driller’s Use:**  
**Job Name:**  
**Job No.:**

**For Official Use:**  
**Well No.:**  
**Longitude:**  
**Latitude:**
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**TRAVEL CHARGE**

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<th>PER HR.</th>
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<tr>
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<th>PER C.Y.</th>
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**FLAT RATE CHARGE**

- **260**

**SUB-TOTAL**

- **260**

**TAX 4%**

- **10.40**

**TOTAL**

- **270.40**

---

This Rental Subject to Jeo the Pumpers General Terms
**Delivery**

**CRANE L 10 YD 3**

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**SUB TOTAL**

557.50

**TAX**

0.00

**TOTAL**

557.50

**JOB TOTAL**

1,120.50

**ADDITIONAL CHARGE 1**

A-5.45

**ADDITIONAL CHARGE 2**

0.00

**GRAND TOTAL**
WELL CONSTRUCTION PERMIT TO ABANDON/SEAL

Makakilo Golf Course Wells, Well Nos. 1904-02 & 03

In accordance with the Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the abandonment/sealing of Makakilo Golf Course Wells (Well Nos. 1904-02 & 03) at Makakilo, Oahu, TMK 9-1-016:001, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

1. The Chairperson of the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809, shall be notified in writing before any work covered by this permit commences.

2. The permit may be revoked by the Commission if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified.

3. The owner or operator of any well which has been determined by the department or voluntarily declared by the owner or operator to be abandoned as defined in §13-168-2, after written notification, shall be required, at owner's or operator's expense, to re-case, cement, plug back, cap, or otherwise repair the well or fill and seal the well with cement in a manner approved by the commission.

4. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (January 23, 1997; HWCPIS). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

5. The Well Abandonment Report form (attached) shall be submitted to the Commission on Water Resource Management within sixty (60) days after completion of the work.

6. The permittee shall comply with all applicable laws, rules, and ordinances.

7. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: April 1, 1999

Expiration Date: When well is sealed in a manner acceptable to the Commission

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the permit date of approval.

Permittee's Signature: 
Date: 4/1/99

Printed Name: Robert Creps  Firm or Title: Pun Makakilo Inc

Installer's Signature: Tracy Runnels C-57, C-57a, or A License #: C-21996 Date: 4/12/99

Printed Name: Tracy Runnels  Firm or Title: Roscoe Moss Hawaii, Inc.

Please sign both copies of this permit, return one to the Chairperson, and retain the other for your records.
Mr. Robert Creps  
Puu Makakilo Inc.  
P.O. Box 78  
Honolulu, Hawaii 96810

Dear Mr. Creps:

Well Construction Permit to Abandon/Seal  
Makakilo Golf Course Wells (Well Nos. 1904-02 & 03)

Enclosed are two (2) copies of your approved Well Construction Permit for the captioned well(s) which authorizes well abandonment/sealing activities. As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 7.

Special Conditions

1. Attached for your information is a copy of the Department of Health's review comments.

2. The proposed method of sealing, as outlined in the application, is approved.

To validate your permit, please sign and have the contractor sign both permit originals and return one for our files.

IMPORTANT - The well owner is responsible for all conditions of the permit. This includes ensuring that the your licensed contractor, submits a completed Well Abandonment Report form (enclosed) within sixty (60) days after the well construction work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions starting from the permit approval date.

If you have any questions, please call the Commission staff at 587-0218.

Aloha,

for: TIMOTHY E. JOHNS  
Chairperson

Enclosures
FACSIMILE TRANSMITTAL

DATE: 4/12/99

TO: CWRM

FROM: Tracy Runnels

REF: Makakilo Golf Wells, 1904-02 & 03

ATTN: Lenore Makama

Hard copies via mail.

Tracy

587 0219
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

APR - 8 1999

Mr. Robert Creps
Puu Makakilo Inc.
P.O. Box 78
Honolulu, Hawaii 96810

Dear Mr. Creps:

Well Construction Permit to Abandon/Seal
Makakilo Golf Course Wells (Well Nos. 1904-02 & 03)

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If you have any questions, please call the Commission staff at 587-0218.

Aloha,

[Signature]
TIMOTHY E. JOHNS
Chairperson

Enclosures
WELL CONSTRUCTION PERMIT TO ABANDON/SEAL

Makakilo Golf Course Wells, Well Nos. 1904-02 & 03

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the abandonment/sealing of Makakilo Golf Course Wells (Well Nos. 1904-02 & 03) at Makakilo, Oahu, TMK 9-1-01B:001, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

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3. The owner or operator of any well which has been determined by the department or voluntarily declared by the owner or operator to be abandoned as defined in §13-168-2, after written notification, shall be required, at owner's or operator's expense, to re-case, cement, plug back, cap, or otherwise repair the well or fill and seal the well with cement in a manner approved by the commission.
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5. The Well Abandonment Report form (attached) shall be submitted to the Commission on Water Resource Management within sixty (60) days after completion of the work.
6. The permittee shall comply with all applicable laws, rules, and ordinances.
7. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: April 1, 1999
Expiration Date: When well is sealed in a manner acceptable to the Commission

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the permit date of approval.

Permittee's Signature: ____________________________ Date: ____________
Printed Name: ____________________________ Firm or Title: ____________

Installer's Signature: ____________________________ Date: ____________
Printed Name: ____________________________ Firm or Title: ____________

Please sign both copies of this permit, return one to the Chairperson, and retain the other for your records.

Attachment
C: USGS
Department of Health/ Safe Drinking Water, Wastewater, and Clean Water Branches
Honolulu Board of Water Supply
The Estate of James Campbell
Mr. Robert Creps  
Puu Makakilo Inc.  
P.O. Box 78  
Honolulu, Hawaii 96810  

Dear Mr. Creps:

Well Construction Permit to Abandon/Seal  
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1. Attached for your information is a copy of the Department of Health's review comments.
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If you have any questions, please call the Commission staff at 587-0218.

Aloha,

for: TIMOTHY E. JOHNS  
Chairperson

Enclosures
WELL CONSTRUCTION PERMIT TO ABANDON/SEAL

Makakilo Golf Course Wells, Well Nos. 1904-02 & 03

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Expiration Date: When well is sealed in a manner acceptable to the Commission

TIMOTHY E. JOHNS, Chairperson
Commission on Water Resource Management

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Permittee's Signature: _______________________________ Date: __________
Printed Name: _______________________________ Firm or Title: _______________________________
Installer's Signature: _______________________________ C-57, C-57a, or A License #: ________ Date: ________
Printed Name: _______________________________ Firm or Title: _______________________________

Please sign both copies of this permit, return one to the Chairperson, and retain the other for your records.

Attachment

USGS
Department of Health/ Safe Drinking Water, Wastewater, and Clean Water Branches
Honolulu Board of Water Supply
The Estate of James Campbell
TO: Honorable Bruce S. Anderson, Director
   Department of Health
   Attention: Dennis Tulana, Wastewater Branch
   William Wong, Safe Drinking Water Branch

FROM: Timothy E. Johns, Chairperson
   Commission on Water Resource Management

SUBJECT: Well Construction Permit Application to Abandon/Seal
   Makakilo Golf Course Wells (Well Nos. 1904-02 & 03)

Transmitted for your review and comment is a copy of the captioned well application.

We would appreciate your comments on the captioned application for any conflicts or
inconsistencies with the programs, plans, and objectives specific to your department. Please respond
by returning this cover memo form by April 20, 1999.

Please find a map, attached, to locate the proposed well. If you have any questions about this
permit application, request additional information, or request additional review time, please contact
Lenore Nakama of the Commission staff at 587-0218.

LN:ss
Attachment(s)

RESPONSE:

[ ] This well qualifies as a source which will serve as a source of potable water to a public water system (serving 25 or more people at least 60 days per year or has 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-29.

[ ] This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 60 days per year or 15 service connections) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.

[ ] If the well is used to supply both potable and non-potable purposes in a single system, the user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.

[ ] It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water Regulations.

[ ] For the applicant’s information, a source of possible wastewater contamination [ ]is [ ] is not located near the proposed well site (information attached).

[ ] Other relevant DOH rules/regulations, information, or recommendations are attached.

No comments/objections

Contact Person: William Wong
Phone: 586-4258

Signed: William Wong
Date: 03/30/99
TO: Honorable Bruce S. Anderson, Director
   Department of Health
   Attention: Dennis Tulang, Wastewater Branch
   William Wong, Safe Drinking Water Branch

FROM: Matthew E. Johns, Chairperson
   Commission on Water Resource Management

SUBJECT: Well Construction Permit Application to Abandon/Seal
   Makakilo Golf Course Wells (Well Nos. 1904-02 & 03)

Transmitted for your review and comment is a copy of the captioned well application.

We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by April 20, 1999.

Please find a map, attached, to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Lenore Nakama of the Commission staff at 587-0218.

RESPONSE:

[ ] This well qualifies as a source which will serve as a source of potable water to a public water system (serving 25 or more people at least 60 days per year or has 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-20-29.

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[ ] For the applicant’s information, a source of possible wastewater contamination [ ] is [ ] not located near the proposed well site (information attached).

[ ] Other relevant DOH rules/regulations, information, or recommendations are attached.

No comments/objections

Contact Person: Lori N. Kajiwara
Phone: 500-294-44
Date: 3-29-99

Signed: Lori N. Kajiwara
Mr. Robert Creps  
Puu Makakilo Inc.  
P.O. Box 78  
Honolulu, HI 96810

Dear Mr. Creps:

Well Construction Permit Application to Abandon/Seal Well Nos. 1904-02 & 03

We acknowledge receipt, on March 3, 1999, of your completed well construction permit application to abandon/seal the Makakilo Golf Course Wells (Well Nos. 1904-02 & 03). You can expect your application to be processed within ninety (90) days from this date.

If you have any questions about your permit application, please contact Lenore Nakama of the Commission staff at 587-0218.

Sincerely,

EDWIN T. SAKODA  
Acting Deputy Director

LN: ss
TO: Honorable Bruce S. Anderson, Director
    Department of Health
    Attention: Dennis Tulang, Wastewater Branch

FROM: Timothy E. Johns, Chairperson
Commission on Water Resource Management

SUBJECT: Well Construction Permit Application to Abandon/Seal
Makakilo Golf Course Wells (Well Nos. 1904-02 & 03)

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LN:ss
Attachment(s)

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[ ] No comments/objections

Contact Person: __________________________ Phone: ______________

Signed: ___________________________ Date: ___________
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<td><strong>25.00</strong></td>
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**REMARKS:**

LINE (1) [Handwritten note]

LINE (2) [Blank]

LINE (3) [Blank]

LINE (4) [Blank]

---

**PAY** TWENTY FIVE AND 00/100

**TO THE ORDER OF** DEPT OF LAND AND NATURAL RESOURCES

**AUTHORIZED SIGNATURE**

---

3-3-99 Abandon filing fee Wells 1904-02/03 25.00 05-99R 5890.61
1. APPLICANT: (Fill out all three, if applicable, and place a check next to the primary contact)
   ☐ WELL OWNER: PUU MAKAKILO INC. Contact Person: ROBERT CREPS Phone: 487-7616
   Mailing Address: P.O. BOX 78, HONOLULU, HI 96810
   Fax: 486-8025
   ☐ LAND OWNER: ESTATE OF JAMES CAMPBELL Contact Person: DONNA GOTH Phone: 674-3229
   Mailing Address: 1001 KAMOKILA BLVD., KAPOLEI, HI 96707
   Fax: 674-3111
   ☐ CONTRACTOR: ROSCOE MOSS HAWAII, INC. Contact Person: MIKE HOPKINS Phone: 682-5856
   Mailing Address: 91-259A OLAI ST., KAPOLEI, HI 96707
   Fax: 682-5866

2. WELL LOCATION/NAME: MAKAKILO GOLF COURSE/STATE # 1904-02 Island: OAHU
   Address: WEST SIDE OF BARBERS POINT GATE OFF MAKAKILO BLVD.
   Tax Map Key: 3-9-1-016-001
   Attach the relevant portion of (a) a 7.5-Minute Series USGS topographic map (scale 1"=24,000"), and (b) a property tax map, showing well location referenced to established property boundaries.

3. (a) PROPOSED WORK: (Check all that apply)
   ☐ Drill New Well ☐ Deepen ☐ Install New Pump
   ☐ Modify Existing Well ☐ Redrill ☐ Modify Pump
   ☒ Abandon/Seal * ☐ Replace Pump
   * Be sure to complete and submit well abandonment report upon completion of work.

(b) WELL TYPE: 
   ☐ Dug ☐ Bored ☐ Driven ☒ Drilled ☐ Radial
   Is this well a part of a battery of wells? ☐ Yes ☐ No
   (Briefly describe and fill in the diagram on the back of this form.)

4. PROPOSED PUMP INFORMATION: 
   Rated Pump Capacity: N/A gallons per minute
   Pump Type (Check one):
   ☐ Deep Well Turbine ☐ Rotary ☐ Propeller ☐ Diesel
   ☐ Submersible ☐ Rotary-Displacement ☐ Reciprocating ☐ Gas
   ☐ Centrifugal ☐ Rotary-Gear ☐ Impulse ☐ Electric, rated horsepower:
   If Pump replacement, Existing Pump Capacity: N/A gallons per minute

5. PROPOSED USE: (Check all that apply)
   ☐ Municipal (including hotels, stores, etc.) ☐ Industrial
   ☐ Domestic (individual, noncommercial water system) ☐ No. of Dwelling Units:
   ☐ Irrigation (crop) ☐ Golf Course ☐ No. of Acres:
   ☐ Military ☐ Other:

6. (a) PROPOSED AMOUNT OF WITHDRAWAL: __________ gallons per day
   (b) METHOD OF FLOW MEASUREMENT:

7. PENDING ACTIONS: ☐ CDUA ☐ SMA ☐ EIS ☐ EA ☐ NONE ☐ Other (explain)

8. REMARKS, EXPLANATIONS: WELLS WILL BE ABANDONED BY USE OF 2" TRENCH WITH 5 GALLONS
   OF WATER PER 94 LB. SACK OF NEAT CEMENT PUMPED IN PERFORATED ZONE, THEN TOPPED
   OFF WITH 1-1 RATIO SAND CEMENT IN SOLID CASED AREA.
   (If more space is needed, please attach additional sheet)

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 30 days after the completion date of the permitted work; 3) monthly water use data shall be submitted to the Commission; 4) such approval shall not constitute a determination of correlative water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

Well Owner: The Estate of James Campbell
Signature: __________________________ Date: 11/13/98
Landowner: DONNA GOTH
Signature: __________________________ Date: 11/13/98
Contractor: ROSCOE MOSS HAWAII, INC.
Signature: __________________________ Date: 11/13/98

Field Checked By: _____________________ Longitude: _____________________ Aquifer System Name: _____________________
Date: ______/_____/______ Latitude: _____________________ State Well No: _____________________

WCP1FORM (11/13/98)
Elevation at top of casing: 53 ft, msf
(Survey to nearest 0.01 ft.)

Minimum annular space between hole and casing ≥ 3".

Cement Grout: 50 ft.
(min. 70% of distance from ground elevation to top of water surface or 500 ft., whichever is less.)

For non-salt water Basal Wells - bottom elevation of well should not be deeper than 1/4 of aquifer thickness or,
Bottom Elevation of Well Limit = (Water Elevation - 0.25 x Aquifer Thickness) ft

Example: Estimated = 2 ft. Water Level Elev. ≥ Bottom Elevation of Well Limit = (2 - 0.25 x 4) = 1.5 ft.

* The approximate elevation must be referenced to mean sea level (msl) at the time of application filing. Final elevations of well components shall be submitted in the Well Completion/Well Abandonment reports and referenced to a benchmark which has been established by a surveyor licensed by the State.

### Impermeable Casing Material:
- Steel: compliant with (check one or more):
  - [ ] ANSI/AWWA C200
  - [ ] API Spec. 5L
  - [ ] ASTM A35
  - [ ] ASTM A139
- Stainless Steel: (check one):
  - [ ] ASTM A409
  - [ ] ASTM A312

### Permeable Casing Material:
- Steel: compliant with (check one or more):
  - [ ] ANSI/AWWA C200
  - [ ] API Spec. 5L
  - [ ] ASTM A35
  - [ ] ASTM A139
- Stainless Steel: (check one):
  - [ ] ASTM A409
  - [ ] ASTM A312

---

<table>
<thead>
<tr>
<th>Rock or Gravel Padding</th>
<th>27 ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material:</td>
<td>Crushed Basalt or Rounded Gravel</td>
</tr>
<tr>
<td>Water Level Elevation:</td>
<td>491 ft, msf</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Hole Diameter:</th>
<th>2 in.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum of 2' Radius &amp; 4&quot; Thick Concrete Pad</td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Solid Casing:</th>
<th>(≥ 50% x [Ground Elev.-Water Level Elev.])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material:</td>
<td>PVC</td>
</tr>
<tr>
<td>Length:</td>
<td>ASTM D1785</td>
</tr>
<tr>
<td>Diameter:</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Wall Thickness:</td>
<td>1 1/16 in.</td>
</tr>
<tr>
<td>Bottom Elevation:</td>
<td>57 ft, msf</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Open Casing:</th>
<th>Perforated or Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material:</td>
<td>ASTM D1785</td>
</tr>
<tr>
<td>Length:</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Diameter:</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Bottom Elevation:</td>
<td>57 ft, msf</td>
</tr>
</tbody>
</table>

---

**Please refer to the HAWAII WELL CONSTRUCTION AND PUMP INSTALLATION STANDARDS**
to assure that your construction plans are in compliance with all existing regulations.
1. APPLICANT: (Fill out all three, if applicable, and place a check next to the primary contact)

☐ WELL OWNER: PULU MAKAKILO INC. Contact Person: ROBERT CREPS Phone: 487-7616
Mailing Address: P.O. BOX 78, HONOLULU, HI 96810
Fax: 486-8025
Email: 

☐ LAND OWNER: ESTATE OF JAMES CAMPBELL Contact Person: DONNA GOTH Phone: 674-3229
Mailing Address: 1001 KAMOKILA BLVD., KAPOLEI, HI 96707
Fax: 674-3111
Email: 

☐ CONTRACTOR: ROSCOE MOSS HAWAII, INC. Contact Person: MIKE HOPKINS Phone: 682-5856
Mailing Address: 91-259A OLAI ST., KAPOLEI, HI 96707
Fax: 682-5866
Email: 

2. WELL LOCATION/NAME: MAKAKILO GOLF COURSE/STATE #1904-03 Island: OAHU
Address: WEST SIDE OF BARBERS POINT GATE OFF MAKAKILO BLVD.
Tax Map Key: 3-9-1-016:001
Attach the relevant portion of (a) a 7.5-Minute Series USGS topographic map (scale 1"=24,000), and (b) a survey map, showing well location referenced to established property boundaries.

3. (a) PROPOSED WORK:

(Check all that apply)

☐ Drill New Well
☐ Modify Existing Well
☐ Install New Pump
☐ Deepen
☐ Redrill
☐ Modify Pump
☐ Abandon/Seal
☐ Replace Pump
* Be sure to complete and submit well abandonment report upon completion of work.

(b) WELL TYPE:

☐ Dug
☐ Bored
☐ Driven
☐ Drilled
☐ Radial
Is this well a part of a battery of wells? ☐ Yes ☐ No
(Briefly describe and fill in the diagram on the back of this form.)

4. PROPOSED PUMP INFORMATION:

Rated Pump Capacity: N/A gallons per minute

Pump Type (Check one):
☐ Deep Well Turbine
☐ Rotary
☐ Submersible
☐ Centrifugal
☐ Propeller
☐ Rotary-Displacement
☐ Rotary-Gear
☐ Reciprocating
☐ Impulse
☐ Gas
☐ Electric, rated horsepower:

If Pump replacement, Existing Pump Capacity: gallons per minute

5. PROPOSED USE:

(Choose all that apply)

☐ Municipal (including hotels, stores, etc.) ☐ Industrial
☐ Domestic (individual, noncommercial water system) ☐ Other
☐ Irrigation (crop) ☐ GOLF COURSE

No. of Dwelling Units:
No. of Acres:

6. (a) PROPOSED AMOUNT OF WITHDRAWAL:

N/A gallons per day

(b) METHOD OF FLOW MEASUREMENT:

7. PENDING ACTIONS:

☐ CDUA ☐ SMA ☐ EIS ☐ EA ☐ NONE ☐ Other (explain)

8. REMARKS, EXPLANATIONS:

WELLS WILL BE ABANDONED BY USE OF 2" TREMEE WITH 5 GALLONS OF WATER PER 94 LB. SACK OF MORTAR CEMENT PUMPED IN PERFORATED ZONE, THEN TOPPED OFF WITH 1-1 RATIO SAND CEMENT IN SOLID CASED AREA.

(IIf more space is needed, please attach additional sheet)

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 30 days after the completion date of the proposed work; 3) monthly water use data shall be submitted to the Commission; 4) such approval shall not constitute a determination of correlative water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

Well Owner: The Estate of James Campbell
Signature: ___________ Date: 3/7/89

Landowner: DONNA B. GOTH
Signature: ___________ Date: March 1, 1999

Contractor: ROSCOE MOSS HAWAII, INC.
Signature: ___________ Date: March 2, 1999

Field Checked By: ___________________________ Longitude: ___________ Aquifer System Name: ___________ State: ___________
Location: ___________________________ Date: ___________ State Well No: ___________

WCPIFORM (11/13/98)
For non-salt water Basal Wells - bottom elevation of well should not be deeper than 1/4 of aquifer thickness or,  
Bottom Elevation of Well Limit = \( \frac{\text{Water Elevation} - \text{Ground Elevation}}{4} \)  

* The approximate elevation must be referenced to mean sea level (msl) at the time of application filing. Final elevations of well components shall be submitted in the Well Completion and Well Abandonment reports and referenced to a benchmark which has been established by a surveyor licensed by the State.

**Impermeable Casing Material:**

- Steel: compliant with (check one or more):  
  - ANSI/AWWA C200  
  - API Spec. 5L  
  - ASTM A53  
  - ASTM A139
- Stainless Steel: (check one):  
  - ASTM A409  
  - ASTM A312
- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)  
  - Schedule 40  
  - Schedule 80
- PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):  
  - Schedule 40  
  - Schedule 80

**Thermoset Plastic:** (check one)  
- Filament Wound Resin Pipe conforming to ASTM D2996  
- Centrifugally Cast Resin Pipe conforming to ASTM D2997  
- Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517  
- Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950  
- PTFE Fluorocarbon Tubing conforming to ASTM D3296  
- FEP Fluorocarbon Tubing conforming to ASTM D3296

**Permeable Casing Material:**

- Steel: compliant with (check one or more):  
  - ANSI/AWWA C200  
  - API Spec. 5L  
  - ASTM A53  
  - ASTM A139
- Stainless Steel: (check one):  
  - ASTM A409  
  - ASTM A312
- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)  
  - Schedule 40  
  - Schedule 80
- PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):  
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- Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950  
- PTFE Fluorocarbon Tubing conforming to ASTM D3296  
- FEP Fluorocarbon Tubing conforming to ASTM D3296
EDWIN SAKODA
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

Date: May 30, 1995

RE: CIVIL OR CASE NO. 92-0655-02
MAKAKILO HALE I v. PAN PACIFIC CONSTRUCTION

Deposition(s) of: EDWIN SAKODA

The original of your deposition in the above-entitled case is ready for you to read and sign. Please phone 532-0222 and make arrangements to come in at your earliest convenience.

If not signed by JULY 3, 1995, the original will be sealed without signature, and will be kept on file at our offices.

You are entitled to 30 days in which to read and sign your deposition; however, if trial intervenes, and request is made for this deposition to be filed with the court prior to trial, we will do so without further notice to you.

TRIAL DATE SET FOR:

Very truly yours,

Donna L. N. Sato
Diane T. Ohata
CARNAZZO COURT-REPORTING COMPANY, LTD.

cc: original transcript
    ARCHIE T. IKEHARA, ESQ., JASON M. YOSHIDA, ESQ.
May 31, 1995

Mr. Edwin Sakoda
Department of Land and Natural
Resources
Commission of Water Resource
Management
1151 Punchbowl Street
Honolulu, Hawaii 96813

Re: Makakilo Hale I, et al. v. Pan-Pacific
Construction, Inc., et al.; Civil No. 92-0655-02
and
Pan-Pacific Construction, Inc. vs. Chiyoda
Pacific, Inc., et al.; Civil No. 94-0582-02

Dear Mr. Sakoda:

Enclosed herewith are the four (4) tapes of the CWRM
meeting held on August 19, 1992, which you provided to us at your
deposition last week.

Thank you for your cooperation in this matter.

Very truly yours,

FUJIYAMA, DUFFY & FUJIYAMA,
Attorneys At Law, A Law
Corporation

By ARCHIE T. IKEHARA

Enclosures as stated
May 31, 1995

VIA HAND-DELIVERY

Mr. Edwin Sakoda
Department of Land and Natural Resources
Commission of Water Resource Management
1151 Punchbowl Street
Honolulu, Hawaii 96813

and
Pan-Pacific Construction, Inc. vs. Chiyoda Pacific, Inc., et al.; Civil No. 94-0582-02

Dear Mr. Sakoda:

Enclosed herewith are the four (4) tapes of the CWRM meeting held on August 19, 1992, which you provided to us at your deposition last week.

Thank you for your cooperation in this matter.

Very truly yours,

FUJIYAMA, DUFFY & FUJIYAMA,
Attorneys At Law, A Law Corporation

By ARCHIE T. IKEHARA

ATI:skk

Enclosures as stated
IN THE CIRCUIT COURT OF THE FIRST CIRCUIT
STATE OF HAWAII

MAKAKILO HALE I, an association of homeowners; MAKAKILO HALE II, an association of homeowners; PALEHUA GARDENS, an association of homeowners; KANEHOA RECREATION CENTER, an association of homeowners; JOE JEFFERS; BERTHA JEFFERS; GLEN YOSHIDA; CYNTHIA YOSHIDA; KALEINOHEAOKEALUALA SCOTT AKAMINE; JANIELLE NAAUO AKAMINE; EDWARD SANTOS; DIANA LIN CRANDALL; LORRAIN BURGESS; ALFRED DILAY, JR.; SHARRON DILAY; ALLEN WILLIAMSON; JOYCE WILLIAMSON; JAMES L. WINGO; ROSELINE QUIOCHO; RODERICK QUIOCHO; RANDALL QUIOCHO; DENNIS BIERMAN; BRIANA ANDERSON; ALBERT MAX CHILDERS; ONA C. SOLBERT; TERRIE L. GORTON; STEVEN B. ARIEL; RALPH KIRK; JOELLE KIRK; MINDY BERGER; JOSEPH M. FORTH; JEFFREY IRENZE; CAROL IRENZE; RICHARD HELSHAM; NORMA HELSHAM; DAVID A. PURVIS; DIANA L. PURVIS; HENRY HOFFMAN; LURA JEAN HOFFMAN; LUCY KANG; AIDE NOHEMI HALDEMAN; STEPHEN D. HALDEMAN; TIMOTHY MILLS; MARY MILLS; LEVI

CIVIL NO. 92-0655-02
[NON-MOTOR VEHICLE TORT]
(Consolidated Cases)

SUBPOENA
(Ed Sakoda)

TRIAL DATE: MARCH 25, 1996

J Re. Makakilo G.C. Well (1904-02,03)
Fort Barrette Well (2004-03)
Makakilo G.C. Well (2104-02)
LAKE; LOUISE LAKE; WILLIAM HART;
MARIA HART; RODNEY K. HACHIKUBO;
FRANCES L. AMMON; NELSON CORREA;
PHILOMINA CORREA; CHARLES PITTS;
GRATIA PITTS; CLARENCE PIENA;
VERONICA PIENA; RUDOLPH
RONACHER; LINDA M. NAJ; MARK
AMORIN; RAMONA AMORIN; HENRY
KAALEKAHI, JR.; PEGGY KAALEKAHI;
JOSEPH NUUANU; ELIZABETH NUUANU;
JAMES FULGONI; DEANNA FULGONI;
MARGARET Y. FLOYD; EDWARD
GARCIA; SONJA GARCIA; NIKKI
MALANI; DAN CARDINAS; DERRIK
AKAMINE; BENNETT KRISE; SHARILYN
KRISE; ETHEL M. DAY; GABRIEL
COMPEHOS; and Plaintiffs JOHN
DOE 46 through 1000,

Plaintiffs,

vs.

PAN-PACIFIC CONSTRUCTION, INC.,
a Hawaii corporation; and
Defendants 1 through 10,

Defendants,

and

PAN-PACIFIC CONSTRUCTION, INC.,
a Hawaii corporation,

Defendant and
Third-Party
Plaintiff,

vs.

CHIYODA PACIFIC, INC.; MAKAKILO
GOLF CORP.; JOHN DOES 1-100;
JANE DOES 1-100; DOE
PARTNERSHIPS 1-100; DOE
CORPORATIONS 1-100; ROE "NON-
PROFIT" CORPORATIONS 1-100; AND
ROE GOVERNMENTAL ENTITIES 1-100,

Third-Party
Defendants.
PAN-PACIFIC CONSTRUCTION, INC., ) CIVIL NO. 94-0582-02
 ) [Other Civil Action]
 )
Plaintiff, )
 )
vs. )
 )
CHIYODA PACIFIC, INC.; MAKAKILO )
GOLF CORP.; JOHN DOES 1-100; )
JANE DOES 1-100; DOE )
PARTNERSHIPS 1-100; DOE )
corporations 1-100; ROE "NON- )
PROFIT" CORPORATIONS 1-100; AND )
ROE GOVERNMENTAL ENTITIES 1-100, )

Defendants. )

SUBPOENA

THE STATE OF HAWAII:

TO THE SHERIFF of the State of Hawaii or his Deputy, or any Police Officer in the State of Hawaii:

YOU ARE COMMANDED to Subpoena ED SAKODA, State of Hawaii, Department of Land and Natural Resources, Water Resource Management Division, 1151 Punchbowl Street, Honolulu, Hawaii, 96813, and to appear before a court reporter at Fujiyama, Duffy & Fujiyama, Suite 2700, Pauahi Tower, Bishop Square, 1001 Bishop Street, Honolulu, Hawaii, on Thursday, May 25, 1995, at 9:00 o'clock a.m., to testify as witness on the part of PAN-PACIFIC CONSTRUCTION, INC. for the taking of a deposition upon oral examination in the above-entitled matter.

DATED at Honolulu, Hawaii, MAY -8 1995.

N. ANAYA

Clerk of the Above-Entitled Court
RETURN OF SERVICE

Received this subpoena at _____ on ____________,
and on ____________, at _____ I served it on the within
named __________________ by delivering a copy to ___ and
tendering to ____ the fee for one day's attendance and the
mileage allowed by law.

DATED: ___________________ ___________________
**PROJECT TITLE**  
EWA CAP ROCK GROUNDWATER QUALITY SURVEY

**WELL DESCRIPTION:**

Well Name: Makakilo GC - North  
Well I.D. No. 3-1904-0ff Site Well

Well Owner: Makakilo Golf Course  
Contact Person ________________________ 
Type: Unused ________________________ 
Flow ________________________ 
Remarks: Grouted, Steel-Cased ________________________

---

**WELL CONSTRUCTION:**

Casing Stick Up (A) ________ ft.  
Ground Elevation (B) ________ ft.  
Diameter of Boring (C) ________ in.  
Total Depth of Boring (D) ________ ft.  
Grouted Interval (E) ________ ft.  
Filter-Pack Interval (F) ________ ft.  

Mrd Dpth to Wtr Tbl/ Approx Elev/ Elev Per DLNR Indx (G) _______ / _______ / _______ ft.

<table>
<thead>
<tr>
<th>Material</th>
<th>Diameter (IN)</th>
<th>Length (FT)</th>
<th>Top/Bot. Elev. (FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Casing (H)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perforated Casing (I)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Open Hole (J)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**JOURNAL OF SAMPLE COLLECTIONS:**

Date February 12, 1993  
Time 11:40 a.m.  
Person JT, JR, CH, NU  
Weather Fair  
Remarks Well not purged before sampling. Sampled w/teflon bailer
# MAKAKILO GC "NORTH"

<table>
<thead>
<tr>
<th>Date of Sample Collection</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>02/12/93</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ANALYTICAL PARAMETERS</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Solids (mg/l)</td>
<td></td>
</tr>
<tr>
<td>Total Suspended Solids (mg/l)</td>
<td></td>
</tr>
<tr>
<td>Chlorides (mg/l)</td>
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</tr>
<tr>
<td>Specific Conductance (mmho/cm)</td>
<td></td>
</tr>
<tr>
<td>Hardness (mg equiv. Ca CO3/l)</td>
<td></td>
</tr>
<tr>
<td>Alkalinity (as Ca CO3) (mg/l)</td>
<td></td>
</tr>
<tr>
<td>pH (std. unit)</td>
<td>7.1</td>
</tr>
<tr>
<td>Temperature (°C/°F)</td>
<td>24/</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td></td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/l)</td>
<td></td>
</tr>
<tr>
<td>Total Residual Chlorine (mg/l)</td>
<td>0.13</td>
</tr>
<tr>
<td>Ammonia (N) (mg/l)</td>
<td></td>
</tr>
<tr>
<td>Total Kjeldahl Nitrogen (mg/l)</td>
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</tr>
<tr>
<td>Total Phosphorus (mg/l)</td>
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</tr>
<tr>
<td>Orthophosphate (mg/l)</td>
<td></td>
</tr>
<tr>
<td>Total Organic Carbon (mg/l)</td>
<td></td>
</tr>
<tr>
<td>Biochemical Oxygen Demand-5 Day (mg/l)</td>
<td>&lt;2.0</td>
</tr>
<tr>
<td>Chemical Oxygen Demand (mg/l)</td>
<td></td>
</tr>
<tr>
<td>Total Coliform (COL/100ml)</td>
<td></td>
</tr>
</tbody>
</table>

- Vinyl Chloride (ppb)
- 1,1-Dichloroethylene (ppb)
- 1,1,1-Trichloroethane (ppb)
- Carbon Tetrachloride (ppb)
- Benzene (ppb)
- 1,2-Dichloroethene (ppb)
- Trichloroethylene (ppb)
- p-Dichlorobenzene (ppb)
- 1,2,3-Trichloropropane (ppb)
- trans-1,2-Dichloroethylene (ppb)
- cis-1,2-Dichloroethylene (ppb)
- 1,2-Dichloropropane (ppb)
- Toluene (ppb)
- Ethylbenzene (ppb)
- Monochlorobenzene (ppb)
- o-Dichlorobenzene (ppb)
- Styrene (ppb)
- m-Xylene (ppb)
- p-Xylene (ppb)
- o-Xylene (ppb)
- Tetrachloroethene (ppb)
- Chloromethane (ppb)
- Bromomethane (ppb)
- Chloroethane (ppb)

(a) - Fecal Positive
(b) - Fecal Negative
(c) - Sample Holding Time Exceeded
(d) - Lost in Extraction

TNTC - Too Numerous To Count
NF - None Found

DRAFT
<table>
<thead>
<tr>
<th>ANALYTICAL PARAMETERS</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene Chloride</td>
<td>(ppb)</td>
</tr>
<tr>
<td>1,1-Dichloroethane</td>
<td>(ppb)</td>
</tr>
<tr>
<td>2,2-Dichloropropane</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Chloroform</td>
<td>(ppb)</td>
</tr>
<tr>
<td>1,1-Dichloropropene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Bromodichloromethane</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Dibromomethane</td>
<td>(ppb)</td>
</tr>
<tr>
<td>trans-1,3-Dichloropropene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>cis-1,3-Dichloropropene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>1,1,2-Trichloroethane</td>
<td>(ppb)</td>
</tr>
<tr>
<td>1,3-Dichloropropane</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Dibromochloromethane</td>
<td>(ppb)</td>
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<tr>
<td>1,1,1,2-Tetrachloroethane</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Bromoform</td>
<td>(ppb)</td>
</tr>
<tr>
<td>1,1,2,2-Tetrachloroethane</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Bromobenzene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>2-Chlorotoluene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>4-Chlorotoluene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>1,3-Dichlorobenzene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Bromochloromethane</td>
<td>(ppb)</td>
</tr>
<tr>
<td>1,2,4-Trichlorobenzene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Hexachlorobutadiene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>1,1,3-Trichlorobenzene</td>
<td>(ppb)</td>
</tr>
<tr>
<td>Arsenic</td>
<td>(ppm)</td>
</tr>
<tr>
<td>Selenium</td>
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<td>Mercury</td>
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<td>Cadmium</td>
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<td>(ppm)</td>
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<td>Barium</td>
<td>(ppm)</td>
</tr>
<tr>
<td>Silver</td>
<td>(ppm)</td>
</tr>
<tr>
<td>Nitrate (as N)</td>
<td>(ppm)</td>
</tr>
<tr>
<td>Nitrite (as N)</td>
<td>(ppm)</td>
</tr>
<tr>
<td>Fluoride</td>
<td>(ppm)</td>
</tr>
<tr>
<td>Sodium</td>
<td>(ppm)</td>
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<tr>
<td>Copper</td>
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<td>Nickel</td>
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<td>Antimony</td>
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<td>Beryllium</td>
<td>(ppm)</td>
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<tr>
<td>Thallium</td>
<td>(ppm)</td>
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<tr>
<td>Iron</td>
<td>(ppm)</td>
</tr>
<tr>
<td>Ethylene Dibromide</td>
<td>(ppb)</td>
</tr>
<tr>
<td>1,2-Dibromo-3-Chloropropane</td>
<td>(ppb)</td>
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</table>

(a) - Fecal Positive                                        | TNTC - Too Numerous To Count |
(b) - Fecal Negative                                         | NF - None Found              |
(c) - Sample Holding Time Exceeded                           |                              |
(d) - Lost in Extraction                                     |                              |
<table>
<thead>
<tr>
<th>Date of Sample Collection</th>
<th>02/12/93</th>
<th>02/25/93</th>
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</tr>
<tr>
<td>Aldicarb</td>
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<td>Aldicarb Sulfone</td>
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<td>Aldicarb Sulfoxide</td>
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<td>Oxamyl</td>
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<td>Methomyl</td>
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<tr>
<td>3-OH Carbofuran</td>
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<td>Propoxur</td>
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<td>Carbaryl</td>
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<td>Methiocarb</td>
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<tr>
<td>Dalapon</td>
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<td>2,4D</td>
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<td>Pentachlorophenol</td>
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<td>2,4,5-TP</td>
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<tr>
<td>Dinoeb</td>
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<td>Picloram</td>
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<tr>
<td>Lindane</td>
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<tr>
<td>Alachlor</td>
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<td>Heptachlor</td>
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<tr>
<td>Heptachlor Epox.</td>
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<tr>
<td>Endrin</td>
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<tr>
<td>Methoxychlor</td>
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<tr>
<td>Chlordane</td>
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<tr>
<td>Toxaphene</td>
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<td></td>
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<tr>
<td>Atrazine</td>
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<td>Simazine</td>
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<td>Bromacil</td>
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<td>Hexazinone</td>
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<tr>
<td>Mevinphos</td>
<td>(ppb)</td>
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</tr>
</tbody>
</table>

(a) - Fecal Positive
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TNTC - Too Numerous To Count
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DRAFT
PROJECT TITLE  EWA CAPROCK GROUNDWATER QUALITY SURVEY

WELL DESCRIPTION:
Well Name: Makakilo GC "South"
Well I.D. No. 1904-Disposal Well (East) 07.4
Well Location

Well Owner: Makakilo Golf Course
Contact Person

Type: Unused
Flow

Remarks: PVC cased, annular space not grouted

WELL CONSTRUCTION:
Casing Stick Up (A) ________________ ft.
Ground Elevation (B) ________________ ft.
Diameter of Boring (C) ______________ in.
Total Depth of Boring (D) ____________ ft.
Grouted Interval (E) ________________ ft.
Filter-Pack Interval (F) ______________ ft.
Mard Dpth to Wtr Tbl/ Approx Elev/ Elev Per DLNR Indx (G) ______/_____/______ ft.

<table>
<thead>
<tr>
<th></th>
<th>DIAMETER (IN)</th>
<th>LENGTH (FT)</th>
<th>TOP/BOT.ELEV.(FT)</th>
<th>MATERIAL</th>
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<tbody>
<tr>
<td>Solid Casing (H)</td>
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<tr>
<td>Perforated Casing (I)</td>
<td></td>
<td></td>
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<tr>
<td>Open Hole (J)</td>
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JOURNAL OF SAMPLE COLLECTIONS:
Date                        | February 12, 1993 | February 25, 1993 | July 1, 1993 |
Time                        | 10:45 a.m.        | 11:45 a.m.        | 10:45 a.m.   |
Person                      | JR, NU            | JT, JR, CH, NU    | CH, KW, JR   |
Weather                     | Fair              | Fair              | Fair         |
Remarks                     | Sampled w/teflon  | Purged 30 times w/3 l-liter teflon bailers sampled w/teflon bailer | Purged 30 times w/3 l-liter teflon bailer sampled w/teflon bailer |
### MAKAKILO GC "SOUTH"

<table>
<thead>
<tr>
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<tr>
<td><strong>ANALYTICAL PARAMETERS</strong></td>
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<td></td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>(mg/l)</td>
<td>1428</td>
<td>1300</td>
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<tr>
<td>Total Suspended Solids</td>
<td>(mg/l)</td>
<td>20</td>
<td>24</td>
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<tr>
<td>Chlorides</td>
<td>(mg/l)</td>
<td>750</td>
<td>52</td>
</tr>
<tr>
<td>Specific Conductance</td>
<td>(mmho/cm)</td>
<td>2680</td>
<td>2350</td>
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<tr>
<td>Hardness (mg equiv. Ca CO3)</td>
<td>(mg/l)</td>
<td>462</td>
<td>420</td>
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<tr>
<td>Alkalinity (as Ca CO3)</td>
<td>(mg/l)</td>
<td>230</td>
<td>238</td>
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<tr>
<td>pH</td>
<td>(std. unit)</td>
<td>7.56</td>
<td>6.91</td>
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<tr>
<td>Temperature</td>
<td>(°C/°F)</td>
<td>/77</td>
<td>/79.1</td>
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<tr>
<td>Turbidity</td>
<td>(NTU)</td>
<td>13</td>
<td>10</td>
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<tr>
<td>Dissolved Oxygen</td>
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<td>0.13</td>
<td>0.08</td>
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<td>Total Residual Chlorine</td>
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<td>Ammonia (N)</td>
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<tr>
<td>Total Kjeldahl Nitrogen</td>
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<td>0.11</td>
<td>0.131</td>
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<tr>
<td>Total Phosphorus</td>
<td>(mg/l)</td>
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<tr>
<td>Orthophosphate</td>
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<td>2.1</td>
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<tr>
<td>Total Organic Carbon</td>
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<tr>
<td>Biochemical Oxygen Demand-5 Day</td>
<td>(mg/l)</td>
<td>10.2</td>
<td>22.4</td>
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<tr>
<td>Total Coliform</td>
<td>(COL/100ml)</td>
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<tr>
<td>Vinyl Chloride</td>
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<td>&lt;0.3</td>
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<tr>
<td>1,1-Dichloroethylene</td>
<td>(ppb)</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
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<tr>
<td>1,1,1-Trichloroethane</td>
<td>(ppb)</td>
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<td>&lt;0.3</td>
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<tr>
<td>Carbon Tetrachloride</td>
<td>(ppb)</td>
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<td>&lt;0.2</td>
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<tr>
<td>Benzene</td>
<td>(ppb)</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
</tr>
<tr>
<td>1,2-Dichloroethane</td>
<td>(ppb)</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
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<tr>
<td>Trichloroethylene</td>
<td>(ppb)</td>
<td>&lt;0.2</td>
<td>&lt;0.2</td>
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<tr>
<td>p-Dichlorobenzene</td>
<td>(ppb)</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
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<tr>
<td>1,2,3-Trichloropropene</td>
<td>(ppb)</td>
<td>&lt;0.2</td>
<td>&lt;0.2</td>
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<tr>
<td>trans-1,2-Dichloroethene</td>
<td>(ppb)</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
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<tr>
<td>cis-1,2-Dichloroethene</td>
<td>(ppb)</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
</tr>
<tr>
<td>1,2-Dichloropropane</td>
<td>(ppb)</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
</tr>
<tr>
<td>Toluene</td>
<td>(ppb)</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
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<td>Ethylbenzene</td>
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<td>Monochlorobenzene</td>
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<td>&lt;0.3</td>
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<tr>
<td>o-Dichlorobenzene</td>
<td>(ppb)</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
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<td>Styrene</td>
<td>(ppb)</td>
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<tr>
<td>m-Xylene</td>
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<td>&lt;0.3</td>
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<tr>
<td>p-Xylene</td>
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<td>&lt;0.3</td>
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<tr>
<td>o-Xylene</td>
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<td>Tetrachloroethene</td>
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<tr>
<td>Chloromethane</td>
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<td>&lt;0.3</td>
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<tr>
<td>Bromomethane</td>
<td>(ppb)</td>
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<td>&lt;0.3</td>
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<tr>
<td>Chloroethane</td>
<td>(ppb)</td>
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</tbody>
</table>

(a) - Fecal Positive
(b) - Fecal Negative
(c) - Sample Holding Time Exceeded
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TNTC - Too Numerous To Count
NF - None Found

DRAFT
## Date of Sample Collection

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<thead>
<tr>
<th>ANALYTICAL PARAMETERS</th>
<th>02/12/93</th>
<th>02/25/93</th>
<th>07/01/93</th>
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</thead>
<tbody>
<tr>
<td>Methylene Chloride (ppb)</td>
<td>&lt;0.2</td>
<td>&lt;0.2</td>
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<tr>
<td>1,1-Dichloroethane (ppb)</td>
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<td>&lt;0.3</td>
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<tr>
<td>2,2-Dichloropropane (ppb)</td>
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<td>&lt;0.3</td>
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<tr>
<td>Chloroform (ppb)</td>
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<td>&lt;0.2</td>
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<tr>
<td>1,1-Dichloropropene (ppb)</td>
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<td>&lt;0.3</td>
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<td>Bromodichloromethane (ppb)</td>
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<td>Dibromomethane (ppb)</td>
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<td>&lt;0.3</td>
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<tr>
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<tr>
<td>cis-1,3-Dichloropropene (ppb)</td>
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<td>1,1,2-Trichloroethane (ppb)</td>
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<td>1,3-Dichloropropane (ppb)</td>
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<td>Bromobenzene (ppb)</td>
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<td>2-Chlorotoluene (ppb)</td>
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<td>4-Chlorotoluene (ppb)</td>
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<td>1,3-Dichlorobenzene (ppb)</td>
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<tr>
<td>Bromochloromethane (ppb)</td>
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<tr>
<td>1,2,4-Trichlorobenzene (ppb)</td>
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</tr>
<tr>
<td>Hexachlorobutadiene (ppb)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Naphthalene (ppb)</td>
<td>&lt;0.3</td>
<td></td>
<td></td>
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<tr>
<td>1,1,3-Trichlorobenzene (ppb)</td>
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<td></td>
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<tr>
<td>Arsenic (ppm)</td>
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<tr>
<td>Selenium (ppm)</td>
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<td>&lt;0.05</td>
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<td>Mercury (ppm)</td>
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<td>&lt;0.0005</td>
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<tr>
<td>Cadmium (ppm)</td>
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<td>Lead (ppm)</td>
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<tr>
<td>Chromium (ppm)</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
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<tr>
<td>Barium (ppm)</td>
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<td>0.066</td>
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<tr>
<td>Silver (ppm)</td>
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<td>&lt;0.01</td>
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<tr>
<td>Nitrate (as N) (ppm)</td>
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<td>Nitrite (as N) (ppm)</td>
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<td>Fluoride (ppm)</td>
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<td>Sodium (ppm)</td>
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<td>Copper (ppm)</td>
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<tr>
<td>Nickel (ppm)</td>
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<tr>
<td>Antimony (ppm)</td>
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<td>Beryllium (ppm)</td>
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<tr>
<td>Thallium (ppm)</td>
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<td>Iron (ppm)</td>
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<td>Ethylene Dibromide (ppb)</td>
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<td>1,2-Dibromo-3-Chloropropene (ppb)</td>
<td>&lt;0.02</td>
<td>&lt;0.02</td>
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</tr>
</tbody>
</table>

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<td>Mevinphos</td>
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(a) - Fecal Positive
(b) - Fecal Negative
(c) - Sample Holding Time Exceeded
(d) - Lost in Extraction

TNTC - Too Numerous To Count
NF - None Found
Mr. Robert M. Creps  
Grace Pacific Corporation  
P.O. Box 78  
Honolulu, HI 96810  

Dear Mr. Creps:

This is in reference to your letters dated November 30, 1994.  

Thank you for informing us of the purchase of Makakilo Golf Course by Pu’u Makakilo Inc., and that you are presently evaluating an alternate source of irrigation water. The existing water use permit for Well Nos. 1904-02 & 03 and the pending applications to construct and use water from a new well, Well No. 2104-02, have been amended to reflect this change in ownership. The scheduling of action on the existing permit or permit applications will not be initiated at this time. Please be assured that you will receive sufficient notice should the need for Commission action become imminent.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director

LN:ss
CIVIL/CASE NO.: 94-0582-02

COURT: FIRST CIRCUIT

CASE TITLE: PAN-PACIFIC CONSTRUCTION, INC. v CHIYODA PACIFIC, INC.

RECORD FROM: DEPT OF LAND & NATURAL RESOURCES, COMMISSION ON WATER RESOURCE MANAGEMENT

REGARDING: MAKAKILO GOLF COURSE

PRODUCED IN RESPONSE TO SUBPOENA DUces TECUM IN THE ABOVE-ENTITLED MATTER. RECORDS WILL BE RETURNED AS SOON AS POSSIBLE.

DATED 02-13-95

BY: [Signature]
IN THE CIRCUIT COURT OF THE FIRST CIRCUIT
STATE OF HAWAII

PAN-PACIFIC CONSTRUCTION, INC., ) CIVIL NO. 94-0582-02
 Plaintiff, ) [Other Civil Action]
 ) SUBPOENA DUCES TECUM;
vs. ) EXHIBIT "1"
 ) (Dept. of Land and Natural Resources)
CHIYODA PACIFIC, INC.; MAKAKILO )
Golf Corp.; John Does 1-100; )
Jane Does 1-100; Doe )
Partnerships 1-100; Doe )
Corporations 1-100; Roe "Non- )
Profit" Corporations 1-100; and )
Roe Governmental Entities 1-100, )
Defendants.

SUBPOENA DUCES TECUM

THE STATE OF HAWAII:

TO THE SHERIFF of the State of Hawaii or his Deputy, or
any Police Officer in the State of Hawaii:

YOU ARE COMMANDED to Subpoena the Custodian of Records
of STATE OF HAWAII, DEPARTMENT OF LAND AND NATURAL RESOURCES,
COMMISSION ON WATER RESOURCES MANAGEMENT, whose address is 1131
Punchbowl Street, Room 227, Honolulu, Hawaii, 96813, or its
qualified employee in charge of business records, and to bring
with him/her any and ALL original and/or legible copies of documents which are more fully described in Exhibit "1" attached hereto, pertaining to the Makakilo Golf Course project located at Makakilo, City and County of Honolulu, State of Hawaii, which are under his/her care, custody and control for the purpose of copying; and to appear before a notary public duly authorized to administer oaths at CARNAZZO COURT-REPORTING COMPANY, LTD., Suite 705, 888 Mililani Street, Honolulu, Hawaii, on Monday, the 13th day of February, 1995, at 1:30 o'clock p.m., to testify as witness on the part of Plaintiff PAN-PACIFIC CONSTRUCTION, INC., for the taking of his/her deposition upon written questions in the above-entitled matter.

DATED at Honolulu, Hawaii, _____________.

JAN 23 1995

N. ANAYA

Clerk of the Above-Entitled Court
EXHIBIT "1"

DEFINITIONS

As used in this Subpoena Duces Tecum ("Subpoena") the following words and/or phrases shall have the following meanings (unless otherwise indicated):

A. "Subpoenaed Party" shall mean and include STATE OF HAWAII, DEPARTMENT OF LAND AND NATURAL RESOURCES, COMMISSION ON WATER RESOURCE MANAGEMENT and all of Subpoenaed Party's subsidiaries, predecessors, successors, affiliates, all former and present shareholders, directors, officers, agents, attorneys, experts, consultants, employees, representatives, trustees, or other persons acting or purporting to act on its behalf or on behalf of its predecessors, subsidiaries, and all of its present and former partners, shareholders or any other principals. The term "Requesting Party" or "PPC" shall mean Plaintiff PAN-PACIFIC CONSTRUCTION, INC.

B. Unless otherwise specified, this Subpoena relates to the period commencing January 1, 1989 to the present (hereinafter referred to as "relevant period").

C. The term "Subject lawsuit" shall mean "Pan-Pacific Construction, Inc. vs. Chiyoda Pacific, Inc., et al.", filed in the First Circuit Court, State of Hawaii, being Civil No. 94-0582-02.

D. The term "Project" shall mean the Makakilo Golf Course project located at Makakilo, City and County of Honolulu, State of Hawaii.
E. The term "Developer" shall mean MAKAKILO GOLF CORP.

F. The term "CHIYODA" shall mean CHIYODA PACIFIC, INC.

G. The term "FINANCE REALTY" shall mean FINANCE REALTY CO., LTD.

H. The term "BELT COLLINS" shall mean BELT COLLINS & ASSOCIATES.

I. The term "N&W" shall mean NELSON & WRIGHT.

J. The term "TNWRE" shall mean TOM NANCE WATER RESOURCES ENGINEERING and/or Belt Collins & Associates (Nance) Ltd.

K. The term "GEOLABS" shall mean CW ASSOCIATES, INC. dba GEOLABS-HAWAII.

L. The term "NOGUCHI" shall mean NOGUCHI & ASSOCIATES, INC.

M. The term "YASUDA" shall mean YASUDA FIRE & MARINE INSURANCE COMPANY OF AMERICA.

N. The term "BANK" shall mean HOKKAIDO TAKUSHOKU BANK, LTD.

O. The term "MMMM" shall mean McCORRISTON MIHO MILLER MUKAI and/or McCORRISTON MIHO & MILLER.

P. The term "OSCO" shall mean OAHU SUGAR COMPANY, LTD. and/or AMFAC/JMB HAWAII, INC.

Q. The term "CE" shall mean THE ESTATE OF JAMES CAMPBELL.
R. The term "DLNR" shall mean the State of Hawaii, Department of Land and Natural Resources including the Commission on Water Resource Management.

S. The term "STATE" shall mean STATE OF HAWAII including the Department of Health.

T. The term "CITY" shall mean CITY AND COUNTY OF HONOLULU including the Department of Public Works.

U. The term "WADSWORTH" shall mean WADSWORTH GOLF CONSTRUCTION CO. OF THE SOUTHWEST dba Wadsworth Golf Construction Co.

V. The term "Dust Damage Claimants" shall mean any person, association or other organization asserting claims for damages relating to dust or dirt allegedly generated from the Project.

W. The term "Fort Barrette Well" shall mean the Fort Barrette Well located at Makakilo, Hawaii.

X. The term "Desalting Plant" shall mean the Desalting Plan proposed to be constructed for the Project.

Y. The term "OSCO Temporary Reservoir" shall mean the temporary irrigation reservoir or pond located in OSCO's Field 101.

Z. The term "Golf Course Contract" shall mean that certain Abbreviated Form of Agreement Between Owner and Contractor dated March 31, 1991 between MGC and PPC relating to the construction of the Project.
AA. The term "Makakilo Hale I Lawsuit" shall mean Makakilo Hale I, et al. vs. Pan-Pacific Construction, Inc., et al., filed in the First Circuit Court, State of Hawaii, being Civil No. 92-0655-02.
DOCUMENTS SUBPOENAEED

Any and all documents or other things relating to or concerning the following for the relevant period:

1. **Communications.** Any and all communications, notes or summary of conferences, meetings, discussions, interviews or telephone conversations or messages relating to or concerning the Project, Golf Course Contract, Fort Barrette Well, Desalting Plant, OSCO Temporary Reservoir, Dust Damage Claimants, dust or dirt allegedly escaping from the Project, the Makakilo Hale I Lawsuit, the Subject lawsuit and/or the issues arising therefrom and involving:

   a. Subpoenaed Party and/or its representatives;
   b. Requesting Party and/or its representatives;
   c. Developer and/or its representatives;
   d. CHIYODA and/or its representatives;
   e. BELT COLLINS and/or its representatives;
   f. N&W and/or its representatives;
   g. TNWRE and/or its representatives;
   h. GEOLABS and/or its representatives;
   i. NOGUCHI and/or its representatives;
   j. YASUDA and/or its representatives;
   k. BANK and/or its representatives;
   l. MMMM and/or its representatives;
   m. OSCO and/or its representatives;
   n. CE and/or its representatives;
   o. FINANCE and/or its representatives;
p. STATE and/or its representatives;
q. CITY and/or its representatives;
r. WADSWORTH and/or its representatives;
s. Dust Damage Claimants and/or their representatives; and
t. Any other person or persons.

2. Golf Course Contract. All documents relating to or concerning the Golf Course Contract including all drafts, amendments and changes thereto.

3. Fort Barrette Well. All documents relating to or concerning the Fort Barrette Well.

4. Desalting Plant. All documents relating to or concerning the Desalting Plant.

5. OSCO Temporary Reservoir. All documents relating to or concerning the OSCO Temporary Reservoir.

6. Water Sources. Any and all documents relating to or concerning the sources of water (both on-site and off-site) contemplated, projected, secured or obtained for temporary and permanent use at the Project.


8. Complaints. Any and all investigations, complaints or incident reports relating to or concerning the Project including dust allegedly escaping from the Project.
9. **Photographs.** Any and all photographs, still or motion pictures, and video tapes of the Project and/or dust allegedly escaping from the Project.
RETURN OF SERVICE

Received this subpoena at _____ on _____________,
and on ______________, at _____ I served it on the within
named __________________ by delivering a copy to ____
and tendering to ____ the fee for one day's attendance and the
mileage allowed by law.

DATED: ____________________    ____________________
Please sign and return this receipt to: (Cheryl)
CARNAZZO COURT REPORTING COMPANY, LTD.
888 Mililani Street, Suite 705
Honolulu, Hawaii 96813
Telephone: (808) 532-0222
Fax: (808) 532-0234

CIVIL NO. 94-0582-02
COURT: FIRST CIRCUIT
CASE TITLE: PAN-PACIFIC CONSTRUCTION, INC. v CHIYODA PACIFIC, INC.
RECORD FROM: STATE OF HAWAII, DEPARTMENT OF LAND AND NATURAL
RESOURCES, COMMISSION ON WATER RESOURCE MANAGEMENT
REGARDING: THE MAKAKILO GOLF COURSE PROJECT

PRODUCED IN RESPONSE TO SUBPOENA DUCES TECUM IN THE ABOVE-ENTITLED
MATTER. RETURN OF RECORDS HEREBY ACKNOWLEDGED.
DATED 2/21/95 BY: Edwin Fukoda
Mr. Robert M. Creps  
Grace Pacific Corporation  
P.O. Box 78  
Honolulu, HI 96810

Dear Mr. Creps:

Transfer of Water Use Permit  
Makakilo Golf Course Wells (Well Nos. 1904-02 & 03)  
Ewa Caprock Groundwater Management Area, Oahu

This is to inform you that a transfer of the water use permit for the Makakilo Golf Course Wells (Well Nos. 1904-02 & 03) from Finance Realty to Pu’u Makakilo has been made pursuant to HRS 174C-59.

Please be advised that any change in the conditions of the use described in the permit invalidates the transfer and constitutes a ground for revocation of the permit.

Enclosed please find our official water use report form. Please use this form to report your monthly total water usage. Monthly water use reporting is a condition of the water use permit and is required under Administrative Rule 13-168-7.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

RAE M. LOUI  
Deputy Director

LN:ss  
Enclosure
November 30, 1994

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

Re: Makakilo Golf Course Wells (#190402 and #190403)

Dear Ms. Loui:

This letter is to inform you that on November 23, 1994 Pu‘u Makakilo Inc., a wholly owned subsidiary of Grace Pacific, purchased the Makakilo Golf Course. Pu‘u Makakilo Inc. is presently evaluating its alternatives to secure a permanent source of irrigation water for the golf course and would like to keep alive the existing permits for well #190402, and #03 which are presently permitted for 1.15 million gallons per day (#190402, #03 is stand-by only). Pu‘u Makakilo Inc. has retained Pacific Land Services as its project manager for this property. Therefore, if you require any additional information regarding this issue please contact Mr. Ned Dewey at Pacific Land Services at 528-3699.

Sincerely,

Grace Pacific Corporation

Robert M. Creps  
Vice President  
Finance & Administration

RMC/sp
Record No 443
WUPNO T
SURFACE
AP_NAME FINANCE REALTY
AP_CONTACT FRED KWOCK
AP_BUILDING
AP_ADDRESS P.O. BOX 3979
AP_CITY HONOLULU
AP_ZIP 96812
AP_AREAACOD 808
AP_PHONE 548-5166
AP_SIGNAT Y
LO_NAME CAMPBELL ESTATE
LO_CONTACT SAMUEL KEALA
LO_BUILDING
LO_ADDRESS 828 FORT ST. MALL STE 500
LO_CITY HONOLULU
LO_ZIP 96813
LO_AREAACOD 808
LO_PHONE 544-3289
LO_SIGNAT Y
WMA KAPOLEI
ISLAND OAHU
WELL_NAME MAKAKILO GC
WELL_NO 1904-02
EXISTING Y
NEW
SOURCE ADD BARBERS POINT ACCESS RD.
S_TMK_ZONE 9
S_TMK_SECT 1
S_TMK_PLAT 16
S_TMK_PARC 1
STREAM
BASAL
DIKE
PERCHED
CAPROCK Y
ARTESIAN
WELLNPUMP Y
December 13, 1993

State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96809

Attention: Ms. Rae M. Loui
Deputy Director

RE: Water Use Permit Issued to Makakilo Golf Corporation,
Wells 1904-02, and 1904-03

Dear Ms. Loui:

Thank you for taking time to meet with me so that I could introduce myself to you and your staff. As I mentioned, I am the independent Court Appointed Receiver in Civil #93-2395-06, a foreclosure proceeding presently pending in the First Circuit Court in the State of Hawaii involving the foreclosure of mortgages and liens covering the Makakilo Golf Course Project (Project). I have enclosed a copy of the order appointing me as Receiver for your information as Exhibit I. As I mentioned to you and your staff briefly, my job as Receiver includes taking appropriate action to preserve such "entitlements" relating to the Project so that it may be sold or disposed of through appropriate foreclosure proceedings intact as a golf course. Of course, the existing water use permit is a vital entitlement which will be transferred to the ultimate purchaser upon closing of any foreclosure sale.

As we discussed, although a substantial amount of work has been put into the Project costing many millions of dollars, due to a lack of funds Makakilo Golf Corporation was unable to finish off the construction of the Project. It would appear that there is a substantial public and community interest in moving the Project through foreclosure proceeding as quickly as possible into the hands of a responsible entity so that the Project can be completed before it deteriorates to a point where it becomes a huge dust bowl and public eyesore.

It is my understanding that even though the existing water use permits for the above wells have no expiration date, Section 13-171-24(4)HAR allows the Commission to revoke water use permits based on non use of water allowed by the permit for a period of four continuous years or more. Based on this provision, you have advised that the above permit could be revoked as soon as March 15, 1994.
Based on the above rule, please consider this my formal application to the Commission that the running of the continuous four year period be tolled by agreement with the Commission as of December 15, 1992, the approximate date when construction of the Project was suspended. The four year revocation period can recommence upon the closing of any foreclosure sale of the Project to a new purchaser.

Such a tolling of the four year revocation period would allow the foreclosure proceeding to be concluded and still allow the new purchaser a reasonable time to finish construction of the Project and commence appropriate water use.

I would be pleased to meet with you and your staff to review and discuss this matter in more detail if necessary. I will also be happy to provide such additional information that you may deem relevant in consideration of my request.

I look forward to hearing from you as soon as possible. Thank you kindly for your consideration of my request.

Yours truly,

John P. Moon
Court Appointed Receiver
Civil #93-2395-06

JPM:jw
Enclosure

cc: Judge Patrick Yim
    Michael Biehl, Esquire
    Michael Yoshida
    Mr. Herbert Ikazaki
    Mr. Hiroshi Usami
    Glenn Sato, Esquire
    Mr. Robert Miyasato
CASE & LYNCH

MICHAEL L. BIEHL 1131-0
ROBERT F. SCHNEIDER 1943-0
DAVID C. FARMER 3946-0
STEPHEN M. TEVES 5374-0

Suites 2500 and 2600
Grosvenor Center, Mauka Tower
737 Bishop Street
Honolulu, Hawaii 96813
Telephone No. 547-5400

Attorneys for Plaintiff

IN THE CIRCUIT COURT OF THE FIRST CIRCUIT
STATE OF HAWAII

THE HOKKAIDO TAKUSHOKU BANK, )  CIVIL NO. 93-2395-06-
LTD., LOS ANGELES AGENCY, ) (FORECLOSURE)

Plaintiff, ) ORDER GRANTING PLAINTIFF'S

vs. ) MOTION TO APPOINT RECEIVER;

CHIYODA PACIFIC, INC., a ) EXHIBIT "A"
Hawaii corporation; CHIYODA )
CORPORATION; KABUSHIKI )
GAISHA (KABUSHIKI KAISHA) )
PISA, aka KABUSHIKI GAISHA )
PISA; KABUSHIKI GAISHA )
(KABUSHIKI KAISHA) SEIYO )
KANKYO KAIHATSU; McCORRISTON )
MIHO & MILLER; BELT COLLINS & )
ASSOCIATES, LTD., aka BELT )
COLLINS & ASSOCIATES (NANCE), )
LTD., dba TOM NANCE WATER )
RESOURCES ENGINEERING; )
PAN-PACIFIC CONSTRUCTION, )
INC.; CITY BANK; WADSWORTH )
GOLF CONSTRUCTION COMPANY OF )
THE SOUTHWEST, dba WADSWORTH )
GOLF CONSTRUCTION COMPANY; )
KOP HAWAII, INC.; GTE )
HAWAIIAN TELEPHONE COMPANY )
INCORPORATED; FINANCE REALTY )
COMPANY, LIMITED, nka FINANCE )
REALTY, LTD.; HAWAIIAN )
ELECTRIC COMPANY; F. E. )
TROTTER, INC.; W. H. McVAY, )
INC., P. R. CASSIDAY, INC., )
H. C. CORNUELLE, INC., and/or )
their successors as TRUSTEES )
UNDER THE WILL AND OF THE )

Date: August 12, 1993
Time: 8:30 a.m.
Judge: Patrick K.S.L. Yim
ORDER GRANTING PLAINTIFF'S MOTION TO APPOINT RECEIVER

Plaintiff THE HOKKAIDO TAKUSHOKU BANK, LTD., LOS ANGELES AGENCY's Motion to Appoint Receiver came on for hearing before the Honorable Patrick K.S.L. Yim on Thursday, August 12, 1993, at 8:30 a.m. Michael L. Biehl, Esq. appeared on behalf of Plaintiff; Michael A. Yoshida, Esq. and Denis C. H. Leong, Esq. appeared on behalf of Defendants KABUSHIKI GAISHA (KABUSHIKI KAISHA) PISA, aka KABUSHIKI GAISHA PISA and KABUSHIKI GAISHA (KABUSHIKI KAISHA) SEIYO KANKYO KAIHATSU; Gilbert D. Butson, Esq. appeared on behalf of Defendants GRACE PACIFIC CORPORATION and LONE STAR HAWAII, nka HAWAIIAN CEMENT; Gregg H. Young, Esq. appeared on behalf of Defendant TAKANO NAKAMURA LANDSCAPING, INC., a Hawaii corporation; Ross N.
Taosaka, Esq. appeared on behalf of PAN-PACIFIC CONSTRUCTION, INC.; Keith Y. Yamada, Esq. appeared on behalf of Defendants FINANCE REALTY COMPANY, LIMITED, nka FINANCE REALTY, LTD. and F. E. TROTTER, INC., W. H. McVAY, INC., P. R. CASSIDAY, INC., H. C. CORNUELLE, INC., and/or their successors as TRUSTEES UNDER THE WILL AND OF THE ESTATE OF JAMES CAMPBELL, DECEASED; and Wilfred K. Iwai, Esq. appeared on behalf of Defendant HYGRADE ELECTRIC CO., LTD., a Hawaii corporation. The Court having considered Plaintiff's motion, the representations of counsel, the records and files in this case, and good cause appearing therefor,

IT IS HEREBY ORDERED that Plaintiff's Motion to Appoint Receiver, be and the same is hereby granted as follows:

1. That ___________________________________________________________________________________ , whose address and telephone number are ____________________________________________________________________________________________, is hereby appointed as Receiver by this Court and is authorized serve as such without bond during the pendency of this action or until further order of the Court. In addition to all the usual powers, rights and duties of a receiver appointed by the Court, the following specific rights and powers are granted:

   (a) to take full possession, control and custody of the Makakilo Golf Course property as described in Exhibit "A" attached hereto ("Property") including all improvements thereon, to the exclusion of Defendants CHIYODA PACIFIC, INC.
and MAKAKILO GOLF CORP., to change the locks to the Property, if necessary or appropriate, and to manage the Property;

(b) to hire contractors to occupy, maintain, insure and provide security for the Property and the improvement thereon;

(c) to bring and prosecute all necessary and appropriate actions for the preservation and protection of the Property; and

(d) to take whatever steps are necessary to protect any of the Property from damage by vandalism, the elements or other hazards.

DATED: Honolulu, Hawaii, ________________.

JUDGE OF THE ABOVE-ENTITLED COURT

APPROVED AS TO FORM:

MICHAEL A. YOSHIDA
DENIS C. H. LEONG
Attorneys for Defendants
KABUSHIKI GAISHA (KABUSHIKI KAISHA)
PISA, aka KABUSHIKI GAISHA PISA and KABUSHIKI KAISHA (KABUSHIKI KAISHA)
SEIYO KANKYO KAIHATSU

GILBERT D. BUTSON
Attorney for Defendant
GRACE PACIFIC CORPORATION
GREGG H. YOUNG
Attorney for Defendant
TAKANO NAKAMURA LANDSCAPING, INC.,
a Hawaii corporation

ROSS N. TAOSAKA
Attorney for Defendant
PAN-PACIFIC CONSTRUCTION, INC.

KEITH Y. YAMADA
Attorney for Defendants
FINANCE REALTY COMPANY, LIMITED,
nka FINANCE REALTY, LTD. and
F. E. TROTTER, INC., W. H. McVAY,
INC., P. R. CASSIDAY, INC., H. C.
CORNUELLE, INC., and/or their
successors as TRUSTEES UNDER THE
WILL AND OF THE ESTATE OF JAMES
CAMPBELL, DECEASED

WILFRED K. IWAI
Attorney for Defendant
HYGRADE ELECTRIC CO., LTD.

The Hokkaido Takushoku Bank, Ltd., Los Angeles Agency v.
Chiyoda Pacific, Inc., et al., Civil No. 93-2395-06, First
Circuit Court, State of Hawaii "ORDER GRANTING PLAINTIFF'S
MOTION TO APPOINT RECEIVER"
SCHEDULE C

All of that certain parcel of land situate at Honouliuli, District of Ewa, City and County of Honolulu, State of Hawaii, described as follows:

LOT 5544, area 311.827 acres, more or less, as shown on Map 508, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application No. 1069 of the Trustees under the Will and of the Estate of James Campbell, deceased;

Being the land(s) described in Transfer Certificate of Title No. 359,466 issued to CHIYODA PACIFIC, INC., a Hawaii corporation.

Together with a non-exclusive easement to construct, maintain, operate and repair the following:

(a) a roadway over a portion of Lot 5552 to be used solely for ingress and egress to and from Lots 5551 and 5544; and

(b) facilities for the transmission of electricity and other utility services with the exception of nonpotable water to and from Lot 5544;

as granted by Grant of Nonexclusive Easement (Access/Utility) dated October 25, 1990, filed as Land Court Document No. 1776288.

BEING THE PREMISES DESCRIBED IN DEED

GRANTOR : FINANCE REALTY COMPANY, LIMITED, a Hawaii corporation

GRANTEE : CHIYODA PACIFIC, INC., a Hawaii corporation

DATED : October 25, 1990

FILED : Land Court Document No. 1776291

EXHIBIT A

319030 DMC TITLE GUARANTY OF HAWAII Page 11
SCHEDULE C CONTINUED

-NOTE:-

1. Lot 5544 shall have access to Lot 5552, a roadway lot, thence over Lots 5551, 4046-A, 4044-A and 4045-A, all being roadway lots to Makakilo Drive, a public street, as set forth by Land Court Order No. 97415, filed April 2, 1990.
**REGULATION BRANCH**  
Commission on Water Resource Management

**FROM:**  

**DATE:** 12/10  

**FILE IN:** 1904-02,03

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<th>CALL</th>
<th>REVIEW &amp; COMMENT</th>
<th>TAKE ACTION</th>
<th>INVESTIGATE &amp; REPORT</th>
<th>DRAFT REPLY</th>
<th>ACKNOWLEDGE RECEIPT</th>
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**FOR YOUR:**  

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<th>SIGNATURE</th>
<th>INFORMATION</th>
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<tr>
<td>R. LOUI</td>
<td>S. Kokubun</td>
<td>G. MATSUMOTO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y. SHIROMA</td>
</tr>
</tbody>
</table>

*Draft Letter only.*
JOHN P. MOON  
900 FORT STREET MALL, SUITE 1300  
HONOLULU, HAWAII 96813  
Phone: (808) 536-3112  
Facsimile: (808) 531-2353

TRANSMITTAL FORM

DATE: December 2, 1993
ATTENTION: W. Roy Hardy, P.E.
OFFICE: State of HI - DLNR, Water Allocation Section
FAX NO: 587-0219
FROM: John P. Moon

TELEFAX NO: (808) 531-2353

TOTAL NO. OF PAGES (Including Transmittal Form) 5

RE: Water Use Permit - Makakilo Golf Corporation, Wells 1904-02 & 1904-03

COMMENTS:
Roy:

As we discussed could you kindly review the two rough drafts of:
(a) proposed letter to Ms. Rae Loui and
(b) technical accuracy of water engineering summary.

Thank you.

IF YOU ARE MISSING ANY PAGES, PLEASE CONTACT: Joy
December 2, 1993

State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96809

Attention: Ms. Rae M. Loui
Deputy Director

RE: Water Use Permit Issued to Makakilo Golf Corporation,
Wells 1904-02, and 1904-03

Dear Ms. Loui:

Thank you for taking time to meet with me so that I could introduce myself to you and your staff. As I mentioned, I am the independent Court Appointed Receiver in Civil #93-2395-06, a foreclosure proceeding presently pending in the First Circuit Court in the State of Hawaii involving the foreclosure of mortgages and liens covering the Makakilo Golf Course Project (Project). I have enclosed a copy of the order appointing me as Receiver for your information as Exhibit I. As I mentioned to you and your staff briefly, my job as Receiver includes taking appropriate action to preserve such "entitlements" relating to the Project so that it may be sold or disposed of through appropriate foreclosure proceedings intact as a golf course. Of course, the existing water use permit is a vital entitlement which will be transferred to the ultimate purchaser upon closing of any foreclosure sale.

As we discussed, although a substantial amount of work has been put into the Project costing many millions of dollars, due to a lack of funds Makakilo Golf Corporation was unable to finish off the construction of the Project. It would appear that there is a substantial public and community interest in moving the Project through foreclosure proceeding as quickly as possible into the hands of a responsible entity so that the Project can be completed before it deteriorates to a point where it becomes a huge dust bowl and public eyesore.

It is my understanding that even though the existing water use permits for the above wells have no expiration date, Section 13-171-24(4)HAR allows the Commission to revoke water use permits based on non use of water allowed by the permit for a period of four continuous years or more. Based on this provision, you have advised that the above permit could be revoked as soon as March 15, 1994.
Ms. Rae M. Loui  
Department of Land and Natural Resources  
Commission on Water Resource Management  

December 1, 1993

Based on the above rule, please consider this my formal application to the Commission that the running of the continuous four year period be tolled by agreement with the Commission as of December 15, 1992, the approximate date when construction of the Project was suspended. The four year revocation period can recommence upon the closing of any foreclosure sale of the Project to a new purchaser.

Such a tolling of the four year revocation period would allow the foreclosure proceeding to be concluded and still allow the new purchaser a reasonable time to finish construction of the Project and commence appropriate water use.

I would be pleased to meet with you and your staff to review and discuss this matter in more detail if necessary. I will also be happy to provide such additional information that you may deem relevant in consideration of my request.

I look forward to hearing from you as soon as possible. Thank you kindly for your consideration of my request.

Yours truly,

John P. Moon  
Court Appointed Receiver  
Civil #93-2395-06

cc: Judge Patrick Yim  
Michael Biehl, Esquire  
Michael Yoshida  
Mr. Herbert Ikazaki  
Mr. Hiroshi Usami  
Glenn Sato, Esquire  
Mr. Robert Miyasato

DRAFT FOR DISCUSSION PURPOSES ONLY

John P. Moon  
Court Appointed Receiver  
Civil #93-2395-06

JPM:jw
Enclosure
We realize that other prospective water uses on the Ewa Plain will materialize. For example, not all of Campbell Estate's eventual requirements are reflected in its current water use allocations. To complete Kapolei Village and develop the adjacent 1100-acre parcel, the State HPDC will require another two to four MGD. However, OSCO use allocations for wells on Campbell Estate lands and tapping the Waipahu-Waiawa Aquifer System total 30.271 MGD (tailored below). This use amount, which will become available with the mid-1995 closing of OSCO, may more than offset these long-term future requirements.

**OSCO Waipahu-Waiawa Aquifer System Wells on Campbell Estate Land**

<table>
<thead>
<tr>
<th>Well No.</th>
<th>Well/Pump Name</th>
<th>Use Allocation MGD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2132-02, -04 to -22</td>
<td>EP 3 &amp; 4</td>
<td>3.354</td>
</tr>
<tr>
<td>2132-05</td>
<td>EP 5 &amp; 6</td>
<td>8.000</td>
</tr>
<tr>
<td>2132-15 to -20</td>
<td>EP 7 &amp; 8</td>
<td>6.813</td>
</tr>
<tr>
<td>2202-21</td>
<td>EP 15 &amp; 16</td>
<td>12.154</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>30.271</strong></td>
</tr>
</tbody>
</table>

*TMK*
The request for a 0.7 MGD water use allocation would be a draft from the Ewa-Kunia (Basalt) Aquifer System. The sustainable yield of this aquifer has been set by the Commission at 20 MGD. At the present time (based on information provided by your staff), 18.391 MGD has been allocated to the users listed below (exclusive of the 0.36 MGD temporary allocation from the Fort Barretta well for the Makaha Golf Course); 1.619 MGD of the aquifer system's yield has not been allocated.

<table>
<thead>
<tr>
<th>Well No.</th>
<th>Applicant</th>
<th>MGD</th>
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<tbody>
<tr>
<td>1905-04</td>
<td>State DOWALD and Honolulu BWS</td>
<td>1.000</td>
</tr>
<tr>
<td>2004-04</td>
<td>Honolulu BWS</td>
<td>1.500</td>
</tr>
<tr>
<td>2006-01 to -11</td>
<td>Oahu Sugar Company</td>
<td>6.010</td>
</tr>
<tr>
<td>2006-13</td>
<td>West Beach Estates</td>
<td>0.700</td>
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<td>2005-14 &amp; -15</td>
<td>Honolulu BWS</td>
<td>1.000</td>
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<tr>
<td>2103-03</td>
<td>U.S. Navy</td>
<td>2.337</td>
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<td>2104-01</td>
<td>Grace Pacific</td>
<td>0.124</td>
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<tr>
<td>2301-01 to -0B</td>
<td>Ewa Plain Water Development Corp.</td>
<td>6.720</td>
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<tr>
<td></td>
<td>Total</td>
<td>18.391</td>
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We are aware that the Ewa Plain Water Development Corporation (EPWDC) would like to develop three more wells in this aquifer for an additional 3.360 MGD. (Also, Campbell Estates has a pending water use permit application for 1.040 MGD). However, these prospective additional uses will be more than offset by planned reductions of existing uses. When Oahu Sugar Company ceases operation in June 1985, its 5.010 MGD allocation for EP 10 (Well Nos. 2006-01 to -11) will become available. When the Navy ceases its Barber Point Naval Air Station, the 2.337 MGD allocated to the Barber Point Shaft (Well No. 2106-08) will also become available. The net effect of these requested additional uses and announced closings will be a 2.947 MGD reduction in the aquifer's total allocation (refer to the tally below). The unallocated portion of the aquifer's sustainable yield would then be 4.556 MGD.

<table>
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<tr>
<td>EPWDC</td>
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<td>(Campbell Estate)</td>
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<tr>
<td>Oahu Closings</td>
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<tr>
<td>Naval Air Station Closings</td>
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<td>Net Total</td>
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TOTAL P.05
MEMO

Finance Realty

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<td>1904-03</td>
<td>0.360</td>
<td>2/9/92</td>
<td>3/14/94</td>
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</tbody>
</table>

Situation is moot.

John Moon

Hakaido Takeda book going well.

Bob Myatt

1) Response to extension on Fort Doreet

2) Well description WUP

- Pacific not very close to well. Weather very dry.
- Pacific is one of the closest.
- Installing 12" line under Fore H-1, at same time as
- Campbell Estate put in 2 fresh water lines.

Current water supply was set up under Chopaka and
Bob not going to that info.
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<td>E. Sakoda</td>
<td>Call</td>
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<td>Y. Shiroma</td>
<td>Review &amp; Comment</td>
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<td>E. Hirano</td>
<td>Take Action</td>
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<td>D. Higa</td>
<td>Investigate &amp; Report</td>
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<td>G. Bauer</td>
<td>Draft Reply</td>
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<td>R. Rozeboom</td>
<td>Acknowledge Receipt</td>
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</table>

**REMARKS:**

No. 1904-02

We should contact them soon as prompt set to expire 2/15/94.
Ms. Rae M. 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: Ewa Caprock Water Management Area

My apologies in the delay in responding to your letter of June 10, 1993 in regard to the warning of potential ground water shortages in the Ewa Caprock Water Management Area. As you are aware, the water use permit issued to Finance Realty Company was for the Makakilo Golf Course. Construction of the golf course came to a halt late last year when Chiyoda Pacific/Makakilo Golf Corp was unable to continue funding Pan Pacific Construction for their work.

As we discussed at our meeting of March 24, 1993, Chiyoda Corporation (the parent of Chiyoda Pacific) has been undergoing recomposition proceedings in Japan under the provisions of the "Wagi Act." Due to this unfortunate circumstance, Chiyoda Pacific ceased its Hawaii operations leaving Pan Pacific Construction in the position of having to maintain the partially completed course in order to preserve the value of the work done to date.

On June 15, 1993, the Hokkaido Takushoku Bank, Ltd. (holder of the First and Second Mortgages on the golf course property) initiated foreclosure proceedings against Chiyoda Pacific. While it is regrettable that the situation has progressed to this point, I believe that the foreclosure action is a positive step in resolving this matter. With the property proceeding to a foreclosure auction, an entity must step to the plate to acquire and complete the golf course.

In the interim, Finance Realty Company will continue to work with Pan Pacific Construction to preserve the value of the asset and to insure all necessary steps are taken to preserve the water commitments for the golf course property. In this regard, we would be most interested in participating in the Ewa Caprock Regional Plan. Please direct any correspondence relating to this matter to me at the address noted on the letterhead.
Ms. Rae Loui  
Ewa Caprock Management Area  
July 22, 1993  
Page 2

As indicated in your letter of May 17, 1993 to Mr. Hiroshi of Pan Pacific Construction, there is a provision in Section 13-171-24(4) of the Hawaii Administrative Rules for the applicant to enter into a written agreement with the Commission covering a period of non-use, wherein such non-use may not apply towards the 4-year revocation period. Given the circumstances surrounding the non-use or the Water Use Permit for Well No. 1904-02, we would like to meet with your staff in regard to working towards such an agreement. If it is appropriate, I will contact Mr. Roy Hardy directly in regard to the provisions of Section 13-171-24(4) HAR.

In regard to a related matter, I briefly discussed the request for a the submission of a water shortage plan with Mr. Hardy. At the present time, it is difficult to identify the alternative courses of action that the future owner of the golf course could take in response to a water shortage situation. One potential alternative might be the acquisition of a water source(s) from Oahu Sugar Company as sugar is withdrawn from production. However, formal discussions have not been initiated with Oahu Sugar Company as it would be premature with the ownership question unresolved. Based on the foregoing, it appears that the readily implementable alternative would be to reduce the withdrawal of ground water for irrigation purposes - recognizing that there would be some detrimental impact on the golf course.

I apologize for not being able to be more definitive at the present time. However, it does appear that the situation is moving towards resolution. In the event you or your staff have questions regarding the water use permit for the Makakilo Golf Course, please contact me at 548-5120.

Very truly yours,

FINANCE REALTY COMPANY

Robert Miyasato  
Executive Vice President

cc: Hiroshi Usami
Mr. Fred Kwock  
Finance Realty  
P.O. Box 3979  
Honolulu, HI 96812

Dear Mr. Kwock:

Warning of Potential Water Shortages  
Ewa Caprock Water Management Area

The Commission has recently approved additional temporary water use permits in the Ewa Caprock Water Management Area. As a part of these approvals, the Commission has directed staff to issue a formal warning of potential future ground water shortages in this water management area to all other existing water use permittees.

The reason for concern is that as urbanization continues to replace existing sugarcane, there is potential for the caprock water to increase beyond usable brackish limits unless the irrigation recharge supplied to the caprock by Oahu Sugar Company (OSCo.) is replaced by some other means. It is possible that by 1995, recharge from sugarcane irrigation may completely cease.

Staff is presently working on the Ewa Caprock Regional Plan which is, in part, an effort to bring about alternative sources to supply non-potable demands in the Ewa region. This effort is to supplement and provide a back-up non-potable source to the caprock aquifer. If you are interested in participating in this regional plan, please contact us.

Staff is also requesting all permittees, who have not done so already, to submit a water shortage plan. Your water shortage plan simply identifies what you are willing to do should the Commission declare a water shortage situation in the Ewa Caprock Ground Water Management Area and can be as short as a one page letter. In a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. The Commission is required by law to formulate a plan to implement such area-wide reductions, which should accommodate, include, and be consistent with your plans. Therefore, your help, by submitting your water shortage plan, is greatly needed in formulating the Commission's overall Water Shortage Plan.

If you have any questions, please contact Roy Hardy at 587-0274.

Sincerely,

RAE M. LOUI  
Deputy Director

RH:ko
Mr. Hiroshi Usami
Pan-Pacific Construction, Inc.
PCC-Tokyo Joint Venture
1132 Bishop St. Ste 2300
Honolulu, HI 93813

Dear Mr. Usami:

Existing Water Use Permit for Well No. 1904-02.

Thank you for your letter updating us on the current status of your Makakilo Project.

We have a few clarifications to make in response to your letter. First, your water use permit approved by the Commission on March 15, 1990 was for Well No. 1904-02 only. However, we have administratively updated the permit to include Well No. 1904-03 as a backup well. Approval conditions also included the need for desalting treatment of the brackish water before application on the golf course. Your letter makes no reference to the status of your desalting treatment plant. Finally, although your permit has no expiration date, under §13-171-24(4) HAR, the Commission has the authority to revoke permits for amounts which are not used over a continuous 4-year period. Therefore, your permit could be revoked as soon as March 15, 1994.

§13-171-24(4) HAR provides the applicant the opportunity to enter into a written agreement with the Commission, for reasons satisfactory to the Commission, for any period of non-use which may not apply towards the 4-year revocation period. As you know, the Ewa Caprock Aquifer brackish water availability is tenuous at this time. We strongly suggest that you work towards such an agreement if you feel that the non-use of your permit over the last three (3) years and the coming possible final year of your permit should not count towards the limitations specified in §13-171-24(4).

If you have any questions, please contact Roy Hardy at 587-0274.

Sincerely,

RAE M. LOUI
Deputy Director

RH:ko
LETTER OF TRANSMITTAL

TO: DEPARTMENT OF LAND AND
NATURAL RESOURCES
COMMISSION ON WATER
RESOURCE MANAGEMENT

DATE: APRIL 16, 1993

JOB NO.

RE:

Gentlemen:

We are sending you attached via Regular Mail Hand Delivery Will Call

The following items:

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<th>COPIES</th>
<th>DATE</th>
<th>DESCRIPTION</th>
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<td>04/16/93</td>
<td>LETTER ADDRESSED TO RAE M. LOUI</td>
</tr>
</tbody>
</table>

THESE ARE TRANSMITTED AS CHECKED BELOW:

- For approval
- Approved as submitted
- Resubmit ___ copies for approval
- For your use/files
- Approved as noted
- Submit ___ copies for distribution
- As requested
- Returned for corrections
- Submit ___ copies for distribution
- For review/comments
- Reviewed by consultant

REMARKS:

The attached letter is being delivered to replace the letter dated April 15, 1993, with corrections on Rae M. Loui’s name and well numbers.

cc:

SIGNED: Hiroshi Usami

PAN-PACIFIC CONSTRUCTION, INC.
PPC-TOKYU JOINT VENTURE
1132 Bishop Street, Suite 2300, Honolulu, Hawaii 96813 Telephone: (808) 537-2922 Facsimile: (808) 521-6308
April 16, 1993

Department of Land and Natural Resources
Commission on Water Resource Management
P O Box 621
Honolulu, Hawaii 96809

ATTENTION: RAE M. LOUI

Re: Existing Permit with Respect to Well No. 1904-02 and No. 1904-03

Gentlemen:

This letter is intended to update you regarding the Makakilo Golf Course project which is presently in a state of limbo.

The primary reason for the stoppage in the development of the golf course is due to the lack of funds to pay for ongoing developments. The development of the project progressed to the point where the clubhouse is 90% finished while golf course is approximately 85% finished. Because of the great amount of labor, materials and effort infused into the project, we can affirmatively state that the project will in no way be abandoned, but that in some manner, the project will be seen to completion.

Mechanic’s liens applications have indeed been filed so that the creditors can secure their positions, finance wise. The liens may be going forward in prosecution; non-paid mortgages may commence foreclosure proceedings. However, notwithstanding actions taken by any of the creditors, it is our very firm opinion that the golf course will be seen to completion.

When and if the golf course is seen to completion, one of the essential ingredients is water. A review of the water resources for the area indicates that the water to be obtained from the above referenced well is vital to the upkeep of the golf course when completed.
In view of the foregoing, the water from the referenced well is being counted upon and your cooperation in maintaining the currently issued water permit which is not to expire until March 15, 1996, will be appreciated.

Very truly yours,

PAN-PACIFIC CONSTRUCTION, INC.

By

Hiroshi Usami,
Vice President
HAND DELIVERED

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

ATTENTION: RAE M. LOUI
FIELD MEMORANDUM

FILE REFERENCE: None
USER NAME: Makakilo Golf Course
OWNER OF LAND: Chiyoda Pacific
FIELD INSPECTION DATE: 12/21/92
WELL LOCATION: Ft. Barrette Well is located 25 feet mauka from the Makakilo Freeway off ramp and 50 feet in from the first road on the right leads to the well site.

TMK 9-2-19:65
QUAD MAP: O-6
LAT. 21 20' 54"
LONG.158 04 53"

PRESENT: Richard Jinnai, Darrel Ikeda (Pan Constr. Staff) ph. no. 6721-8961

WATER USE: Well 2004-03 (Makakilo Golf Course). Dust control

STATUS: 1. June 12, 1991 Makakilo GC requested permission to test Fort Barrette Well for 6 months.
2. June 18, 1991 request granted by Chairman.
4. May 20, 1992 request denied by Deputy Director.
5. June 23, 1992 Makakilo GC submitted water use permit for 6 to 12 months.
6. August 19, 1992 request was granted by the Commission for 6 months temporary water use only. Extention of up to 6 months may be granted by the Chairman.

WELL DESCRIPTION: The well was drilled 1941 by the U.S. Navy. Since drilled in 1941 no well completion report or as-built were submitted or found. According to the well index and verified in field the well has a 12" casing, and from the Well Index, the total depth 190', ground elevation 175' bottom of solid casing -7'. Chloride reading 243 ppm.

PUMP DESCRIPTION: Pump through sight verification is a 40 hp 3535 rpm motor. Water from the well flows to a 4" CI metered pipe then to a 20,000 gallon metal reservoir located in the golf course construction area. Water trucks uses the water from the reservoir primarily for dust control. On a typical construction day Darrel Ikeda said they use about 40,000 gallons.

Today the golf course construction has been halted due to money problems. Water is not being used from the well. Makakilo Golf Course manages to irrigate the lower end (Pearl City Side) of the golf course, by purchasing water from Oahu Sugar Company's Waihole Ditch System. Water is pumped from the ditch through an 8" pipeline that empties into an open reservoir near the 18th hole. The chloride contents from the ditch system is said to be 10 ppm. Once construction is over Fort Barrette Well will be sealed.

NOTE: Makakilo Golf Course also applied ground water use for Wells 1904-02 and 1904-03. The wells are located 1.1 mile below Farrington Hwy. on the right side of Barbers Pt. Access Road. Both wells has been field checked and water is not being used.
Wells 1904-02 & 03 will be the primary wells for the Makakilo Golf Course Desalting Plant. Water will then be pumped to the main open reservoir and gravity flow to 3 other open reservoirs on the golf course via 10" pipeline. The Ft. Barrette Well will be sealed after construction is over. We need to send the proper form for well sealing.

SUMMARY:

2. Water to be used primarily for dust control.
3. We do not have any well completion report, as-built drawings, and pumpage data.
4. Using water from Waihole Ditch to irrigate a portion of the golf course.
5. Need to send proper form for well sealing Ft. Barrette Well.
FIELD MEMORANDUM

FILE REFERENCE: NO FILE REF
DECLARANTS NAME: Makakilo Golf Course
FIELD INSPECTION DATE: 12/07/92, 01/14/93

PRESENT: Richard Jinnai, Lance Suganuma, Greg Fukumitsu (Ph.No. 537-1141)
TMK: 9-01-16:01
OWNER OF PARCEL: Campbell Estate
LOCATION TMK: 9-01-016:01
QUAD MAP: 06

COORDINATES:

<table>
<thead>
<tr>
<th>WELL NO.</th>
<th>WELL NAME</th>
<th>LAT:</th>
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<tr>
<td>1904-02</td>
<td></td>
<td>21' 19' 55&quot;</td>
<td>158 04' 23&quot;</td>
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<tr>
<td>1904-03</td>
<td>Monitor</td>
<td>21' 19' 51&quot;</td>
<td>158 04' 25&quot;</td>
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<tr>
<td>1904-01M</td>
<td>Capped</td>
<td>21' 21' 14&quot;</td>
<td>158 04' 12&quot;</td>
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</table>


PRESENT USE: No water is being use as of this date.

FUTURE USE: Water from both well 1904-02 & 03 will be used to irrigate Makakilo Golf Course, 184 acres.

BACKGROUND: Applied for Ground Water Use Application

WELL DESCRIPTION: I sighted 4 wells drilled in the area. 1904-02, 03, & 01M & Capped Well. 02, 03, & 01M are drilled and at grade level capped with a dome type pvc cap. The three wells cased with 12" PVC casing. The fourth is also capped but with a metal plate, 2 feet above grade and cased with 12" metal casing. 02 & 03 have well completion report in file. The other two 01M & Capped Well do not have any Well Completion or Well Construction Permit.

FIELD NOTE:
The 4 wells are located 1.1 mile below from Farrington Hwy. on the Waianae side of Barbers Pt Access Road. Well permit were issued Sept. 27, 1989. Well completion report was sent to us 12/1/92 after I reported to Greg Fukumitsu that we do not have any well completion report. 02 & 03 will be use to supply the Desalting Plant with water to irrigate the golf course. 01M will be used as a monitor well and Capped Well will not be used.

SUMMARY:

1. Wells 1904-02, 03 now has Well Completion Report and Pumpage Data, attatched. 02 has a water use permit.

2. Also there is pump installation permit for Well 1904-03. No pump installation permit was found for 1904-02.

3. 01M & Capped Well was drilled with Well 1904-02 permit. Need Drillers to submit Well Drilling
4. Well 1904-03 was called 04 by mistake. Error was corrected in file.

There's also two exploratory wells (according to Greg Fukumitsu) by the coral pit. These wells also could not be found.
If you do not receive all pages, please telephone immediately.

Although it was drilled in an actively cultivated sugarcane field (on the cane field side of OSCO's private dirt road), subsequent survey has shown it to be 23.16' into the road R.O.W.
b. Schedule inspection appointment immediately following receipt of permit application.

c. In the case of a water user with multiple permit applications coordinate inspection schedule by highest priority as listed above.

2. Document and Confirm Well Information:
   a. Position of well using GPS equipment
   b. Type of water of water uses(s) from the well
   c. Pump size, type and capacity
   d. Confirm well depth, casing size, chloride content, etc.
   e. Quantity of water pumped (mgd)
   f. Current water meter reading if available
   g. Photograph well site, pump and discharge assem, storage tank, etc.
   h. Ask water user to submit monthly water use reports, if they are not doing so

For Official Use Only:
Date received:________ Date accepted:________
Field checked by:________ Date:______ Latitude:________ Hydrologic Unit:________
Comments:________ Date:______ Longitude:________ State Diversion No.:________

References: Hawaii Revised Statutes, Chapter 174C.
Hawaii Administrative Rules, Chapters 13-167 to 13-171.
MEMORANDUM

To: Mr. William W. Paty
From: Rae M. Loui
Subject: Background of Makakilo Golf Course Wells (Well Nos. 1904-02, 03) and Fort Barrette Well (Well No. 2004-03)

DATE ACTION TAKEN

September 27, 1989 The Commission issued a well construction permit to Finance Realty Company to drill and test Makakilo Golf Course Well (Well No. 1904-02) in the brackish caprock aquifer.

March 15, 1990 The Commission approved the issuance of a water use permit to Makakilo Golf Corp. to use 1.15 mgd of brackish caprock water for golf course irrigation use from the Makakilo Golf Course Well. Conditions:

1. Chloride Content of the water used on the Makakilo Golf Course shall be 200 ppm or less;

2. The development of the ground water source shall be completed within 24 months from the date of permit issuance.

Note: Though the Commission approved the issuance of the water use permit, technically, the actual permit was never issued since it is still "under review" by the Attorney General.

February 1, 1991 Makakilo Golf Corp. submitted an application for a well construction permit to construct and test a stand-by well to act as a backup source for the primary brackish, caprock well.

April 24, 1991 The Commission approved the well construction permit for the Makakilo Golf Course Standby Well (Well No. 1904-03).
June 12, 1991  Makakilo Golf Corp. requested permission to test Fort Barrette Monitor Well for six to nine months from date of approval.

June 18, 1991  The request to test Fort Barrette Well was approved by letter from the Chairperson.

November 25, 1991  Makakilo Golf Course Well was completed.

January 10, 1992  Makakilo Golf Course Standby Well was completed.

February 27, 1992  Makakilo Golf Corp. requested a six-month extension of the test period for the Fort Barrette Well.

May 20, 1992  The request was denied by letter from the Deputy Director.

June 23, 1992  Makakilo Golf Corp. submitted a water use permit application to use 0.36 mgd from the Fort Barrette Well for 6 to 12 months until the construction of the 1 mgd desalination plant is completed.

August 19, 1992  Commission scheduled to act on temporary water use permit.

It can be argued that Makakilo Golf Corp.'s water use permit has expired since one of the conditions, that "the development of the ground water source shall be completed within 24 months from the date of permit issuance", has not been met. Water from the brackish, caprock well cannot be used on the golf course until the desalting plant is completed. Makakilo Golf Corp. will be sending a letter soon requesting an extension of the water use permit. The matter will be taken to the Commission for action.
THE ESTATE OF JAMES CAMPBELL

August 4, 1992

Mr. William Paty
Commission on Water Resource Management
Department of Land & Natural Resources
State of Hawaii
Post Office Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

HFDC's Temporary Water Use Application for Kapolei Irrigation Wells No. 2003-01 to -03

We wish to comment on HFDC's application for temporary use of 1.5 MGD drawn from three wells in the Kapolei-BPNAS sector of the Ewa Caprock Aquifer. Since Campbell Estate's project, the City of Kapolei (TCK), is counting on using water from this same aquifer sector, we are concerned about the grant of HFDC's request without considering the Estate's application for a water use permit dated August 7, 1991 (copy attached), which has not as yet been acted on by the Commission.

Report R-79 prepared by George A. L. Yuen & Associates for the Commission on Water Resource Management estimates that the sustainable yield of the Kapolei-BPNAS is 5 MGD with the benefit of sugar cane irrigation return flow, but is less than 5 MGD (by an unspecified amount) if sugar cane is withdrawn. Considering the aquifer's performance after cane withdrawal, draft rates of 1.15 MGD for the approved Chiyoda Makakilo Golf Course well, 1.5 MGD proposed to be drawn by HFDC, and 1.0 MGD proposed for the City of Kapolei and Kapolei Business Park may not be sustainable.

The Estate is installing an extensive dual water system throughout the City of Kapolei and Kapolei Business Park. Landscaping designed to withstand the brackish water and in accordance with xeriscaping principles will be installed in early 1993. We pioneered the use of non-potable water, have counted on its use, and, to this end, applied for the water use permit a year ago which we hoped was adequate lead time to meet our commitment to the use of non-potable water.

This is the basis of our concern: HFDC's proposed 1.5 MGD draft, along with the approved 1.15 MGD draft by the Makakilo Golf Course, may not allow for use of the resource by the City of Kapolei and the Kapolei Business Park. HFDC does not have alternative sources to bring on line if the 1.5 MGD rate proves excessive and beyond the caprock's sustainable yield. Once their expenditure for landscaping is made, the commitment to irrigate cannot be revoked without substantial adverse consequences.
Until the sustainable yield is more specifically identified, we respectfully suggest that the Commission grant all parties partial approval (i.e., less than the amounts requested at this time), and instruct the applicants to work together to formulate a joint non-potable water use plan for the Commission's review and approval.

Campbell Estate is not opposed to granting a temporary use permit to HFDC. We simply request that both applications be acted on with a view to accommodating the needs of all users. The Estate is willing to scale back its 1.0 MGD use rate to a temporary use rate of 0.7 MGD which represents our minimum needs at this time. If HFDC's request were also reduced so as to accommodate all of us in the sector, the Estate would have no objection to their permit.

Should you have any questions, please call me at 544-3290.

Very truly yours,

Michael A. Warren
Manager, Land Development

Attachment
CHECKLIST for WATER USE PERMITS

SOURCE NAME or LOCATION: Makakilo Golf Course Well

WELL NUMBER: 1904-02 01M CHANGED TO MONTEC HILL/2-

OWNER or OPERATOR: Finance Realty

ADDRESS: P.O. Box 3479

HONOLULU, HI 96812

TELEPHONE (contact person): 548-5166 (Fred Kwok)

Date application received: 1-12-90
Date acknowledged receipt/request more info: 1-17-90
Date application accepted: 1-17-90
Suspending date (no hearing = 90 days): 1-17-90
Suspending date (hearing = 180 days): 1-17-90
Date filing fee deposited:

Application sent to following:

<table>
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</tr>
<tr>
<td>Navy</td>
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<td>2-22-90</td>
</tr>
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</table>

Dates of Public Notice: January 31 and February 7, 1990
Suspense date for objections: February 22, 1990
Date of hearing, if any:

Date agenda due:
Date submittal due:
Date submittal sent to applicant:

Date application approved or disapproved: 3-15-90
Date applicant notified of decision:

REMARKS: Pub. No. - same form as Honolulu WWTP
March 16, 1990

Finance Realty  
P. O. Box 3979  
Honolulu, Hawaii  96812

Gentlemen:

I am pleased to inform you that your application for a Water Use Permit for Makakilo Golf Course Well at Makakilo, Oahu has been approved by the Commission on Water Resource Management on March 15, 1990 at their regular meeting held at Kailua-Kona, Hawaii.

A water use permit will be issued at a later date.

Sincerely,

MANABU TAGOMORI  
Deputy Director

MT:fc
"...therefore, the drawdown would be several feet, at about a million gallons per day."

Unanimously approved with amendment (Cox/Nakata).

ITEM 2  CITY AND COUNTY OF HONOLULU, DIVISION OF WASTEWATER MANAGEMENT APPLICATION FOR A WATER USE PERMIT, HONOLUHULI WASTEWATER TREATMENT PLANT, OAHU

Mr. Sakoda amended the application to show it is also for a well construction permit.

Mr. Cox asked if the standard conditions for a well drilling permit shouldn't be added if the Commission is approving a drilling permit. Mr. Sakoda replied that he had forgotten to add the well construction permit into the application. Therefore, he planned to put in the details of the well construction on the permit itself. He added that the water use permit is the more important permit because this project is in the water management area.

Mr. Cox voiced his concern that if Oahu Sugar's efforts are not successful in putting enough recharge for the aquifer, he felt this well should be the first to be cut back because the amount is close to the sustainable yield.

Chairperson Paty asked what the timeframe was for the Oahu Sugar lands to be taken out of production. Mr. Sakoda replied that the proposed schedule for the basal aquifer is for five years, but that the specifics are not that clear. He added that Condition 1 was specifically put into the permit to let the user know of the concern of the water in that area.

Mr. Tagomori added that there is a program underway dealing with the Honolululi Sewage Treatment plant to recycle the effluent. A feasibility study has been completed by the joint effort of Campbell Estate, the City, the UH Water Resource Research Center, and the Department of Health. The study shows that the advanced primary treated sewage can be used to recharge the aquifer. The planning and design phase of the project will be initiated later in the year. The other project that will be recharging the caprock is the damming of Westloch.

Dr. Lewin added that in terms of using the advanced primary for recharge, there may be some objections from EPA, therefore research will be very important.

Dr. Lewin asked who was using the caprock water at the present time. Mr. Tagomori replied that Oahu Sugar was the primary user and Mr. Sakoda added that all the golf course projects in the area would also be using the caprock water.

Unanimously approved with amendment (Lewin/Cox).

ITEM 3  FINANCE REALTY APPLICATION FOR A WATER USE PERMIT, MAKAKILO GOLF COURSE WELL, MAKAKILO, OAHU

In discussions with staff, the Board of Water Supply asked that a correction be made that the chloride content of the water be 200 ppm or less, instead of 160 ppm.

In answer to Mr Cox's question on who owns the well makai of the proposed well, Mr. Sakoda said it is an old Oahu Sugar well that is no longer being used.
Mr. Fred Kwock, president of Finance Realty and Mr. Journ Yee answered questions by the Commission. In regards to the salinity of the well, Mr. Yee said they had drilled a well and the pump test showed the salinity to be 580–600 ppm. Mr. Cox asked how they planned to bring the salinity down to 200 ppm. Mr. Yee replied they plan to install a desalinization plant and pointed out that Finance Realty, Campbell Estate and Grace Pacific had commissioned Tom Nance and John Mink to provide a detailed water level study of the area. The conclusion was that the seepage from the golf course would not be going towards the two wells. He added that the Commission had been sent a copy of the report.

Mr. Cox asked if staff had looked at the report and what their thoughts were. Mr. Sakoda said he had looked at the study and that, basically, the concerns are taken care of.

Dr. Lewin added that his staff would be monitoring the pump tests for salinity and any contaminants.

Unanimously approved as corrected (Lewin/Cox).

ITEM 4  AKITATSU YOSHIKA APPLICATION FOR A WELL CONSTRUCTION AND PUMP INSTALLATION PERMIT, MOLOAA–YOSHIKA WELL, MOLOAA, KAUAI

Unanimously approved (Cox/Lewin).

ITEM 5  MAKOELAUL, INC. APPLICATIONS FOR A WELL CONSTRUCTION PERMITS, MAKOELAUL WELLS A, B, C, AND D, MAKOELAUL, MOLOKAI

Dr. Lewin asked if the Hawaiian Home Lands draws water from this area. Mr. Sakoda answered that no water is drawn from the immediate vicinity. Wells makai of the proposed well are all on the applicant's property.

Mr. Penn, upon request of the Native Hawaiian Advisory Council (NHAC), asked if HHL or Bishop Estate have lands over the same aquifer as the application and the specific use for the irrigation.

The applicant, Michael Bruce Anglin, said there were no Hawaiian Home lands in that area and the Bishop Estate lands were about 2 miles east of his property. Crops that would be planted on the property would be citrus and there would be an above-ground nursery.

Unanimously approved (Lewin/Nakata).

ITEM 6  BOARD OF WATER SUPPLY APPLICATION FOR A PUMP INSTALLATION PERMIT, WAIANAE WELL II, WAIANAE, OAHU

Mr. Cox asked if the well would be pumped 24-hours a day or on an as needed basis.

Mr. Sakoda replied it would be pumped on demand only.

Unanimously approved (Cox/Lewin).

ITEM 7  BOARD OF WATER SUPPLY APPLICATION FOR A PUMP INSTALLATION PERMIT, WAIANAE WELL II, WAIANAE, OAHU

Unanimously approved (Lewin/Cox).
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Finance Realty
Application for a Water Use Permit
Makakilo Golf Course Well, Makakilo, Oahu

Applicant:  Landowner:
Finance Realty  The Estate of James Campbell
P.O. Box 3979  828 Fort Street Mall, Suite 500
Honolulu, Hawaii 96812  Honolulu, Hawaii 96813

Action Requested: Approval of a water use permit to use 1.15 million gallons per day (mgd) from Makakilo Golf Course Well (Well No. 1904-02) for irrigation of the Makakilo Golf Course.

Source of Water Supply: Caprock aquifer, Pearl Harbor Water Management Area.

Project Location: The well is located along the access road to Barbers Point Naval Air Station, Honolulu, Oahu.

Proposed Water Use: Golf course irrigation, Makakilo Golf Course. Brackish water from the caprock well will be desalted before being applied to the golf course.

Water Availability and Impact on Surrounding Wells: The well is located in the Kapolei Sector of the Caprock Aquifer. Sustainable yield under current conditions is estimated at 5 mgd. There are no other caprock wells being used in the Kapolei Sector at this time. Brackish caprock water from the well will be desalted then applied to the golf course. The golf course is situated over the Waianae Basal Aquifer. The Navy's Barbers Point Shaft and the Board of Water Supply's Makakilo Well both tap the Waianae Basal Aquifer and are within a mile of the golf course. The Board of Water Supply, the Department of Health, and the Navy have expressed their concern that brackish water not be allowed to be used over the basal aquifer. Concerns have also been expressed concerning the possibility of contamination of the basal aquifer by pesticides, herbicides, and fertilizers applied over the recharge area. The Department of Land Utilization approved Finance Realty's application for a Conditional Use Permit for the Makakilo Golf Course on February 14, 1989. A condition of the permit is that the owner/developer establish a ground water monitoring plan to be approved by the Department of Health. Condition 6 of the Conditional Use Permit states that "should data from the monitoring wells indicate the presence of the measured compound and/or the increased level of such compound, the DOH can require the owner/developer or subsequent owner to take immediate mitigative action to stop the cause of contamination. Subsequently, the developer/owner or subsequent owner shall mitigate any adverse effects caused by the contamination."

As Amended

Approved by Commission on
Water Resource Management
at the meeting held on
MAR 15, 1990

ITEM 3
Public Notice: In accordance with DLNR Administrative Rules, a public notice was published in the Star Bulletin on January 31 and February 7, 1990. In addition, copies of the public notice were sent to the Mayor’s office, the Department of Health, the Honolulu BWS, the Navy, Oahu Sugar Company, and to The Estate of James Campbell. Written objections to the proposed permit were to be submitted to the Commission by February 22, 1990. The Navy has expressed their concern that the proposed Makakilo Golf Course may result in the contamination of the Barbers Point Shaft, which provides about 2.5 mgd of potable water for the Naval Air Station (NAS), Barbers Point. The Honolulu Board of Water Supply recommended approval of the application on the condition that the chloride content of the water applied to the golf course be 750 ppm or less. Oahu Sugar Company did not have any specific objection to the permit application but expressed their concerns regarding the administration of the aquifer and the importance of increasing recharge to the aquifer to maintain its present quality. No other concerns or objections have been submitted.

RECOMMENDATION:

That the Commission approve the issuance of a water use permit to the applicant to use 1.15 mgd of brackish caprock water for golf course irrigation use from Well No. 1904-02, subject to the following conditions:

General Conditions

(1) The water use authorized by the permit must be for the reasonable-beneficial use described in the permit.

(2) The use must not interfere with any existing legal use of water.

(3) Modification of any permit condition must be approved by the Commission.

(4) The applicant must comply with all other applicable laws, rules, and ordinances.

Additional Conditions

(1) The permit shall be subject to the Chairperson’s approval of a water use plan recommending possible measures to prevent or minimize saltwater contamination of the Caprock Aquifer and establish courses of action to prevent the aquifer from becoming too saline. The applicant must comply with the approved plan.

(2) Chloride content of the water used on the Makakilo Golf Course shall be 750 ppm or less.

(3) An approved flowmeter must be installed to measure withdrawals and a record of the withdrawals must be kept and reported.
Chairperson and Members
Commission on Water Resource Management

March 15, 1990

(4) The development of the ground water source shall be completed within 24 months from the date of permit issuance.

Respectfully submitted,

MANABU TAGOMORI
Deputy Director

WILLIAM W. PATY, Chairperson
MINUTES OF THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: March 15, 1990
TIME: 2:00 p.m.
PLACE: Kona Surf Hotel
       Kohala Room
       78-128 Ehukai Road
       Kailua-Kona, Hawaii

ROLL Chairperson Paty called the meeting of the Commission on Water
Resource Management to order at 2:22 p.m.

The following were in attendance:

MEMBERS: Mr. William Paty
          Dr. John Lewin
          Mr. Richard Cox
          Mr. Robert Nakata

EXCUSED: Mr. Guy Fujimura
         Dr. Michael Chun

STAFF: Mr. Manabu Tagomori
       Mr. George Matsumoto
       Mr. Eric Hirano
       Mr. Edwin Sakoka
       Ms. Sharon Kokubun

COUNSEL: Mr. Randy Young

OTHERS:

Mr. Bradley Mossman
Mr. Journ Yee
Mr. Bruce William Anglini
Mr. George Robertson

Mr. Robert Sarae
Mr. Fred Kwock
Mr. Dave Penn

The meeting room was changed from the Mauna Kea Room to the Kohala
Room by the hotel.

Items were taken in the following order, but will be reported numerically: 1,
2, 3, 8, 4-7, and 9.

Mr. Tagomori asked that Item 10 be deferred.

ITEM 1 APPROVAL OF FEBRUARY 14, 1990 MINUTES

Mr. Cox asked that the second paragraph of Item 3 be amended to read:

Approved by Commission on
Water Resource Management
at the meeting held on

Typed: [Signature]

ITEM 2
"...therefore, the drawdown would be several feet, at about a million gallons per day."

Unanimously approved with amendment (Cox/Nakata).

ITEM 2  
CITY AND COUNTY OF HONOLULU, DIVISION OF WASTEWATER MANAGEMENT APPLICATION FOR A WATER USE PERMIT, HONOLULI WASTEWATER TREATMENT PLANT, OAHU

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In discussions with staff, the Board of Water Supply asked that a correction be made that the chloride content of the water be 200 ppm or less, instead of 160 ppm.

In answer to Mr Cox's question on who owns the well makai of the proposed well, Mr. Sakoda said it is an old Oahu Sugar well that is no longer being used.
Mr. Fred Kwock, president of Finance Realty and Mr. Journ Yee answered questions by the Commission. In regards to the salinity of the well, Mr. Yee said they had drilled a well and the pump test showed the salinity to be 580-600 ppm. Mr. Cox asked how they planned to bring the salinity down to 200 ppm. Mr. Yee replied they plan to install a desalinization plant and pointed out that Finance Realty, Campbell Estate and Grace Pacific had commissioned Tom Nance and John Mink to provide a detailed water level study of the area. The conclusion was that the seepage from the golf course would not be going towards the two wells. He added that the Commission had been sent a copy of the report.

Mr. Cox asked if staff had looked at the report and what their thoughts were. Mr. Sakoda said he had looked at the study and that, basically, the concerns are taken care of.

Dr. Lewin added that his staff would be monitoring the pump tests for salinity and any contaminants.

Unanimously approved as corrected (Lewin/Cox).

ITEM 4 AKITATSU YOSHIOKA APPLICATION FOR A WELL CONSTRUCTION AND PUMP INSTALLATION PERMIT, MOLOAA–YOSHIOKA WELL, MOLOAA, KAUA'I

Unanimously approved (Cox/Lewin).

ITEM 5 MAKOLELAU, INC. APPLICATIONS FOR A WELL CONSTRUCTION PERMITS, MAKOLELAU WELLS A, B, C, AND D, MAKOLELAU, MOLOKAI

Dr. Lewin asked if the Hawaiian Home Lands draws water from this area. Mr. Sakoda answered that no water is drawn from the immediate vicinity. Wells makai of the proposed well are all on the applicant's property.

Mr. Penn, upon request of the Native Hawaiian Advisory Council (NHAC), asked if HHL or Bishop Estate have lands over the same aquifer as the application and the specific use for the irrigation.

The applicant, Michael Bruce Anglin, said there were no Hawaiian Home lands in that area and the Bishop Estate lands were about 2 miles east of his property. Crops that would be planted on the property would be citrus and there would be an above-ground nursery.

Unanimously approved (Lewin/Nakata).

ITEM 6 BOARD OF WATER SUPPLY APPLICATION FOR A PUMP INSTALLATION PERMIT, WAIANAE WELL II, WAIANAE, OAHU

Mr. Cox asked if the well would be pumped 24-hours a day or on an as needed basis.

Mr. Sakoda replied it would be pumped on demand only.

Unanimously approved (Cox/Lewin).

ITEM 7 BOARD OF WATER SUPPLY APPLICATION FOR A PUMP INSTALLATION PERMIT, WAIANAE WELL II, WAIANAE, OAHU

Unanimously approved (Lewin/Cox).
FACSIMILE TRANSMITTAL PAGE

Please deliver the following pages to:

Name: Taun Yee
Company: Finance Realty
From: Ed Sakeda
Date: 3-13-90 Time: 2:10pm
Message: BUS Letter on Makaha Golf Course

Total number of pages (including Transmittal Page): 3

If you do not receive all of the pages legibly, please call back: (808) 548-7243
Sending Facsimile Number: (808) 548-6032
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TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE) WAS SENT

** COUNT **
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TOTAL 0:01'45" 3  XEROX TELECOPIER 7020
March 7, 1990

Finance Realty
P.O. Box 3979
Honolulu, Hawaii 96812

Gentlemen:

Application for a Water Use Permit
Makakilo Golf Course Well, Makakilo, Oahu

The Commission on Water Resource Management will be acting on your permit application for the Makakilo Golf Course Well (Well No. 1904-02) at its meeting on Thursday, March 15, 1990, 2:00 p.m., at the Kona Surf Hotel, Mauna Kea Room, 78-128 Ehukai Road, Kailua-Kona, Hawaii.

Your application will be included on the agenda as Item 3 (enclosed).

You or your representative are invited to attend the meeting.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:ko
Encl.
Mr. Manabu Tagomori  
Division of Water and Land Development  
Department of Land & Natural Resources  
P. O. Box 373  
Honolulu, Hawaii 96809

Dear Manabu:

Navy Concerns Regarding Use of Caprock Water to Irrigate  
Finance Realty's Makakilo Golf Course

This letter responds to concerns raised by the U.S. Navy in its letter of February 22, 1990 to the Division of Water and Land Development. The Navy states that use of a caprock well or wells to irrigate the proposed Makakilo Golf Course could contaminate its Barbers Point shaft in two ways: the caprock water itself may be contaminated with chemicals from sugarcane cultivation; and irrigation water or excess rainfall percolating downward from the golf course could carry dissolved herbicides and fertilizers which are applied in normal golf course maintenance. The enclosed map shows the proposed golf course in relation to the Navy's shaft and the caprock well.

These same concerns were raised by the Navy previously during the Conditional Use Permit (CUP) process administered by the City's Department of Land Utilization. Considerable investigative effort was undertaken to respond to these concerns. This work developed new information on the aquifer and culminated in the requirement of a monitoring program to be approved by the State Department of Health (DOH). Copies of the initially proposed program, a letter to DOH modifying this program, and DOH's approval letter are enclosed.

The primary thrust of the investigative effort was to establish the direction of groundwater flow. All existing wells and observation holes in the vicinity of the golf course were surveyed from a single, common datum. Following this, repeated water level measurements were made to establish gradients and direction of flow. The field work was a joint effort of Mink & Yuen (John Mink and John Chang), the USGS (Paul Eyre), and Belt Collins & Associates (Tom Nance). This work established that the flow direction is to the west with a slight northern component. This new information is quite different from long-held assumption that the direction of flow is to the southwest. This leads to the conclusion that natural discharge of the Waianae aquifer is toward (or into) Makaiwa and Waimanalo Gulches rather than into the caprock. These results were first written up in a February 10, 1989 report by John Mink in support of the Palailai landfill closure plan (a copy of the report is enclosed). The water level field work is currently being expanded to provide additional information on Waianae aquifer flow directions, an effort which is being funded by the Ewa Plain Water Development Corporation. Newly acquired data is entirely consistent with the data and conclusions in the Mink report.
Given this established flow direction, it is unlikely that water percolating from the golf course would end up in the Navy's shaft. The DOH-approved monitoring program does include ongoing confirmation of this flow direction. A new monitoring well will be drilled (its location is shown on the enclosed sketch). Its water level, together with water levels measured in well 2004-02 (old Fort Barrette well) and well 2103-01 (T-19), will establish the gradient and direction of flow in the aquifer directly beneath the golf course. Water quality analyses of these wells will also detect chemical changes, if any, resulting from the golf course.

A more critical component of the monitoring program will be the use of lysimeters within the golf course, one of which will be located as close as possible to the Navy's shaft. The lysimeters will intercept and accumulate water percolating from the golf course for periodic collection and analysis. The advantages of lysimeters over observation wells are substantial. Sampling is, in effect, done continuously (by accumulation) rather than periodically. Further, if the percolating water does contain undesirable contaminants, it can be discovered earlier than with deep monitoring wells. Changes to the golf course's use of chemicals or other maintenance practices can then be implemented.

In summary, we do agree that the concerns raised by the Navy deserve careful consideration. Recent field work has shown that the prevailing direction of groundwater flow provides substantial protection. The DOH-approved monitoring program will provide an ongoing assessment of this flow direction, as well as continuous evaluation of the potential impact on groundwater of the irrigation and maintenance practices of the golf course. It will also trigger implementation of mitigative measures, should the need arise. For these reasons, we believe that the proposed use of caprock water on the golf course will not compromise the Navy's shaft.

Sincerely,

Tom Nance

TN:It

c: Fred Kwock - Finance Realty

Enclosures: 1. Map of the Golf Course and Nearby Wells
2. Preliminary Monitoring Program
3. Letter of January 12, 1990 from Tom Nance to Tom Arizumi
4. Letter of February 21, 1990 from James Ikeda to Tom Nance
Proposed Water Quality Monitoring Program
Makakilo Golf Course Conditional Use Permit
Case No. 88 / CUP1-30(GU)

Requirements of the Monitoring Program

The Department of Land Utilization's (DLU) approval of the Makakilo Golf Course's Conditional Use Permit (CUP) Type 1 sets forth the following requirements for a ground water monitoring plan and system:

Condition 3. Establishment of a ground water monitoring plan and system having:
   • a system of monitoring wells extending 10 feet below the water table;
   • a monitoring schedule of at least once every six months or more frequently if required by the Department of Health (DOH); and
   • a list of compounds to be tested.

Condition 4. Contracting an independent third party professional for water sampling and analysis by a certified laboratory.

Condition 5. Soil sampling in selected areas.

Condition 6. Monitoring at the observation well just above the Barbers Point Shaft (State Well No. 2103-01).

The monitoring program must be approved by DOH and the actual monitoring begun prior to the issuance of grading permits.
Proposed Modifications and Additions to the Monitoring Requirements

While the monitoring program proposed herein generally conforms to the conditions of DLU's CUP approval, several modifications and additions are appropriate. The chief modification is for the use of two lysimeters with the golf course and two deep wells just outside it to monitor percolate rather than the exclusive reliance on observation wells. Proposed additions to the program are measurements of rainfall, pan evaporation, irrigation application, and the quantity and quality of golf course percolate.

The objective of monitoring is to collect and analyze irrigation water which may percolate from the golf course toward the water table, enabling mitigating action to be taken if that is necessary. The advantage of lysimeters is that they can collect and retain the percolating water. In contrast, a grab sample from a deep monitoring well only reflects ground water quality at the well at the specific moment of sampling. Fertilizer and biocide applications tend to be episodic rather than continuous and percolating water will follow selected flow paths. For this situation, a grab sample from a well or wells two times a year is very likely to miss potential contamination. Lysimeters can also provide an earlier warning long before the contamination actually reaches the water table. Monitoring at a deep well could detect contaminants several years after their application. For these reasons, lysimeters are a more appropriate monitoring system than deep wells. However, data from the lysimeters would be supplemented by sampling at two existing wells.

Monitoring Locations and Devices

Monitoring is proposed in four general categories: environmental, irrigation supply, golf course turf, and groundwater response. Table 1 and Figures 1 and 2 provide details of the proposed measuring locations and devices. Choices for the locations of the lysimeters and observation wells are as follows. First and most importantly, recent field work done by John Mink, John Chang, Paul Eyre, and Tom Nance demonstrated conclusively that the direction of groundwater flow in this sector of the Waianae aquifer is due west (see "Waianae Aquifer Southwest Oahu Simultaneous Head Survey", Mink & Yuen, Inc., February 1989). For this reason, a lysimeter and observation well (State Well No. 2004-03) are located on the west side of the golf course. Second, concern for the possible impact on the Navy's nearby shaft (Well No. 2103-03) has been expressed by the Navy and DOH. A second lysimeter and observation well (No. 2103-01) are proposed to monitor this possibility. Third, there are two active potable supply wells in the vicinity, the Navy's shaft and Board of Water Supply's Makakilo well (No. 2004-04). The quality of water pumped by these wells, as determined by ongoing testing by the respective owners, will provide additional data.
<table>
<thead>
<tr>
<th>Category</th>
<th>Measured Parameter</th>
<th>No. of Measuring Locations</th>
<th>Proposed Location and Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental</td>
<td>Rainfall</td>
<td>1</td>
<td>Standard 8-inch can near maintenance area class A pan next to 8-inch rain can.</td>
</tr>
<tr>
<td></td>
<td>Pan Evaporation</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Irrigation Supply</td>
<td>Flowrate</td>
<td>1</td>
<td>Measurement will be by a meter on the influent supply line.</td>
</tr>
<tr>
<td></td>
<td>Water Quality</td>
<td>1</td>
<td>Obtained from the influent supply line.</td>
</tr>
<tr>
<td>Golf Course Turf</td>
<td>Soil Moisture</td>
<td>2</td>
<td>Porous PVC (PORVIC) tubes will be installed at each lysimeter; sampling will be by suction pumping</td>
</tr>
<tr>
<td></td>
<td>Water Quality</td>
<td></td>
<td>for laboratory analysis.</td>
</tr>
<tr>
<td></td>
<td>Percolate Quality</td>
<td>2</td>
<td>Percolating water will be accumulated at the bottom of each lysimeter and will be measured by</td>
</tr>
<tr>
<td></td>
<td>Percolate Quantity</td>
<td></td>
<td>chalk and steel tape.</td>
</tr>
<tr>
<td>Groundwater Response</td>
<td>Water Quality</td>
<td>2</td>
<td>Accumulated percolant will be retrieved by suction pumping for laboratory analysis.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grab samples will be obtained from Well 2103-01 located above the Barbers Point Shaft (2103-03);</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>pumped samples will be obtained from BWS' Makakilo well (2004-04).</td>
</tr>
</tbody>
</table>
LYSIMETER CROSS-SECTION

Figure 1
Figure 2
Water Quality Testing

Water quality testing would be done every six months, once at the end of March and then again at the end of September. The list of constituents to be tested for each sampling location is set out in Table 2. It should be noted that two of the constituents, organic compounds denoted A and B in Table 2, will not be chosen until the specific chemical applications by the golf course operator are known. Candidate compounds are identified in Note 2 of the table, however.

Two qualifications to this testing program are appropriate. First, soil moisture and lysimeter testing prior to the substantial mass grading that will be done during construction, the possible importation of soil, and placement of the measuring devices would be impractical and the results would be meaningless. It is proposed that soil moisture measurements begin at the appropriate time in the golf course's construction sequence and not before. Second, it is requested that the monitoring requirements be reviewed no later than the fifth year to see if the testing schedule might reasonably be reduced. Laboratory costs alone will be in the range of $4,000 to $5,000 every six months. At present, HSPA is the only private local laboratory capable of doing all the analyses. The alternative is to use a mainland laboratory at greater cost and incurring the difficulty of handling and transporting the samples.
Table 2. Proposed Water Quality Testing

<table>
<thead>
<tr>
<th>Sample</th>
<th>Chemical Constituent</th>
<th>Salinity(1)</th>
<th>pH</th>
<th>Chlorides</th>
<th>Nitrates</th>
<th>Ammonium</th>
<th>Compound A(2)</th>
<th>Compound B(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Supply</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>(See Note 3)</td>
<td></td>
</tr>
<tr>
<td>Soil Moisture(3)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Percolate From</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Lysimeter(3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well 2103-01</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>(See Note 4)</td>
<td></td>
</tr>
<tr>
<td>Well 2004-03</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>(See Note 4)</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. Salinity will be measured by a refractometer to 0.01 parts per thousand as an indication of total dissolved solids.

2. Compounds A and B will be identified after the course’s schedule of fertilizer, herbicide, and other biocide applications is known. Logical candidates based on current practice are chlorpyriphos (found in Dursban), carbaryl (found in Sevin), and chlorothalonil (found in Bravo and Daconil). The choice will be based on quantity applied, the absence of analytical detection problems, and concurrence of DOH.

3. Compounds A and B will be initially tested in the irrigation supply to confirm their lack of presence but not tested routinely thereafter.

4. Compounds A and B will be tested initially in the well water. If they are detected, testing will be continued routinely. If they are not detected, testing will be discontinued until such time as these compounds show up in the golf course percolate.
Mr. Tom Arizumi  
Drinking Water Program  
Department of Health  
5 Waterfront Plaza, Suite 250  
500 Ala Moana Boulevard  
Honolulu, Hawaii 96813  

Dear Tom:

Monitoring Program for the Makakilo Golf Course

This letter is to confirm agreements reached at our meeting of January 11, 1990 regarding groundwater monitoring for Finance Realty's Makakilo Golf Course. Attending the meeting on behalf of the Department of Health (DOH) were youself, David Higa, and Chauncey Hew. Representing the golf course were Fred Kwock and Journ Yee of Finance Realty. I was present as Finance Realty's consultant.

We had previously submitted a preliminary proposal for monitoring to your department on July 11, 1989. The agreements reached yesterday modified this proposal so that the program would be comprised of the following elements: (i) use of three lysimeters within the golf course itself; (ii) drilling a small diameter observation well into basal groundwater at a location west of the golf course; (iii) utilizing two other existing small diameter wells for observation purposes; and (iv) conducting laboratory analyses of water samples from the lysimeters and wells.

Location and design of the lysimeters will be coordinated with your staff and subject to your approval. When a final grading plan for the golf course is available, it will be submitted to DOH and become the basis for locating the lysimeters. A tentative location for the new observation well is shown on the enclosed sketch. Existing small diameter wells 2004-03 and 2103-01 will also be used for groundwater observation and sampling. The specific list of constituents to be analyzed for lysimeter and well water samples will be finalized when the golf course's turf management and chemical application practices are known. A certified laboratory will be used for all laboratory work. As with the other items above, the list of chemical constituents to be tested for will be subject to your approval.

I trust this reasonably summarizes the present status of the monitoring program. As you are aware, our Conditional Use Permit from the Department of Land Utilization requires DOH approval of the monitoring program prior to issuance of any grading permit. Toward that end, could you please provide written concurrence to the program as agreed to and described above. Your prompt response would be greatly appreciated.

Sincerely,

Tom Nance

cc: Finance Realty  
    David Kuriyama

Enclosure
Mr. Tom Nance
President
Water Resources Engineering, Inc.
680 Ala Moana Boulevard, Suite 200
Honolulu, Hawaii 96813

Dear Mr. Nance:

SUBJECT:  MAKAKILO GOLF COURSE
GROUNDWATER MONITORING PROGRAM

Reference is made to your January 12, 1990 letter to the Safe Drinking Water Branch (SDWB) regarding the groundwater monitoring program for Makakilo Golf Course.

The SDWB concurs with your summary and has no objections to the proposed groundwater monitoring program. This concurrence satisfies the Department of Health's requirement for the implementation of a groundwater monitoring program.

If you have any questions about this subject, please contact the SDWB at telephone 543-8258.

Sincerely,

JAMES K. IKEDA, Acting Chief
Environmental Management Division

CH:gr
WAIANAE AQUIFER SOUTHWEST OAHU
PALAILAI SANITARY LANDFILL

Simultaneous Head Survey

MINK AND YUEN, INC.

February 10, 1989
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Level Surveys</td>
<td>3</td>
</tr>
<tr>
<td>Analysis, Interpretations and Conclusions</td>
<td>7</td>
</tr>
<tr>
<td>Regional Scale</td>
<td>9</td>
</tr>
<tr>
<td>Local Scale</td>
<td>9</td>
</tr>
<tr>
<td>Conclusions</td>
<td>10</td>
</tr>
<tr>
<td>Additional Comments</td>
<td>12</td>
</tr>
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</table>

## APPENDIX

- Well Construction Details
- Head Measurements
- Regional Flow Direction and Gradient
- Local Flow Direction and Gradient
- Map Southwest Oahu
- Map Palailai Sanitary Landfill
Simultaneous Head Survey Waianae Aquifer Southwest Oahu Vicinity of Palailai Sanitary Land Fill

Mink and Yuen, Inc.
February 10, 1989

Following a review of the Parametrix, Inc. report on the closure of the Palailai Sanitary Landfill (July, 1988) by Campbell Estate and its consulting engineers, a decision was made to verify groundwater flow direction in the southwestern portion of the Waianae aquifer by a carefully programmed simultaneous water level survey at accessible wells both up gradient and down gradient of the landfill. The objective of the survey was to determine whether groundwater beneath the active landfill could be expected to flow to and beyond the monitor wells that were installed as part of the closure plan. Initial water level measurements at these wells suggested that the groundwater flow vector was west-southwest, placing the two down gradient monitor sites in marginal locations with respect to direct groundwater flow from beneath the landfill (see maps in Appendix).

The monitor wells originally were located on the prevailing assumption that groundwater flow in the Waianae aquifer is southwesterly. A simultaneous head survey had not been taken in the Waianae aquifer for many years, if ever one had, and the direction of flow was postulated on plottings of water levels taken at different times under variable pumping conditions. For general purposes the southwesterly vector was adequate; for local detail its use was a test of faith in the
invariance of flow direction and hydraulic gradient.

Groundwater in the Waianae aquifer flows from an inland boundary at the Wahiawa High Level barrier southward. Flow direction is approximately parallel to the crest of the Waianae Range and the north-south unconformity separating the Koolau basalt from the underlying Waianae basalt (see the recent Mink and Yuen report to DLNR titled, "Review and Re-evaluation of Groundwater Conditions in the Pearl Harbor Groundwater Control Area, Oahu, Hawaii"). Toward the southern terminus of the Waianae Range the flow vector arcs southwesterly, then westerly to Palailai and the western boundary of the aquifer. This terminal boundary strikes in a northerly direction approximately in Makaiwa Gulch.

Final discharge of the aquifer is into alluvium and limestone where the Ewa Plain caprock meets the Waianae basalt at and somewhat below sea level, and also through the Makaiwa boundary. The importance of the latter discharge front is based on flow vectors calculated from the simultaneous head survey data.

Quite clearly groundwater flow direction in the Waianae aquifer is not simple. On a global scale flow is from the Wahiawa barrier to the Ewa Plain east of Makaiwa, while regional flow in the southern portion of the aquifer is toward the west. On a local scale at Palailai the vector is slightly north of west.
Water Level Surveys

Measuring water levels and converting them to heads (water table elevation above sea level) is the most common method employed in Hawaii to evaluate changes in aquifer conditions over time and to calculate groundwater flow direction and hydraulic gradient. But the technique is fraught with problems of accuracy; the measuring devices often lack precision (for example, wires stretch, contributing a distortion which is not usually corrected for), and survey bench marks lack consistency from one to another. Although potential errors are small in absolute terms, perhaps on the order of 0.1 ft. in 100 vertical feet, they are significant when the groundwater occurs as a basal lens in which changes in head over hundreds of feet in the horizontal plane may be less than 0.1 ft. Natural phenomena also produce perturbations in head, causing symmetry of the flow vector to be disturbed. Among these—phenomena are barometric changes, drawdowns caused by pumping, and tidal changes where the measuring point is near the coast. Nevertheless, good, but not precise, water level elevations can be taken when an effort is made to avoid human error and to account for natural perturbations.

To suppress avoidable errors in measurements during the recent simultaneous head survey, all depth-to-water readings were taken from points that were surveyed from a single benchmark. The survey to each measuring point was conducted by Thompson Surveyors in November-December, 1988.
addition, a steel tape was used as the standard for obtaining depth-to-water. All of the wells are too distant from the coast to be affected by tidal movement, and the principal pumping sink, Oahu Sugar Co. Pump EP-10, was off during the survey. Barometric variations are insignificant because the groundwater is unconfined.

Besides the head measurements taken recently, a valuable set of depth-to-water data for the Palailai monitor wells was collected by Parametrix in the summer of 1987. Parametrix also surveyed elevations to each monitor well, but because these elevations differ by as much as 0.31 feet from the Thompson survey they were not used in determining heads in this evaluation. Instead the Parametrix depth-to-water data was converted to heads using the Thompson elevations. For the same measuring points, the Thompson and Parametrix elevations are as follows:

<table>
<thead>
<tr>
<th>Survey</th>
<th>Well PMW-1</th>
<th>Well PMW-2</th>
<th>Well PMW-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parametrix</td>
<td>113.56</td>
<td>129.77</td>
<td>288.64</td>
</tr>
<tr>
<td>Thompson</td>
<td>113.74</td>
<td>130.08</td>
<td>288.53</td>
</tr>
<tr>
<td>Difference</td>
<td>0.18</td>
<td>0.31</td>
<td>0.11</td>
</tr>
</tbody>
</table>

The Thompson survey is used as the datum because it closed on a single benchmark with all wells, the monitors in addition to the regional wells, in the loop.
The recently conducted simultaneous head survey was designed to determine the regional groundwater flow vector and gradient. Heads were determined at seven wells, including the three monitor wells. Information about the construction details of the wells and all of the head data are tabulated in the Appendix. One of the wells (2103-01, or T-19) is located up gradient of the landfill, another (1905-04, or the State desalinization well) is on about the same groundwater equipotential as the landfill, and two (2006-13, or West Beach golf course; and 2006-14, or West Beach brackish #1) are down gradient (see map). At no other wells in the region was it possible to measure heads. For example, well 2004-02 (old 274-1), up gradient of the landfill, was filled with debris to above the water table; 2004-01 (old 275) is lost and not locatable; 2004-04 (Campbell Board of Water Supply well), up gradient, has no access for tape measurement; and in 2001-01 to 11 (EP Pump 10), down gradient, direct measurement of the water table was also impossible.

Well 2103-01 (T-19) is far up gradient of the landfill and evidently in the region where the groundwater flow vector arcs westerly from its southern trend. It is not, as a result, a reliable point for computing either the gradient or the flow vector toward the landfill. The best data set for determining these regional parameters are the observations made at wells 1905-04 (desalinization well), 2005-04 (PMW-3), 2006-13 (West Beach golf) and 2006-14 (West Beach brackish #1). The three monitor wells were used to calculate the local
gradient and vector in the vicinity of the landfill.

The regional head survey was conducted on November 23, 1988 except for the measurement at 2006-14, which was taken on the 29th of November. For determining the local gradient and vector additional readings were taken at the monitor wells on December 28, 1988. Earlier measurements by Parametrix of water levels at the monitor wells were obtained on July 21, 1987, July 22, 1987, July 23, 1987 and in September, 1987 (day not specified in the records).

Measurements of depth-to-water during the regional survey and the recent local survey were made with both an electric wire sounder and a steel tape. The wire sounder was rented from the Board of Water Supply; the steel tape is the property of the US Geological Survey. The steel tape measurements are more accurate because distortion by stretching is less than for the wire sounder. All calculations of flow vectors and gradients based on the recent surveys employed steel tape depth-to-water measurements supervised by Mink and Yuen, Inc.; the earlier soundings by Parametrix were made with a wire.

The head surveys were planned and run by Mink and Yuen, Inc., in cooperation with Belt and Collins Assoc., and the Campbell Estate. Measurements are the responsibility of Mink and Yuen. Participating in most of them was Paul Eyre of the USGS, and in some of them, Tom Nance of Belt and Collins. John Mink and John Chang represented Mink and Yuen. The depth-to-water data set collected earlier by Parametrix was a
cooperative effort of Grace Pacific, Parametrix and J. Mink. The complete set of measurements is included in the Appendix.

Analysis, Interpretations and Conclusions

Groundwater in the Waianae aquifer occurs as a basal lens which in the area of the landfill is unconfined. South of Farrington Highway a wedge of sediments, reaching as deep as 1000 feet below sea level at the coast, covers and confines the aquifer. The portion of the aquifer of interest with respect to potential contamination is the unconfined sector inland of Farrington Highway.

In an unconfined basal aquifer the curve of the water table as well as the bottom of the lens is parabolic, which means that the gradient is not constant as it would be in a confined aquifer where thickness of flow is invariant, but varies with distance from the discharge front (origin of the coordinate system). The general form of the parabolic surface is:

\[ h = ax^{-1/2} \]

in which \( a \) is a constant incorporating specific flux, hydraulic conductivity, and a relationship between the specific gravities of fresh and sea waters. The derivative of this expression, \( \frac{dh}{dx} \), is the gradient and is expressed as:

\[ \frac{dh}{dx} = a/2x^{-1/2} \]

Near the origin the curvature of the parabola is steepest and therefore the gradient is greatest. As distance increases, the parabola flattens, resulting in smaller gradients. Far
from the origin the gradient is nearly constant over long
distances. What all of this says is that the gradient between
one set of points in the lens will differ from that between
another set. A single value of regional gradient actually
represents the average of the continuously changing gradient
between the points of measurements.

The flow vector is not affected by the curvature of the
lens. However, a single value for the vector assumes
homogeneity and isotropism of the aquifer, which by no means
exists except on a grand scale. The flow vector represents an
average of flow directions, and the applicability of the
average is a function of the dimensions of the aquifer
between the points of measurements. Over short distances
computed vectors may diverge appreciably from the regional
average. The representative elementary volume (REV) of the
basaltic aquifer is probably on the order of several hundred
feet for each of the three metric dimensions. Evidently the
size of the aquifer mass between the three monitor wells at
the landfill is as large as an REV because, as discussed
later, the computed vector at the landfill is equal to that
computed for the region.

Flow vectors and gradients were determined using a
dimensional construction that conserves the gradient between
any two points in a three point set. Values were calculated
for the regional scale with horizontal dimensions of
approximately 1 mile by 1 mile and for the local scale at the
landfill with dimensions of about 2000 feet by 2000 feet.
Regional Scale

The three point sets used in regional calculations are given in the Appendix along with computed flow vectors and gradients. Calculations were made for three sets of data. The average flow vector was W 7.3 N over a range of values S 88 W to W 18 N. The average gradient was 1/5100, or about 1 ft./mile, which is the normal gradient for the inland portion of both the Koolau and Waianae aquifers in southern Oahu.

The computed flow vector suggests that PMW-1 is not directly down gradient of groundwater underlying the active portion of the landfill but that PMW-2 is on the margin of the flow path. Assigning a hydraulic conductivity of 1500 ft./day and effective porosity of .05 to the Waianae aquifer, which are average values determined by pump tests for the basaltic aquifers of southern Oahu, results in a groundwater velocity of 5.9 ft./day, or travel time of 2154 ft./yr.

Local Scale

Five sets of water level measurements obtained at the monitor wells were employed to determine the flow vector and gradient in the vicinity of the landfill. The data sets accompanied by results of calculations are given in the Appendix. A sixth set is included but the computed vector is awry by about 45 degrees from the other five sets and therefore was not used in averaging. This divergent set was
taken during the simultaneous head survey on November 23, 1988; a second set was obtained December 28, 1988, when it became apparent the earlier set was inconsistent. All of the other data sets are measurements made by Parametrix and Grace Pacific during the summer of 1987.

The computed vectors are contained in a narrow range from W 2 N to W 12 N and average W 7.2 N, virtually identical to the regional vector. The average gradient is 1/7660, implying a groundwater velocity at the landfill of 3.9 ft./day (assumed hydraulic conductivity of 1500 ft./day and specific yield of .05). As in the case of the regional computations, PMW-1 lies just outside while PMW-2 lies on the margin of the direct flow path from the active landfill.

**Conclusions**

Evidently the flow vector of groundwater in the southwestern part of the Waianae aquifer is slightly northerly of due west. For both regional and local calculations the average is W 7 N. This appears to be as good a result as is obtainable from opportunities for water table measurements in wells.

The flow direction implies that terminal leakage from the Waianae aquifer preferentially takes place through the Makaiwa barrier rather than into the deeper section of the caprock wedge. Some discharge probably enters the caprock at its inland boundary. Groundwater movement does not appear to have a directional tendency toward pump EP-10 even though
this station often pumps at 10 to 15 mgd. During the November-December, 1988, head surveys KP-10 was not pumping, but it had been earlier; it likely was on during the Parametrix measurements in the summer of 1987. If the station were a strong sink for regional flow the effect on the flow vector would be noticeable even when the pumps are off because recovery in the unconfined portion of the aquifer would not be great enough to allow establishment of a significantly different flow direction between episodes of pumping.

The gradient computed at the landfill (1 ft per 0.97 miles) is somewhat greater than the calculated regional gradient (1 ft. per 1.45 miles). Both values are consistent with typical gradients in basal aquifers of southern Oahu. The particle velocity of the groundwater falls between 3.9 and 5.9 ft./day, suggesting an average value of approximately 5 ft./day. This value also is typical of basal aquifers in southern Oahu. In the 14 years the landfill has been in operation, groundwater initially beneath the landfill would have travelled about 4.5 miles were such a long flow path possible. However, the Makaiwa boundary is less than two miles from the landfill and the caprock boundary less than one mile, implying that a landfill groundwater plume is established all the way to the western boundary of the Waianae aquifer.
Additional Comments

The chief objective of the simultaneous head survey was to ascertain the direction of groundwater flow at and down gradient of the landfill. Within the limitations of the number of wells accessible for water level measurements and the measuring techniques, this goal, along with estimates of the gradient, was achieved. Groundwater flow is toward the west, the gradient is about 1 ft./mile and velocity is on the order of 5 ft./day.

In the review of the Parametrix report by Campbell Estate and its consultants, concern was expressed that the two down gradient wells (PMW-1 and PMW-2) might not be in the flow path of groundwater passing beneath the active landfill. The vector calculations show that in the strictest sense PMW-1 lies outside the flow path while PMW-2 lies on its boundary. This conservative interpretation ignores the tendency for contaminating infiltration to disperse laterally to some extent and the resulting formation of a plume in the saturated zone. Unfortunately, the complexity of the infiltration and groundwater accumulation processes would be difficult to realistically model on the scale needed to establish the geometry of the plume beneath and down gradient of the landfill.

Whether another monitor well located directly west of the center of the landfill is needed to ascertain down gradient contaminant flow is questionable. West Beach wells 2006-13 and 2006-14 and Oahu Sugar pump EP-10 (2006-01) are
located down gradient and may be within the spread of the plume. Still another down gradient well might be 2006-12, which is said to be accessible although it had been presumed lost and was not used in the simultaneous survey. On the other hand, an additional down gradient well would eliminate doubts about sampling groundwater which at one time passed beneath the landfill.

In the review, the higher salinity of samples from PMW-3 compared to PMW-2 and PMW-1 was raised. In the Appendix are listed details about the construction of the monitor wells. The fact that the bottom of PMW-3 is 5 ft. above sea level while the other wells penetrate to 1.5 and 4 ft. below sea level suggests that the samples from PMW-3 reflect typical enrichment of salinity at the very top of the lens generated by rinsing of sea salt. In a normal basal lens, especially in dry areas, the upper layer is more saline than the mid portion of the lens, and a concentration gradient probably exists in this upper layer. Even a difference of 5 to 10 ft. in depth of penetration will reflect the salinity gradient.
WELL CONSTRUCTION DETAILS
Waianae Aquifer Wells near Palailai Landfill
(All linear measurements in feet)

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PMX=Parametrix; GP=Grace Pacific  
M&Y=Mink & Yuen; USGS=US Geological Survey (Paul Eyre)
REGIONAL FLOW DIRECTION AND GRADIENT
Waianae Aquifer Wells near Palailai Landfill
Regional heads, flow direction and gradients. (Ft.)

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LOCAL FLOW DIRECTION AND GRADIENT
Waianae Aquifer Wells near Palailai Landfill
Heads, flow direction and gradients at landfill. (Ft.)

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MAPS

Southwest Oahu
Palailai Sanitary Landfill
State of Hawaii  
Department of Land and Natural Resources  
Division of Water and Land Development  
P.O. Box 373  
Honolulu, Hi 96809  

Attn: Mr. Manabu Tagomori  

Re: Application for Water Use Permit Pearl Harbor  
Water Management Area, Applicant: Finance Realty

Gentlemen:

It is noted that the Department of Navy has no objections to the pumpage per se of caprock water for irrigation of the Makakilo Golf Course, but has raised concerns about contamination of the Barbers Point water shaft by doing so.

This issue has been thoroughly investigated by Finance Realty from the inception of the golf course and extraordinary precautionary measures to what is considered only a remote hazard have been accepted by the Board of Water Supply and the State Board of Health to ensure no deterioration of the Navy water supply source. These measures have also been mandated by the Department of Land Utilization.

It was first determined that the underground and surface flow of water from the proposed golf course do not go in the direction of the Navy water source.

Even so it is very unlikely that there will be percolation to the substrata since water usage will be kept to low levels due to the high cost of supplying the water. The terrain is hilly so that there will be runoff from rains rather than water seeping downward carrying chemical residues.

Water holding ponds and reservoirs will be lined to obviate seepage. Fuel storage tanks and maintenance areas will be built in accordance to federal standards.

In accordance with BWS requirements, the caprock water used will be desalinated from about 650 ppm to 200 ppm chloride. This is less salty than the present Navy water source. So, if in the unlikely situation of irrigation water reaching the source, it will be better salinity wise.
Three lysimeters, which will provide an early detection system of chemical residues in the soil will be installed. Further, three monitoring wells will be used for observation purposes.

Correspondence is attached relating to the above.

It is believed that Finance Realty has taken responsible and extraordinary measures to assure no deterioration of the water supply due to the golf course.

Sincerely,

Fred K. Kwock
President

cc: Department of Navy
    Pacific Division
    National Facilities Engineering Command
    Pearl Harbor, Hawaii 96860-7300
    Attn: Mr. E. Torngren, P. E. (w/o encl.)
    Director
    Utilities Division
    Re: 5090-A5, Ser. 11412/1473

cc: Mr. Tom Nance
RE: WATER FLOW
December 7, 1988
88-2114 (839-1001)

Bruce S. Anderson, Ph.D.
Deputy Director for Environmental Health
Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Anderson:

Conditional Use Permit for the Proposed Makakilo Golf Course

At a meeting on September 17, 1988, we agreed with you and your staff that a study of groundwater levels in this sector of the aquifer could determine the direction of groundwater flow and confirm that the Navy's Barbers Point Shaft (Well No. 2103-03) would not be affected by the golf course's percolating irrigation water. This study was conducted in November 1988. It was funded jointly by Grace Pacific (for its Palailai Landfill closure plan), Campbell Estate (for its planning purposes), and Finance Realty (for the Makakilo golf course). The work was carried out by John Mink and John Chang of George A.L. Yuen & Associates, Paul Eyre of the U.S. Geological Survey, and Tom Nance of Belt Collins & Associates. Walter P. Thompson, Inc. conducted the level line survey to establish reference elevations for all wells from a common benchmark. John Mink will produce a report subsequently in support of the Palailai Landfill closure plan. This letter and its enclosures present the water level results and their interpretation on behalf of Finance Realty for the proposed golf course.

Our assessment of the water level data is that the direction of flow is almost due west. Percolation from the golf course would move away from and not affect the Navy's shaft. The seven wells used in this study are listed on the enclosed table along with their reference elevations, measured depths to water, and resulting water levels. (Notes at the bottom of the table discuss other wells in the region which were not used in the survey.) The water levels are also plotted on the enclosed map. This map clearly shows the direction of flow to the west. The gradient also steepens in this direction, consistent with discharge from the aquifer at its western end.

The formation overlying the basalt aquifer on the Ewa Plain is predominantly limestone and is known commonly as the "caprock". We know from wells drilled into and through the limestone that the caprock is wedge shaped, being at least 1000 feet thick along the southern shoreline, thinning with distance inland, and pinching out makai of Farrington Highway. A recent report, "Groundwater Resources and Sustainable Yield, Ewa Caprock Aquifer" by George A.L. Yuen & Associates (July 1988) for the Department of Land and Natural Resources, provides a good summary of this formation's dimensions and structure. Our measured water levels strongly indicate that discharge from the basalt aquifer in the southern direction is minimal. This would have to occur as deep discharge beneath the caprock offshore or as leakage into the overlying formation. Primary confirmation is provided by the level measurements but the occurrence of an independent basal lens in the caprock with increasing salinity with depth provides further substantiation. It is our conclusion that predominant flow and discharge from the basalt aquifer is to the west. Judging by the high salinities in the caprock along its western shoreline, most of this discharge is below the caprock into the ocean. At this shoreline margin, its thickness is in the 100- to 300-foot range.
Pumpage from wells is and will continue to be a significant fraction of the total flow through the aquifer. In the sector of the aquifer depicted on the enclosed map, the most significant pumpages are the Navy's Barbers Point Shaft (at 2.0 to 2.5 MGD), BWS' Makakilo well (at 1.0± MGD), and Oahu Sugar Company's Pump 10 (currently at 4 to 5 MGD). The first two of these are expected to remain relatively stable in the future. Use of Oahu Sugar Company's Pump 10 will be reduced gradually as fields are withdrawn and it will end sometime in the 1990s when all fields west of Kalaeloa Boulevard have been displaced by development of West Beach Estates and expansion of Campbell Industrial Park. However, reduction and eventual termination of Oahu Sugar Company's use will be offset by future pumpage from West Beach's golf course wells (one well initially and a second in the early 1990s) and BWS' Barbers Point non-potable wells (two wells initially and up to five ultimately). In other words, draft by wells in this portion of the aquifer will remain generally as it is at present; a future change in the direction of flow through the aquifer as a result of changes in well pumpage is not expected.

We intend to continue monitoring groundwater levels. Our hope is to incorporate the measurements as part of the USGS groundwater monitoring program. Alternatively we will continue to make measurements ourselves. In addition, we intend to do percolation studies for the golf course as soon as it has been constructed. Should you have any questions or would like to discuss our findings and interpretations further, please feel free to call. We believe the findings are conclusive, that they bear out our knowledge of the geologic structure, and that they satisfy the criteria for project approval which we set at the meeting of September 17. As I am sure you are aware, Finance Realty is anxious to proceed with its project. We would appreciate a letter to be sent to the Department of Land Utilization in support of the Makakilo Golf Course as soon as possible.

Sincerely,

Tim Nance

cc: Fred Kwock - Finance Realty
    Tom Arizumi - State Drinking Water Program
    Fred Rodriguez - Environmental Communications, Inc.

Enclosures
### Water Levels in Deep Wells in the Western Portion of the Waianae Basalt Aquifer

<table>
<thead>
<tr>
<th>Name / Owner</th>
<th>State No.</th>
<th>Measuring Point Elevation (Ft. msl)</th>
<th>Date Measured</th>
<th>Measurement Water Level (Ft)</th>
<th>Computed Water Level (Ft. msl)</th>
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<tr>
<td>T-19: USGS Observation</td>
<td>2103-01</td>
<td>211.88</td>
<td>11/23/88</td>
<td>196.22</td>
<td>15.66</td>
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<td>Palailai PMW-1</td>
<td>2005-02</td>
<td>113.74</td>
<td>11/23/88</td>
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<td>Palailai PMW-2</td>
<td>2005-03</td>
<td>130.08</td>
<td>11/23/88</td>
<td>115.11</td>
<td>14.97</td>
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<tr>
<td>State Desalting Well</td>
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<td>58.70</td>
<td>11/23/88</td>
<td>43.64</td>
<td>15.06</td>
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<tr>
<td>West Beach Golf Course</td>
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<td>59.96</td>
<td>11/23/88</td>
<td>45.78</td>
<td>14.18</td>
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<tr>
<td>BWS Barbers Point Non-Potable</td>
<td>2006-14</td>
<td>180.44</td>
<td>11/26/88</td>
<td>166.39</td>
<td>14.05</td>
</tr>
</tbody>
</table>

**Notes:**

1. The level line survey was done by Walter P. Thompson, Inc. All measuring point elevations are referenced to the City & County street monument at the intersection of Makakilo Drive and Farrington Highway.

2. Two wells were not measured due to their near proximity to wells which were measured. These were the Navy's Barbers Point Shaft (Well 2103-03) which is next to T-19 (Well 2103-01) and BWS' second Barbers Point non-potable well (2006-15 next to Well 2006-14).

3. Oahu Sugar Company's Pump 10 (Wells 2006-01 to 2006-11) was not measured. Recent changes in the wells' header piping do not allow for a measurement.

4. The Army's abandoned Well 2004-03 is backfilled with dirt above the water level in the well.

5. BWS' Makakilo Well (2004-05) has an airline hooked up to a compressor which is not considered to be reliable. No direct measurement is possible.

6. All other wells drilled into the basalt aquifer have been sealed or lost; Well 2006-12 was sealed and Wells 2004-01 and 2004-02 could not be found.
RE: MONITOR PROGRAM
February 21, 1990

Mr. Tom Nance
President
Water Resources Engineering, Inc.
680 Ala Moana Boulevard, Suite 200
Honolulu, Hawaii 96813

Dear Mr. Nance:

SUBJECT: MAKAKILO GOLF COURSE
GROUNDWATER MONITORING PROGRAM

Reference is made to your January 12, 1990 letter to the Safe Drinking Water Branch (SDWB) regarding the groundwater monitoring program for Makakilo Golf Course.

The SDWB concurs with your summary and has no objections to the proposed groundwater monitoring program. This concurrence satisfies the Department of Health's requirement for the implementation of a groundwater monitoring program.

If you have any questions about this subject, please contact the SDWB at telephone 543-8258.

Sincerely,

JAMES K. IKEDA, Acting Chief
Environmental Management Division

CH:gr
Mr. Tom Arizumi
Drinking Water Program
Department of Health
5 Waterfront Plaza, Suite 250
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Tom:

Monitoring Program for the Makakilo Golf Course

This letter is to confirm agreements reached at our meeting of January 11, 1990 regarding groundwater monitoring for Finance Realty's Makakilo Golf Course. Attending the meeting on behalf of the Department of Health (DOH) were youself, David Higa, and Chauncey Hew. Representing the golf course were Fred Kwock and Joum Yee of Finance Realty. I was present as Finance Realty's consultant.

We had previously submitted a preliminary proposal for monitoring to your department on July 11, 1989. The agreements reached yesterday modified this proposal so that the program would be comprised of the following elements: (i) use of three lysimeters within the golf course itself; (ii) drilling a small diameter observation well into basal groundwater at a location west of the golf course; (iii) utilizing two other existing small diameter wells for observation purposes; and (iv) conducting laboratory analyses of water samples from the lysimeters and wells.

Location and design of the lysimeters will be coordinated with your staff and subject to your approval. When a final grading plan for the golf course is available, it will be submitted to DOH and become the basis for locating the lysimeters. A tentative location for the new observation well is shown on the enclosed sketch. Existing small diameter wells 2004–03 and 2103–01 will also be used for groundwater observation and sampling. The specific list of constituents to be analyzed for lysimeter and well water samples will be finalized when the golf course's turf management and chemical application practices are known. A certified laboratory will be used for all laboratory work. As with the other items above, the list of chemical constituents to be tested for will be subject to your approval.

I trust this reasonably summarizes the present status of the monitoring program. As you are aware, our Conditional Use Permit from the Department of Land Utilization requires DOH approval of the monitoring program prior to issuance of any grading permit. Toward that end, could you please provide written concurrence to the program as agreed to and described above. Your prompt response would be greatly appreciated.

Sincerely,

Tom Nance

TN:it

cc: Finance Realty
    David Kuriyama

Enclosure
DEPARTMENT OF LAND UTILIZATION

CONDITIONAL USE PERMIT

Relevant passages re: Water Quality

Section V: Decision and Order

Pg. 11  Item 3

Pg. 12  Items 4, 5, & 6

Pg. 13  Items 10, 13, 15, & 16
DEPARTMENT OF LAND UTILIZATION OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

IN THE MATTER OF THE APPLICATION
OF
FINANCE REALTY, INC.
FOR A CONDITIONAL USE PERMIT TYPE 1

CASE NO. 88/CUP1-30(GU)

FINDINGS OF FACT, CONCLUSIONS OF LAW,
AND RECOMMENDATION

I. APPLICATION

APPLICANT/AGENT: Finance Realty, Ltd.
LANDOWNER: James Campbell Estate
LOCATION: Northeast of Makakilo Town above the H-1 Freeway, Makakilo, Oahu
TAX MAP KEY: 9-2-03: Por. 18
LAND AREA: 232.5 Acres
ZONING: AG-2 General Agricultural District
REQUEST: A Conditional Use Permit (CUP), Type 1, to develop an 18-hole golf course with accessory uses.

The application was processed in accordance with Section 8.30 of the Land Use Ordinance.

II. FINDINGS OF FACT

On the evidence presented, the Director has found:

A. Development Plan: Agriculture
B. Land Use Ordinance: AG-2 General Agricultural District
C. Existing Land Use: The subject site is currently vacant and can be described as dry range land with a scrub vegetative cover.
D. Existing Surrounding Land Use: To the east of the site is the existing Pacific Concrete and Rock Quarry which is zoned AG-2. Other surrounding lands are vacant and currently zoned residential and agricultural. (See Exhibit B.)

E. Proposal: The applicant requests a CUP, Type 1 in order to develop an 18-hole golf course on 232.5 acres of vacant, AG-2 General Agricultural District-zoned land in Makakilo. This golf course, to be known as the Makakilo Golf Course, will be privately owned and operated, and available for public play. Limited individual and corporate memberships will be available. All uses will be accessory to the golf course and no urban residential units will be developed as part of the proposed project. Ancillary uses include a clubhouse, a halfway house or rest stop at the ninth hole, a maintenance building, a driving range, and parking.

The clubhouse will be central to a cluster of three facilities located in proximity to the entrance. To its left and nearest the driving range will be a two-story parking/golf cart storage facility. Eighty parking stalls will be provided on the upper level which will be on grade, and the golf cart storage, fueling and maintenance functions will occupy the lower level. To the right of the clubhouse will be a 120-stall parking lot.

The clubhouse is planned to be a two-story, 24,000 square-foot building containing banquet facilities, public and member's dining facilities, toilet and kitchen facilities on the upper level, and locker facilities, office space, a pro shop, and utility spaces on the lower level. The dining and clubhouse facilities will be open 365 days, until 10 p.m., with extended hours for banquet and special occasions.

The ninth-hole rest stop or halfway house will be a one-story, 400 square-foot snackshop for beverages and sandwiches. No food preparation will occur here, and only food prepared at the clubhouse kitchen will be served. Limited restroom facilities will also be available at this rest stop.

A maintenance building is proposed for the lower portion of the golf course to store maintenance equipment (mowers, fertilizer spreaders, repair shop for irrigation system and rolling stock maintenance), and chemicals (fertilizers, pesticides, herbicides, etc.). Access to this building will be via the Quarry Access Road below the golf course proper.

The golf course will feature strategically-placed sand traps and several lakes scattered throughout the course. These water storage basins will also function as storm runoff settling ponds and the largest, located near the 9th hole, is planned to serve as the irrigation system reservoir.
The applicant states that fee structures for the course will be similar to other courses with membership and monthly fees for members. Varied open play rates are planned for weekdays, weekends and holidays, along with special Kamaaina, Club, Senior and Junior rates. Public fees for the course have not yet been specified. However, given the Department of Parks and Recreation's (DPR) concern regarding affordability of the proposed course for Oahu residents, any CUP approval would require the applicant to negotiate an agreement/contract for public play rates with DPR.

The hours of use for the golf course are proposed to be from sunup to sundown, 365 days a year, with the driving range available for use until 10 p.m. daily.

F. Public Agencies Review: The application was reviewed by one Federal, three State, and five City agencies to determine the adequacy of public services and facilities to support the proposed use. While the Board of Water Supply commented that it had no objection to the subject golf course, it did state that it found unacceptable the proposed use of brackish water with chlorides exceeding 200 parts per million (ppm) for irrigation. This issue will be further addressed under infrastructure.

It was requested by the Navy that the CUP-1 be denied until the Navy is given assurances by the developer that the proposal will not affect the quality of its drinking water source. This comment is based on the Navy's concern that the proposed golf course may adversely affect the water quality in the Barbers Point Shaft, which is the only source of potable water for the Naval Air Station at Barbers Point. They are concerned that the irrigation of the proposed golf course using caprock water will increase the salinity of the water at the Barbers Point Shaft. Further, they are also concerned about the effects of pesticides and fertilizers applied to the golf course.

The Department of Transportation expressed concern about the potential need for improvements at the intersection of Makakilo Drive and the Makakilo Interchange off ramp.

The Department of Land and Natural Resources (DLNR) stated that because the irrigation water source is expected to be from the Ewa Plain caprock aquifer within the Pearl Harbor Water Management Area, a water-use permit must be obtained from the Commission on Water Resource Management. Additionally, the DLNR commented that the salinity of the caprock water has increased significantly and if this trend continues, water from this source will become too brackish for golf course irrigation.

The Department of Health (DOH) had a number of concerns about the project. Primary among those and similar to the Navy's and Board of Water Supply's (BWS) concerns was the potential for contamination of nearby
public water systems by either the intended use of brackish water or the use of chemicals on the golf course. Because the location of the proposed project is extremely close to the sources of two major public water systems, the Barbers Point Shaft and the Makakilo Well, the nature of the hydrology of the area make the contamination of these sources a major concern of the DOH. The DOH cited a U.S. Geological Survey study conducted on the use of brackish waters for irrigation and its effect on the quality of groundwater in the Barbers Point Shaft. This study concluded that the use of brackish irrigation waters on fields is the primary cause of a rise in the chloride concentrations in the source. The current EPA recommended level for chloride concentration in drinking water is 250 milligrams per liter (mg/l), and the DOH states that chloride levels in both sources presently equal or exceed 230 mg/l. The DOH further comments that of potentially greater health impact would be the contamination of these sources by pesticides, herbicides, and fertilizers applied to the land in the recharge area of the two sources. They can be carried to the groundwater supply by either the irrigation water or by rainfall penetrating the ground. The applicant will be required to address all water concerns of the DOH (and thereby address Navy’s and Board of Water Supply’s concerns as well) as a condition of the CUP-1.

Another concern centered on the use of dual water systems as proposed by the applicant due to the increased potential for the consumption of nonpotable water. The DOH advised the appropriate use of cross-connection control devices and the clear labeling of piping to address such problems. This, too, will be made a condition of the CUP-1.

The proposed construction of several man-made lakes by the applicant to serve as obstacles, storm water runoff settling ponds, and irrigation system reservoirs proved to be another concern to the DOH. If unlined, the brackish irrigation water and storm water runoff could recharge the aquifer that supplies water to the Barbers Point Shaft. This is of concern because such water has the potential to carry pesticide and fertilizer residues to the lakes, and depending on the solubility of each product, to contaminate the underlying aquifer through normal groundwater recharge. The DOH recommends that if a liner is installed at the time of construction and grading, monitoring devices be installed in a manner to detect leaks from liner failure. This also can be made a condition of the CUP-1.

Because the applicant proposes to utilize gas-powered golf carts which will necessitate the installation of an underground storage tank, the DOH requests that the applicant outline measures to be taken to ensure prompt detection and confinement of gasoline releases into the subsurface environment. This, too, can be addressed as a condition of the CUP-1.

The DOH recommends that the maintenance shed which will store fertilizers and pesticides be bermed and waterproofed to contain all spills and leaks from containerized liquids. This can be made a condition of the CUP-1.
The DOH concluded its comments by stating there were numerous environmental concerns relating to the proposal. As such, it could not support the project until measures to mitigate these concerns can be provided, and recommended that it be denied at this time.

Because all of the concerns cited could not be adequately addressed by the applicant prior to the original June 30, 1988, deadline for the Director's decision on the CUP-1, the application was withdrawn. Upon resolution of these concerns, the application was subsequently resubmitted to the DLU.

All of these issues will be addressed under Infrastructure. None of the other agencies had objections to the project.

The Department of General Planning (DGP) indicated that no Development Plan Land Use or Public Facilities Map amendment is required to develop the project site as golf course since the lands have a Land Study Bureau Rating of "E", the project will be privately funded, and is permitted by the Land Use Ordinance. Once the golf course is completed, DGP will process a Land Use amendment to redesignate the site from Agriculture to Parks and Recreation. The Department of Parks and Recreation recommended that the green fees for the proposed golf course be affordably structured so as to allow the greatest possible number of Oahu residents to play.

G. Community Concerns: Notices regarding the project were sent to adjoining property owners, community organizations, public officials, and the local Neighborhood Board. The Oahu Tri-County Farm Bureau had no objections to the project. No other comments have been received to date.

H. Land Use Relationship: The project site is generally bounded by the H-1 Freeway to the east and south, Makakilo Gulch to west and Palehua Road (Cane Haul Road) to the north. The existing land uses in the area are residential and agricultural. Makakilo City lies to the west of the project site, and at the present, approximately 1,730 single-family units and 1,010 multi-family units have been sold. The cultivation of sugar cane is the major agricultural use in the area.

Future land uses in the area include the expansion of Makakilo City. By the golf course completion target date of July 1991, Makakilo City is projected to increase by 400 single-family units and 225 multi-family units. Also by 1991, Phase I of the Makakilo Shopping Center (or Kapolei Shopping Center) is expected to be completed and operational. This shopping center will consist of approximately 157,000 square feet of gross leaseable area.

III. ANALYSIS

The Director may allow a conditional use upon finding that the proposed use satisfies the following four criteria:
1. The proposed use is permitted as a conditional use in the underlying zoning district and conforms to the requirements of the Land Use Ordinance (LUO).

The proposed golf course is permitted as an outdoor recreation facility in the AG-2 General Agricultural District as a Conditional Use Permit, Type 1 subject to approval of a CUP. The applicant's proposal meets the LUO requirements in the following areas:

   a. Lot area and width: The two-acre minimum lot size and the 150-foot minimum lot width and depth of the AG-2 district are obviously met by the subject 232.5 acres.

   b. Building Heights and Setbacks: In AG-2 zoned districts, the maximum height permitted for nonagricultural structures is 15 feet and 25 feet if height setbacks are provided. While the halfway house, maintenance building, and parking structure will fall well under these height limits, the clubhouse will require a height variance which has recently been applied for.

   In AG-2 General Agricultural Districts, the front yard requirement is 15 feet while the side and rear yard requirements are both 10 feet. With the closest structure being 30 feet from any property boundary, these requirements are amply met by the proposal.

   c. Parking: The applicant will provide two loading spaces and 201 parking stalls in two parking areas, one on either side of the clubhouse, or five more spaces than the 195 required using the parking calculations. (See page 16.)

   d. Screening and Buffering: The LUO requires landscaping and screening of parking lots, service and loading spaces, and trash enclosure in all zoning districts. The proposed golf course will meet all screening requirements of the LUO.

   e. Signage: While signage for the proposal has not yet been specified, the project must comply with the LUO sign regulations for AG-2 General Agricultural Districts which allow one sign not exceeding 12 square feet in area, and no closer than 10 feet from the property line or higher than eight feet above ground elevation. No off-site signs will be permitted.

2. The site is suitable for the proposed use considering size, shape, location, topography, infrastructure, and natural features.

Under Section 5.20 of the Land Use Ordinance (LUO), golf courses are permitted in AG-2 General Agricultural Districts as a Type 1 Conditional Use Permit.
a. **Topography and Natural Features:** The proposed golf course is located on the slopes of Puu Makakilo, starting from its northeast face and wrapping around to its south face. The area consists of dry range land with a poor, scrub-type vegetative cover. While the terrain of the subject area is hilly and varies in elevation, none of the slopes exceed 30 percent. Grading in certain areas will be extensive in order to achieve the necessary plateaus for the fairways and greens. The effects of this grading on drainage will be addressed under *Infrastructure*.

b. **Infrastructure:**

**Water:** To address the DOH's earlier concerns about potential groundwater contamination, the applicant subsequently provided the DOH with new information concerning the direction of groundwater flow in the area of the proposed golf course. The data presented to the DOH was gathered by field calculations of well head levels from potable and observation wells in the area. The DOH stated that the head levels clearly indicated that the direction of groundwater flow is in a more westerly direction than earlier assumed, and indicates that any groundwater contamination resulting from the golf course activities will travel in a westerly direction towards the adjacent Makakilo residential development. The DOH further stated that this direction of flow will preempt contamination concerns of the Navy's Ewa Shaft resulting from the proposed golf course.

While the information provided alleviated many of the DOH's concerns related to contamination of existing drinking water sources, the DOH did state that the developer should monitor the application of pesticides and fertilizers through soil sampling to ensure that no groundwater contamination occurs. Further, the DOH added that the monitoring of the observation well (USGS Well No. 2103-01) for potential contamination from the golf course should be conducted. These will be made conditions of the CUP-1. The DOH has also proposed additional conditions regarding the monitoring and testing of groundwater, lining of the proposed man-made lakes, implementation of a management plan for fertilizers and pesticides, berming of structures which will house pesticides and other chemicals, and adherence to the Underground Storage Tank Program. These, too, will be included as conditions of the CUP-1.

**Traffic:** As previously indicated, vehicular access to the site will be via an access road which will be constructed from the end of Makakilo Drive by the applicant to dedicable standards. Planned roadways will be 56 feet wide with curbing and shoulders, and will be adequate for all modes of traffic including service vehicles, refuse collection trucks, fire service trucks, and other emergency vehicles. The dedicated roadway will end at the golf course property line, and the interior roadway system will continue into the golf course proper.
Makakilo Drive provides the only access for Makakilo City to major highways, including the H-1 Freeway which carries the majority of the vehicles in the east-west direction of the region. The primary market for the Makakilo Golf Course is expected to be private members, local golfers, and tourists who are located to the east of the project site towards the Primary Urban Center, including Honolulu, Waikiki, Central Oahu, and other areas.

While the Department of Transportation (DOT) expressed concern about the potential need for improvements at the intersection of Makakilo Drive and the Makakilo Interchange off ramp, they indicated that Ordinance 86-128 pertaining to the zone change for the Makakilo Shopping Center required the Center developer to implement certain improvements, including traffic signals, at this particular intersection. The DOT, therefore, recommends that the developers of the proposed golf course and the shopping center coordinate this matter in order to determine their respective responsibilities. The Department of Transportation Services recommends direct access to the golf course from the H-1 Freeway. The Ewa Development Plan Public Facilities Map indicates a future interchange for the H-1 approximately three miles east of the Makakilo interchange. Campbell Estate's master plan for Ewa shows that this interchange would connect to an extension of Makakilo Drive, serving the golf course area and other future increments of Finance Realty's Makakilo development.

Wastewater: The anticipated sewerage volume to be generated by the project is estimated to be 8-10,000 gallons per day. An on-site sewer system will be constructed by the applicant which will consist of a force main from the Halfway House and Maintenance Building through which effluent will be pumped to the golf clubhouse. From the clubhouse, sewage will flow through a gravity sewer main along the access road and connect with the proposed off-site sewerage system. Wastewater will be disposed of at the existing Honouliuli Wastewater Treatment Plant which, according to the Department of Health, has available capacity to accommodate this additional flow. The Department of Public Works stated that public sewers may be considered available and adequate, since the sewer improvements will be provided by the developer. Provision of sewer improvements by the developer in accordance with City standards will be made a condition of the CUP-1.

Drainage: A preliminary drainage report prepared for the project concluded that due to the grading and vegetative cover to be provided by the golf course, the amount of runoff generated on-site will actually be reduced. Department of Public Works (DPW) personnel verbally concurred with this conclusion, and in written comments stated that the project will have a negligible impact on drainage. Much of the parcel's steeply sloped areas with poor ground cover will be replaced by milder slopes with tuffgrass. The applicant states that the estimated grading quantities for the project are:
Graded area = 167 acres
Excavation = 620,000 cubic yards
Embankment = 620,000 cubic yards

As these figures indicate, all materials to be excavated will be used for embankment purposes on site. Since more precise grading specifications are not available at this time, review of the applicant's grading plan by the Director prior to the issuance of any grading permit is appropriate and will be made a condition of the CUP-1. Additionally, because all drainage improvements must be to City standards, approval of such improvements by the DPW will also be made a condition of the CUP-1.

c. Environmental:

Historical/Archaeological Sites: A surface reconnaissance of the subject parcel was completed by the Applied Research Group of the Bishop Museum in March 1988. This reconnaissance concluded that because no surface remains were located within the project area and because the potential for subsurface remains is minimal, no testing was warranted. The Historic Sites Office of the Department of Land and Natural Resources concurred with this conclusion.

Botanical Survey: The site is covered with scrub weedlike vegetation which are all exotic or introduced species.

3. The proposed use will not alter the character of the surrounding area in a manner substantially limiting, impairing, or precluding the use of surrounding properties for the principal uses permitted in the underlying zoning district.

a. Impacts on Agriculture: The Department of Agriculture stated that the subject property has Land Study Bureau Overall Productivity Ratings and Land Types of D65, E82, E85, E86, E87, E104, and E105, which indicate that most of the project area has poor productivity potential for most agricultural activities. Thus, although zoning for the property is AG-2 General Agricultural District, development of the proposed golf course will not involve the loss of any highly productive agricultural lands. It should also be noted that because the subject property is vacant, the proposal will not displace any farmers or other tenants in residence. While the site is under a limited grazing lease to Tongg Ranch, this lease is subject to termination by the landowner.

b. Impacts on Residential Uses: No urban residential uses will be developed on the site as part of the proposed project. Further, the golf course will not have a major impact on any of the existing residences in the Makakilo area, since none of the homes are in close proximity to the subject site. The homes are set apart well to the west and north of the course. Homes on Makakilo Drive are two ridges west of the proposed golf course, and homes in the higher areas of Makakilo are situated behind the
unimproved Puu Makakilo. There are vacant lands currently zoned preservation, residential, and agricultural which directly border the golf course boundaries. Any residential units built in these areas will likely command premium values when and if developed because of the amenities of a view and open space. Below the southern boundary of the subject property is the Pacific Concrete and Rock Quarry which is an unlikely site for any future residential development.

The dining and clubhouse facilities will be open 365 days, closing at 10 p.m. with extended hours for banquets and special occasions. While the relative isolation of the golf course should ensure that the development will not impact the adjacent residential community with its evening operations of the dining facilities and the driving range, a condition of the CUP-l will be granting the Director authority to alter operating hours should it become necessary in the future.

c. Urban Design: The accessory uses have been designated to minimize their visual impacts from the H-l Freeway. The golfcart storage facility will be located under one of the parking structures in order to screen its operations from view, and both parking structures will be terraced into the hillside and landscaped.

The clubhouse will also be terraced into the hillside in order that the view towards the golf course from the H-l Freeway will not be dominated by a silhouette of the structure against the hillside. The building materials will be predominantly stucco, glass, heavy timbers, and rock retaining walls, with the rock walls serving to blend the clubhouse into the surrounding terrain. The clubhouse will also have a pitched roofline (height variance required) to echo the slopes of the surrounding hillsides, and a large lanai on the second floor which will wrap around the makai side of the building.

The maintenance building will be comprised of a low rigid frame system with a metal roof deck on purlins. Walls will be of metal siding and the flooring will be concrete. Landscaping will be installed on all sides of the building so that view impacts from the H-l Freeway will remain unobtrusive.

Because the course will be laid out on such an irregular-shaped parcel, the traditional 9th and 18th holes closing at the clubhouse will not be practiced at the proposed golf course. The 18 holes begin on the northern end of the course, and each nine holes winds away from the clubhouse, broken only by the halfway house at the end of the first nine holes of play. While the first nine holes move in a north to south configuration, the second nine holes parallel each other.

Landscape plantings are to be done in large irregular masses of single species to appear natural and to fit in with the large scale of the course. Straight line plantings will be avoided. A variety of plant
material will be utilized for color, accent, screening, and space definition. Final building design and landscape plan approval by the Director will also be made a condition of the CUP-1.

d. Community Benefits: One of the obvious community benefits to be derived from the proposal is the provision of an additional golf course facility which the Department of Parks and Recreation has stated will help meet the increasing recreational demand for golf on Oahu. However, this benefit will be realized only if the course is open to public play at affordable rates. This can be made a condition to the permit. Secondly, a vast dry and arid open space will be replaced by a well-landscaped visual amenity which will improve the runoff retention capacity of the site. Other benefits which the proposal will provide are employment opportunities for an estimated 65-70 persons, as well as additional revenue for the City. Finally, a less obvious benefit of the development is the provision of a golf facility on land with poor agricultural potential, thereby relieving some of the pressure to develop golf courses on more productive agricultural lands.

IV. CONCLUSIONS OF LAW

The Director hereby makes the following Conclusions of Law: The proposed 18-hole golf course and attendant accessory uses will not have any significant adverse effect on the health, safety, or comfort of persons living or working in the area and will be no more injurious, economically or otherwise, to property or improvements in the surrounding area than would any use generally permitted in the district, provided the use meets the concerns outlined in this report and the conditions enumerated in the following Recommendations.

V. DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Conclusions of Law, the Director of Land Utilization hereby approves the application for a Conditional Use Permit to establish an 18-hole golf course with accessory uses, including a clubhouse, driving range, maintenance building and parking, in the AG-2 General Agricultural District, subject to the following conditions:

1. This Conditional Use pertains to the land area on the map attached hereto as Exhibit A.

2. The golf course and accessory uses shall be in general accord with the Makakilo Golf Course Master Plan, attached hereto as Exhibits C-1 through C-6. No residential uses shall be permitted as accessory to the golf course.

The following conditions require compliance prior to the issuance of grading permits:

3. The owner/developer and all subsequent owners shall establish a groundwater monitoring plan and system which shall be presented to the
State Department of Health (DOH) for its approval. Confirmation from the DOH of its approval of such a plan and system shall be submitted to the DLU prior to the issuance of any grading permits. The groundwater monitoring plan and system shall minimally describe the following components:

a) A system of monitoring wells constructed throughout the site. These monitoring wells shall extend approximately ten (10) feet below the water table, or as required by the DOH or BWS.

b) A routine groundwater monitoring schedule of at least once every six (6) months and more frequently, as required by the DOH, in the event that the monitoring data indicates a need for more frequent monitoring.

c) A list of compounds which shall be tested for as agreed to by the DOH. This list may include, but not be limited to the following: total dissolved solids, chlorides, PH, nitrogen, phosphorus, or any other compounds associated with fertilizers, biocides or effluent irrigation.

4. Baseline groundwater data shall be established as described in this paragraph. Once the test well sites and list of compounds to be monitored have been determined and approved by the DOH, the owner/developer shall contract with an independent third-party professional (approved by the DOH) to have the groundwater sampled and its data reported to the DOH. Testing of the groundwater shall be done by a certified laboratory. Confirmation from the DOH that such approved testing is being conducted and has been arranged shall be submitted to DLU prior to the issuance of any grading permits.

5. Soil sampling in appropriate areas in a manner prescribed and approved by the DOH shall be conducted to ensure that ground water contamination from pesticides and fertilizers does not occur. Confirmation from the DOH that such sampling is underway/to commence shall be submitted to DLU prior to the issuance of any grading permits.

6. The observation well (USCG Well No. 2103-01) shall be monitored for contamination that may originate from the golf course. Confirmation from the DOH that such monitoring is underway/to commence shall be submitted to DLU prior to the issuance of any grading permits. Should data from the monitoring wells indicate the presence of the measured compound and/or the increased level of such compound, the DOH can require the owner/developer or subsequent owner to take immediate mitigating action to stop the cause of contamination. Subsequently, the developer/owner or subsequent owner shall mitigate any adverse effects caused by the contamination.

7. The applicant shall submit a preliminary project grading plan to the DLU for review and approval prior to the issuance of any grading permit.
8. The applicant shall negotiate and enter into a contract with the City's Department of Parks and Recreation to establish terms, conditions, and rates for public play on the golf course. The contract with the City shall control tee time policies and rates at least four days per week. A copy of the executed contract with the City shall be forwarded by the applicant to DLU prior to the issuance of any grading permit.

The following conditions require compliance prior to the issuance of building permits:

9. The applicant shall enter into an agreement with the City's Department of Transportation Services (OTS) to extend Makakilo Drive to the proposed location of the new H-1 Freeway interchange indicated on the Ewa Development Plan Public Facilities Map and enter into an agreement with the State's Department of Transportation (DOT) to participate in the cost of constructing the new interchange. Final subdivision approval, including performance bonds, for the Makakilo Drive improvements will be required prior to the issuance of building permits for golf course structures.

10. Buildings designated to house fertilizers and biocides shall be bermed to a height sufficient to contain a catastrophic leak of all fluid containers. Floors of such building shall be made waterproof to ensure that all leaks can be contained within the structure for cleanup. Confirmation that plans for such berming and waterproofing have been approved by the DOH shall be submitted to DLU prior to the issuance of a building permit for the structure.

11. A plan showing the location of and specifications for the project's exterior lighting, which would show that there will be no direct illumination toward residential, apartment, and country districts shall be submitted for the Director's approval prior to the issuance of any building permits.

12. Should final design of the clubhouse or any other planned structure exceed height limits for the parcel, a height variance shall be approved prior to the issuance of any building permits for the structure(s). Final building design and landscape plans shall be approved by the Director prior to the issuance of any building permits.

The remaining are general conditions not related to issuance of grading or building permits:

13. The proposed man-made lakes to serve as obstacles, storm water runoff settling ponds, and irrigation system reservoirs shall be lined and installed with monitoring devices to detect leaks. This shall be done in a manner prescribed and approved by the DOH. If there is any leakage, the applicant shall be responsible for repair and/or corrective action and subject to the review and approval of DOH.
14. In consultation with the DOH, the applicant shall use cross-connection control devices, the clear labeling of piping, and other recommended measures to alleviate potential problems with the project's proposed dual water system.

15. The owner/developer/operator of the golf course shall conform to the requirements of the Federal and State Underground Storage Tank Program.

16. A golf course maintenance plan and program shall be established based on "Best Management Practices (BMP)" in regards to utilization of fertilizers and biocides as well as the irrigation schedule. BMP's will be revised as an ongoing measure. Confirmation of the DOH's approval of the golf course maintenance plan shall be submitted to DLU prior to implementation.

17. The DOH shall immediately notify the DLU of any failure by the applicant to comply with Condition Nos. 3, 4, 5, 6, 8, 13, 14, 15, or 16 contained herein.

18. All wastewater improvements shall be provided at the developers cost and in accordance with City standards and requirements.

19. All water system improvements to serve the project's domestic water needs shall be provided at the developer's cost, and in accordance with City requirements and standards.

20. All drainage improvements required by the Department of Public Works shall be provided at the developer's cost and in accordance with City standards.

21. The applicant shall obtain approval of a permit to withdraw water for irrigation purposes from the Commission on Water Resources.

22. Operation of the facilities shall cease by 10 p.m., with the exception of extended dining hours for banquets and other intermittent special occasions. However, at no time shall operations be permitted beyond midnight. The Director shall retain the authority to further alter operating hours should such alteration be deemed necessary in the future.

23. If during construction, any previously identified sites or remains (such as artifacts, shell, bone, or charcoal deposits, human burials, rock or coral alignments, pavings, or walls) are encountered, the applicant shall stop work and contact the State Department of Land and Natural Resources (DLNR) Historic Sites Office at 548-7460 immediately. Work in the immediate area shall be stopped until the office is able to assess the impact and make further recommendations for mitigative activity.
24. The owner/developer shall notify the Department of General Planning (DGP) upon completion of the golf course in order that DGP may process a Land Use amendment to redesignate the site from Agriculture to Parks and Recreation.

25. The Director may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate in accordance with Section 4.30 (B) of the Land Use Ordinance, as amended.

26. Any modifications to the project and/or conditions stated herein shall be subject to the approval of the Director of Land Utilization.

27. In the event of noncompliance with any of the conditions set forth herein, the Director may initiate action to halt its operation until all conditions are met, or terminate the use and revoke the permit. The Director may also terminate the use and revoke the Conditional Use Permit upon determination that such activity or activities prove harmful to the health, life, safety, and welfare of the neighborhood and/or the general public.

28. The applicant and/or landowner shall notify the Director of Land Utilization of any change or termination of use. The Director shall then determine appropriate disposition of the permit and facilities.

29. Violations of this permit shall be subject to Article 8 of the Administrative and Enforcement Section 8.60 of the Land Use Ordinance, as amended.

Dated at Honolulu, Hawaii, this 14 day of February, 1989.

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

By JOHN P. WHALEN, DIRECTOR

JPW:ik
0460N
### PARKING SPACE CALCULATIONS

<table>
<thead>
<tr>
<th></th>
<th>LUO Requirement (Sq. Ft.)</th>
<th>Proposed Floor Area (Sq. Ft.)</th>
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<tr>
<td>Pro Shop</td>
<td>1 per 400</td>
<td>2,660</td>
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<tr>
<td>Office</td>
<td>1 per 400</td>
<td>1,600</td>
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<tr>
<td>Kitchen</td>
<td>1 per 400</td>
<td>1,495</td>
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<tr>
<td>Kitchen (9th-hole Rest House)</td>
<td>1 per 400</td>
<td>135</td>
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<tr>
<td></td>
<td></td>
<td>5,890</td>
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<tr>
<td>Total Stalls Required</td>
<td></td>
<td>5,890/400 = 14.72 = 15</td>
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<tr>
<td>Stalls Provided</td>
<td></td>
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<tr>
<td>Main Restaurant</td>
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<td>1,460</td>
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<td></td>
<td></td>
<td>5,615</td>
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<tr>
<td>Total Required</td>
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<td>5,615/100 = 56.15 = 57</td>
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<tr>
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<tr>
<td>Hole</td>
<td>3 per hole</td>
<td>18 holes</td>
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<tr>
<td>Stalls Provided</td>
<td>Greater Amt. 63/54</td>
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<tr>
<td>Golf Driving Range</td>
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<td>Stalls Provided</td>
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<tr>
<td>Handicap Parking</td>
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<td>151 to 200 total stalls = 6</td>
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<tr>
<td>Required</td>
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<td>6 Stalls</td>
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<tr>
<td>Handicap Provided</td>
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<td>195 Stalls</td>
<td>195 Stalls</td>
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<tr>
<td>Including Compact and Handicap Stalls</td>
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<td>201 stalls</td>
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<tr>
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<td>Loading Space Calculations</td>
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<td>Total Floor Area</td>
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<td>2 Spaces</td>
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To:  GLENN BAWER - DWRM  
From:  Tom Nance  
Subject:  REQUESTED INFO.

(1) Schematic section of DES' first production well (1806-11) in the condition it was left prior to outfitting (HMCO did the outfitting).  
(2) Layout of the Miletides Desal plant site - there are actually five holes, 4 within the plant lot. Three have plastic casings; the opposite hole has steel casing.

680 Ala Moana Boulevard, Suite 406 • Honolulu, Hawaii 96813-5411 • Phone: (808) 537-1141 • Fax: (808) 538-7757
CHECKLIST

☑ WELL CONSTRUCTION PERMIT ☑ PUMP INSTALLATION PERMIT

WELL NAME or LOCATION: MAKAKILO GOLF COURSE
STAND-BY WELL ISLAND: OAHU

WELL NUMBER: 1904-0A07 Tax Map Key: 9-1-16:01

OWNER/OPERATOR:
Firm Name: MAKAKILO GOLF CORPORATION
Contact Person: BOB MOSE
Address: 500 ALA MANA BLVD., HONOLULU, HI 96813
Phone: 591-BB04

LANDOWNER:
Firm Name: STATE OF JAMES CAMPBELL
Contact Person: SAMUEL KEALA
Address: 828 PEPET ST HALL, SUITE 500
HONOLULU, HI 96815
Phone: 544-3289

Date application received: 2-1-91
Date acknowledged receipt/request more info: 3-1-91
Date application accepted: 
Suspense date (90 days): 
Date filing fee deposited: $25

Application sent to following:
- Dept. of Health
- Dept. of Hawn Home Lands
- Dept/Bd of Water Supply
- Historic Preserv. Prog.
- Koolauloa NB #28 (Oahu)
- Dept.Pub. Wrks (Hawaii)
- Office of Hawaiian Affairs

Date sent: 4/3/91
Comments received:

Date agenda due: 
Date submittal due: 
Date submittal sent to applicant: 

Date application approved or disapproved: 
Date applicant notified of decision: 

REMARKS:

Hislop called Bob Impeor - CWAM mtg. on 4/17
Hislop called Sam/Keala - "" "" 
To: DWRM

Attention: Ed Sakada

From: Tom Nance

Subject: Makahilo Desil Wellness

If you do not receive all pages, please telephone immediately.

Location of the original hole is shown on the map following. Although it was drilled in an actively cultivated sugarcane field (on the cane field side of OSCO's perimeter dirt road), subsequent survey has shown it to be 23.14' into the road R.O.W.
LOCATION MAP
WELLS 1904-02 & 03 ALONG THE
BPNAE ACCESS ROAD
Gentlemen: We are sending you [Attached]

- Shop drawings
- Prints
- Specifications
- Copy of letter

Copies  Date  Description
1  11/15/92  WELL COMPLETION REPORTS

These are transmitted as checked below:

- For approval
- No exceptions taken
- Resubmit [ ] copies for approval
- For your use
- Make corrections noted
- Submit [ ] copies for distribution
- As requested
- Revise and resubmit
- Return [ ] corrected prints
- For review and comment
- Rejected

Remarks:

Copy to: [ ]

Signed: [Signature]

If enclosures are not as noted, kindly notify us at once.
From: [Signature]

Date: 

File In: 

To: 

Initial: 

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<th>Initial</th>
<th>Please</th>
<th>Remarks</th>
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<td>E. Sakoda</td>
<td></td>
<td>See Me</td>
<td>Mitchell - Tom Name will call</td>
</tr>
<tr>
<td>F. Ching</td>
<td></td>
<td>Call</td>
<td></td>
</tr>
<tr>
<td>W. Rozeboom</td>
<td></td>
<td>Review &amp; Comment</td>
<td>Send a map showing locations of wells.</td>
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<tr>
<td>P. Haraguchi</td>
<td></td>
<td>Take Action</td>
<td></td>
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<tr>
<td>G. Bauer</td>
<td></td>
<td>Investigate &amp; Report</td>
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<td>N. Fujii</td>
<td></td>
<td>Draft Reply</td>
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<tr>
<td>A. Okamura</td>
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<td>Acknowledge Receipt</td>
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<tr>
<td>E. Lau</td>
<td>E.</td>
<td>Type Final cc:</td>
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<tr>
<td>L. Chang</td>
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<tr>
<td>Y. Shiroma</td>
<td></td>
<td></td>
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<tr>
<td>M. Tagomori</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>S. Kokubun</td>
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For Your: 

<table>
<thead>
<tr>
<th>For Your</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approval</td>
</tr>
<tr>
<td>Signature</td>
</tr>
<tr>
<td>Information</td>
</tr>
</tbody>
</table>

The original 1904-02 is an observation well. We'll probably give the old one an "M" number.
Mr. Manabu Tagomori  
Water Resource Management Division  
Department of Land and Natural Resources  
State of Hawaii  
P. O. Box 373  
Honolulu, Hawaii 96809  

Dear Manabu:

Well Completion Report  
for Wells 1904-02 and -03  
in the Ewa Caprock Aquifer Near Puu Kapolei

Enclosed are Well Completion Reports for Wells 1904-02 and -03 located next to the Barbers Point Naval Air Station access road. The wells were drilled by Roscoe Moss Company to provide brackish feedwater (of 800 to 900 MGL chlorides) for a private desalting plant. Treated water from the plant will be pumped to the Makakilo Golf Course for irrigation use.

If you have any questions or require additional information, please give me a call at 521-5361.

Sincerely,

Tom Nance

cc: Bob Imose

Enclosures
NAME: Bob Miyasato
Company: Finance Realty
From: Ed Sakoda
Date: 3/12/93  Time: 3:57 pm

Total number of pages (including Transmittal Page): 3

If you do not receive all of the pages legibly, please call back: (808) 587-4225
 Sending Facsimile Number: (808) 587-0219
 Receiving Facsimile Number: ( ) 518-3330

TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE) WAS SENT

** COUNT **
# 3

*** SEND ***

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<th>DURATION</th>
<th>#PAGES</th>
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<td>8085483330</td>
<td>3-12-93</td>
<td>1'40&quot;</td>
<td>3</td>
<td>XEROX TELECOPIER 7020</td>
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TOTAL  0:01'40"    3
### WELL COMPLETION REPORT

- **Location:** Makakilo Golf Course
- **Well Name:** Well 2, Irrigation
- **Owner:** Makakilo Golf Course
- **Contractor:** Rosco Moss Hawaii, Inc.
- **Date of Well Completion:** 01-10-92
- **Date of Pump Installation:** 01-10-92
- **Ground Elevation:** 372.5 ft above mean sea level
- **Total Depth of Well Below Ground:** 70 ft
- **Casing Installed:** PVC 1.2 in. I.D. x 600 ft
- **Well Height:** 50 ft below ground
- **Pump Installation:** Wells 1.1 ft below ground

### Driller's Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level (ft)</th>
<th>Depth (ft)</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>Brown Mud</td>
<td></td>
<td>10-20</td>
<td>White Coral</td>
<td></td>
</tr>
<tr>
<td>20-40</td>
<td>Rinsed brown mud &amp; coral</td>
<td></td>
<td>40-70</td>
<td>Rinsed brown mud &amp; coral</td>
<td></td>
</tr>
<tr>
<td>40-70</td>
<td></td>
<td></td>
<td>70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Remarks

Submitted by (print) Tom Nance

Signature: [Signature]

Title: Consultant

Date: Jan 15, 1992

FOR DRILLER'S USE

Job Name: ...

Job No.: ...

FOR OFFICIAL USE

Latitude: 21° 19' 62"

Longitude: 158° 04' 29"

Well No.: 1904-03
WELL 1904-03 (40' WEST OF WELL 1904-02)
CHIYODA MAKIKO GOLF CORP - OWNER

- DRILLED DEC. 1991
- SHORT TERM PUMP TEST IN THE OPEN HOLE ON DEC. 30; 8-HR PUMP TEST IN THE CASED WELL ON JAN. 7, 1992

**Graph:**
- **DRAWDOWN (FT):**
  - Cased well test on Jan. 7th
  - Open hole test on Dec. 30th
  - Drawdown in 1904-02 (Jan. 7th)

**Flowrate (gallons per minute):**
- 200
- 400
- 600

Water quality during Dec. 30th pump test in the open hole:

<table>
<thead>
<tr>
<th>Time</th>
<th>Chlorides (MCL)</th>
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</thead>
<tbody>
<tr>
<td>1:50 PM</td>
<td>725</td>
</tr>
<tr>
<td>3:00</td>
<td>735</td>
</tr>
<tr>
<td>4:00</td>
<td>790</td>
</tr>
<tr>
<td>5:00</td>
<td>800</td>
</tr>
<tr>
<td>6:00</td>
<td>815</td>
</tr>
</tbody>
</table>

Water quality during Jan. 7th 8-HR pump test in the cased well:

<table>
<thead>
<tr>
<th>Time</th>
<th>Temp (°C)</th>
<th>Conductivity (μmhos)</th>
<th>Chlorides (MCL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 AM</td>
<td>20.8</td>
<td>3125</td>
<td>710</td>
</tr>
<tr>
<td>9</td>
<td>20.8</td>
<td>3220</td>
<td>745</td>
</tr>
<tr>
<td>10</td>
<td>20.7</td>
<td>3500</td>
<td>770</td>
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<tr>
<td>11</td>
<td>20.9</td>
<td>3440</td>
<td>815</td>
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<tr>
<td>Noon</td>
<td>20.8</td>
<td>3500</td>
<td>840</td>
</tr>
<tr>
<td>1:30PM</td>
<td>20.8</td>
<td>3640</td>
<td>875</td>
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<tr>
<td>2</td>
<td>20.7</td>
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<tr>
<td>4</td>
<td>20.7</td>
<td>3740</td>
<td>910</td>
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</table>

E. Lab. Temp
**WELL COMPLETION REPORT**

**A. STATE WELL NO.** 1904-02  
**WELL NAME** Wall 4  
**LOCATION** Makaliko Golf Course  
**TAX MAP KEY**  

**B. LOCATION** Makaliko Golf Course  

**C. WELL OWNER** Makaliko Golf Course  

**D. DRILLING OR PUMP INSTALLATION CONTRACTOR** Rosco Moss Hawaii, Inc.  
**DRILLER** Jerry Bourn  

**E. TYPE OF HUB** Cable tool  

**F. DATE OF WELL COMPLETION** 11/25/91  
**DATE OF PUMP INSTALLATION**  

**G. GROUND ELEVATION** (msl)  
**Top of Drilling Platform** (ma) ft.  
**Height of drilling platform above ground surface** (ft)  
**Depth mark and method used to determine ground elevation** (ft)  

**H. TOTAL DEPTH OF WELL BELOW GROUND** 77  
**HOLE SIZE** 18 inch dia. from 0 ft. to 77 ft. below ground  

**J. CASING INSTALLED:**  
**12 in. I.D. steel 80 in. wall solid section to 77 ft. below ground**  
**12 in. I.D. steel 80 in. wall perforated section to 77 ft. below ground**  
**Type of perforation**  

**K. ANNULUS:**  
**Grouted from 0 ft. to 50 ft. below ground**  
**Gravel packed from 50 ft. to 77 ft. below ground**  

**L. PERMANENT PUMP INSTALLATION:**  
**Pump type, make, serial no.**  
**Capacity** (gpm)  
**Motor type, H.P., voltage, r.p.m.**  
**Depth of pump intake setting** (ft. below ground)  
**Depth of bottom of airline** (ft. below ground)  

**M. PROPOSED USE**  

**H. INITIAL WATER LEVEL** 49'9" ft. below ground.  
**INITIAL CHLORIDE ppm:**  
**Date and time of measurement** 11/14/91  
**Date and time of sampling**  

**F. PUMPING TESTS:**  
**Reference point (R.P.) used:**  
**Elevation is (ft.)**  

**Date** 11/22/91  
**Start water level** 39'5" ft. below R. P.  
**End water level** 0 ft. below R. P.  
**Depth of well** 77 ft. below ground  
**Elapsed Time (hours)**  
**Rate Drawn** (gpm) down (ft.)  
**Cl Temp.**  
**10:00 a.m.** 24 hr. test  
**to** to  
**4:50**  
**4:5.**  
**to** to  
**to** to  

**Q. DRILLER’S LOG:**  
**Depth, ft.**  
**Rock Description & Remarks**  
**Water Level ft.**  

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<th>Water Level ft.</th>
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**REMARKS:**  

Submitted by (print)  
**TOM NANCE**  
**Signature**  

**FOR DRILLER’S USE**  
**Job Name**  
**Job No.**  

**FOR OFFICIAL USE**  
**Latitude** 21° 19’ 52”  
**Longitude** 156° 04’ 29”  
**Well No.** 1904-02
WELL 1904-02 (NEAREST BP NAS ACCESS ROAD)
CHYODA MAKUSHI GOLF CORP. - OWNER

- DRILLED NOV. 1991
- 2½-HR PUMP TEST IN THE OPEN HOLE ON NOV. 14; 24-HR PUMP TEST IN THE CASED WELL ON NOV. 22-23, 1991

DRAWDOWN (FT.)

FLOW RATE (GALLONS PER MINUTE)

WATER QUALITY DURING NOV. 14TH PUMP TEST IN THE OPEN HOLE

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<th>ELAPSED TIME</th>
<th>CHLORIDES (MGL)</th>
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<tr>
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<td>725</td>
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WATER QUALITY DURING NOV 22-23, 1991
24-HR PUMP TEST IN THE CASED WELL

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LAB TEMP
## PUMPING TEST RECORD

**for**

**Makahile Golf Course Well 1904-02**

(Name)

(No.)

**Island Makahile**

Project or Job No. 2-91/5 19 91

### Description of Well--

1. Elevation: ground surface __________ ft., top of casing 50 ft., rotary table __________ ft., referenced to __________ bechmark.
2. Total depth of well 78 ft.; or 28 ft. elevation, mal
3. 12 in. solid casing to 52 ft. depth, perforated to 72 ft. depth
4. Static water level on __________ 19 91; 49.5 ft. below ground surface, top of casing; or __________ ft. elevation mal
5. Measured __________ method

### Description of Pump and Pump Setting--

5. Turbine type pump with 3 stage bowl assembly
6. Gasoline diesel electric power with 45 horsepower
7. Shaft speed: 1200 rpm at 5 gpm flow
8. Depth of pump intake: 63 8 ft. below __________ ; or 133 ft. elev. mal
9. Depth of airline bottom: 62 ft. below __________ ; or 12 ft. elev. mal
10. Center of gage: 52 ft. elev. mal. Flow measured with __________

### Test conducted by

**James Coffman**

**John Henry**

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<th>Airline (feet)</th>
<th>Drawdown (feet)</th>
<th>Chlorides (ppm)</th>
<th>Temp. (°F)</th>
<th>Cond. (mmhos 25°C)</th>
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**PUMPING TEST RECORD for Makahilo Golf Course Well 1902-02 (name) (NO.) 1102-28 (Project or Job No. 2Q1R 1991)**
TO: Makakilo Golf Corporation  
Five Waterfront Plaza, Suite 310  
500 Ala Moana Boulevard  
Honolulu, HI 96813

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your application to construct, test, and install a pump in Makakilo Golf Course Standby Well (Well No. 1904-04) for golf course irrigation use, is approved subject to the following conditions:

1. The Division of Water Resource Management (DWRM), P.O. Box 373, Honolulu, HI 96809, shall be notified, in writing, before any work covered by this permit commences.

2. The well shall be used as a backup well only.

3. The proposed well construction and pump installation shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit shall not constitute a determination of correlative water rights. The permittee is notified and by this provision understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the capacity to withdraw water authorized here or even some lesser amount is guaranteed in the future.
4. The permit shall be for construction, testing, and installation of an 875 gpm capacity, or less, pump in the well, as determined by the pumping test results. The applicant shall submit to DWRM the test results and proposed permanent pump information, based on the test, for approval by the Chairperson. No permanent pump may be installed and no water used from the well without the Chairperson's approval.

5. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage on a monthly basis.

6. The following shall be submitted to DWRM within 30 days after completion of the work:
   a. Well Completion Report.
   b. As-built sectional drawing of the well.

7. The applicant shall comply with all applicable laws, rules, and ordinances.

8. This permit may be revoked if work is not started within six months of the date of issuance or if work is suspended or abandoned for six months. The work proposed in the permit application shall be completed within 24 months from the date of permit issuance.

APR 24 1991

Date of Issuance

cc: USGS
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Honolulu Board of Water Supply
WELL CONSTRUCTION PERMIT

for
Makakilo Golf Course Well
Well No. 1904-02
Makakilo, Oahu

TO: Finance Realty Company
P.O. Box 3979
Honolulu, Hawaii 96812

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your application to construct and test Well No. 1904-02 within Tax Map Key: 9-1-16:01 for golf course and landscape irrigation use is approved, subject to the following conditions:

1. The Division of Water and Land Development (DOWALD), Geology-Hydrology Section, shall be notified at 548-7619, before any work covered by this permit commences.

2. The permit shall be for construction and testing only. No permanent pump may be installed and no water used from the well without the necessary water use and pump installation permit from the Commission.

3. The following shall be submitted to DOWALD within 30 days after completion of the well:
   a. Well Completion Report.
   b. Elevation (referenced to mean sea level) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawing of the well.
   d. Plot plan and map showing the exact location of the well.
   e. Complete pumping test record; including time, pumped drawdown, chloride content, and water quality data.
4. The applicant shall comply with all applicable laws, rules, and ordinances.

5. This permit may be revoked if work is not started within six months of date of issuance or if work is suspended or abandoned for six months. The work shall be completed within two years of the date of issuance.

WILLIAM W. PATY, Chairperson
Commission on Water Resource Management

SEP 27 1989
Date of Issuance

cc: USGS
   Department of Health, Drinking Water Program
   Ground Water Protection Program
   Honolulu Board of Water Supply
April 3, 1991

MEMORANDUM

TO: Manabu Tagomori, Deputy Director
Commission on Water Resource Management

FROM: Don Hibbard, Administrator
State Historic Preservation Division

SUBJECT: Well Construction and Pump Installation
Permit Application, Makakilo G.C. Standby
Well No. 1904-106 (Makakilo Golf Corporation)
Honouliuli, 'Ewa, O'ahu
TMK: 9-1-16: 01

HISTORIC PRESERVATION PROGRAM CONCERNS:

A review of our records shows that the location of the proposed
well site has been surveyed for historic sites and that no sites
were found. Thus, we believe that well construction and pump
installation will have "no effect" on historic sites.
March 21, 1991

Mr. Manabu Tagomori
Deputy Director
Department of Land and Natural Resources
Commission on Water Resource Management
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Tagomori:


We have no objections to the backup well for the Makakilo Golf Course. The developer should obtain approval from the Department of Health for use of the well water over the basal aquifer.

Very truly yours,

KAZU HAYASHIDA
Manager and Chief Engineer
The Honorable William W. Paty, Chairperson  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P.O. Box 621  
Honolulu, Hawaii 96809  

Dear Mr. Paty:  

SUBJECT: WELL CONSTRUCTION PERMIT APPLICATION  
MAKAKILO GOLF COURSE STAND-BY WELL  
STATE WELL NO. 1904-005  
MAKAKILO, OAHU  

Thank you for the opportunity to review and comment on the subject document. We have examined the application and have the following comments to offer:  

1. The application indicates that the subject well will be used for golf course irrigation. Thus, the Department's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems," are not applicable. However, if the proposed use were to change, the applicant must notify the Safe Drinking Water Branch.  

2. If the irrigation system is supplemented with potable water, adequate measures must be taken to eliminate cross-connections and backflow conditions. The potable and non-potable water systems should be clearly labeled and physically separated by an air gap or an approved backflow preventer to avoid contaminating the potable water supply.  

3. The proposed well is situated above the Underground Injection Control (UIC) line. Land areas above the UIC line are considered to contain underground sources of drinking water. Thus, it is essential that the well be designed and constructed to prevent the possibility of groundwater contamination. For example, the well should have a concrete well pad and full grouting to prevent seepage or floodwaters from migrating down the well shaft.
4. The operation of the proposed well should not be allowed to adversely affect the water quality of any nearby wells. The map accompanying the application indicates that the proposed well is located approximately 1,000 feet upstream of state well nos. 1904-01 and -03.

If you should have any questions, please contact the Safe Drinking Water Branch at 543-8258.

Very truly yours,

JOHN C. LEWIN, M.D.
Director of Health

cc: Bob Imose
    Makakilo Golf Course Corporation
    Five Waterfront Plaza, Suite 310
    500 Ala Moana Blvd.
    Honolulu, HI 96813
MEMORANDUM

TO: Mr. Don Hibbard, Director
    Historic Preservation Program

FROM: Manabu Tagomori, Deputy Director
      Commission on Water Resource Management

SUBJECT: Well Construction and Pump Installation Permit Application(s)

Transmitted for your review and comment is a copy of the following permit application(s):

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<th>Island</th>
<th>Well Name</th>
<th>Well No.</th>
<th>Application Type</th>
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<td>3458-02</td>
<td>Well and Pump</td>
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<td>Well and Pump</td>
</tr>
</tbody>
</table>

Please review the application(s) pursuant to your area of concern and submit your comments to us, orally or in writing, by March 22, 1991.

Should you have any questions, please contact our Regulation Branch at 548-7541.

NF:bm
Enc.
Honorable Hoaliku L. Drake  
Director  
Department of Hawaiian Home Lands  
State of Hawaii  
P.O. Box 1879  
Honolulu, Hawaii 96805

Dear Mrs. Drake:

**Well Construction and Pump Installation Permit Application(s)**

Transmitted for your review and comment is a copy of the following permit application(s):

<table>
<thead>
<tr>
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Please review the application(s) pursuant to your area of concern and submit your comments to us, orally or in writing, by March 22, 1991.
Should you have any questions, please contact Manabu Tagomori, Deputy Director at 548-7533.

Very truly yours,

WILLIAM W. PATY

Enc.
Honorable John C. Lewin, M.D.
Director
Department of Health
State of Hawaii
1250 Punchbowl Street
Honolulu, Hawaii 96813

Attn: Mr. Thomas Arizumi, Drinking Water Branch

Dear Dr. Lewin:

Well Construction and Pump Installation Permit Application(s)

Transmitted for your review and comment is a copy of the following permit application(s):

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Should you have any questions, please contact Manabu Tagomori, Deputy Director at 548-7533.

Very truly yours,

WILLIAM W. PATY
Mr. Thomas K. Kaulukukui, Sr.
Chairman & Trustee-At-Large
Office of Hawaiian Affairs
1600 Kapiolani Blvd., Suite 1500
Honolulu, Hawaii 96814

Attn: Ms. Linda Delaney, Land & Natural Resources Division

Dear Mr. Kaulukukui:

Well Construction and Pump Installation Permit Application(s)

Transmitted for your review and comment is a copy of the following permit application(s):

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Please review the application(s) pursuant to your area of concern and submit your comments to us, orally or in writing, by March 22, 1991.
Should you have any questions, please contact Manabu Tagomori, Deputy Director at 548-7533.

Very truly yours,

WILLIAM W. PATY

Enc.
March 4, 1991

The Honorable William W. Paty
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Attn: Mr. Manabu Tagomori, Deputy

Dear Mr. Paty:

We have received the following water permit applications. Thank you for the opportunity to review these applications:

<table>
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The only concern we raise on the above-referenced applications is a concern regarding Makakilo Golf Course Standby #1904-04. We simply caution that water on the Ewa Plain is limited and that current applications must be balanced against future development plans for the entire area.

We have no other comments or concerns at this time.

Sincerely,

Moses K. Keale, Sr.
Chair, Board of Trustees
Mr. Kazu Hayashida  
Manager and Chief Engineer  
Board of Water Supply  
City and County of Honolulu  
630 South Beretania Street  
Honolulu, Hawaii 96843

Dear Mr. Hayashida:

Well Construction and Pump Installation Permit Application(s)

Transmitted for your review and comment is a copy of the following permit application:

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<th>Application Type</th>
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<tr>
<td>Oahu</td>
<td>Makakilo G.C. Standby</td>
<td>1904-94 92</td>
<td>Well and Pump</td>
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Please review the application pursuant to your area of concern and submit your comments to us, orally or in writing, by March 22, 1991.

Should you have any questions, please contact our Regulation Branch at 548-7541.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director

NF:bm
Enc.
Mr. Bob Imose  
Makakilo Golf Corporation  
Five Waterfront Plaza, Suite 310  
500 Ala Moana Blvd.  
Honolulu, Hawaii 96813

Dear Mr. Imose:

We have received your application and filing fee for a permit to construct and install a pump in a well (Well No. 1904-94) at Makakilo, Oahu, (TMK 9-1-16:01). We are reviewing the application for completeness.

Should you have questions, please call the Regulation Branch of the Division of Water Resource Management at 548-7541.

Sincerely,

[Signature]

MANABU TAGOMORI  
Deputy Director

NF:mh
RE: MAKAKILO GOLF COURSE-WELL

PAY TO THE ORDER OF

DEPARTMENT OF LAND AND NATURAL RESOURCES

***************TWENTY FIVE AND NO/100********

$ 25.00

DOLLARS

MEMO FEES FOR APPLICATION FOR NEW WELL
AT MAKAKILO GOLF COURSE

1904-01 well cons. & pump
APPLICATION FOR

X WELL CONSTRUCTION PERMIT

PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 375, Honolulu, Hawaii 96859. Application must be accompanied by a non-refundable filing fee of $15.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 548-7543, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island Oahu

Tax Map Key 9-1-16:01

Address Along Barbers Point Access Road

(Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER

Firm Name Makakilo Golf Corporation

Contact Person Bob Imose

Address Five Waterfront Plaza, Suite 310

500 Ala Moana Boulevard

Honolulu, Hawaii 96813

Phone 599-8804

3. PROPOSED CONTRACTOR FOR:

Name Roscoe Moss Company

Address 830 Ahu Street

Honolulu, Hawaii 96819

4. PROPOSED WORK

- Drill New Well
- Alter
- Install New Pump
- Replace Pump
- Modify Pump

(Briefly describe the proposed work and fill in the diagram on the back of this form.)

5. PROPOSED USE

- Municipal (including hotels, stores, etc.)
- Domestic (individual, noncommercial water systems)
- Industrial
- Irrigation (specify) Golf Course
- Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL

Back-up 875 gallons per day

7. PROPOSED PUMP INFORMATION

Pump Type: Vertical Turbine

Motor: Diesel Gas

Rated Pump Capacity 875 gallons per minute (gpm)

Well Owner (print) Makakilo Golf Corp.

Landowner (print) CAMPBELL ESTATE

Signature Date 12/8/91

For Official Use Only:

Field Checked By ____________________________

Latitude ____________________________

Longitude ____________________________

Hydrologic Unit ____________________________

State Well No. 194-04-07

Quad map no. O-O
Briefly describe the proposed work:

The well will be drilled, cased, and pump tested as a back-up source of irrigation supply for the Makakilo Golf Course. Existing Well 1904-02, which has a water use permit, will be the primary source of supply. An additional use allocation will not be needed for this new well.

PROPOSED SECTION OF WELL

Elevation at top of casing 57 ft., msl.

Cement Grout 50 ft.

Hole Dia. 17 in.

Total Depth 75 ft.

Rock Packing 25 ft.

Ground Elev. 55 ft., msl*

Solid Casing: PVC (Schedule 80)

Material

Length 55 ft.

Diameter 12 in.

Wall thickness 0.70 in.

Casing: /X/Perforated / /Screen Material PVC (Schedule 80)

Length 20 ft.

Diameter 12 in.

Wall thickness 0.70 in.

Openings 53 sq. in./L.F.

Open Hole:

Length None

Diameter in.

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
Makakilo Golf Course

Stand-By Well (1904-04)
Mr. Manabu Tagomori  
Division of Water and Land Development  
Department of Land & Natural Resources  
P. O. Box 373  
Honolulu, Hawaii  96809

January 5, 1990  
90-030  (839-10)

Dear Manabu:

  **Data Submittal For The Makakilo Golf Course Well (State No. 1904-02)**

The enclosed data describes the recently completed Well No. 1904-02 which will ultimately provide irrigation water for the Makakilo Golf Course. Roscoe Moss Company’s Driller’s Report was filed in November 1989. This additional data includes step-drawdown data, the well’s as-built dimensions, laboratory results of a sample taken at the end of a 7-hour pump test, and a map showing the well’s exact location.

Should you have questions or require additional information, please feel free to contact me.

Sincerely,

Tom Nance

TN:It

cc:  Journ Yee

Enclosures
Makakilo Golf Course Well
Performance During the Pump Test of November 2, 1989
Ground Elevation 52 Feet

50 Feet of 12-Inch Solid Casing

78-Feet Total Depth

50 Feet of 12-Inch Solid Casing

12-Inch (ID), 5/16-Inch Thick Steel Casing (ASTM A-242)

20 Feet of 12-Inch "Full-Flo" Perforated Casing

Grouted Annulus

Gravel Pack of Rounded Rock

Static Water Level

Water Bearing Formation

8 Feet of Open Hole

Well Section
Not to Scale

Makakilo Golf Course Well
As-Built Dimensions
ESTIMATED WATER ANALYSIS

PROJECT NAME: MAKAKILO GOLF COURSE

-----water data as ppm-ion-----

<table>
<thead>
<tr>
<th></th>
<th>FEEDWATER TO EDR UNIT</th>
<th>EDR PRODUCT WATER</th>
<th>FINAL BLENDED WATER ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na</td>
<td>464</td>
<td>47</td>
<td>141</td>
</tr>
<tr>
<td>Ca</td>
<td>77</td>
<td>7</td>
<td>23</td>
</tr>
<tr>
<td>Mg</td>
<td>58</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>K</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cl</td>
<td>680</td>
<td>56</td>
<td>195</td>
</tr>
<tr>
<td>HCO3</td>
<td>425</td>
<td>60</td>
<td>142</td>
</tr>
<tr>
<td>SO4</td>
<td>128</td>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td>NO3</td>
<td>33</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

TOTAL TDS (as ion) 1865 ppm  190 ppm  565 ppm

SiO2 76 ppm  76 ppm  76 ppm
TOTAL HARDNESS 436 ppm  43 ppm  129 ppm
TOTAL ALKALINTY 375 ppm  48 ppm  114 ppm
pH 7.7  7.4  7.5
**State of Hawaii**
**DIVISION OF WATER AND LAND DEVELOPMENT**

**DRILLER'S REPORT**

**DESCRIPTION**
- **Date of report**: Nov. 9, 1989
- **Person filing report**: Tracy Runnels
- **Owner**: Fianco Realty
- **WELL**: MeaKilo Golf Course #2
- **ISLAND**: Oahu

**DRILLING COMPANY**: Kosco Moss Co.

**DATE OF REPORT**

**HYDROLOGY**

**INITIAL WATER LEVEL**: 50 ft. below drilling platform

**INITIAL CHLORIDE**: 660 ppm

**PUMPING TESTS**

<table>
<thead>
<tr>
<th>Date</th>
<th>Start water level</th>
<th>End water level</th>
<th>Depth of well</th>
<th>Elapsed Time (hours)</th>
<th>Rate (gpm)</th>
<th>Draw-down (ft.)</th>
<th>Cl- (ppm)</th>
<th>Temp. °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct. 21, 9</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>400</td>
<td>5</td>
<td>660</td>
<td></td>
</tr>
</tbody>
</table>

**REFLECTION POINT (R.P.) USED**: Ground which elevation is 30 ft.

**SUBSURFACE FORMATION**

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level, ft.</th>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level, ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1.7</td>
<td>Red Silt &amp; Clay</td>
<td>69</td>
<td>7.7</td>
<td>Hard Gray &amp; White Calcite</td>
<td>89</td>
</tr>
<tr>
<td>1.7 - 3.3</td>
<td>Hard Black Coral</td>
<td>77</td>
<td>80</td>
<td>Red Conglomerite</td>
<td>105</td>
</tr>
<tr>
<td>3.3 - 3.5</td>
<td>Medium Gray Coral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5 - 5.5</td>
<td>Medium Hard Coral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5 - 5.8</td>
<td>Medium Hard Coral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.8 - 6.9</td>
<td>Medium Hard Coral</td>
<td></td>
<td></td>
<td></td>
<td></td>
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**REMARKS**:


**FOR DRILLER'S USE**

<table>
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<th>Job No.</th>
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</table>

**FOR OFFICIAL USE**

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
<th>Well No.</th>
</tr>
</thead>
</table>
**DESCRIPTION**

**Date of report**: Nov. 9, 1989  
**Person filing report**: Tracy Runnels

**A. OWNER**: Fianace Realty  
**WELL NAME**: Makena Golf Course  
**ISLAND**: Oahu

**B. GENERAL LOCATION**:  

**C. DRILLING COMPANY**: Roscoe Moss Co.

**D. TYPE OF RIG**: Cable tool  
**DRILLING COMPLETED**: Oct. 31

**E. ELEVATION, msl**: Top of drilling platform __________ ft.  
**Height of drilling platform above ground surface**: __________ ft.  
**Bench mark and method used to determine**: __________ ft. elevation:

**F. HOLE SIZE**:  
*10* inch dia. to __________ ft. below drilling platform.  
*12* inch dia. to __________ ft. below drilling platform.

**G. CASING INSTALLED**:  
*12* in. I.D. x __________ ft. below drilling platform.  
*12* in. I.D. x __________ ft. below drilling platform.

**H. ANNUlus**: Grouted __________ ft. to __________ ft. below drilling platform.

**Gravel packed**: __________ ft. to __________ ft. below drilling platform.

**I. PERMANENT PUMP INSTALLATION**:  
*Pump type, make, serial no.*: __________ Capacity __________ g.p.m.

**Motor type, H.P., voltage, r.p.m.**

**Depth of pump intake setting**: __________ ft. below __________ which elevation is __________ ft.

**Depth of bottom of airline**: __________ ft. below __________ which elevation is __________ ft.

**HYDROLOGY**

**J. INITIAL WATER LEVEL**:  
50 ft. below drilling platform.  
**Date of measurement**: Oct. 26, 1989

**K. INITIAL CHLORIDE**:  
660 ppm, total depth of well __________ ft. below drilling platform  
**Sampling Date**: Dec. 1989

**L. PUMPING TESTS**

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<th>Drawn-down (ft.)</th>
<th>Cl- (ppm)</th>
<th>Temp. °F</th>
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</thead>
<tbody>
<tr>
<td>10/2/89</td>
<td>50</td>
<td>30</td>
<td>80</td>
<td>0</td>
<td>800</td>
<td>5</td>
<td>660</td>
<td></td>
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**Reference point (R.P.) used**: Ground which elevation is __________ ft.

**M. DRILLER’S LOG**

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<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
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<td>0 to 14</td>
<td>Red soil + clay</td>
<td>69 to 77</td>
<td>Hard Gray + White Coral</td>
<td></td>
<td></td>
</tr>
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<td>18 to 33</td>
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**N. REMARKS**

**FOR DRILLER’S USE**

**FOR OFFICIAL USE**

**INSTRUCTIONS**: Send three(3) copies to: Manager-Chief Engineer, Division of Water and Land Development, P. O. Box 373, Honolulu, Hawaii 96809.

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**REMARKS:**
September 12, 1989

The Honorable William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

SUBJECT: WELL CONSTRUCTION PERMIT APPLICATION
MAKAKILO GOLF COURSE WELL
STATE WELL NO. 1904-02
MAKAKILO, OAHU

Thank you for the opportunity to review and comment on the subject
permit application. Finance Realty Co. has applied for the permit to drill a
new well to be used for golf course irrigation and/or landscaping of Kapolei
City. Our comments are as follows:

1. The Department's Administrative Rules, Title 11, Chapter 20,
"Potable Water Systems", are not applicable because the proposed
well is intended to be used only for irrigation.

2. In a letter to Dr. Bruce Anderson dated August 1, 1988, Finance
Realty Co. has indicated that the well water will be desalinated
at the well site to a chloride concentration of 200 mg/l or less.
Desalination will reduce the likelihood of golf course percolation
water affecting the salinity of the BWS Makakilo Well and the
Navy's Barber's Point Shaft.

3. A groundwater level study was conducted by John Mink and John
Chang of A.L. Yuen & Associates, Paul Eyre of the United States
Geological Service and Tom Nance of Belt Collins and Associates in
1988. It was determined by water level measurements that
groundwater flow is to the west. Based on the study, heavy
pumpage at the Makakilo Golf Course Well could have less of an
impact on the water quality of the existing BWS Makakilo Well and
the Navy's Barbers Point Shaft than previously thought.
4. The well site is situated above the Underground Injection Control (UIC) line. Land areas above the UIC line are considered to contain underground sources of drinking water. It is essential that the well is designed and constructed so that it does not in itself contribute to groundwater contamination. For example, the well should have a concrete well pad to prevent seepage or floodwaters from migrating down the well shaft.

5. There are many golf course activities which might contribute to groundwater contamination. Among the activities which should not be allowed to contaminate groundwater are the following:

a. Application of biocides, and fertilizers

b. Storage of fuel for vehicles (especially underground storage)

c. Maintenance of vehicles and equipment (cleaning, refueling, lubrication, etc.)

If any of these activities is planned, mitigative measures to assure that groundwater contamination will not occur must be included.

6. As a precautionary measure, monitoring wells should be installed throughout the golf course, especially in areas downgradient of effluent irrigation and areas following drainage ways. The design and siting of the monitoring wells should be reviewed by the Department of Health. The monitoring wells should be periodically sampled and tested for compounds associated with effluent irrigation, fertilizers, and biocides. If any detrimental compounds are found, the owners must be made responsible to immediately correct the situation or face the possibility of a shutdown.

7. Wastewater disposal activities must comply with all pertinent rules and regulations in the event that the project does not connect to an existing, approved wastewater treatment works.
If you should have any questions, please contact the Safe Drinking Water Branch at 548-2235.

Very truly yours,

JOHN C. LEWIN, M.D.
Director of Health

cc: Fred Kwock
Finance Realty Co.
P. O. Box 3979
Honolulu, Hawaii 96812
September 8, 1989

Finance Realty Company
P.O. Box 3979
Honolulu, Hawaii 96812

Gentlemen:

The Commission on Water Resource Management will be acting on your permit application for Makakilo Golf Course Well at their meeting on September 13, 1989, at 2:00 p.m. Please note that the meeting will take place in Lihue, Kauai, at the State Office Building, Conference Rooms A and B, 3060 Elwa Street.

Your application will be included on the agenda as Item 5 (attached).

You or your representative are invited to attend the meeting.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:bm
Attach.
Mr. Manabu Tagomori  
Deputy Director  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P. O. Box 621  
Honolulu, Hawaii 96809  

Dear Mr. Tagomori:  

Subject: Well Construction Permit Applications for Makakilo Golf Course Well (1904-02) and Kahuku-Kuilima Resort Well  

We forward our comments concerning the two proposed well projects.  

1. Makakilo Golf Course Well  

We have no objections to the development of the well. However, the chloride of the irrigation water should not exceed the chloride of the groundwater underlying the golf course.  

We request that you furnish us with copies of the complete log of geological formations, hydrological conditions encountered, finished elevation, and appurtenances for our files.  

2. Kuilima Resort Well  

We have no objections to the drilling of the well. However, we suggest that the possible use of non-potable water for irrigation be investigated before potable water is allowed for the irrigation of the golf course.  

We request that you furnish us with copies of the complete log of geological formations, hydrological conditions encountered, finished elevation, and
appurtenances for our files. We also request that copies of the pumpage and chloride data from the well be sent to us if the data are made available to you from the owner.

If you have any questions, please call Chester Lao at 527-5276.

Very truly yours,

KAZU HAYASHIDA
Manager and Chief Engineer
Honorable John C. Lewin, M.D.
Director Of Health
Department of Health
1250 Punchbowl Street
Honolulu, Hawaii 96813

Attention: Mr. Thomas Arizumi, Drinking Water Program

Dear Dr. Lewin:

Well Construction Permit Applications

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168-12(c), we are sending you a copy of the following permit applications:

- Makahiki Golf Course Well (1904-02)
- Naiea-CIRA-CEICY Irrigation Well (0705-05)
- Kahuku-Kuulima Resort Well
- Port Allen Power Station Salt Water Well (5435-06)

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

If you have any questions, please contact Manshu Tagomori at 548-7533.

Very truly yours,

WILLIAM W. PATY

Enc.
July 28, 1989

Mr. Kazu Hayashida
Board of Water Supply
630 S. Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Well Construction Permit Application

We are sending you a copy of the following permit applications for your review and comments:

- Makakilo Golf Course Well (1904-02)
- Kahuku-Kuilima Resort Well

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

If you have any questions, please contact Dan Lum at 548-7643.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:bm
Enc.
July 18, 1989

Mr. Fred K. Kwock, President  
Finance Realty Co., Ltd.  
P.O. Box 3979  
Honolulu, Hawaii 96812-3979  

Dear Mr. Kwock:

We acknowledge receipt of your application for a well construction permit to drill a caprock well for the proposed Makakilo Golf Course and/or landscaping of Kapolei City.

We are returning your $25.00 filing fee since a filing fee has already been credited toward the application (see enclosed letter of December 5, 1988).

My staff will be processing the application and will contact your staff should there be any questions.

Sincerely,

[Signature]

MANABU TAGOMORI  
Deputy Director

ES:ko  
Encl.
PAY TO THE ORDER OF
- Dept. of Land & Natural Resources

FINANCE REALTY CO., LTD.

ACCOUNT | DESCRIPTION | AMOUNT
---|---|---
120-61-00-00 | Re: Makakilo Golf Course - Filing fee for well Construction Permit | $25.00

DETACH THIS VOUCHER BEFORE DEPOSITING CHECK.
July 5, 1989

Mr. William Paty  
Chairman  
Commission on Water Resource Management  
Department of Land and Natural Resources  
Division of Water Resources Management  
P. O. Box 373  
Honolulu, Hawaii  96809

RE: Submittal of Well Construction Permit

Dear Mr. Paty:

We are submitting herewith an application for a Well Construction Permit, together with a check for the filing fee.

Your early consideration and approval for this application will be much appreciated, and thank you.

Very truly yours,

[signature]

Fred K. Kwock  
President

Enclosure

FKK: jty/lyk

cc: Tom Nance, Tom Nance Water Resources
DIVISION OF WATER RESOURCE MANAGEMENT

FROM: [Handwritten]
DATE: [Handwritten]
FILE IN: ________

TO: INITIAL:

PLEASE: REMARKS:

M. TAGOMORI         See Me
D. Lum
G. Matsumoto
G. Akita
L. Chang
Y. Shiroma
E. Sakoda
D. Nakano
W. Rozeboom
P. Haraguchi
S. Samuels
R. Chung
T. Kam
A. Monden
H. Young
R. Suzuki
N. Kaneshiro
T. Nakama

---

Check here

Dean 4-10-88
July 5, 1989

Mr. William Paty
Chairman
Commission on Water Resource Management
Department of Land and Natural Resources
Division of Water Resources Management
P. O. Box 373
Honolulu, Hawaii  96809

RE: Submittal of Well Construction Permit

Dear Mr. Paty:

We are submitting herewith an application for a Well Construction Permit, together with a check for the filing fee.

Your early consideration and approval for this application will be much appreciated, and thank you.

Very truly yours,

[Signature]

Fred K. Kwok
President

Enclosure

FKK:jty/lyk

cc: Tom Nance, Tom Nance Water Resources
APPLICATION FOR

X WELL CONSTRUCTION PERMIT

_ PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96808. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 548-7543, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island __ Oahu ___ Tax Map Key __ 9-1-16:01 _____
Address ____________________________
(Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER

Firm Name __ Finance Realty Co. ______
Contact Person __ Fred Kwok ______
Address ___ P.O. Box 3979 ______
Honolulu, Hawaii 96812 ______
Phone ___ 548-5166 ______

LANDOWNER

Firm Name __ Estate of James Campbell ______
Contact Person __ Samuel Keala ______
Address ___ 828 Fort Street Mall, Suite 500 ______
Honolulu, Hawaii 96813 ______
Phone ___ 536-1961 ______

3. PROPOSED CONTRACTOR FOR: □ Well Drilling □ Pump Installation

Name __ Will be bid or negotiated ______
Address ____________________________

4. PROPOSED WORK

□ Drill New Well □ Deepen □ Alter □ Redrill
□ Install New Pump □ Replace Pump □ Seal □ Abandon
□ Modify Pump

(Briefly describe the proposed work and fill in the diagram on the back of this form.)

5. PROPOSED USE

□ Municipal (including hotels, stores, etc.) □ Military
□ Domestic (individual, noncommercial water systems) □ Industrial
□ Irrigation (specify) Golf Course & Landscaping □ Other (specify) ______

6. PROPOSED AMOUNT OF WITHDRAWAL __ 1,000,000 __ gallons per day (Tentative)

7. PROPOSED PUMP INFORMATION (Tentative)

Pump Type: □ Vertical Turbine □ Submersible □ Centrifugal
Motor: □ Diesel □ Gas □ Electric: __ 200 __ Rated Horsepower
Rated Pump Capacity __ 1,000 __ gallons per minute (gpm) ______

Well Owner (print) ____________________________
Signature ____________________________
Date __ 6/21/89 __________

Landowner (print) ____________________________
Signature ____________________________
Date __ 7/8/89 __________

For Official Use Only:

Field Checked By ____________________________
Latitude ____________________________
Hydrologic Unit ____________________________
Date __ __________
Longitude ____________________________
State Well No. ______ 1904-02 __________
Briefly describe the proposed work:

Well will be drilled into the limestone (caprock) aquifer and pumped tested for possible use to irrigate the proposed Makakilo Golf Course and/or landscaping of Kapolei City.

PROPOSED SECTION OF WELL

Elevation at top of casing 60 ft., msl.

Ground Elev. 58 ft., msl*

Cement Grout 50 ft.

Hole Dia. 18 in.

Solid Casing:

Material ASTM A-242
Length 58 ft.
Diameter 12 in.
Wall thickness 0.3125 in.

Total Depth 76 ft. (With Optional Open Hole)

Rock Packing 16 ft.

Casing: / X/Perforated / /Screen

Material ASTM A-242
Length 10 ft.
Diameter 12 in.
Wall thickness 0.3125 in.
Openings 60 sq. in./L.F.

Open Hole: (Optional)
Length 10 feet
Diameter 10 in.

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
MAKAKILO GOLF COURSE WELL
(1904–02)
The sum of $25.00

Pay to the order of Dept. of Land & Natural Resources

$25.00

FINANCE REALTY CO., LTD.

ACCOUNT

DESCRIPTION

120-61-00-00

Re: Makakilo Golf Course - Filing fee for well Construction Permit

$25.00
April 19, 1988

Mr. Tom Nance
Belt Collins & Associates
680 Ala Moana Blvd., 2nd Floor
Honolulu, Hawaii 96813

Dear Mr. Nance:

Thank you for your letter of March 22, 1988, requesting written comments from the Department of Land and Natural Resources on the availability of irrigation water for the proposed Makakilo Golf Course.

Our comments are as follows:

1. To the best of our knowledge, the availability of irrigation water at the proposed location has not been determined at this time. However, the sustainable yield of the Caprock Subarea is under study.

2. An exploratory test well probably would be required to determine availability of water.

3. An application for an exploratory well drilling permit will be given consideration without prejudicing the Department of Land and Natural Resources' right to approve or disapprove the subsequent issuance of a water use permit.

4. Should exploratory drilling indicate an adequate source of irrigation water, an application for a water use permit must be submitted to the Department for consideration.

If you have any questions, please contact Mr. Dan Lum at 548-7643.

Sincerely,

MANABU TACOHORI
Deputy for Water Resource Management

ES:ko
Mr. Tom Nance
Belt Collins & Associates
606 Coral Street
Honolulu, Hawaii 96813

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MANABU TAGOMORI
Deputy for Water Resource Management
March 22, 1988

Irrigation Source for the Proposed Makakilo Golf Course

Finance Realty proposes to build an 18-hole golf course on Puu Makakilo, just mauka of H-1 Freeway. Brackish water from a new shallow well to be drilled into the limestone (caprock) aquifer will be the source of irrigation supply. An approximate location for the well is shown on the enclosed sketch. Its final location will be determined by small bore hole test drilling and through coordination with Campbell Estate, Oahu Sugar Company, and Kapolei Village (an HHA-City project). Pumpage from the well is expected to average 0.7 MGD year-round. Maximum use in a dry summer period might be as high as 1.0 MGD. Notably, nearby well 1904-01 was pumped by Oahu Sugar Company at an average of 4.7 MGD before it was abandoned several years ago. If necessary to obtain the required yield, the golf course well could be located as far makai as well 1904-01.

We understand that the well's location is in the Pearl Harbor Ground Water Control Area so that permits from DLNR to drill the well and to draw water from it will be required. Prior to this process, Finance Realty is preparing a Golf Course Conditional Use Permit (Type I) Application for submittal to the City's Department of Land Utilization. A requirement of this application is written comment from the Department of Land and Natural Resources on the availability of irrigation water at the proposed location. I have discussed this informally with a member of your staff to confirm that limits of pumpage from the limestone (caprock) aquifer generally or specific areas have not yet been established.

We appreciate your attention and look forward to your comments. If you have any questions, please contact me or Greg Fukumitsu at 521-5361.

Sincerely yours,

Tom Nance

cc: Fred Rodriguez
Enclosure
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<th>INITIAL</th>
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DATE: 3/16
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TO: INITIAL: PLEASE: REMARKS:

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B. Suzuki
S. Kokubun
D. Hamada
L. Nanbu
F. Ching

To BPA: 4/5

18  use? Makalena
March 22, 1988
88-549

Mr. Manabu Tagomori
Manager-Chief Engineer
Division of Water and Land Development
State of Hawaii
P. O. Box 373
Honolulu, Hawaii 96809

Dear Manabu:

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Tom Nance

cc: Fred Rodriguez

Enclosure
PROJECT AREA

ISLAND OF OAHU