May 13, 1985

MEMORANDUM FOR THE RECORD

FROM: Dan Lum

SUBJECT: Waialae Country Club Water Use Request

On May 10, 1985, as requested by Manabu Tagomori, I checked with Fred Rodrigues and Tom Nance on the amount of water use to be permitted by the Board for irrigation by the Waialae Country Club (WCC).

The WCC application request was for an additional 0.594 mgd over their presently preserved use of 0.270 mgd, for a total average amount of 0.864 mgd.

According to Tom Nance, Belt Collins calculated a 4.9 million gallon reservoir requirement based on a peak month demand of 810,000 gallons and a reservoir water level fluctuation of one foot. Tom also indicated that the projected average use amounts to 458,000 gallons per day, calculated as follows: current average use of 270,000 gallons per day divided by current maximum month use of 480,000 gallons per day equals 56.25 percent, and 56.25 percent times projected maximum month use of 814,000 gallons per day equals a projected average use of 458,000 gallons per day.

Rounded to 460,000 gallons per day, less an existing preserved use of 270,000 gallons per day equals an additional average use of 190,000 gallons per day required by WCC. Therefore the board submittal recommends a permitted use of 0.190 mgd, additional, for WCC.

DAN LUM

DL: dh
APPLICATION FOR: (check one)
☐ PERMIT TO WITHDRAW WATER FOR BENEFICIAL USE
☐ PERMIT TO SUPPLY WATER FOR BENEFICIAL USE

Instructions: Fill out, sign, and send application with pertinent attachments to Department of Land and Natural Resources, P.O. Box 373, Honolulu, Hawaii 96809. A non-refundable filing fee $100 is required, excepting military, federal, state, and local government agencies.

1. NAME OF APPLICANT Waialae Country Club Address 4997 Kahala Ave phone 734-21

2. REQUESTED BENEFICIAL USE OF WATER:
☐ Domestic ☐ Municipal ☐ Military ☐ Agricultural ☐ Industrial ☐ Other Irrigation

Appropriately describe nature and purpose of requested use: Request to withdraw additional 594,000 gallons per day to implement proposed water storage reservoir plan (See attached plans and hydrological study approval of request). Proposed commencement date of water use: Upon

3. REQUESTED AMOUNT OF WITHDRAWAL OR SUPPLY:
Average Annual mgd; Maximum Month mgd; Maximum Day mgd: 594 mgd

Appropriately describe schedule or times of taking requested withdrawal: 24 hours per day to replace irrigation water pumped from storage reservoir

4. NATURE AND TERM OF REQUESTED PERMIT: ☐ Temporary ☐ Permanent

Requested period of permit

5. PROPOSED SOURCE OF WATER SUPPLY:
☐ Existing source ☐ Modification of existing source ☐ New source

Briefly describe existing or proposed source and any related facilities and submit map, plot plan, and plans or drawings of source of supply: Waialae Country Club proposes to build a water storage reservoir on the golf course to store irrigation water presently being pumped from Well #1646-01. This is being done to reduce impact on the brackish water lens (See attached study & plans)

If construction work is proposed for new or modified existing source, give:
Commencement Date July, 1985 Completion Date December, 1985

6. ASSESSMENT OF REQUESTED WATER USE OR SUPPLY

In a separate attachment to this application, applicant must provide a written assessment addressing the desirability of issuing the requested permit, including such considerations as the availability of water, the beneficial purpose of the proposed water use, and the impact, if any, of the proposed water use on existing permitted uses, preserved uses, and individual household uses.

Waialae Country Club
Signature: 
Date: 4/17/85

Water User or Supplier
Waialae Country Club
Signature:
Date: 4/21/85

Owner of Water Source

In accordance with Department Regulation No. 9, every permit approved and issued by the Board of Land & Natural Resources shall be for a specified period of time, for a specified beneficial use, subject to suspension and revocation, and subject to the shortage and emergency powers of the Board. Consideration of applications for a permit shall include: availability of water, beneficial purpose of water use, non-impairment of the most beneficial use and development of the water resources in the designated area, and no substantial and material interference with existing uses of water.

100.00 Check deposited: 4/30/85

For Official Use:
Docket No. 180 days 28 OCTOBER 1985
Board Approved Disapproved
Well No. 1646-01
May 13, 1985

Mr. Fred Rodrigues  
Environmental Communications  
P.O. Box 536  
Honolulu, Hawaii 96809

Dear Fred:

As requested, attached is a copy of a memorandum concerning Waialae Country Club's request for additional permitted water use for irrigation.

Very truly yours,

[Signature]

MANABU TAGOMORI  
Manager-Chief Engineer

DL: dh  
Attach.
May 13, 1985

MEMORANDUM FOR THE RECORD

FROM: Dan Lum

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Rounded to 460,000 gallons per day, less an existing preserved use of 270,000 gallons per day equals an additional average use of 190,000 gallons per day required by WCC. Therefore the board submittal recommends a permitted use of 0.190 mgd, additional, for WCC.

DAN LUM

DL:dh
HONOLULU GROUND WATER CONTROL AREA
WATER WITHDRAWAL and USE PERMIT
for
Waialae Country Club Well No. 1646-01
Honolulu, Oahu

TO: Waialae Country Club
4997 Kahala Ave.
Honolulu, Hawaii 96816

Permission is hereby granted to Waialae Country Club to withdraw and use water from Well No. 1646-01 located in the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area, Oahu, subject to all requirements of Chapter 177, HRS, Chapter 166, Title 13, the administrative rules of the Department of Land and Natural Resources (DLNR) and the following additional conditions:

1. The term of this permit shall be twenty years from the date of issuance of the permit with a five-year Board review to determine compliance with the provisions of the permit.

2. The amount of water to be withdrawn under this permit shall be 0.19 mgd (million gallons per day), averaged annually, for irrigation use. (This permitted use of 0.19 mgd when added to a preserved use of 0.27 mgd amounts to a total of 0.46 mgd, averaged annually, which may be withdrawn from Well 1646-01.)

3. The use authorized by the permit must not interfere substantially and materially with existing individual household uses and existing preserved uses.

4. The use of this well shall be subject to the shortage and emergency powers of the Board of Land and Natural Resources (BLNR).

5. This permit may be suspended or revoked, in accordance with Chapter 166.

6. The permit holder may be required to relinquish this permit to BLNR, in accordance with Chapter 166.
7. The withdrawal from Well 1646-01 shall be recorded and reported to DLNR on a monthly basis by the permittee. The Board of Land and Natural Resources may declare this permit null and void if it determines that the conditions of this permit are not being met or if the development of the ground water source is not completed within 24 months from the date the permit is issued.

SUSUMU ONO, Chairperson of the Board
Date of issuance: 6 JUN 1985

cc: USGS
    Honolulu BWS
    Dept. of Health
    Mr. Fred Rodrigues
Chairperson and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Waialae Country Club Water Use Permit Application,
Honolulu Ground Water Control Area, Waialae-Hawaii Kai Subarea.

Waialae Country Club has submitted a Water Use Permit Application to withdraw an additional 0.190 million gallons per day for irrigation use from the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area.

Waialae Country Club presently irrigates directly from an existing well (State No. 1646-01) which has a preserved use of 0.270 million gallons per day. A proposed new irrigation system which includes a water storage pond on the golf course requires an additional average annual amount of 0.190 million gallons per day over the presently preserved use of 0.270 million gallons per day, for a total of 0.460 million gallons per day.

Tabulated below is the current status of withdrawals for the Waialae-Hawaii Kai Subarea:

<table>
<thead>
<tr>
<th>Sustainable Yield</th>
<th>5.00 mgd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preserved Use</td>
<td>1.10 mgd</td>
</tr>
<tr>
<td>Water Use Permits Issued by BLNR</td>
<td>0.70 &quot;</td>
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<tr>
<td>Total Uses Authorized</td>
<td>1.80 &quot;</td>
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<tr>
<td>Water Available</td>
<td>3.20 mgd</td>
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</tbody>
</table>

Analysis of the application indicates that the well is down gradient from three Board of Water Supply wells in the subarea and should not affect them. The additional water requested is based on a calculated amount of irrigation required per acre of golf course.

RECOMMENDATION:

That the Board approve the issuance of a Water Withdrawal and Use Permit to Waialae Country Club for an additional 0.190 million gallons per day for irrigation use above their preserved use of 0.270 million gallons per day for a total of 0.460 million gallons per day. The applicant shall be required to submit monthly pumpage data to the Board to determine the actual amount of water used versus the calculated amount. The term of the permit shall be 20 years with a five-year Board review to determine compliance with the provisions of the permit. The applicant shall be subject to any special conditions and applicable laws and rules.

Respectfully submitted,

MANABU TAGOMORI
Manager-Chief Engineer

APPROVED FOR SUBMITTAL:

SUSUMU ONO, Chairperson

Approved by the Board of Land & Natural Resources at the meeting held on 5-24-85

ITEM D-10
Chairperson and Members  
Board of Land and Natural Resources  
State of Hawaii  
Honolulu, Hawaii

Gentlemen:

Waialae Country Club Water Use Permit Application,  
Honolulu Ground Water Control Area, Waialae–Hawaii Kai Subarea

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<th>Amount</th>
</tr>
</thead>
<tbody>
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<td>5.00 mgd</td>
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<tr>
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</tbody>
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Respectfully submitted,

MANABU TAGOMORI  
Manager-Chief Engineer

APPROVED FOR SUBMITTAL:

SUSUMU ONO, Chairperson

Approved by the Board of Land & Natural Resources at the meeting held on 5-24-85

ITEM D-11
Public Notice

All interested parties are hereby notified that the Board of Land and Natural Resources plans to consider and act on a Water Use Permit application in the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area at its regularly scheduled meeting on Friday morning, 9:00 a.m., May 24, 1985, room 132, Kalanimoku Building, 1151 Punchbowl Street, Honolulu.

The applicant, Waialae Country Club, requests permission to withdraw an additional 0.545 million gallons per day for their proposed new irrigation system.

For further information, please contact the Division of Water and Land Development at 548-7539.

State of Hawaii
BOARD OF LAND AND NATURAL RESOURCES

SUSUMU ONO
Chairperson

Dated: May 8, 1985
Publish in the Honolulu Star Bulletin issue of May 13, 1985
**NOTICE TO VENDORS**

Conditions of purchase are listed on the back side of this purchase order. Please read carefully. Payments may be delayed if all steps are not followed.

Hawaii Newspaper Agency
Hawaiian Star Bulletin
685 Kapiolani Blvd.
Hon., HI 96813
Attention: Legal Ads Dept

The State of Hawaii is an EQUAL EMPLOYMENT OPPORTUNITY and AFFIRMATIVE ACTION employer. We encourage the participation of women and minorities in all phases of employment.

<table>
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<td></td>
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<td>Publication of &quot;Public Notice&quot; (attached herewith)</td>
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<tr>
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<td>&quot;Consideration of a Water Use Permit in the Honolulu Ground Water Control Area&quot;</td>
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<td>2-column ad</td>
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<td></td>
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<td>Publish in Hon. Star Bulletin issue of May 13, 1985</td>
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<td></td>
<td></td>
<td>(call 548-7619 if any questions)</td>
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**Estimated**

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<td>60.00</td>
</tr>
</tbody>
</table>

**REQUISITION No. 24252**

**AUTHORIZED SIGNATURE**

A. FURUUCHI

**GOODS/SERVICES RECEIVED IN GOOD ORDER AND CONDITION**

**COPY #7 - DEPARTMENT**

STATE ACCOUNTING FORM C-03
JULY 1, 1983 (REVISED)
To: Department of Land & Natural Resources
Division of Water & Land Development
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Ed Sakoda

DATE: May 6, 1985

SUBJECT: Waialae Golf Course

Please find enclosed one (1) copy of the Waialae Golf Course Irrigation Lake Evaluation by Tom Nance of Belt, Collins & Associates, dated April 25, 1985 for your review.

Lorraine Caffery for
F. J. Rodriguez

encl.
WAIALAE GOLF COURSE
IRRIGATION LAKE EVALUATION

By

Tom Nance
Belt, Collins & Associates

April 25, 1985
This report evaluates the proposed size for an irrigation lake to be located within Waialae Golf Course. Complete details of the proposed irrigation system, including design or concept drawings, were not available for this report. However, discussions with Alan Lum and Bob Shouse, correspondence of various consultants with the Greens Committee, and a topographic survey of the area of the proposed lake by Walter Thompson, Inc. have provided the following information:

- Maximum irrigation rate by the system would be 815,000 gallons per day equivalent to 1.5 inches per week over 140 acres;
- New irrigation piping and sprinkler heads would be installed based on a plan by Don Burns;
- Pressure to the sprinkler heads would be provided by a package pumping system capable of delivering up to 2,200 gallons per minute (GPM);
- The pumping system would draw water from a new lake to be constructed between the 11th and 12th holes; the pump cycle would be up to nine hours long, occurring between 8:00 p.m. and 5:00 a.m.;
- The lake size should limit drawdown below the full water level to one foot or less; its storage volume will also provide standby supply;
- Supply to the lake will be provided from an existing well (the well is identified as No. 1646-01 in the State's numbering system);
- The pump in this well is rated to produce about 600 GPM at a pressure head of 100 pounds per square inch (psi); it may be replaced by one which can operate more efficiently at the substantially lower pressure head needed to deliver water to the proposed lake.

BACKGROUND INFORMATION ON THE EXISTING WELL, PUMP, AND WATER USE RATE

To understand available irrigation alternatives, knowledge of existing conditions is required. Well 1646-01 was drilled at an unknown date, probably sometime near the turn of the century. It now has an 8-inch casing which is about 33 feet long; extends from its flange elevation eight feet above sea level to 25 feet below sea level. This casing was inserted within the
original 10-inch casing of the same length. The drilled hole below the casing, according to old records, extends to 112 feet below sea level. A 1977 measurement by Roscoe Moss Company personnel indicates the bottom was then 100 feet below sea level.

Logs of the strata penetrated by the well are not known to exist. Based on 1929 measurements by the U. S. Geological Survey, most water comes from two zones, one from 25 to 32 feet below sea level and the other from 50 to 60 feet below sea level. Inflow from other layers is apparently negligible. Records of the well's pumpage and chloride content are compiled by the Honolulu Board of Water Supply (BWS); these are summarized on the graphs on the page following. Notably, BWS records indicate that the water use has averaged 260,000 gallons per day over the last nine years (1976-84). This is substantially less than golf course personnel believe is used. The installed pump is a six stage, Peerless 7HXB line shaft turbine driven by a 50 horsepower electric motor. A control valve on its discharge line limits pressure in the irrigation piping to 85 psi or less to prevent damage to the thin-walled pipe in the system; the valve also throttles the pump so that it works against a pressure of 100 psi or more. At this pressure, the manufacturer's rating curve indicates that it should produce 600 GPM. Pressures were 100 and 78 psi on either side of the control valve. From this observation, it is concluded that the pump is working within 97 percent of its rated capacity, that BWS records of water use are essentially correct, and that less water is actually being used than golf course personnel believe.

The well taps into a confined aquifer near its western boundary; the aquifer extends eastward to Palolo Valley. Five other wells have been drilled into this groundwater compartment. Three of these belong to BWS (no.'s 1746-01 and 1747-02 are production wells; 1747-01 is a small diameter observation well). The fourth (no. 1646-02) is a four inch well near to the golf course irrigation well. The fifth (no. 1646-04) is Waialae's unused brackish well next to the fourth tee. Another well belonging to BWS (no. 1746-02) is located just beyond the western boundary of this aquifer. The lower water level in this well demonstrates the hydrologic separation of groundwater.
WELL 1646-1  
BISHOP EST--WAIALAE GOLF COURSE

PUMPAGE IN MGALS

YEAR

WELL 1646-1  
BISHOP EST--WAIALAE GOLF COURSE

CHLORIDE IN MG/L

ANNUAL MAXIMUM AND MINIMUM CHLORIDE
bodies. All the wells referred to above are located on the map on the page following.

Although recorded data on pump tests of the golf course's irrigation well are not available, at least two tests have been conducted. One was done in the 1960's when a Layne pump was installed and the other was done in 1977 when the Peerless pump replaced the Layne. Based on recollections of individuals involved (Bill Spitz for the earlier test, Bill Moore of Roscoe Moss for the more recent one), chloride content rose during both tests from the normal 150+- milligrams per liter (MGL) to 300 MGL or more in response to continuous pumping at rates in the range of 700 to 850 GPM. This is the reason the control valve is set to limit pumping to 600 GPM or less. These test results are consistent with BWS' experience with its production wells located in the aquifer.

All of the above-mentioned wells are located in a groundwater control area which is regulated by the Department of Land & Natural Resources (DLNR). As such, these wells must have a permit to pump water, to change their pumping rates, or to modify the well. For the regulatory area from Waialae to Hawaii Kai, DLNR has established a 5.0 million gallons per day (MGD) limit for the draft from all wells combined. At the present time, 1.8 MGD has been committed to just two entities, BWS (1.53 MGD for wells 1746-01 & 02) and Waialae Country Club (0.27 MGD for well 1646-01). The remainder of 3.2 MGD of the 5.0 MGD maximum draft is uncommitted. Portions of it may be obtained by permit from DLNR if use of the resource is judged to be reasonable.

The present irrigation system consists of low pressure PVC pipes supplied directly from the single well pump. There is no storage. A hydro-pneumatic tank is located next to Waialae's unused brackish well, but it is no longer operational. The well pump starts and stops automatically in response to pressure levels in the pipe network. Operation is modulated by the control
valve which keeps pressures in the pipe network below 85 psi to avoid damaging the pipes and laterals.

PROPOSED IRRIGATION LAKE

The drawing on the page following is a preliminary topographic map prepared recently by Walter Thompson, Inc. It shows the outline of the proposed irrigation lake which encloses an area of 1.813 acres. Also shown is an outline of a smaller, 1.175 acre lake that was added to the drawing by Belt, Collins & Associates. It is assumed that the outline of the proposed lake reflects golf course esthetics as well as functional volume for irrigation purposes. The outline of the smaller lake is based on volume only.

Specific design data on the lake were not available. According to Bob Shouse, the intent was to use Chevron Industrial Membrane (CIM) liner on a 3:1 side slope and have the bottom six feet deep. It is assumed that a finished edge around the lake would be utilized. The sketch below shows a vertical, grouted rock wall. Other edges such as inclined rock (grouted or simply hard placed) or precast concrete blocks might also be used. With the section and depth shown on the sketch, total volume of the proposed lake would be 3.27 million gallons (MG). The smaller lake could store 2.09 MG.
The CIM liner is a reasonable choice. It could be placed on a steeper slope (up to 2:1) if necessary, but that is not appropriate here, particularly if a vertical rock wall is used. Maximum drawdown of the lake level would occur at the end of the irrigation cycle at 5:00 a.m. This drawdown is caused by the volume of water drawn out during irrigation less the incoming well supply during this time. Maximum irrigation draft is 0.815 MG; well inflow at 600 GPM for nine hours would be 0.324 MG; net draft from the lake would be 0.491 MG. Resulting drawdown in the proposed 1.815-acre lake would be 10 inches; in the smaller 1.175-acre lake, it would be 15.4 inches. The visual impact of this drawdown at 5:00 a.m. is not considered significant.

The first golfer would be on the course at 8:00 a.m., three hours after irrigation had ended. Well inflow in these three hours would have added 0.108 MG to the lake, leaving a residual deficit of 0.383 MG. Drawdowns at that time would be 7.8 inches in the proposed lake and 12 inches in the smaller lake. Through the day, continued pump inflow would recover the remaining drawdown.

Comparative cost estimates for the two lake sizes are summarized below. The proposed lake, with about four inches less drawdown when golfers are first on the course, would cost $107,000 more than the smaller lake.

<table>
<thead>
<tr>
<th>Item</th>
<th>Proposed 1.813 Acre Lake</th>
<th>1.175 Acre Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Unit Price</td>
<td>Quantity</td>
</tr>
<tr>
<td>CIM Liner</td>
<td>1.45/ft²</td>
<td>90,820</td>
</tr>
<tr>
<td>Excavation &amp; Material Disp.</td>
<td>7.50/yd³</td>
<td>14,955</td>
</tr>
<tr>
<td>Grouted Rock Retaining Wall</td>
<td>185/yd³</td>
<td>362</td>
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<tr>
<td>Tree Relocations</td>
<td>750/tree</td>
<td>30</td>
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<tr>
<td>Sub-Total</td>
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<tr>
<td>Engineering &amp; Contingency</td>
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</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If the proposed irrigation scheme is implemented, a submersible pump designed for low pressure heads should be installed in the well. The $22,000 estimated cost to change this pump is summarized below. A standby pump to provide back-up supply would cost another $4300. If the pump in the well failed, it could be pulled and replaced the same day.

**ESTIMATED COST FOR CONVERSION TO A SUBMERSIBLE WELL PUMP**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Layne Pump 8TM (1 stage) and 10 horsepower motor</td>
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<tr>
<td>Motor Control Panel</td>
<td>$2,800</td>
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<tr>
<td>Revisions to Electrical System (Optional)</td>
<td>$12,000</td>
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<tr>
<td>Contingencies</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>$19,100</td>
</tr>
</tbody>
</table>

**ALTERNATIVES**

There are at least two cost savings options to consider for the proposed irrigation scheme. One option would be to install a lower capacity well, enabling a smaller lake to be constructed. Costs given previously illustrate the savings that could be achieved by reducing lake size. That option would be to install a 24" diameter, spiral-shank edge around the lake. If this inclined rock edge were grouted, a savings of $15,000 to $18,000 compared to the vertical wall would be realized; if the rock was simply hand placed, savings of $27,000 to $33,000 would be possible. It should be realized that drawdown with an inclined edge would expose more rock. Also, discoloration of the rocks by algae or other staining would be more likely to occur.

Together with the first well, the maximum irrigation amount of 0.815 MGD
could be applied in an 11 to 12 hour cycle. As with the current system, irrigation would be by direct pumping from wells. It would be appropriate to install a new hydro-pneumatic tank to minimize pump cycling in non-irrigation hours.

Development of a second well would require exploratory drilling and its success can not be assured. Deepening and other modifications of Waialae's brackish well (no. 1646-04) several years ago demonstrated that: (1) the thickness of coral and alluvial strata at a particular site is difficult to predict; (2) if volcanic rocks are penetrated deep in the hole rather than near to the surface, the water developed by the well will be too salty; and (3) the amount and quality of water which can be developed from the overlying coral and alluvium is not likely to be satisfactory. If another well is attempted, the site chosen should be at least 1,200 feet in order to avoid hydraulic interference with the existing well. This distance would require the site to be on the other side of the Kapakahi Gulch channel. Choice of the specific site would require investigation beyond the scope of this report.
<table>
<thead>
<tr>
<th>To Initial</th>
<th>Name</th>
<th>Action</th>
</tr>
</thead>
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<tr>
<td>Manabu Tagomori</td>
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<td>Call</td>
<td></td>
</tr>
<tr>
<td>Daniel Lum</td>
<td>Take action by</td>
<td></td>
</tr>
<tr>
<td>George Matsumoto</td>
<td>Review &amp; comment</td>
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<td>Draft reply by</td>
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<td>Tom Nakama</td>
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<td>Paul Matsuo</td>
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<tr>
<td>Neal Imada</td>
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<tr>
<td>Jon Kurio</td>
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<td>Mitchell Ohye</td>
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<tr>
<td>Sherrie Samuels</td>
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<tr>
<td>Kay Oshiro</td>
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<tr>
<td>Doris Hamada</td>
<td>Information</td>
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</tbody>
</table>

**Approval Signatures:**

- R. Chuck
- J. Sakai
- B. Koyanagi
- T. Fujii
- E. Yonamine
- R. Jinnai
- J. Yoshimoto

---

Note: Draft "Matt"? 2nd draft please - ed (insert figures)
Mr. Rodrigues called and gave this info.

Instead of 147 it is
167 includinguffs.

The getting actual
calculations to 964,000 gal.
<table>
<thead>
<tr>
<th>To</th>
<th>Initial</th>
<th>Name</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Manabu Tagomori</td>
<td>See Me</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Takeo Fujii</td>
<td>Take action by</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Harold Sakai</td>
<td>Route to your</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>branch</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Review &amp; comment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>George Morimoto</td>
<td>Draft reply by</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Herbert Morimatsu</td>
<td>For Information</td>
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<td>George Miyashiro</td>
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<td>Daniel Lum</td>
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<td>Noboru Kaneshiro</td>
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<td>Leslie Asari</td>
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</tbody>
</table>

Note: The table contains the names of individuals who are recipients of the document, with corresponding actions for each.
June 16

Call

George
Heronick

2A-1596

3 acres

147 acres

1.5"/week

4/30
8/482u

Monday, June 16
Memo To: Ed
Memo From: Kay
Date 4/26 Time 8:15 a.m.
Mr. Ms. Rodrigues
Phone 521-8391
Message:

☐ Telephoned
☐ Returned Your Call
☐ Will Call Again
☐ Wants to See You
for 5/24 Bond Meeting

Summit in by 10 May

1.5"/week for 147 acres

1.5 in
12 ft/week for 147 acres

14.575 acres, feet x (325,851 gallons/acre-ft)

= 5,000,000 gallons per week

= 0.855 mgyd

0.960

= 0.010

Water to keep 4"/day:

4 in.

12 in.

4 in. + 8 in. = 12 in.

4 in.

24 in.

36 in.

48 in.

24 in.

8 in.

36 in.

48 in.

12 in.

8 in.

12 in.

8 in.

12 in.

8 in.

24 in.

36 in.

48 in.

12 in.

8 in.

12 in.

8 in.

12 in.

8 in.

24 in.

36 in.

48 in.

12 in.

8 in.

12 in.

8 in.

12 in.

8 in.

24 in.

36 in.
APPLICATION FOR:  (check one)
☐ PERMIT TO WITHDRAW WATER FOR BENEFICIAL USE
☐ PERMIT TO SUPPLY WATER FOR BENEFICIAL USE

Instructions: Fill out, sign, and send application with pertinent attachments to Department of Land and Natural Resources, P.O. Box 373, Honolulu, Hawaii 96809. A non-refundable filing fee of $100 is required, excepting military, federal, state, and local government agencies.


2. REQUESTED BENEFICIAL USE OF WATER:
☐ Domestic ☐ Municipal ☐ Military ☐ Agricultural ☐ Industrial ☐ Other Irrigation (specify)

Appropriately describe nature and purpose of requested use: Request to withdraw additional 594,000 gallons per day to implement proposed water storage reservoir plan (see attached plans and hydrological study).

Proposed commencement date of water use: Upon

3. REQUESTED AMOUNT OF WITHDRAWAL OR SUPPLY:
Average Annual mgd; Maximum Month mgd; Maximum Day mgd

24 hours per day to replace irrigation water pumped from storage reservoir

4. NATURE AND TERM OF REQUESTED PERMIT:
☐ Temporary ☐ Permanent

Requested period of permit

5. PROPOSED SOURCE OF WATER SUPPLY:
☐ Existing source ☐ Modification of existing source ☐ New source

If construction work is proposed for new or modified existing source, give:
Commencement Date: July, 1985  Completion Date: December, 1985

6. ASSESSMENT OF REQUESTED WATER USE OR SUPPLY

In a separate attachment to this application, applicant must provide a written assessment addressing the desirability of issuing the requested permit, including such considerations as the availability of water, the beneficial purpose of the proposed water use, and the impact, if any, of the proposed water use on existing permitted uses, preserved uses, and individual household uses.

Waialae Country Club

Signature: [Signature]  Date: 4/21/85

Water User or Supplier

Waialae Country Club

Signature: [Signature]  Date: 4/23/85

Owner of Water Source

In accordance with Department Regulation No. 9, every permit approved and issued by the Board of Land & Natural Resources shall be for a specified period of time, for a specified beneficial use, subject to suspension and revocation, and subject to the shortage and emergency powers of the Board. Consideration of applications for a permit shall include: availability of water, beneficial purpose of water use, non-impairment of the most beneficial use and development of the water resources in the designated area, and no substantial and material interference with existing uses of water.

For Official Use:

Docket No. 180
180 days 28 October 1985
Board Approved  Disapproved
Well No. 1646-01

100.00 Check Deposited: 4/30/85
Waialae Country Club  
Attn: Allan Lum

Dear Sir:

Enclosed is a memorandum replying to the questions posed at our meeting on Thursday, January 31. I hope it will be helpful in explaining the irrigation plan to your members.

I will be happy to assist when you alter the well and pump to fit the new irrigation scheme.

Sincerely,

John F. Mink
Waialae Country Club
Groundwater Supply for Irrigation

February 4, 1985
John F. Mink

The following is a brief assessment of the Waialae Country Club irrigation well (State no. 1646-01; old no. 1A) and the aquifer from which it draws water. Included in the commentary are remarks about the relationship of the well to irrigation as it is now practiced and to the proposed surface reservoir storage scheme.

Prevailing Situation

The well is connected directly to the irrigation system, and its pump-motor provides the energy to both lift the water and drive the sprinklers. No storage exists between the well and the sprinklers. As a result, irrigation has to go on for about 17 hours each irrigation day, which interferes with use of the golf course. It would be desirable to reduce the actual watering period to 8 or 9 hours a day.

Optimal irrigation requires 1.5 inches of water per week, equivalent to 960,000 gpd (gallons per day). The pump in the well has a capacity of 600 gpm (gallons per minute), or 864,000 gpd if pumped continuously, a shortfall of 96,000 gpd from optimal demand. This relatively minor shortfall, however, is acceptable.

Currently the pump operates for only 17 hours each irrigation day, giving a total output of 612,000 gpd, a deficit of 348,000 gpd below ideal irrigation demand. If pumping were reduced to 8 or 9 hours, the water volume produced would be insufficient to properly maintain the golf course.

The well exploits the Waialae Aquifer, which extends from Diamond Head-Palolo Valley to Wailupe Valley. This aquifer has sustained pumpage from the well in addition to draft from the Board of Water Supply Shaft on 16th Avenue and Claudine Street for about half a century. Two other Board of Water Supply stations now also pump from the aquifer but at rates that will not appreciably affect either the output or quality of water of the Club's well.

In order to maximize draft from the well while minimizing the daily period of irrigation, a plan has been proposed to construct an open surface reservoir into which the well will pump and from which the irrigation system will be supplied. The well will be able to operate at 600 gpm for 24 hours a day, if needed, without interfering with course use. The pumps extracting water from the reservoir will be large enough to enable irrigation to be restricted to the desired 8 to 9 hours. For this plan to be put into effect, the present pump will have to be replaced.
Status of the Aquifer and the Well

The head (water table elevation above sea level) of the Waialae Aquifer is about 10 feet inland of the golf course and 8 feet at the well. This reflects a substantial basal groundwater body floating on sea water. The aquifer is artesian, which means that the groundwater is confined by a poorly permeable cap of sediments. Total rate of flow through the aquifer exceeds the present draft of the Board of Water Supply and the Club. No other entity taps the aquifer.

The well probably was drilled early in the century, although no record of the date could be found. A smaller well (State no. 1646-02; old no. 1A) 75 feet away was drilled in 1881. The wells were used by Waialae Dairy before the Club was organized.

A statement about the well's capacity before 1964 could not be found, but evidently a pump of at least 600 gpm was used in some, if not all, of the period between 1933 and 1964. In the latter year a new pump of 600 gpm capacity driven by a 50 HP motor was installed. The pump sits in an 8 inch casing but the motor is above ground. Lift to the ground surface is less than 20 feet, so that most of the energy of the motor is used to push the water to and through the sprinkler system.

Quality of the pumped water is excellent and presently varies over the narrow range of 180 to 200 mg/l (milligram per liter) chloride. For comparison, the recommended upper limit for potable water is 250 mg/l chloride; the Board of Water Supply normally provides water of 150 mg/l chloride or less. A record of salinity extending back to 1933 shows that chloride content never exceeded about 275 mg/l.

The installed capacity of 600 gpm will continue to produce water of less than 250 mg/l chloride. But because grass flourishes on water perhaps twice as saline, a somewhat larger pump, say 700 gpm, would be allowable. However, the Waialae Aquifer, along with all of southern Oahu, is "designated" by the State, which means that whatever is being produced now cannot be increased unless permission is granted by the Board of Land and Natural Resources.

Role of the Well in the Proposed Irrigation Scheme

The storage of water in an open reservoir, from which irrigation supply will be withdrawn, permits the installation of a much smaller pump-motor in the well. The existing equipment will have to be removed and replaced with an approximately 5 HP unit capable of yielding the allocation of 600 gpm. The well could then be pumped on demand at any time of the day or night.

No need remains for the pump shanty or the pit. If a submersible pump is used, all that will be necessary is a small protected panel on a cement slab laid on the ground surface; if a deep well turbine is used, the motor could be placed in a sound proof enclosure on the cement slab. The shanty and pit is an anachronism, a charming reminder of past technology but wasteful of space.
When the present pump is pulled, the condition of the casing in the well should be ascertained with a down-hole video camera. Also, a simple step-drawdown pump test should be conducted to establish stable drawdown for the design rate of the pump.

If the smaller well, which has a 4 inch diameter casing, is open, it can be fitted with a pump capable of yielding at least 50 gpm, and perhaps 75 gpm. A rate of this magnitude would have no appreciable effect on the main well nor on the aquifer. However, a permit from DLNR would be required to install a pump on the well.

Conclusions
The Club well is in no danger of either going salty or dry. It currently is fitted with a 600 gpm pump and presumably has an equal allocation from DLNR. This size, when pumped continuously, yields sufficient water for near optimal irrigation, but falls short of need when restricted to less than 24 hours per day. To hold the daily irrigation schedule to 8 or 9 hours, either additional direct capacity must be installed or storage must be provided. A single well could not sustain the required total capacity to meet the demand for this short a period. Two wells at about 600 gpm each would be required. The storage-reservoir plan, on the other hand, could be satisfied by the existing well pumping as needed.
Chevron Industrial Membrane

Pit and Pond Lining

J.P. ERRETT INC.
Suite 914, Gold Bond Bldg.
677 ALA MOANA BLVD.
HONOLULU, HI. 96813
(808) 531-1111
Chevron Industrial Membrane

System Description

**Chevron Industrial Membrane—CIM**

CIM Premix is a pourable, polymerizable black liquid which, when properly mixed with Activator CIM, becomes an elastomer which fully cures in 24 hours. It forms a tough, durable, resilient, impermeable barrier to water and most aqueous reagents. It may be spray or squeegee applied and retains excellent physical characteristics through hot or cold environments.

**Chevron Industrial Membrane—CIM, Troweling Grade**

CIM Premix Troweling Grade is a pourable, polymerizable black liquid which, when properly mixed with Activator CIM, becomes a thick, viscous semigel which can be trowel applied to vertical and overhead surfaces. Thicknesses up to 1/8" are achieved without sag or self-leveling. It fully cures in 24 hours to form a tough, durable, resilient, impermeable barrier to water and most aqueous reagents. It may be squeegee or trowel applied and retains excellent physical characteristics through hot or cold environments.

Advantages

**Speed**—Application rate of up to five gallons per minute (by spray application) will provide twenty square yards per minute (50 mils). This is uninterrupted during the full day of application.

**Economy**—No factory fabrication, very high application rate and low labor cost.

**Versatility**—Recommended for far greater range of applications than either in-place or pre-formed systems.

**Simplicity**—Very little training required. No field seaming as with pre-forms. Ease of repair.

No adhesive primer to fail as with pre-formed systems.

**Shorter pot life.**

Cure time—Ready for service within 24 hours as compared to some at five days.

Excellent UV stability—Most industrial applications will not require protective coating.

Low temperature flexibility permits severe outdoor exposure conditions.

High solids content (90%). Less volatile pollution.

Limitations

Will not withstand prolonged hydrocarbon or organic solvent exposure.

Limited to maximum 140°F continuous exposure.

No variety of color. (But can be painted.)

Consult manufacturer for application to Portland cement concrete in constant submersion service.

UA-USES, APPLICATIONS

**Typical Uses**

<table>
<thead>
<tr>
<th>Chemical and Waste Water Industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wash tanks and vats</td>
</tr>
<tr>
<td>Corrosion protection to steel and concrete</td>
</tr>
<tr>
<td>Utility floors</td>
</tr>
<tr>
<td>Catch basins</td>
</tr>
<tr>
<td>Sanitary land fill</td>
</tr>
<tr>
<td>Sewage treatment</td>
</tr>
<tr>
<td>Paper mill effluent</td>
</tr>
<tr>
<td>Flumes</td>
</tr>
<tr>
<td>Reservoirs</td>
</tr>
</tbody>
</table>

Hatcheries
Collecting basins
Drainage ditches
Mine drainage
Spent acids
Spillways
Canals
Cooling tower base
Dam facing

Typical berm and trench detail on sewage treatment lagoons in Saudi Arabia 64 acres in 54 days with the seamless, spray-on application of CIM to
SPECIFICATIONS FOR RESERVOIR

1. Size and shape to be consistent with outline on designer's print

2. Depth to be approximately 5 feet in the mauka/Koko-Head end sloping to 8 feet at the makai/Diamond Head end.

3. Capacity: approximately 4.9 million gallons

4. Coconut trees (approximately 20 to be relocated) by contractor

5. Contractor to excavate the site and stockpile material at designated locations

6. Contractor to finish grade with sand or suitable material in preparation for installation of Chevron membrane (see attached).

7. Exterior of reservoir to be lined with lava or moss rock to be in compliance with City & County ordinances.
State of Hawaii  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Division of Water and Land Development  
Honolulu, Hawaii  

June 10, 1982

Chairman and Members  
Board of Land and Natural Resources  
State of Hawaii  
Honolulu, Hawaii  

Gentlemen:

RESUBMITTAL  
Terms of Water withdrawal and Use Permits

The Department's Administrative Rules on ground water control require that the Board specify the period or duration of permits and the commencement and completion dates for the construction of ground water sources. After investigation and study of this matter, DOWALD is ready to make specific recommendations for adoption by the Board of Land and Natural Resources.

The Ground Water Use Law specifies that permits may be issued up to a maximum of 50 years and allows for extension of the permit after one-half of the permit period has lapsed. The staff is recommending that the duration of each permit be established at twenty (20) years with a review every five years by the Board to determine compliance with provisions of the permit. The staff feels that 20 years is a reasonable time for regulating ground water withdrawals and uses at this early stage of the program. As the Department gains experience in ground water regulation, the duration of the permits may be reviewed and adjusted as appropriate in the future.

On the commencement and completion dates, the staff recommends that a period of 24 months be established for completing the development of the ground water source. This construction period is a reasonable time for drilling, testing, and for the installation of permanent pumps and controls to fully bring the ground water source into operation. The period may be extended upon a showing of good cause and good faith performance. The permit and construction dates should commence on the date the permit is issued by the Department.

It is recommended that the above terms be standardized for all water withdrawal and use permits issued by the Board, subject to adjustments required by the Board for any permit.

RECOMMENDATION:

That the Board establish the terms of ground water withdrawal and use permits at 20 years from the date of issuance of the permit with a five-year Board review to determine compliance with the provisions of the permit and that the development of the ground water source be completed within 24 months from the date of permit issuance for all permits issued by the Board, subject to adjustments required by the Board for any permit.

Respectfully submitted,

ROBERT T. CHUCK  
Manager-Chief Engineer

APPROVED FOR SUBMITTAL  
SUSUMU ONO, Chairman

ITEM D-1

6/10/82
September 11, 1981

Chairman and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Certification of Ground Water Withdrawals and Uses,
Honolulu Ground Water Control Area, Cahu

The Honolulu Ground Water Control Area was designated by the Board of Land and Natural Resources on February 27, 1981 under authority of Chapter 177, HRS, and Chapter 188 of Title 13, Administrative Rules entitled "Rules for the Control of Ground Water Use in the State of Hawaii". The Department's regulatory procedures provide for water users to declare their existing water uses within a ninety-day period which ended June 4, 1981 and allows the Board 180 days to certify the declared uses.

The recommended certification of total annual, average daily, and maximum daily withdrawals for individual wells and/or well fields is tabulated in the attachment, "Certification of Ground Water Withdrawals and Uses, Honolulu Ground Water Control Area", for the Moanalua-Kaimuki Subarea and Waialae-Hawaii Kai Subarea. A comparison of the recommended quantity for certification and the sustainable yield adopted by the Board on July 24, 1981 is tabulated below:

<table>
<thead>
<tr>
<th>Subarea</th>
<th>Sustainable Yield (mgd)</th>
<th>Recommended Certification (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moanalua-Kaimuki</td>
<td>55</td>
<td>41.827</td>
</tr>
<tr>
<td>Waialae-Hawaii Kai</td>
<td>5</td>
<td>1.100</td>
</tr>
</tbody>
</table>

The remaining ground water supplies may be withdrawn by obtaining permits from the Board of Land and Natural Resources.

RECOMMENDATION:

That the Board certify the existing withdrawals and uses for each well tabulated on the attached "Certification of Ground Water Withdrawals and Uses, Honolulu Ground Water Control Area" dated September 11, 1981, subject to any special conditions and applicable laws, rules and regulations.

Respectfully submitted,

ROBERT T. CHUCK
Manager-Chief Engineer

APPROVED FOR SUBMITTAL:

SUSUMU ONO, Chairman

ITEM D-4
### MOANALUA-KAIMUKI Subarea

#### Board of Water Supply

<table>
<thead>
<tr>
<th>User/Source</th>
<th>State Well No.</th>
<th>Total Wells</th>
<th>Source Use</th>
<th>Declared Exist. Use</th>
<th>5-yr. Ave Source Capacity (mgd)</th>
<th>Withdrawal Use</th>
<th>Preserved Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaimuki Station</td>
<td>1748-03 to 10</td>
<td>8 Mun.</td>
<td>22.32</td>
<td>3.60</td>
<td>14.17</td>
<td>1,346.85</td>
<td>3.69</td>
</tr>
<tr>
<td>Palolo Well</td>
<td>1847-01</td>
<td>1 Mun.</td>
<td>1.51</td>
<td>1.31</td>
<td>1.70</td>
<td>478.15</td>
<td>1.31</td>
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<tr>
<td>Wilder Station</td>
<td>1849-13 to 16</td>
<td>4 Mun.</td>
<td>10.08</td>
<td>5.75</td>
<td>10.08</td>
<td>2,058.75</td>
<td>5.75</td>
</tr>
<tr>
<td>Ilanilani Station</td>
<td>1851-12, 13, 24,</td>
<td>9 Mun.</td>
<td>22.536</td>
<td>6.64</td>
<td>18.14</td>
<td>2,423.60</td>
<td>6.64</td>
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<tr>
<td>Kailihi Pump</td>
<td>1952-08 to 08, 16</td>
<td>8 Mun.</td>
<td>14.112</td>
<td>4.03</td>
<td>11.82</td>
<td>1,702.95</td>
<td>4.03</td>
</tr>
<tr>
<td>Kailihi Shaft</td>
<td>2052-08</td>
<td>1 Mun.</td>
<td>17.28</td>
<td>8.11</td>
<td>17.28</td>
<td>2,560.15</td>
<td>8.11</td>
</tr>
<tr>
<td>Moanalua Station</td>
<td>2152-10 to 12</td>
<td>2 Mun.</td>
<td>6.018</td>
<td>3.29</td>
<td>6.048</td>
<td>1,200.85</td>
<td>3.29</td>
</tr>
</tbody>
</table>

Subtotal (Wells) | 34 | 93,981 | 33.62 | 79,329 | 12,271.30 | 33.62 |

#### Private Users

<table>
<thead>
<tr>
<th>User/Source</th>
<th>State Well No.</th>
<th>Total Wells</th>
<th>Source Use</th>
<th>Declared Exist. Use</th>
<th>5-yr. Ave Source Capacity (mgd)</th>
<th>Withdrawal Use</th>
<th>Preserved Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amouron H. C. &amp; B.</td>
<td>2053-05</td>
<td>1 Ind.</td>
<td>0.576</td>
<td>0.139</td>
<td>Ind.</td>
<td>0.576</td>
<td>50.74</td>
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<tr>
<td>Army - Ft. Shafter</td>
<td>2053-10, 11</td>
<td>2 Dom.</td>
<td>2.6</td>
<td>1.035</td>
<td>Dom.</td>
<td>2.6</td>
<td>137.78</td>
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<td>Army - Trigler</td>
<td>2152-07, 08</td>
<td>2 Dom.</td>
<td>1.555</td>
<td>0.009</td>
<td>Dom.</td>
<td>1.555</td>
<td>222.28</td>
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<td>Bishop Trust</td>
<td>1851-26</td>
<td>1 Ind.</td>
<td>1.15</td>
<td>0.06</td>
<td>Ind.</td>
<td>1.15</td>
<td>21.90</td>
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<td>Del Monte Corp.</td>
<td>1952-12</td>
<td>1 Ind.</td>
<td>1.296</td>
<td>0.244</td>
<td>Ind.</td>
<td>1.296</td>
<td>90.66</td>
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<tr>
<td>Castle &amp; Cooke Foods</td>
<td>1951-11, 13, 20, 21</td>
<td>4 Ind.</td>
<td>Nat. flow</td>
<td>2.0</td>
<td>Ind.</td>
<td>7.717</td>
<td>730.00</td>
</tr>
<tr>
<td>Hawaii Meat Co., Ltd.</td>
<td>2053-09</td>
<td>1 Ind.</td>
<td>0.144</td>
<td>0.082</td>
<td>Ind.</td>
<td>0.144</td>
<td>109.33</td>
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<tr>
<td>Honolulu Gas Co.</td>
<td>1952-14</td>
<td>1 Ind.</td>
<td>14.0</td>
<td>2.5</td>
<td>Ind.</td>
<td>14.6</td>
<td>112.50</td>
</tr>
<tr>
<td>Honolulu Int. C.C.</td>
<td>2154-01</td>
<td>1 Irr.</td>
<td>Nat. flow</td>
<td>0.346</td>
<td>Irr.</td>
<td>No data</td>
<td>126.29</td>
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<td>Kamehameha Schools</td>
<td>2052-07, 11</td>
<td>2 Dom.</td>
<td>1.728</td>
<td>0.189</td>
<td>Dom.</td>
<td>1.728</td>
<td>71.09</td>
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<td>Kawaihae Church</td>
<td>1851-09</td>
<td>1 Irr.</td>
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<td>No data</td>
<td>Irr.</td>
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<td>0.02</td>
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<td>kokuaui Kogpo</td>
<td>1749-19</td>
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<td>0.336</td>
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<td>Ind.</td>
<td>No data</td>
<td>13.70</td>
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<tr>
<td>MFU, Inc.</td>
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<td>1 Ind.</td>
<td>No data</td>
<td>No data</td>
<td>Ind.</td>
<td>No data</td>
<td>7.30</td>
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<tr>
<td>Paradise Hotel</td>
<td>1750-09</td>
<td>1 Oth.</td>
<td>No data</td>
<td>No data</td>
<td>Oth.</td>
<td>No data</td>
<td>7.30</td>
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<tr>
<td>Pacific Club</td>
<td>1851-07</td>
<td>1 Dom.</td>
<td>0.043</td>
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<td>0.043</td>
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<td>Pacific Laundry</td>
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<td>0.576</td>
<td>No data</td>
<td>Ind.</td>
<td>0.576</td>
<td>36.50</td>
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<td>No data</td>
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<td>Queen's Med. Ctr</td>
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<td>1 Dom.</td>
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<td>0.237</td>
<td>Dom.</td>
<td>1.090</td>
<td>86.50</td>
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<td>S. M. Daman Estate</td>
<td>2153-02</td>
<td>1 Oth.</td>
<td>0.144</td>
<td>0.021</td>
<td>Oth.</td>
<td>0.144</td>
<td>7.66</td>
</tr>
</tbody>
</table>

Subtotal (Private Users) | 27 | 27,888 | 0.817 | 25,625 | 2,295.55 | 8.207 |

TOTAL - Moanalua-Kaimuki Subarea | 61 | 121,774 | 41.027 | 114,873 | 15,266.85 | 41.827 |

### WAIAlAE-HAWAIi KAI Subarea

#### Board of Water Supply

<table>
<thead>
<tr>
<th>User/Source</th>
<th>State Well No.</th>
<th>Total Wells</th>
<th>Source Use</th>
<th>Declared Exist. Use</th>
<th>5-yr. Ave Source Capacity (mgd)</th>
<th>Withdrawal Use</th>
<th>Preserved Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aliu Koa</td>
<td>1746-01</td>
<td>1 Mun.</td>
<td>0.504</td>
<td>0.40</td>
<td>Mun.</td>
<td>0.504</td>
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<td>Wai'alea Iki Station</td>
<td>1746-02</td>
<td>1 Mun.</td>
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<td>0.10</td>
<td>Mun.</td>
<td>0.504</td>
<td>69.35</td>
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<td>Wai'alea Shaft</td>
<td>1747-02</td>
<td>1 Mun.</td>
<td>2.800</td>
<td>0.24</td>
<td>Mun.</td>
<td>0.24</td>
<td>87.60</td>
</tr>
</tbody>
</table>

Subtotal (Wells) | 3 | 3,988 | 0.82 | 3,296 | 302.95 | 0.83 |

#### Private User

<table>
<thead>
<tr>
<th>User/Source</th>
<th>State Well No.</th>
<th>Total Wells</th>
<th>Source Use</th>
<th>Declared Exist. Use</th>
<th>5-yr. Ave Source Capacity (mgd)</th>
<th>Withdrawal Use</th>
<th>Preserved Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wai'alea Country Club</td>
<td>1646-01</td>
<td>1 Irr.</td>
<td>0.864</td>
<td>0.270</td>
<td>Irr.</td>
<td>0.864</td>
<td>28.55</td>
</tr>
</tbody>
</table>

TOTAL - Wai'alea-Hawaii Kai Subarea | 4 | 4.752 | 1.100 | 2.562 | 401.50 | 1.100 |
WATER USE PERMIT NO. 150

This report has been prepared in accordance with 13-171-22(b) of the Hawaii Revised Statutes requiring a 20-year review of issued water use permits to determine permit compliance. Following is a summary of permit information, site characteristics, methodology, findings, and recommendations for this State permit file.

Permit Information

| Water User: | Waialae Country Club  
|             | 4997 Kahala Ave.  
|             | Honolulu, HI 96816 |
| Landowner of Source: | Bishop Estate  
|                     | 4997 Kahala Ave.  
|                     | Honolulu, HI 96816 |
| Permitted Withdrawal Rate: | 0.460 mgd (Based upon a 12-month moving average) |
| Water Management Area: | Waialae-West |
| Island: | Oahu |
| Aquifer Sector/System: | Honolulu/Waialae-West |
| System Sustainable Yield: | 4 mgd |
| Water Type: | Unknown |
| Original CWRM Date: | September 11th, 1981 |
| Standard Conditions: | None |
| Special Conditions: | 51-57 |

Water Source

| State Well Number(s): | 1646-01 |
| Well Name: | Waialae CC |
| Water Source TMK Number(s): | 1st Division, 3-5-023:001 |
| State Land Use Classification(s): | Urban |
| County Zoning Classification(s): | P-2 |
| Geographical Coordinates: | Latitude 21° 16’ 33.0” North  
|                           | Longitude 157° 46’ 45.0” West |

End Use

| End Use TMK Number(s): | 1st Division, 3-5-023:001 |
| State Land Use Classification(s): | Urban |
| County Zoning Classification(s): | P-2 |
| Beneficial Use Explanation: | Use for irrigation of the Waialae Golf Course |
Background Information

Waialae Country Club has been the sole permittee of this water source. Although Water Use Permit 150 was initially issued in the early 1980's, the permittee has advised that the Country Club has been in existence since late 1920's/early 1930's and has most likely been drawing water from the aquifer prior to the original 1981 approval date. Consistent water use reporting records are available beginning in 2005 with mildly consistent recording prior to that. The permittee's 12-month moving average has not exceeded the permitted amount of 0.460 mgd since that time. There are no salinity records on file for State Well No. 1646-01. Reference the permit file for additional information on reporting history.

Water Use Permit 150 was approved during the September 11th, 1981 Commission on Water Resource Management meeting for withdrawal of 0.270 mgd. Approval for additional water use was granted during the June 6th, 1985 CWRM meeting bringing the permitted total withdrawal to 0.460 mgd. This water source has been in use for at least 25 years by the Waialae Country Club. Special conditions 51-57 are the governing conditions for this water use permit. A complete list of all standard and special conditions is given in the final summary report to the Legislature for the 20-year Water Use Permit Review.

Field Investigation Information

Contact: Dave Nakama
Site Address: 4997 Kahala Ave.
Honolulu, HI 96816

Brown and Caldwell conducted a field investigation on January 15th, 2008 from 8:45 a.m. until 9:30 a.m. with a representative of Mr. Dave Nakama. During this time, type of water usage was verified, GPS coordinates of well head(s) were recorded, flow meter installation and functionality were documented, and property TMK information was verified. The wellhead, its related appurtenances, and water usage area were visually inspected to assess compliance with permit conditions. Visual inspection of water loss/waste was limited to outdoor areas within the usage boundary. The physical location of the site is at the Waialae Country Club & Golf Course. Reference the TMK and GIS maps for a visual representation of the project site and well head location.

Summary of Findings for Water Use Permit No. 150

Water is currently being drawn from State Well No. 1646-01 and is being used for irrigation of approximately 145 acres of golf course and two acres of water feature on TMK parcel 3-5-
The geographical coordinates of the well head are 21° 16' 33.0" N, 157° 46' 45.0" W, with real time accuracy of ±15-feet. The water is drawn from the well and is sent through underground piping to a 2-acre water feature that doubles as a holding tank. The water feature is equipped with a level sensor that regulates pump operation. Both the influent pipe and the level sensor are located on the Eastern side of the water feature. On the opposite end of the water feature, a pump house draws water from the pond and feeds it into the central golf course irrigation system. Reference the Appendix for photographs of the previously described system components.

A flow meter is installed near the well head to record water use, but it has been broken for approximately six months. The permittee has advised that a new flow meter has been on back order for several months and will be promptly installed upon arrival. Until that time, water use is being estimated and monthly reports are being sent to the Commission on Water Resource Management. Aside from the faulty flow meter, visual inspection indicates that all system components are in good working order. The water is not being used outside of the permitted TMK boundaries and there appears to be no wasting of water or water loss.

Although no salinity records are being submitted to the Commission, WUP 150 does not include a condition that mandates such salinity reporting. As such, no violation has occurred and the permittee has achieved full permit compliance.

Recommendations

- Address the following discrepancies between the Commission’s electronic database and actual field investigation findings:
  - New permittee is the Waialae Country Club
  - Water source and end use TMK parcel numbers
  - State land use and county zoning classifications
- No disciplinary action required for this WUP since the permittee is in compliance with all standard and special conditions.
APPENDIX

Field Investigation Photographs
Figure 1 – State Well No. 1646-01

Figure 2 – Pump Controls for State Well No. 1646-01
Figure 3 – Flowmeter (Installed, Broken)

Figure 4 – Water Feature/Holding Pond
Figure 5 - Irrigation System Pump House & Controls

Figure 6 - Water Use Area (Typ.)
Water Use Permit Survey
(Please complete one survey form for each WUP)

WUP Number: 150
Well Number(s): 1646-01

Contact Information (of the person who will be present at site visit):
Name: Dave Nakama
Phone (for phone interview): 734-2151 ext 262
Fax: 734-4791
Email: nakamad@yahoo.com 223-9311 (cell)
Best time to reach for phone interview: Mornings M - F

Property Information (of the water use/well location):
Address: 4997 Kahala Avenue
City: Honolulu, HI Zip: 96816
Well Location TMK (list all if multiple wells present): 3-5-023-001-0000
Water Use TMK (list all if used on multiple lots):

Water Use/Well Information:
Is the water source currently in use? Yes ☑ No
If no, please explain: ____________________________________________________________

What are you currently using the water for? (example: "Use for 45 acres of diversified agriculture and 3 residences"): Irrigation

Is a flow meter installed and working properly? Yes ☑ No ☐
If no, please explain: Meter is installed but not working. New meter is on back order.

Do you submit monthly water use reports to the State? Yes ☑ No ☐
If no, please explain: ____________________________________________________________

Field Investigations:
A representative from Brown and Caldwell will be visiting wells in your area over the next several months between the times of 9:00 am and 5:00 pm. Each site investigation will take approximately 1-2 hours. Please indicate up to three potential days of the week and availability times for an on-site inspection of the well location and verification of water use compliance. The permit holder must provide Brown and Caldwell with at least five (5) working days notice of the need to reschedule.

Option #1 Date (M-F): Monday Time: 9:00 am ☑ 12:00 pm ☐ 3:00 pm ☐
Option #2 Date (M-F): Tuesday Time: 9:00 am ☑ 12:00 pm ☐ 3:00 pm ☐
Option #3 Date (M-F): Thursday Time: 9:00 am ☑ 12:00 pm ☐ 3:00 pm ☐

Once this survey is returned, a Brown and Caldwell representative will be contacting you to conduct a phone interview and finalize the exact date and time of your field investigation. Please fax/mail completed surveys by December 12th, 2007 and direct any questions related to this survey to Mr. Milo Smith of Brown and Caldwell at:
1099 Alakea Street, Suite #2400
Honolulu, HI 96813
Tel: (808) 203-2661
Fax: (808) 533-0226
mcsmith@brwncald.com

For Official Use Only
Received: 12/3/07
Information Updated: 12/3/07
Phone Interview Complete: 1/6/08

Notes/Comments:________________________________________________________________________
Phone Interview

WUP Number: 150
Well Number(s): 1646-01

Contact Name: Dave Nakama

Phone Number: (608) 734-2151 (x 262)

Attempt #1: Date/Time: 1/13/06 - 9:25 am Result: Reached

Attempt #2: Date/Time: ____________________________ Result: ____________________________

Well Location TMK(s): 3-5-023:001
Water Use TMK(s): 3-5-023:001

Water Source Address: 44a7 Kahala Ave.
City: Honolulu
Zip Code: 96816

Currently using water source?
Yes ☒ No ☐

Notes/Comments:

How often is the water source being used?
Daily ☒ Weekly ☐ Monthly ☐

Notes/Comments:

How long have you been using this water source?: 7 years (Early 30's?)

Has there been any rezoning of the water source/water use properties?
Yes ☐ No ☒

Have you reported the rezoning to the State?
Yes ☐ No ☐ N/A ☒

If no, explain:
N/A

Scheduled field investigation day/time: 1/15/06 @ 9:00 a.m.

Notes (Special directions, site conditions, potential hazards, general notes, etc.):

• Security Desk
• Parking lot on Ocean Side
Comments To Make:

- Although we prefer that you do not change your scheduled field investigation time, if you require a reschedule, you must provide Brown and Caldwell with at least five (5) working days notice of the need to reschedule.
- A representative from Brown & Caldwell will be making a reminder phone call to you sometime during the week prior to your scheduled field investigation.
- It is very important that you provide access to the site at the day and time agreed upon. Due to a very tight schedule, if you fail to provide access at the agreed upon time and/or do not reschedule with at least a five (5) working day notice, a makeup date will not be allowed.
- If for some reason you don't know where your well head is located, it would be a good idea to locate it prior to your field investigation to help make the visit go quickly and smoothly.
- Other

- Was there a previous permittee?
- Waralae CC or Bishop estate is permittee?
- Waralae CC or Bishop estate is Lo??
Field Investigation Checklist

WUP Number: 150  Well Number(s): 1646-01

Water Source
Well Location TMK(s): 3-5-023.01
Well Head GPS Coordinates:  
Latitude: 21°10.550'N  Longitude: 117°10.751'W
Well Type:  Pump

Currently using water source?  Yes ☑  No ☐
Notes/Comments:  

Is there a flow meter installed?  Yes ☐  No ☑
Is the flow meter operational?  Yes ☐  No ☑
Notes/Comments:  On back order

Water Use
Water Use TMK(s): 3-5-023.01

What is the water being used for?  Drawn from well via pump, sent to holding pond/water feature (2 acres) pumped out of pond via pump into the irrigation system.

Is the water being used within the permitted boundaries?  Yes ☑  No ☐
If no, explain  

Is there any observed wasting of water or water loss?  Yes ☐  No ☑
If no, explain  

Are the permit conditions being complied with?  Yes ☐  No ☑
If no, explain:  No flowmeter (working) installed. A replacement flowmeter for the facility one is on backorder.

Other
Photographs of:  Water Source ☑  Usage Area ☑  Water Meter ☑  Pump/Motor ☑

General Notes/Comments:  met w/Mervin, not Dave.

Investigated By:  M B  Date: 1/15/08  Time: 8:45 AM
Standard Conditions List

1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means “the use of water in such a quantity as is necessary for economic and efficient utilization, which is both reasonable and consistent with State and County land use plans and the public interest.” (HRS § 174C-3)

2. The right to use ground water is a shared use right.

3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:
   a. Can be accommodated with the available water source;
   b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
   c. Will not interfere with any existing legal use of water;
   d. Is consistent with the public interest;
   e. Is consistent with State and County general plans and land use designations;
   f. Is consistent with County land use plans and policies; and
   g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in Section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).

4. The ground-water use here must not interfere with surface or other ground-water rights or reservations.

5. The ground-water use here must not interfere with interim or permanent instream flow standards. If it does, then:
   a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
   b. The interim or permanent instream flow standard, as applicable, must be amended.

6. The water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.

7. The water use permit application and submittal, as amended, approved by the Commission at its <Insert Date> meeting are incorporated into this permit by reference.

8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.

Variations of Standard Condition (8) are as follows:
   i. Modification of any permit condition shall be approved by the Commission. Modification of any permit condition without notification may result in the revocation of the water use permit.
9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. Protect the water sources (quantity or quality);
   b. Meet other legal obligations including other correlative rights;
   c. Insure adequate conservation measures;
   d. Require efficiency of water uses;
   e. Reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. Meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. Carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard

10. An approved flowmeter(s) must be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a monthly basis (attached).

Variations of Standard Condition (10) are as follows:
   i. The applicant shall keep monthly pumpage estimates to be submitted annually to the Commission.
   ii. An approved flowmeter(s) need not be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a yearly basis (attached).
   iii. An approved flowmeter(s) must be installed to measure withdrawals and a monthly record of withdrawals, water-levels, salinity, and temperature must be kept and reported to the Commission on a monthly basis in accordance with the Commission's September 16, 1992 action on reporting requirements.
   iv. Approved flowmeters must be installed to measure monthly withdrawals and a monthly record of withdrawals must be kept and reported to the Commission on Water Resource Management on a monthly basis.
   v. An approved flowmeter(s) must be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a quarterly/yearly basis (attached).
   vi. An approved flowmeter shall be installed to measure water withdrawals
   vii. An approved flowmeter(s) must be installed to measure withdrawals; and a record of the withdrawals must be kept and reported to the Department of
Land and Natural Resources, Division of Water and Land Development, P.O. Box 373, Honolulu, HI 96809, on a monthly basis.

viii. Although not stated as a condition of the permit §13-168-7 HAR requires you to keep a record of your monthly total pumpage, water level, salinity, and water temperature. This information must be submitted to the Commission on a regular monthly basis using the enclosed water use report form.

ix. An approved flowmeter shall be installed and the withdrawal from Well 1851-73 shall be recorded and reported to DLNR on a monthly basis by the owner and/or operator of the well.

x. The withdrawals from these wells shall be recorded and reported to the DLNR on a monthly basis by the BWS.

xi. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting water usage on a monthly basis.

xii. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage. Water usage shall be measured on a monthly basis and reported to the Commission.

xiii. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage. Water usage shall be measured on a monthly basis and reported to the Commission along with water level and salinity measurements.

11. This permit shall be subject to the Commission’s periodic review of the <Aquifer> Aquifer System’s sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the <Aquifer> Aquifer System, or relevant modified aquifer(s), is reduced.

12. A permit may be transferred, in whole or in part, from the permittee to another, if:
   a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of use, remain the same; and
   b. The Commission is informed of the transfer within ninety days.

Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer, which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.

13. The uses(s) authorized by law and by this permit do not constitute ownership rights.

14. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances that will affect the permittee’s water use.

15. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservations, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter
into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period or forfeiture.

16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the <Aquifer>Ground-Water Management Area.

17. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.

18. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.

19. Special conditions in the attached cover transmittal letter or attached exhibits are incorporated herein by reference.

20. If the ground-water source does not presently exist, the new well shall be completed, i.e. able to withdraw water for the proposed use on a regular basis, within twenty-four (24) months from the date the water use permit is approved.

**Variations of Standard Condition (20) are as follows:**

i. The 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 two years from the date of permit issuance.

21. This permit may not be transferred or the use rights granted by this permit sold or in any other way alienated. Pursuant to HRS § 174C-59 and the requirements of Chapter 174C, the Commission on Water Resource Management has the authority to allow the transfer of the permit and the use rights granted by this permit in a manner consistent with HRS § 174C-59. Any such transfer shall only occur with the Commission's prior express written approval. Any sale, assignment, lease, alienation, or other transfer of any interest in this permit shall be void.

22. The water use permit granted shall be an interim water use permit, pursuant to HRS § 174C-50. The final determination of the water use quantity shall be made within five (5) years of the filing of the application to continue the existing use.

23. The water use permit shall be issued only after agricultural review.

24. That scheduled adjustments to Oahu Sugar Co. permitted use shall be initiated upon discontinuance of agricultural uses.
25. The issuance of this permit was approved by the Commission on Water Resource Management at its meeting on <Insert Date>.

26. The permit shall be subject to the review by the Attorney General.

27. The permit holder may be required to relinquish this permit at any time or specified time after issuance to the Board of Land and Natural Resources in accordance with Chapter 166 of Title 13.

28. The applicant shall obtain the necessary land acquisition documents from the Hawaii Housing Authority.
Special Conditions List

1. Should an alternate permanent source of water be found for this use, then the Commission reserves the right to revoke this permit, after a hearing.

2. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

3. The applicant shall contact the Environmental Management Division, State Department of Health, at 586-4304, concerning "GUIDELINES APPLICABLE TO GOLF COURSES IN HAWAII" date <Insert Date & Version #>.

4. Standard Condition 10 is emphasized, to report consumption on a regular basis.

5. The applicant may continue this existing use of ground water within the limits approved by the Commission, and the actual issuance of the interim permit shall not be a reason to interrupt this existing use.

6. This interim water use permit shall cease to become interim and shall be subject to HRS § 174C-55 upon administrative review of the quantity within five (5) years, provided that all conditions of the use (including the review of the quantity which shall not be greater than the amount initially granted) remain the same. Enforcement of the allocation limit shall be stayed pending staff’s review and issuance of a permanent water use permit.

7. As-built drawings of the well and pump, and a complete pumping test record shall be submitted within sixty (60) days.

8. In the event the pump tests show that aquifer boundary conditions do not support the requested withdrawals, the Commission reserves the right to amend this permit, after a hearing, to a level that is supported by the pump tests.

9. The existing use may be continued within the levels approved by the Commission, and the actual issuance of the permit document shall not be a reason to interrupt the approved level of use.

10. The filing of an application by Kukui, Inc. for a new or modified water use permit for the Kualapuu Aquifer in excess of 2.0 mgd (total system withdrawal) shall be just cause for re-consideration of this interim permit by the Commission.

11. Upon completion of a new transmission line for the transport of water use by Well #17, the permit shall be modified to reduce the allocation amount by the additional 79,220 gallons per day allocated for use of the Molokai Irrigation System.

12. Within six (6) months from the date of approval of a water use permit for the well, the applicant shall conduct a feasibility study and submit a report describing
alternative sources of nonpotable water for irrigation uses at the resort area. It is suggested that the developer consider use of dual lines in the subdivisions so that effluent may be used in the existing reuse system. Another consideration is the development of brackish water wells in the Kaluakoi Aquifer system for mixing with the effluent generated at the resort.

13. Within six (6) months from the date of approval of a water use permit for the well, the application shall evaluate the filter back discharges into Kakaako Gulch to determine if excessive preventable waste is occurring and identify possible measures to eliminate or reduce such waste. The evaluation shall be conducted in cooperation with the Commission staff and staff of the Department of Health’s Safe Drinking Water Branch, which regulates the drinking water system.

14. Within six (6) months from the date of approval of a water use permit for the well, the applicant shall 1) implement a leakage control and detection system and compete repairs to prevent such leakage and 2) implement use of xeriscaping and low-flow fixtures.

15. Action on the future use portion of the water use permit application for Well #17 (Well No. 0901-01) is deferred pending the establishment of existing uses in the aquifer. Kukui Inc.’s application for uses in excess of those uses existing on July 15, 1992 will be considered “new” uses and will be taken up by the Commission as soon as other existing use applications have been decided. In the interim,
   a. The Commission shall recognize that there is disagreement between the applicant’s staff calculations of reasonable-beneficial existing use
   b. The Applicant will have the burden of proof to show within six (6) months reasonable-beneficial existing use calculations that support the applicant’s request as opposed to staff’s calculations.
   c. The Commission’s enforcement of the approved existing use allocation will be suspended for six (6) months.

16. The permittee shall submit a notice of intent and written request to continue the use at least ninety (90) days prior to the expiration of the interim five-year permit.

17. The Commission shall delegate to Maui Department of Water Supply the authority to allocate the use of water for municipal purposes, as provided in §174C-48(b).

18. Maui Department of Water Supply shall be exempt from the requirements for permit modifications, as provided in §174C-57(c).

19. The permittee must meter water use and monitor chloride concentrations on a monthly basis and submit monthly reports of water use and chloride concentrations to the Commission.

20. Standard Condition 16 is waived for saltwater wells.

21. The permit will be revoked if (1) stream monitoring shows that pumping the well reduces stream flow, or (2) the electromagnetic resistivity survey indicates that the
well was drilled into a dike compartment, unless the applicant submits a petition for an amendment to the interim instream flow standard with the well completion report. However, no use of the water may be made without a Pump Installation Permit, which cannot be issued during consideration of the amendment of the interim instream flow standard.

22. The applicant shall present the results of the electromagnetic resistivity survey, pump tests, and stream monitoring to a community meeting as well as to the Commission.

23. A final determination of water use quantity shall be made within five (5) years of the filing date of the application (<Insert Date>) to continue existing use.

24. The applicant shall implement, by December 31, 1995, a biological and hydraulic monitoring program for a minimum 2-year period that: 1) documents the existing operating procedure, 2) seeks to identify the impacts of all operating alternatives on Waikolu Stream, and 3) seeks to identify the effectiveness of weir modifications (Dam No. 1). This program shall incorporate the three new wells, Wells #4-6 (Well Nos. 0855-06, -05, &-04, respectively), which may be pumped within the approved limits, for monitoring and testing purposes only. Further, semi-annual reports summarizing data and preliminary findings shall be submitted to the Commission. It is suggested that the Department of Agriculture work with the State Division of Aquatic Resources and other affected agencies to prepare the monitoring program in light of the difficult technical questions raised by this application. A particular concern is the coordination of this monitoring program with the ongoing National Park Service study by Anne Brasher. A draft of this plan shall be submitted to the Commission staff within ninety (90) days for technical review and comment. Results of the monitoring program shall be used to make recommendations to the Commission on any additional use of the wells, and shall be made readily available to all interested parties.

25. That the Commission approves the well construction permit for the Kamiloloa-Waiola Well (Well No. 0759-01), subject to the standard well construction conditions and the special conditions for the pumping well for the aquifer tests.

26. That the Commission authorizes the Chairperson to approve and issue a pump installation permit upon acceptance of adequate pump test result, subject to the standard pump installation conditions.

27. Should the well be used for back-up domestic supply, applicant is advised to contact DOH or otherwise ensure safe drinking water quality is maintained.

28. The applicant shall follow the agreed monitoring plan.

29. If pesticides used by the applicant are found in ground or surface water and can be traced to the applicant's use, the CWRM may revoke the permit immediately upon such finding.
30. Issuance of the interim permit shall be withheld until the reservation of water for DHHL is set by rule. Applicant may continue this existing use within the approved limits.

31. The applicant shall submit well modification and pump installation permit applications for administrative approval by chairperson prior to beginning any work required to complete well.

32. Should any stream flow impacts result from use, petition to amend interim instream flow standards shall be submitted.

33. Should any dewatering result from use, pumping shall cease immediately.

34. Shall submit accurate schematic diagram of distribution system for the battery of 5 wells.

35. Shall be subject to a 6-month independent audit & monitoring.

36. Final pump capacity shall be determined from pump test results & approved administratively by signature of chair.

37. The permittee shall seek and submit to the Commission within ninety (90) days written confirmation from the Department of Land Utilization of the non-conforming use.

38. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride, unless a variance from the chloride limit has been granted. The authority to approve future variance requests is delegated to the chairperson.

39. The duration of the interim permit shall be:
   a. To July 1, 2006, or
   b. Until treated wastewater is available and acceptable for use, or
   c. Until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

40. Action on any interim permit may be initiated by the Commission or any permittee upon letter request or pursuant to §174C-57 Haw. Rev. Stat. (Modification of permit terms).

41. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.

42. Require adherence to the chloride sampling protocol and the submittal of weekly chloride data. The authority to approve variances from the weekly reporting requirement is delegated to the Chairperson.

43. Require adherence to the Conservation Conditions.
44. In the event a water shortage is declared by the Commission, permittees in the <Insert Aquifer System> shall comply with the <Insert Aquifer System> water shortage plan adopted by the Commission.

45. The permittee shall contact the Department of Health, Clean Water Branch and obtain the necessary discharge permit(s).

46. Permit shall be interim and replaces existing WUP for 2051-07 & 11.

47. Applicant shall submit an acceptable archaeological inventory survey report to DHP. If historic sites affected, a plan to mitigate these affects must be accepted by DHP and completed by applicant.

48. Should the well be used for back-up domestic supply, applicant is advised to contact DOH or otherwise ensure safe drinking water quality is maintained.

49. (The permittee) may report monthly pumpage on yearly basis.

50. Prior to issuance of any permits, must submit filing fee for after-the-fact pump installation permit.

51. The term of this permit shall be twenty years from the date of issuance of the permit with a five-year Board review to determine compliance with the provisions of the permit.

52. The amount of water to be withdrawn under this permit shall be 0.19 mgd, averaged annually, for irrigation use. This permitted use of 0.19 mgd when added to a preserved use of 0.27 mgd amounts to a total of 0.46 mgd, averaged annually, which may be withdrawn from well 1646-01.

53. The use authorized by the permit must not interfered substantially and materially with existing individual household uses and existing uses.

54. The use of this well shall be subject to the shortage and emergency powers of the Board of Land and Natural Resources (BLNR).

55. This permit may be suspended or revoked, in accordance with Chapter 166.

56. The permit holder may be required to relinquish this permit to BLNR, in accordance with Chapter 166.

57. The withdrawal from Well 1646-10 shall be recorded and reported to DLNR on a monthly basis by the permittee.

58. In the event that emergency water use occurs, the permittee shall notify the Commission in writing within one (1) day of pumping, to inform the Commission as to the nature of the emergency and the expected duration of the emergency. A water
use report shall also be filed pursuant to Standard Condition 10 and Administrative Rule 13-168-7.

59. Note DOH’s requirements related to non-potable water systems (attached to original permit).

60. Standard Condition 16 requiring the submittal of a water shortage plan is waived.

61. All non-potable spigots and piping shall be clearly labeled as “DO NOT DRINK, NON-POTABLE” to prevent direct human consumption.

62. Standard Condition 10 is modified. Due to the inability to take water level measurements, the requirement to measure monthly water levels is waived. In addition, as long as the U.S. Geological Survey is collecting and analyzing the chloride content of the well water, the requirement for the permittee to measure and report chlorides is also waived.

63. Well elevation components must be surveyed by a licensed surveyor and this information must be submitted to commission prior to issuance of permanent permit.

64. The permittee shall obtain approvals from the Department of Health and the U.S. Environmental Protection Agency prior to use of the water.

65. This water use permit, WUP No. <Insert #>, shall supersede WUP No. <Insert #>.

66. WUP No. <Insert #> is revoked

67. Standard Condition 17 is waived.

68. Standard Condition 22 for interim water use permits shall not apply.

69. To supplement our records, we request that you provide a map of the Galbraith Est. lands west of Wahiawa (2100 ac+) and the associated TMK’s for use area.

70. Deferred action on portion requested for golf course irrigation pending further refinement of irrigation requirement and a feasibility study for utilization of surface water sources, including Wahiawa Reservoir.

71. Written justification be provided for any 'cushion' of 0.5 mgd.

72. The water use permit shall be an interim permit. The duration of the interim permit shall be until treated wastewater is available and acceptable for use. The permittee shall continue discussions with Honolulu Board of Water Supply regarding the use of reclaimed water.

73. The permittee is put on notice that this is a qualified approval in that this permit may be modified or revoked prior to the expiration of the interim permit if the
Commission decides that the use of additional basal ground water for dust control and landscape irrigation is not reasonable-beneficial use.

74. The permittee encouraged to use drought-tolerant landscaping to conserve water.

75. Should the applicant provide written evidence that the county DHCD approves a 201E exemption for the elderly affordable housing project then the applicant may modify a corresponding portion of their existing aquacultural use to be used by the exemption approved project within the Commission approved water use permit limits under recommendation 5.

76. The applicant shall obtain a water lease/permit from Land Division prior to actual use of the well water.

77. Require the permittee to sign a contract by May 14, 1998 with the City Department of Wastewater Management to buy and use 0.400 mgd of R-1 water for a corresponding reduction in allocation for Well Nos. 1900-02, 17 to 20, and 1901-03.

78. Standard Condition 9 is waived.

79. Standard Condition 10 is modified to exempt the permittee from monthly measurements of salinity and temperature.

80. Standard Condition 10 is waived.

81. Applicant must seek a determination from BLNR and Land Mgt Div as to whether water license required. If required, license must be obtained prior to issuance of permit. If not, permit will be issued w/out further action.

82. Commission defers action on use in excess of 452,000 gpd pending additional info from BWS and further staff analysis.

83. The permit shall be subject to the Commission’s sustainable yield review by December 1990.

84. The Commission shall delegate to the Honolulu Board of Water Supply the authority to allocate the use of water for municipal purposes, in accordance with §174C-48(b) HRS.

85. Honolulu Board of Water Supply shall be exempt from the requirements of permit modifications as provided in §174C-57.

86. BWS must participate in discussions, to be coordinated by Commission Staff, regarding a monitoring program to address impacts to Kaneohe Bay water quality, prior to any action on applications for future municipal uses.

87. A pump installation permit application must be made and approved prior to the installation of a permanent pump.
88. The water withdrawn shall be 0.7 mgd for municipal use.

89. The installed pump capacity of the well shall not be more than 700 gpm or 1.01 mgd.

90. The term of permit shall automatically expire twelve months from the date of issuance.

91. The Honolulu Board of Water Supply may continue to submit monthly water data on their own form, provided that the data are submitted in a format that is acceptable to the Commission staff.

92. Standard Condition 7 shall not apply.

93. Standard Condition 22 shall not apply.

94. Standard Condition 10 is modified to exempt the permittee from monthly measurements of salinity and temperature.

95. This permit shall be subject to conditions providing for stream restoration if the Commission determines that additional water should be returned to the streams.

96. HECO 1 mgd for industrial use

97. Campbell Estate 1 mgd for municipal use through BWS, by separate agreement with HECO

98. BWS 1 mgd for municipal use.

99. The permit shall be subject to the Commission’s sustainable yield review by <Insert Date>.

100. The applicant shall obtain the current version of the Department of Health’s Guidelines Applicable to Golf Courses in Hawaii. Where relevant and viable, items of the guidelines should be implemented and sustained appropriately. To obtain the current version, contact the Safe Drinking Water Branch, Environmental Management Division at 808-586-4258 (Honolulu).

101. The future use portion of the application shall be deferred until existing uses in the Koolauloa area are established.

102. The water to be withdrawn under this permit shall be a total of 0.03 mgd (0.02 mgd preserved plus an additional 0.01 mgd permitted use), averaged annually, for domestic and irrigation use

103. Existing well 1851-09 shall be properly sealed by a licensed drilling contractor. A well modification permit application, enclosed, shall be submitted to the Department for approval of the well sealing. A filing fee for sealing the well will not be required.
104. The permittee is required to test the source using a certified private laboratory and submit the test results to the Commission within three (3) months. The Commission will then forward the results to the Department of Health for their review. The Department of Health recommends that the well be routinely tested for microbiological and chemical parameters thereafter.

105. The permittee is required to submit a completed Registration of Well and Declaration of Water use by <Insert Date>.

106. The permittee shall contact the Department of Health for a written determination on the status of their water system and comply with any Department of Health requirements for monitoring and testing.

107. In the event that the original spring source decontaminates, the new well authorized will be shut down.

108. That within each aquifer the total permitted use shall not exceed the sustainable yield.

109. That any water available for allocation shall be for in-district use.

110. That scheduled reductions to Oahu Sugar Co. permitted use shall be initiated upon final termination of an Osco lease or sub-lease, whichever occurs later.

111. That permits for water use issued in accordance with the proposed schedule shall be interim permits subject to review and adjustment by 1995.

112. That the permit shall be an interim permit for a new use which is afforded to existing users as specified in §13-171-20.

113. That the original allocation of 0.200 mgd shall be taken to hearing for possible revocation at a later date to complete the transfer of the water use permit entirely to Well No. 3407-02. This revocation would reduce the current allocation afforded to the Kunihiro Well (Well No. 3406-06) to zero.

114. This allocation incorporates the unspecified domestic needs of the applicant and therefore necessitates a single meter be installed at the well.

115. Should any impacts to nearby wells or streams be established by the use of this well, the applicant shall address these issues to the satisfaction of the Commission.

116. If an economically feasible nonpotable source is identified, the applicant shall convert to the alternative nonpotable source.

117. The permit shall be subject to the Chairperson's approval of a water use plan recommending possible measures to prevent or minimize saltwater contamination and establish courses of action to follow should the aquifer become to saline to use.
118. Permittee shall provide the necessary end-use information on the 10th residence to allow regulation of the use under Chapter 174C.

119. Standard Conditions 10 & 18 shall not apply.

120. Standard Condition 10 is modified to exempt the permittee from the requirement to install a flowmeter. Salt water withdrawals may instead be estimated based on pumping capacity and run time.

121. The applicant shall review the existing year long period of pumpage and streamflow data and provide analysis on ground and surface water interaction. Deadline is January 25, 1994.

122. The water use permit for Well Nos. 2301-27 to -32 for 0.75 mgd (WUP No. 419) shall be revoked upon issuance of a pump installation permit for the well.

123. The permittee shall use mulching to decrease evaporative losses and manage irrigation scheduling to minimize water demand.

124. The permittee shall submit a detailed agricultural plan to support any future water use permit application for increased agricultural use at this parcel.

125. If not already obtained, the permittee shall seek and obtain any necessary permits from the Department of Health for the proposed discharge to Malaekahana Stream.

126. Standard Condition 10 is modified to waive the requirement for installing a water meter on Well Nos. 2358-21, 22, and 29. The permittee shall install a water meter on Well No. 2358-26 to measure total monthly flow through the discharge line. This quantity should then be assumed to be the rate of natural flow from the other three wells for monthly reporting purposes.

127. The permit shall be effective upon submittal of documentation by Navy that it has met the DOH requirements for a public system.

128. This WUP shall be subject to Army's application for a WUP to reduce the permitted use of the Army's Schofield Shaft (2901-02 to 04, 10) by 0.208 mgd to a new total of 5.648 mgd. The Army's application shall be submitted within 60 days after the approval of this WUP or this WUP shall be void. Approval of the modification request shall be obtained from the CWRM prior to use of Well No. 3100-02 and issuance of this WUP.

129. Navy shall submit an after-the-fact PIPA, and approval of the permit shall be obtained prior to use of the well.

130. The well shall not be used for drinking water purposes unless it is properly tested and treated.
131. This permit is approved subject to reclaimed water becoming a practical alternative and provided that the Department of Health approves the reuse application.

132. Should any opae ula be recovered in the well water, the permittee shall notify the Division of Aquatic Resources and provide specimens to the Division of Aquatic Resources for analysis.

133. If a single meter at the well is used, the Commission shall allow an additional 1,000 gallons per day to the water use permit amount for the domestic needs of two residences, although a permit for individual domestic consumption is not required. Otherwise, the applicant must provide a meter to separately measure the irrigation consumption.

134. This permit is approved under the requirement that conversion to either: 1) treated wastewater becoming available for reuse as an alternative supply source, provided that Department of Health concerns over the use of treated effluent over the potable water aquifer have been addressed; and/or 2) other nonpotable source becoming available will occur in a timely manner.

135. These permits shall be subject to a review of actual use within four years for possible modification of the permitted amount.

136. The permit shall be reviewed in two (2) years for possible additional revocation due to nonuse.

137. The allocation is based on the projects listed in Exhibit 5 (of Item 10 of the May 20, 1998 Staff Submittal), except for the Queen’s Beach GC (TMK 139-11-2,3), Lot 9 (TMK 139-17-51), and Varsity Place (TMK 128-24-35).

138. Kamehameha Schools Bishop Estate/Honolulu Board of Water Supply shall transfer the water use permit within ninety (90) days of the effective date of the transfer of the pump station to the Honolulu Board of Water Supply, pursuant to §174C-59 Hawaii Revised Statutes.

139. The permittee shall ensure that the water is recycled by either directing it into the Waiahole Ditch for use by downstream farmers (subject to the approval of the Agribusiness Development Corporation’s Board) or into Waikele Farm’s existing irrigation system.

140. The permittee shall file a completed application to modify WUP No. 758 to reduce the allocation by 0.100 mgd within 60 days. If a completed water use permit modification application is not received within 60 days from this submittal’s date, then the subject water use permit application (WUPA No. 767) shall be deemed denied without prejudice without the need for another hearing.

141. The water withdrawn shall be for municipal use. No improvements to the existing sources are required as the existing source capacities are greater than the increase.
142. Water license must be determined through LM.

143. Proposed other uses will be considered at a later date.
HONOLULU GROUND WATER CONTROL AREA
WATER WITHDRAWAL and USE PERMIT
for
Waialae Country Club Well No. 1646-01
Honolulu, Oahu

TO: Waialae Country Club
4997 Kahala Ave.
Honolulu, Hawaii 96816

Permission is hereby granted to Waialae Country Club to withdraw and use water from Well No. 1646-01 located in the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area, Oahu, subject to all requirements of Chapter 177, HRS, Chapter 166, Title 13, the administrative rules of the Department of Land and Natural Resources (DLNR) and the following additional conditions:

1. The term of this permit shall be twenty years from the date of issuance of the permit with a five-year Board review to determine compliance with the provisions of the permit.

2. The amount of water to be withdrawn under this permit shall be 0.19 mgd (million gallons per day), averaged annually, for irrigation use. (This permitted use of 0.19 mgd when added to a preserved use of 0.27 mgd amounts to a total of 0.46 mgd, averaged annually, which may be withdrawn from Well 1646-01.)

3. The use authorized by the permit must not interfere substantially and materially with existing individual household uses and existing preserved uses.

4. The use of this well shall be subject to the shortage and emergency powers of the Board of Land and Natural Resources (BLNR).

5. This permit may be suspended or revoked, in accordance with Chapter 166.

6. The permit holder may be required to relinquish this permit to BLNR, in accordance with Chapter 166.
7. The withdrawal from Well 1646-01 shall be recorded and reported to DLNR on a monthly basis by the permittee.

The Board of Land and Natural Resources may declare this permit null and void if it determines that the conditions of this permit are not being met or if the development of the ground water source is not completed within 24 months from the date the permit is issued.

\[\text{SUSUMU ONO, Chairperson of the Board}\]

\[\text{JUN 6 1995}\]

\[\text{Date of issuance}\]

\[\text{cc: USGS}\]
\[\text{Honolulu BWS}\]
\[\text{Dept. of Health}\]
\[\text{Mr. Fred Rodrigues}\]
May 24, 1985

Chairperson and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Waialae Country Club Water Use Permit Application, Honolulu Ground Water Control Area, Waialae-Hawaii Kai Subarea

Waialae Country Club has submitted a Water Use Permit Application to withdraw an additional 0.190 million gallons per day for irrigation use from the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area.

Waialae Country Club presently irrigates directly from an existing well (State No. 1646-01) which has a preserved use of 0.270 million gallons per day. A proposed new irrigation system which includes a water storage pond on the golf course requires an additional average annual amount of 0.190 million gallons per day over the presently preserved use of 0.270 million gallons per day, for a total of 0.460 million gallons per day.

Tabulated below is the current status of withdrawals for the Waialae-Hawaii Kai Subarea:

<table>
<thead>
<tr>
<th></th>
<th>Sustainable Yield</th>
<th>Preserved Use</th>
<th>Water Use Permits Issued by BLNR.</th>
<th>Total Uses Authorized</th>
<th>Water Available</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.00 mgd</td>
<td>1.10 mgd</td>
<td>0.70 &quot;</td>
<td>1.80 &quot;</td>
<td>3.20 mgd</td>
</tr>
</tbody>
</table>

Analysis of the application indicates that the well is down gradient from three Board of Water Supply wells in the subarea and should not affect them. The additional water requested is based on a calculated amount of irrigation required per acre of golf course.

RECOMMENDATION:

That the Board approve the issuance of a Water Withdrawal and Use Permit to Waialae Country Club for an additional 0.190 million gallons per day for irrigation use above their preserved use of 0.270 million gallons per day for a total of 0.460 million gallons per day. The applicant shall be required to submit monthly pumpage data to the Board to determine the actual amount of water used versus the calculated amount. The term of the permit shall be 20 years with a five-year Board review to determine compliance with the provisions of the permit. The applicant shall be subject to any special conditions and applicable laws and rules.

Respectfully submitted,

MANABU TAGOMORI
Manager-Chief Engineer

APPROVED FOR SUBMITTAL:

SUSUMU ONO, Chairperson

Approved by the Board of Land & Natural Resources at the meeting held on 5-24-85.
May 13, 1985

MEMORANDUM FOR THE RECORD

FROM: Dan Lum

SUBJECT: Waialae Country Club Water Use Request

On May 10, 1985, as requested by Manabu Tagomori, I checked with Fred Rodrigues and Tom Nance on the amount of water use to be permitted by the Board for irrigation by the Waialae Country Club (WCC).

The WCC application request was for an additional 0.594 mgd over their presently preserved use of 0.270 mgd, for a total average amount of 0.864 mgd.

According to Tom Nance, Brett Collins calculated a 4.9 million gallon reservoir requirement based on a peak month demand of 810,000 gallons and a reservoir water level fluctuation of one foot. Tom also indicated that the projected average use amounts to 458,000 gallons per day, calculated as follows: current average use of 270,000 gallons per day divided by current maximum month use of 480,000 gallons per day equals 56.25 percent, and 56.25 percent times projected maximum month use of 814,000 gallons per day equals a projected average use of 458,000 gallons per day.

Rounded to 460,000 gallons per day, less an existing preserved use of 270,000 gallons per day equals an additional average use of 190,000 gallons per day required by WCC. Therefore the board submittal recommends a permitted use of 0.190 mgd, additional, for WCC.

DAN LUM

DL: dh
APPLICATION FOR: (check one)
☐ PERMIT TO WITHDRAW WATER FOR BENEFICIAL USE
☐ PERMIT TO SUPPLY WATER FOR BENEFICIAL USE

Instructions: Fill out, sign, and send application with pertinent attachments to Department of Land and Natural Resources, P.O. Box 373, Honolulu, Hawaii 96809. A non-refundable filing fee of $100 is required, excepting military, federal, state, and local government agencies.

1. NAME OF APPLICANT: Waialae Country Club
   Address: 4997 Kahala Ave
   Phone: 734-21

2. REQUESTED BENEFICIAL USE OF WATER:
   ☐ Domestic ☐ Municipal ☐ Military ☐ Agricultural ☐ Industrial ☐ Other Irrigation (specify)

   Appropriately describe nature and purpose of requested use: Request to withdraw additional 594,000 gallons per day to implement proposed water storage reservoir plan (See attached plans and hydrological study approval of request ______). Proposed commencement date of water use: Upon ______

3. REQUESTED AMOUNT OF WITHDRAWAL OR SUPPLY:
   Average Annual __ mgd; Maximum Month __ mgd; Maximum Day __ mgd

   Appropriately describe schedule or times of taking requested withdrawal: 24 hours per day to replace irrigation water pumped from storage reservoir ______

4. NATURE AND TERM OF REQUESTED PERMIT: ☐ Temporary ☐ Permanent
   Requested period of permit ______

5. PROPOSED SOURCE OF WATER SUPPLY:
   ☐ Existing source ☐ Modification of existing source ☐ New source

   Briefly describe existing or proposed source and any related facilities and submit map, plot plan, and plans or drawings of source of supply: Waialae Country Club proposes to build a water storage reservoir on the golf course to store irrigation water presently being pumped from Well #1646-01. This is being done to reduce impact on the brackish water lens (See attached study & plans)

   If construction work is proposed for new or modified existing source, give:
   Commencement Date July, 1985
   Completion Date December, 1985

6. ASSESSMENT OF REQUESTED WATER USE OR SUPPLY
   In a separate attachment to this application, applicant must provide a written assessment addressing the desirability of issuing the requested permit, including such considerations as the availability of water, the beneficial purpose of the proposed water use, and the impact, if any, of the proposed water use on existing permitted uses, preserved uses, and individual household uses.

   Waialae Country Club
   Signature: ______ Date: 4/17/85

   Water User or Supplier
   Waialae Country Club
   Signature: ______ Date: 4/17/85

   Owner of Water Source

In accordance with Department Regulation No. 9, every permit approved and issued by the Board of Land & Natural Resources shall be for a specified period of time, for a specified beneficial use, subject to suspension and revocation, and subject to the shortage and emergency powers of the Board. Consideration of applications for a permit shall include: availability of water, beneficial purpose of water use, non-impairment of the most beneficial use and development of the water resources in the designated area, and no substantial and material interference with existing uses of water.

For Official Use:
Docket No. 180
180 days 28 OCTOBER 1985
Board Approved Disapproved
Well No. 1646-01
May 13, 1985

Mr. Fred Rodrigues  
Environmental Communications  
P.O. Box 536  
Honolulu, Hawaii 96809

Dear Fred:

As requested, attached is a copy of a memorandum concerning Waialae Country Club's request for additional permitted water use for irrigation.

Very truly yours,

[Signature]

MANABU TAGOMORI  
Manager-Chief Engineer

DL: dh  
Attach.
May 13, 1985

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FROM: Dan Lum

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The WCC application request was for an additional 0.594 mgd over their presently preserved use of 0.270 mgd, for a total average amount of 0.864 mgd.

According to Tom Nance, Belt Collins calculated a 4.9 million gallon reservoir requirement based on a peak month demand of 810,000 gallons and a reservoir water level fluctuation of one foot. Tom also indicated that the projected average use amounts to 458,000 gallons per day, calculated as follows: current average use of 270,000 gallons per day divided by current maximum month use of 480,000 gallons per day equals 56.25 percent, and 56.25 percent times projected maximum month use of 814,000 gallons per day equals a projected average use of 458,000 gallons per day.

Rounded to 460,000 gallons per day, less an existing preserved use of 270,000 gallons per day equals an additional average use of 190,000 gallons per day required by WCC. Therefore the board submittal recommends a permitted use of 0.190 mgd, additional, for WCC.

DAN LUM

DL: dh
HONOLULU GROUND WATER CONTROL AREA
WATER WITHDRAWAL and USE PERMIT
for
Waialae Country Club Well No. 1646-01
Honolulu, Oahu

TO: Waialae Country Club
4997 Kahala Ave.
Honolulu, Hawaii 96816

Permission is hereby granted to Waialae Country Club to withdraw and use water from Well No. 1646-01 located in the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area, Oahu, subject to all requirements of Chapter 177, HRS, Chapter 166, Title 13, the administrative rules of the Department of Land and Natural Resources (DLNR) and the following additional conditions:

1. The term of this permit shall be twenty years from the date of issuance of the permit with a five-year Board review to determine compliance with the provisions of the permit.

2. The amount of water to be withdrawn under this permit shall be 0.19 mgd (million gallons per day), averaged annually, for irrigation use. (This permitted use of 0.19 mgd when added to a preserved use of 0.27 mgd amounts to a total of 0.46 mgd, averaged annually, which may be withdrawn from Well 1646-01.)

3. The use authorized by the permit must not interfere substantially and materially with existing individual household uses and existing preserved uses.

4. The use of this well shall be subject to the shortage and emergency powers of the Board of Land and Natural Resources (BLNR).

5. This permit may be suspended or revoked, in accordance with Chapter 166.

6. The permit holder may be required to relinquish this permit to BLNR, in accordance with Chapter 166.
7. The withdrawal from Well 1646-01 shall be recorded and reported to DLNR on a monthly basis by the permittee.

The Board of Land and Natural Resources may declare this permit null and void if it determines that the conditions of this permit are not being met or if the development of the ground water source is not completed within 24 months from the date the permit is issued.

JUN 6 1995
Date of issuance

cc: USGS
    Honolulu BWS
    Dept. of Health
    Mr. Fred Rodrigues
Chairperson and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

May 24, 1985

Gentlemen:

Waialae Country Club Water Use Permit Application,
Honolulu Ground Water Control Area, Waialae-Hawaii Kai Subarea.

Waialae Country Club has submitted a Water Use Permit Application to withdraw an additional 0.190 million gallons per day for irrigation use from the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area.

Waialae Country Club presently irrigates directly from an existing well (State No. 1646-01) which has a preserved use of 0.270 million gallons per day. A proposed new irrigation system which includes a water storage pond on the golf course requires an additional average annual amount of 0.190 million gallons per day over the presently preserved use of 0.270 million gallons per day, for a total of 0.460 million gallons per day.

Tabulated below is the current status of withdrawals for the Waialae-Hawaii Kai Subarea:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Sustainable Yield</td>
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<tr>
<td>Preserved Use</td>
<td>1.10 mgd</td>
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<tr>
<td>Water Use Permits Issued by BLNR</td>
<td>0.70 mgd</td>
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<tr>
<td>Total Uses Authorized</td>
<td>1.80 mgd</td>
</tr>
<tr>
<td>Water Available</td>
<td>3.20 mgd</td>
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</tbody>
</table>

Analysis of the application indicates that the well is down gradient from three Board of Water Supply wells in the subarea and should not affect them. The additional water requested is based on a calculated amount of irrigation required per acre of golf course.

RECOMMENDATION:

That the Board approve the issuance of a Water Withdrawal and Use Permit to Waialae Country Club for an additional 0.190 million gallons per day for irrigation use above their preserved use of 0.270 million gallons per day for a total of 0.460 million gallons per day. The applicant shall be required to submit monthly pumpage data to the Board to determine the actual amount of water used versus the calculated amount. The term of the permit shall be 20 years with a five-year Board review to determine compliance with the provisions of the permit. The applicant shall be subject to any special conditions and applicable laws and rules.

Respectfully submitted,

MANABU TAGOMORI
Manager-Chief Engineer

APPROVED FOR SUBMITTAL:

SUSUMU ONO, Chairperson

Approved by the Board of Land & Natural Resources at the meeting held on 5-24-85

ITEM D-4
Chairperson and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Waialae Country Club Water Use Permit Application,
Honolulu Ground Water Control Area, Waialae-Hawaii Kai Subarea.

Waialae Country Club has submitted a Water Use Permit Application to withdraw an additional 0.190 million gallons per day for irrigation use from the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area.

Waialae Country Club presently irrigates directly from an existing well (State No. 1646-01) which has a preserved use of 0.270 million gallons per day. A proposed new irrigation system which includes a water storage pond on the golf course requires an additional average annual amount of 0.190 million gallons per day over the presently preserved use of 0.270 million gallons per day, for a total of 0.460 million gallons per day.

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Respectfully submitted,

MANABU TAGOMORI
Manager-Chief Engineer

APPROVED FOR SUBMITTAL:

SUSUMU ONO, Chairperson

Approved by the Board of Land & Natural Resources at the meeting held on

5-24-85

ITEM D-4
Public Notice

All interested parties are hereby notified that the Board of Land and Natural Resources plans to consider and act on a Water Use Permit application in the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area at its regularly scheduled meeting on Friday morning, 9:00 a.m., May 24, 1985, room 132, Kalanimoku Building, 1151 Punchbowl Street, Honolulu.

The applicant, Waialae Country Club, requests permission to withdraw an additional 0.545 million gallons per day for their proposed new irrigation system.

For further information, please contact the Division of Water and Land Development at 548-7539.

State of Hawaii
BOARD OF LAND AND NATURAL RESOURCES

Dated: May 8, 1985

Publish in the Honolulu Star Bulletin issue of May 13, 1985
The State of Hawaii is an EQUAL EMPLOYMENT OPPORTUNITY and AFFIRMATIVE ACTION employer. We encourage the participation of women and minorities in all phases of employment.

Publication of "Public Notice" (attached herewith)

"Consideration of a Water Use Permit in the Honolulu Ground Water Control Area"

2-column ad

Publish in Hon. Star Bulletin issue of May 13, 1985

(call 548-7619 if any questions)

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<th>UNIT DESCRIPTION</th>
<th>OBJECT</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
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<td>Publication of &quot;Public Notice&quot;</td>
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</table>
TO: Department of Land & Natural Resources
Division of Water & Land Development
P.O. Box 621
Honolulu, Hawaii 96809

DATE: May 6, 1985

SUBJECT: Waialae Golf Course

Attention: Ed Sakoda

Please find enclosed one (1) copy of the Waialae Golf Course Irrigation Lake Evaluation by Tom Nance of Belt, Collins & Associates, dated April 25, 1985 for your review.

Lorraine Caffery for
F. J. Rodriguez

encl.
WAIALAE GOLF COURSE
IRRIGATION LAKE EVALUATION

By

Tom Nance
Belt, Collins & Associates

April 25, 1985
This report evaluates the proposed size for an irrigation lake to be located within Waialae Golf Course. Complete details of the proposed irrigation system, including design or concept drawings, were not available for this report. However, discussions with Alan Lum and Bob Shouse, correspondence of various consultants with the Greens Committee, and a topographic survey of the area of the proposed lake by Walter Thompson, Inc. have provided the following information:

- Maximum irrigation rate by the system would be 815,000 gallons per day equivalent to 1.5 inches per week over 140 acres;
- New irrigation piping and sprinkler heads would be installed based on a plan by Don Burns;
- Pressure to the sprinkler heads would be provided by a package pumping system capable of delivering up to 2,200 gallons per minute (GPM);
- The pumping system would draw water from a new lake to be constructed between the 11th and 12th holes; the pump cycle would be up to nine hours long, occurring between 8:00 p.m. and 5:00 a.m.;
- The lake size should limit drawdown below the full water level to one foot or less; its storage volume will also provide standby supply;
- Supply to the lake will be provided from an existing well (the well is identified as No. 1646-01 in the State's numbering system);
- The pump in this well is rated to produce about 600 GPM at a pressure head of 100 pounds per square inch (psi); it may be replaced by one which can operate more efficiently at the substantially lower pressure head needed to deliver water to the proposed lake.

BACKGROUND INFORMATION ON THE EXISTING WELL, PUMP, AND WATER USE RATE

To understand available irrigation alternatives, knowledge of existing conditions is required. Well 1646-01 was drilled at an unknown date, probably sometime near the turn of the century. It now has an 8-inch casing which is about 33 feet long; extends from its flange elevation eight feet above sea level to 25 feet below sea level. This casing was inserted within the
original 10-inch casing of the same length. The drilled hole below the casing, according to old records, extends to 112 feet below sea level. A 1977 measurement by Roscoe Moss Company personnel indicates the bottom was then 100 feet below sea level.

Logs of the strata penetrated by the well are not known to exist. Based on 1929 measurements by the U. S. Geological Survey, most water comes from two zones, one from 25 to 32 feet below sea level and the other from 50 to 60 feet below sea level. Inflow from other layers is apparently negligible. Records of the well's pumpage and chloride content are compiled by the Honolulu Board of Water Supply (BWS); these are summarized on the graphs on the page following. Notably, BWS records indicate that the water use has averaged 260,000 gallons per day over the last nine years (1976-84). This is substantially less than golf course personnel believe is used. The installed pump is a six stage, Peerless 7HXB line shaft turbine driven by a 50 horsepower electric motor. A control valve on its discharge line limits pressure in the irrigation piping to 85 psi or less to prevent damage to the thin-walled pipe in the system; the valve also throttles the pump so that it works against a pressure of 100 psi or more. At this pressure, the manufacturer's rating curve indicates that it should produce 600 GPM. Pressures were 100 and 78 psi on either side of the control valve. From this observation, it is concluded that the pump is working within 97 percent of its rated capacity, that BWS records of water use are essentially correct, and that less water is actually being used than golf course personnel believe.

The well taps into a confined aquifer near its western boundary; the aquifer extends eastward to Palolo Valley. Five other wells have been drilled into this groundwater compartment. Three of these belong to BWS (no.'s 1746-01 and 1747-02 are production wells; 1747-01 is a small diameter observation well). The fourth (no. 1646-02) is a four inch well near to the golf course irrigation well. The fifth (no. 1646-04) is Waialae's unused brackish well next to the fourth tee. Another well belonging to BWS (no. 1746-02) is located just beyond the western boundary of this aquifer. The lower water level in this well demonstrates the hydrologic separation of groundwater
bodies. All the wells referred to above are located on the map on the page following.

Although recorded data on pump tests of the golf course's irrigation well are not available, at least two tests have been conducted. One was done in the 1960's when a Layne pump was installed and the other was done in 1977 when the Peerless pump replaced the Layne. Based on recollections of individuals involved (Bill Spitz for the earlier test, Bill Moore of Roscoe Moss for the more recent one), chloride content rose during both tests from the normal 150+/- milligrams per liter (MGL) to 300 MGL or more in response to continuous pumping at rates in the range of 700 to 850 GPM. This is the reason the control valve is set to limit pumping to 600 GPM or less. These test results are consistent with BWS' experience with its production wells located in the aquifer.

All of the above-mentioned wells are located in a groundwater control area which is regulated by the Department of Land & Natural Resources (DLNR). As such, these wells must have a permit to pump water, to change their pumping rates, or to modify the well. For the regulatory area from Waialae to Hawaii Kai, DLNR has established a 5.0 million gallons per day (MGD) limit for the draft from all wells combined. At the present time, 1.8 MGD has been committed to just two entities, BWS (1.53 MGD for wells 1746-01 & 02) and Waialae Country Club (0.27 MGD for well 1646-01). The remainder of 3.2 MGD of the 5.0 MGD maximum draft is uncommitted. Portions of it may be obtained by permit from DLNR if use of the resource is judged to be reasonable.

The present irrigation system consists of low pressure PVC pipes supplied directly from the single well pump. There is no storage. A hydro-pneumatic tank is located next to Waialae's unused brackish well, but it is no longer operational. The well pump starts and stops automatically in response to pressure levels in the pipe network. Operation is modulated by the control
valve which keeps pressures in the pipe network below 85 psi to avoid damaging the pipes and laterals.

PROPOSED IRRIGATION LAKE

The drawing on the page following is a preliminary topographic map prepared recently by Walter Thompson, Inc. It shows the outline of the proposed irrigation lake which encloses an area of 1.813 acres. Also shown is an outline of a smaller, 1.175 acre lake that was added to the drawing by Belt, Collins & Associates. It is assumed that the outline of the proposed lake reflects golf course esthetics as well as functional volume for irrigation purposes. The outline of the smaller lake is based on volume only.

Specific design data on the lake were not available. According to Bob Shouse, the intent was to use Chevron Industrial Membrane (CIM) liner on a 3:1 side slope and have the bottom six feet deep. It is assumed that a finished edge around the lake would be utilized. The sketch below shows a vertical, grouted rock wall. Other edges such as inclined rock (grouted or simply hard placed) or precast concrete blocks might also be used. With the section and depth shown on the sketch, total volume of the proposed lake would be 3.27 million gallons (MG). The smaller lake could store 2.09 MG.
The CIM liner is a reasonable choice. It could be placed on a steeper slope (up to 2:1) if necessary, but that is not appropriate here, particularly if a vertical rock wall is used. Maximum drawdown of the lake level would occur at the end of the irrigation cycle at 5:00 a.m. This drawdown is caused by the volume of water drawn out during irrigation less the incoming well supply during this time. Maximum irrigation draft is 0.815 MG; well inflow at 600 GPM for nine hours would be 0.324 MG; net draft from the lake would be 0.491 MG. Resulting drawdown in the proposed 1.815-acre lake would be 10 inches; in the smaller 1.175-acre lake, it would be 15.4 inches. The visual impact of this drawdown at 5:00 a.m. is not considered significant.

The first golfer would be on the course at 8:00 a.m., three hours after irrigation had ended. Well inflow in these three hours would have added 0.108 MG to the lake, leaving a residual deficit of 0.383 MG. Drawdowns at that time would be 7.8 inches in the proposed lake and 12 inches in the smaller lake. Through the day, continued pump inflow would recover the remaining drawdown.

Comparative cost estimates for the two lake sizes are summarized below. The proposed lake, with about four inches less drawdown when golfers are first on the course, would cost $107,000 more than the smaller lake.

**COMPARATIVE IRRIGATION LAKE COSTS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit Price</th>
<th>Proposed 1.813 Acre Lake</th>
<th>1.175 Acre Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIM Liner</td>
<td>1.45/ft²</td>
<td>90,820</td>
<td>$131,689</td>
</tr>
<tr>
<td></td>
<td></td>
<td>62,250</td>
<td>$90,263</td>
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<tr>
<td>Excavation &amp; Material Disp.</td>
<td>7.50/yd³</td>
<td>14,955</td>
<td>112,163</td>
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<tr>
<td></td>
<td></td>
<td>9,410</td>
<td>70,575</td>
</tr>
<tr>
<td>Grouted Rock Retaining Wall</td>
<td>185/yd³</td>
<td>362</td>
<td>66,970</td>
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<tr>
<td></td>
<td></td>
<td>300</td>
<td>55,500</td>
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<tr>
<td>Tree Relocations</td>
<td>750/tree</td>
<td>30</td>
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<td></td>
<td>28</td>
<td>21,000</td>
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<td>Sub-Total</td>
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<td>$333,322</td>
<td>$237,338</td>
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<tr>
<td>Engineering &amp; Contingency</td>
<td></td>
<td>33,678</td>
<td>23,662</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$367,000</td>
<td>$261,000</td>
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</table>
If the proposed irrigation scheme is implemented, a submersible pump designed for low pressure heads should be installed in the well. The $22,000 estimated cost to change this pump is summarized below. A standby pump to provide back-up supply would cost another $4300. If the pump in the well failed, it could be pulled and replaced the same day.

**ESTIMATED COST FOR CONVERSION TO A SUBMERSIBLE WELL PUMP**

<table>
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<tr>
<th>Description</th>
<th>Cost</th>
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<tr>
<td>Layne Pump 8TM (1 stage) and 10 horsepower motor</td>
<td>$4,300</td>
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<tr>
<td>Motor Control Panel</td>
<td>2,800</td>
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<tr>
<td>Revisions to Electrical System (Optional)</td>
<td>12,000</td>
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<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>$19,100</strong></td>
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<tr>
<td>Contingencies</td>
<td>2,900</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$22,000</strong></td>
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There are at least two cost savings options to consider for the proposed irrigation scheme. If this inclined rock edge were grouted, a savings of $15,000 to $18,000 compared to the vertical wall would be realized; if the rock was simply hand placed, savings of $27,000 to $33,000 would be possible. It should be realized that drawdown with an inclined edge would expose more rock. Also, discoloration of the rocks by algae or other staining would be more likely to occur.

Together with the first well, the maximum irrigation amount of 0.815 MGD...
could be applied in an 11 to 12 hour cycle. As with the current system, irrigation would be by direct pumping from wells. It would be appropriate to install a new hydro-pneumatic tank to minimize pump cycling in non-irrigation hours.

Development of a second well would require exploratory drilling and its success can not be assured. Deepening and other modifications of Waialae's brackish well (no. 1646-04) several years ago demonstrated that: (1) the thickness of coral and alluvial strata at a particular site is difficult to predict; (2) if volcanic rocks are penetrated deep in the hole rather than near to the surface, the water developed by the well will be too salty; and (3) the amount and quality of water which can be developed from the overlying coral and alluvium is not likely to be satisfactory. If another well is attempted, the site chosen should be west of well 1646-04 at a distance of at least 1200 feet in order to avoid hydraulic interference with the existing well. This distance would require the site to be on the other side of the Kapakahi Gulch channel. Choice of the specific site would require investigation beyond the scope of this report.
WATER RESOURCES & FLOOD CONTROL BRANCH

From: 
Date: 
File in: 

To Initial

✓ Manabu Tagomori ___ See me
Albert Ching ___ Call
Daniel Lum ___ Take action by ___
George Matsumoto ___ Review & comment
Nobu Kaneshiro ___ Draft reply by ___
Tom Nakama ___ Type draft
Paul Matsuo ___ Type final
Edwin Sakoda ___ Xerox copies
Neal Imada ___ Mail
Joe Menor ___ Acknowledge receipt
Jon Kurio ___
Mitchell Ohye ___
Sherrie Samuels ___ Approval
Kay Oshiro ___ Signature
Doris Hamada ___ Information

___ R. Chuck ___ J. Sakai ___ B. Koyanagi
___ T. Fujii ___ E. Yonamine ___ R. Jinnai
___ J. Yoshimoto ___

Ed S draft motion
2nd draft plua and (hand figures)
Mr. Rodrigues called and gave them info. instead of 147 it is 167 including ruffs.

This getting actual calculations to 964,000 gal.
### DIVISION OF WATER AND LAND DEVELOPMENT

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#### To Initial

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<td>Leslie Asari</td>
<td>Jean Siarot</td>
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#### Other Initials

- Ibris Hamada
- Lorraine Nanbu
- Jean Siarot
- Elsie Yonamine
- Kay Oshiro
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</table>

**3 acres**

**147 acres**

**1.5" week**

4/30

8, 48 am
Date 4/26 Time 3:15 p.m. Mr. Ms. Rodriguez
Memo To: Ed of
Memo From: Kay Phone 521-8391
Message:

☐ Telephoned
☐ Please Phone
☐ Returned Your Call
☐ Urgent Call At Once
☐ Will Call Again
☐ Wants to See You
for 5/24 Board Meeting
SUBMITTED IN 139 10 May
1.5"/week for 147 acres

\[
\frac{1.5 \text{ in}}{12 \text{ ft}} = 0.125 \text{ ft/week}
\]

- 0.125 ft/week for 147 acres
- 14,775 acres x (325,851 gallons/acre-ft)
- 5,088 million gallons per week
- 0.855 myd

\[
0.855 \text{ myd} = \frac{0.855 \times 10^9 \text{ gal}}{1,200 \text{ gal}} = \frac{930}{1,200} = 0.775
\]

141,125,000 gals

\[
\text{gallons} = \frac{141,125,000}{1,000,000} = 141,125 \text{ Mgal}
\]
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<tr>
<th>Date</th>
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<td>0.147</td>
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<td>0.942</td>
<td>0.195</td>
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</table>

**HK Ave:**

(0.279) (0.272) (0.190) (0.262) (0.215)
APPLICATION FOR: (check one)

☒ PERMIT TO WITHDRAW WATER FOR BENEFICIAL USE
☐ PERMIT TO SUPPLY WATER FOR BENEFICIAL USE

Instructions: Fill out, sign, and send application with pertinent attachments to Department of Land and Natural Resources, P.O. Box 373, Honolulu, Hawaii 96809. A non-refundable filing fee of $100 is required, excepting military, federal, state, and local government agencies.

1. NAME OF APPLICANT
Waialae Country Club
Address: 4997 Kahala Ave
Phone: 734-215

2. REQUESTED BENEFICIAL USE OF WATER:
☐ Domestic ☐ Municipal ☐ Agricultural ☐ Industrial ☐ Other Irrigation (specify)

Appropriately describe nature and purpose of requested use: Request to withdraw additional 594,000 gallons per day to implement proposed water storage reservoir plan (See attached plans and hydrological study approval of request). Proposed commencement date of water use: Upon

3. REQUESTED AMOUNT OF WITHDRAWAL OR SUPPLY:
Average Annual mgd; Maximum Month mgd; Maximum Day mgd

Appropriately describe schedule or times of taking requested withdrawal:
24 hours per day to replace irrigation water pumped from storage reservoir

4. NATURE AND TERM OF REQUESTED PERMIT: ☐ Temporary ☐ Permanent

Requested period of permit ______________

5. PROPOSED SOURCE OF WATER SUPPLY:
☐ Existing source ☐ Modification of existing source ☐ New source

Briefly describe existing or proposed source and any related facilities and submit map, plot plan, and plans or drawings of source of supply: Waialae Country Club proposes to build a water storage reservoir on the golf course to store irrigation water presently being pumped from Well #1646-01. This is being done to reduce impact on the brackish water lens (See attached study & plans)

If construction work is proposed for new or modified existing source, give:
Commencement Date July, 1985 Completion Date December, 1985

6. ASSESSMENT OF REQUESTED WATER USE OR SUPPLY

In a separate attachment to this application, applicant must provide a written assessment addressing the desirability of issuing the requested permit, including such considerations as the availability of water, the beneficial purpose of the proposed water use, and the impact, if any, of the proposed water use on existing permitted uses, preserved uses, and individual household uses.

Waialae Country Club
Signature: ____________________________ Date: 4/17/85

Water User or Supplier
Waialae Country Club
Signature: ____________________________ Date: 4/23/85

Owner of Water Source

In accordance with Department Regulation No. 9, every permit approved and issued by the Board of Land & Natural Resources shall be for a specified period of time, for a specified beneficial use, subject to suspension and revocation, and subject to the shortage and emergency powers of the Board. Consideration of applications for a permit shall include: availability of water, beneficial purpose of water use, non-impairment of the most beneficial use and development of the water resources in the designated area, and no substantial and material interference with existing uses of water.

100.00 Check deposited 4/30/85

For Official Use:

Docket No. 180
180 days 28 OCTOBER 1985
Board Approved Disapproved
Well No. 1646-01
Waialae Country Club  
Attn: Allan Lum

Dear Sir:

Enclosed is a memorandum replying to the questions posed at our meeting on Thursday, January 31. I hope it will be helpful in explaining the irrigation plan to your members.

I will be happy to assist when you alter the well and pump to fit the new irrigation scheme.

Sincerely,

John F. Mink
Waialae Country Club
Groundwater Supply for Irrigation

February 4, 1985
John F. Mink

The following is a brief assessment of the Waialae Country Club irrigation well (State no. 1646-01; old no. 1A) and the aquifer from which it draws water. Included in the commentary are remarks about the relationship of the well to irrigation as it is now practiced and to the proposed surface reservoir storage scheme.

Prevailing Situation

The well is connected directly to the irrigation system, and its pump-motor provides the energy to both lift the water and drive the sprinklers. No storage exists between the well and the sprinklers. As a result, irrigation has to go on for about 17 hours each irrigation day, which interferes with use of the golf course. It would be desireable to reduce the actual watering period to 8 or 9 hours a day.

Optimal irrigation requires 1.5 inches of water per week, equivalent to 960,000 gpd (gallons per day). The pump in the well has a capacity of 600 gpm (gallons per minute), or 864,000 gpd if pumped continuously, a shortfall of 96,000 gpd from optimal demand. This relatively minor shortfall, however, is acceptable.

Currently the pump operates for only 17 hours each irrigation day, giving a total output of 612,000 gpd, a deficit of 348,000 gpd below ideal irrigation demand. If pumping were reduced to 8 or 9 hours, the water volume produced would be insufficient to properly maintain the golf course.

The well exploits the Waialae Aquifer, which extends from Diamond Head-Palolo Valley to Wailupe Valley. This aquifer has sustained pumpage from the well in addition to draft from the Board of Water Supply Shaft on 16th Avenue and Claudine Street for about half a century. Two other Board of Water Supply stations now also pump from the aquifer but at rates that will not appreciably affect either the output or quality of water of the Club's well.

In order to maximize draft from the well while minimizing the daily period of irrigation, a plan has been proposed to construct an open surface reservoir into which the well will pump and from which the irrigation system will be supplied. The well will be able to operate at 600 gpm for 24 hours a day, if needed, without interfering with course use. The pumps extracting water from the reservoir will be large enough to enable irrigation to be restricted to the desired 8 to 9 hours. For this plan to be put into effect, the present pump will have to be replaced.
Status of the Aquifer and the Well

The head (water table elevation above sea level) of the Waialae Aquifer is about 10 feet inland of the golf course and 8 feet at the well. This reflects a substantial basal groundwater body floating on sea water. The aquifer is artesian, which means that the groundwater is confined by a poorly permeable cap of sediments. Total rate of flow through the aquifer exceeds the present draft of the Board of Water Supply and the Club. No other entity taps the aquifer.

The well probably was drilled early in the century, although no record of the date could be found. A smaller well (State no. 1646-02; old no. 1A) 75 feet away was drilled in 1881. The wells were used by Waialae Dairy before the Club was organized.

A statement about the well’s capacity before 1964 could not be found, but evidently a pump of at least 600 gpm was used in some, if not all, of the period between 1933 and 1964. In the latter year a new pump of 600 gpm capacity driven by a 50 HP motor was installed. The pump sits in an 8 inch casing but the motor is above ground. Lift to the ground surface is less than 20 feet, so that most of the energy of the motor is used to push the water to and through the sprinkler system.

Quality of the pumped water is excellent and presently varies over the narrow range of 180 to 200 mg/l (milligram per liter) chloride. For comparison, the recommended upper limit for potable water is 250 mg/l chloride; the Board of Water Supply normally provides water of 150 mg/l chloride or less. A record of salinity extending back to 1933 shows that chloride content never exceeded about 275 mg/l.

The installed capacity of 600 gpm will continue to produce water of less than 250 mg/l chloride. But because grass flourishes on water perhaps twice as saline, a somewhat larger pump, say 700 gpm, would be allowable. However, the Waialae Aquifer, along with all of southern Oahu, is "designated" by the State, which means that whatever is being produced now cannot be increased unless permission is granted by the Board of Land and Natural Resources.

Role of the Well in the Proposed Irrigation Scheme

The storage of water in an open reservoir, from which irrigation supply will be withdrawn, permits the installation of a much smaller pump-motor in the well. The existing equipment will have to be removed and replaced with an approximately 5 HP unit capable of yielding the allocation of 600 gpm. The well could then be pumped on demand at any time of the day or night.

No need remains for the pump shanty or the pit. If a submersible pump is used, all that will be necessary is a small protected panel on a cement slab laid on the ground surface; if a deep well turbine is used, the motor could be placed in a sound proof enclosure on the cement slab. The shanty and pit is an anachronism, a charming reminder of past technology but wasteful of space.
When the present pump is pulled, the condition of the casing in the well should be ascertained with a down-hole video camera. Also, a simple step-drawdown pump test should be conducted to establish stable drawdown for the design rate of the pump.

If the smaller well, which has a 4 inch diameter casing, is open, it can be fitted with a pump capable of yielding at least 50 gpm, and perhaps 75 gpm. A rate of this magnitude would have no appreciable effect on the main well nor on the aquifer. However, a permit from DLNR would be required to install a pump on the well.

Conclusions

The Club well is in no danger of either going salty or dry. It currently is fitted with a 600 gpm pump and presumably has an equal allocation from DLNR. This size, when pumped continuously, yields sufficient water for near optimal irrigation, but falls short of need when restricted to less than 24 hours per day. To hold the daily irrigation schedule to 8 or 9 hours, either additional direct capacity must be installed or storage must be provided. A single well could not sustain the required total capacity to meet the demand for this short a period. Two wells at about 600 gpm each would be required. The storage-reservoir plan, on the other hand, could be satisfied by the existing well pumping as needed.
Chevron Industrial Membrane

Pit and Pond Lining
Chevron Industrial Membrane

System Description

Chevron Industrial Membrane—CIM
CIM Premix is a pourable, polymerizable black liquid which, when properly mixed with Activator CIM, becomes an elastomer which fully cures in 24 hours. It forms a tough, durable, resilient, impermeable barrier to water and most aqueous reagents. It may be spray or squeegee applied and retains excellent physical characteristics through hot or cold environments.

Chevron Industrial Membrane—CIM. Troweling Grade
CIM Premix Troweling Grade is a pourable, polymerizable black liquid which, when properly mixed with Activator CIM, becomes a thick, viscous semigel which can be trowel applied to vertical and overhead surfaces. Thicknesses up to ¾” are achieved without sag or self-leveling. It fully cures in 24 hours to form a tough, durable, resilient, impermeable barrier to water and most aqueous reagents. It may be squeegee or trowel applied and retains excellent physical characteristics through hot or cold environments.

Advantages

Speed—Application rate of up to five gallons per minute (by spray application) will provide twenty square yards per minute (50 mils). This is uninterrupted during the full day of application.
Economy—No factory fabrication, very high application rate and low labor cost.
Versatility—Recommended for far greater range of applications than either in-place or pre-formed systems.
Simplicity—Very little training required. No field seaming as with pre-forms. Ease of repair.
No adhesive primer to fail as with pre-formed systems.
Shorter pot life. Permits application of second coat (if required) within minutes.
Cure time—Ready for service within 24 hours as compared to some at five days.
Excellent UV stability—Most industrial applications will not require protective coating.
Low temperature flexibility permits severe outdoor exposure conditions.
High solids content (90%). Less volatile pollution.

Limitations

Will not withstand prolonged hydrocarbon or organic solvent exposure.
Limited to maximum 140°F continuous exposure.
No variety of color (But can be painted.)
Consult manufacturer for application to Portland cement concrete in constant submersion service.

UA-USES, APPLICATIONS

Typical Uses

Chemical and Waste Water Industries

- Wash tanks and vats
- Corrosion protection to steel and concrete
- Utility floors
- Catch basins
- Sanitary land fill
- Sewage treatment
- Paper mill effluent
- Flumes
- Reservoirs
- Hatcheries
- Collecting basins
- Drainage ditches
- Mine drainage
- Spent acids
- Spillways
- Canals
- Cooling tower base
- Dam facing

Typical berm and trench detail on sewage treatment lagoons in Saudi Arabia 64 acres in 54 days with the seamless, spray-on application of CIM to
SPECIFICATIONS FOR RESERVOIR

1. Size and shape to be consistent with outline on designer's print

2. Depth to be approximately 5 feet in the mauka/Koko-Head end sloping to 8 feet at the makai/Diamond Head end.

3. Capacity: approximately 4.9 million gallons

4. Coconut trees (approximately 20 to be relocated) by contractor

5. Contractor to excavate the site and stockpile material at designated locations

6. Contractor to finish grade with sand or suitable material in preparation for installation of Chevron membrane (see attached).

7. Exterior of reservoir to be lined with lava or moss rock to be in compliance with City & County ordinances.
State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Water and Land Development
Honolulu, Hawaii

June 10, 1982

Chairman and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Gentlemen:

RESUBMITAL
Terms of Water withdrawal and Use Permits

The Department's Administrative Rules on groundwater control require that the Board specify the period or duration of permits and the commencement and completion dates for the construction of groundwater sources. After investigation and study of this matter, DOWALD is ready to make specific recommendations for adoption by the Board of Land and Natural Resources.

The Ground Water Use Law specifies that permits may be issued up to a maximum of 50 years and allows for extension of the permit after one-half of the permit period has lapsed. The staff is recommending that the duration of each permit be established at twenty (20) years with a review every five years by the Board to determine compliance with provisions of the permit. The staff feels that 20 years is a reasonable time for regulating groundwater withdrawals and uses at this early stage of the program. As the Department gains experience in groundwater regulation, the duration of the permits may be reviewed and adjusted as appropriate in the future.

On the commencement and completion dates, the staff recommends that a period of 24 months be established for completing the development of the groundwater source. This construction period is a reasonable time for drilling, testing, and for the installation of permanent pumps and controls to fully bring the groundwater source into operation. The period may be extended upon a showing of good cause and good faith performance. The permit and construction dates should commence on the date the permit is issued by the Department.

It is recommended that the above terms be standardized for all water withdrawal and use permits issued by the Board, subject to adjustments required by the Board for any permit.

RECOMMENDATION:

That the Board establish the terms of groundwater withdrawal and use permits at 20 years from the date of issuance of the permit with a five-year Board review to determine compliance with the provisions of the permit and that the development of the groundwater source be completed within 24 months from the date of permit issuance for all permits issued by the Board, subject to adjustments required by the Board for any permit.

Respectfully submitted,

ROBERT T. CHUCK
Manager-Chief Engineer

APPROVED FOR SUBMITTAL

SUSUMU ONO, Chairman

ITEM D-1
State of Hawaii  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Division of Water and Land Development  
Honolulu, Hawaii  

September 11, 1981

Chairman and Members  
Board of Land and Natural Resources  
State of Hawaii  
Honolulu, Hawaii

Gentlemen:

Certification of Ground Water Withdrawals and Uses, Honolulu Ground Water Control Area, Cahu

The Honolulu Ground Water Control Area was designated by the Board of Land and Natural Resources on February 27, 1981 under authority of Chapter 177, HRS, and Chapter 180 of Title 13, Administrative Rules entitled "Rules for the Control of Ground Water Use in the State of Hawaii". The Department's regulatory procedures provide for water users to declare their existing water uses within a ninety-day period which ended June 4, 1981 and allows the Board 180 days to certify the declared uses.

The recommended certification of total annual, average daily, and maximum daily withdrawals for individual wells and/or well fields is tabulated in the attachment, "Certification of Ground Water Withdrawals and Uses, Honolulu Ground Water Control Area", for the Moanalua-Kaimuki Subarea and Waialae-Hawaii Kai Subarea. A comparison of the recommended quantity for certification and the sustainable yield adopted by the Board on July 24, 1981 is tabulated below:

<table>
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<tr>
<th>Subarea</th>
<th>Sustainable Yield (mgd)</th>
<th>Recommended Certification (mgd)</th>
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<tr>
<td>Moanalua-Kaimuki</td>
<td>55</td>
<td>41.827</td>
</tr>
<tr>
<td>Waialae-Hawaii Kai</td>
<td>5</td>
<td>1.100</td>
</tr>
</tbody>
</table>

The remaining ground water supplies may be withdrawn by obtaining permits from the Board of Land and Natural Resources.

RECOMMENDATION:

That the Board certify the existing withdrawals and uses for each well tabulated on the attached "Certification of Ground Water Withdrawals and Uses, Honolulu Ground Water Control Area" dated September 11, 1981, subject to any special conditions and applicable laws, rules and regulations.

Respectfully submitted,

ROBERT T. CROOK  
Manager-Chief Engineer

APPROVED FOR SUBMITTAL:  

SUSUMU ONO, Chairman

Approved by the Board of Land & Natural Resources at the meeting held on

ITEM D-4

B8
## State of Hawaii
### DEPARTMENT OF LAND AND NATURAL RESOURCES
#### CERTIFICATION OF GROUND WATER WITHDRAWALS AND USES

**Honolulu Ground Water Control Area**

<table>
<thead>
<tr>
<th>User/Source</th>
<th>State Well No.</th>
<th>Total Wells Use</th>
<th>Source Capacity (mgd)</th>
<th>5-yr. Ave Withdrawal (mgd) Use</th>
<th>Maximum Daily Use (mgd)</th>
<th>Total Annual Use (mgd)</th>
<th>Average Daily Use (mgd)</th>
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<td><strong>MOANALUA-KAIHU KI Subarea</strong></td>
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<td>Kaimuki Station</td>
<td>1849-03 to 10</td>
<td>8 Mun.</td>
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<td>Palolo Well</td>
<td>1847-01</td>
<td>1 Mun.</td>
<td>1.51</td>
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<td>1.70</td>
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<td>Wilder Station</td>
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<td>4 Mun.</td>
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<td>5.75</td>
<td>Mun.</td>
<td>10.08</td>
<td>2,058.75</td>
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<td>Moretonia Station</td>
<td>1851-12, 13, 24, 31 to 35, 67</td>
<td>9 Mun.</td>
<td>22.54</td>
<td>6.04</td>
<td>Mun.</td>
<td>18.14</td>
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<td>Kalihi Pump</td>
<td>1952-06 to 08</td>
<td>9 Mun.</td>
<td>14.112</td>
<td>4.83</td>
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<td>11.82</td>
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<td>Kalihi Shaft</td>
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<td>1 Mun.</td>
<td>17.28</td>
<td>8.11</td>
<td>Mun.</td>
<td>17.28</td>
<td>2,560.15</td>
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<td>Manoa Station</td>
<td>2152-10 to 12</td>
<td>2 Mun.</td>
<td>6.018</td>
<td>3.29</td>
<td>Mun.</td>
<td>6.048</td>
<td>1,200.85</td>
</tr>
</tbody>
</table>

**Subtotal (UWS Wells):** 34

93.086 33.62 79.218 12,271.30 33.62

**Private Users**

<table>
<thead>
<tr>
<th>User</th>
<th>State Well No.</th>
<th>Total Wells Use</th>
<th>Source Capacity (mgd)</th>
<th>5-yr. Ave Withdrawal (mgd) Use</th>
<th>Maximum Daily Use (mgd)</th>
<th>Total Annual Use (mgd)</th>
<th>Average Daily Use (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amuran H.C. &amp; D.</td>
<td>2053-05</td>
<td>1 Ind.</td>
<td>0.576</td>
<td>0.139</td>
<td>Ind.</td>
<td>0.576</td>
<td>50.74</td>
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<tr>
<td>Army - Ft. Shafer</td>
<td>2053-10, 11</td>
<td>2 Dom.</td>
<td>2.6</td>
<td>1.035</td>
<td>Dom.</td>
<td>1.6</td>
<td>377.70</td>
</tr>
<tr>
<td>Army - Tripler</td>
<td>2153-07, 08</td>
<td>2 Dom.</td>
<td>1.555</td>
<td>0.609</td>
<td>Dom.</td>
<td>1.555</td>
<td>222.28</td>
</tr>
<tr>
<td>Bishop Trust</td>
<td>1851-26</td>
<td>1 Ind.</td>
<td>1.15</td>
<td>0.06</td>
<td>Ind.</td>
<td>1.15</td>
<td>21.90</td>
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<tr>
<td>Del Monte Corp.</td>
<td>1952-12</td>
<td>1 Ind.</td>
<td>1.296</td>
<td>0.244</td>
<td>Ind.</td>
<td>1.296</td>
<td>80.06</td>
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<tr>
<td>Castle &amp; Cooke Foods</td>
<td>1952-11, 13, 20, 31</td>
<td>4 Ind.</td>
<td>Nat. flow</td>
<td>2.0</td>
<td>Ind.</td>
<td>7.717</td>
<td>730.00</td>
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<tr>
<td>Hawaii Mount Co., Ltd.</td>
<td>2053-09</td>
<td>1 Ind.</td>
<td>0.144</td>
<td>0.082</td>
<td>Ind.</td>
<td>0.144</td>
<td>29.93</td>
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<tr>
<td>Honolulu Gas Co.</td>
<td>1952-14</td>
<td>1 Ind.</td>
<td>14.0</td>
<td>2.5</td>
<td>Ind.</td>
<td>14.6</td>
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<tr>
<td>Honolulu Int. C.C.</td>
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<td>1 Irr.</td>
<td>Nat. flow</td>
<td>0.346</td>
<td>Irr.</td>
<td>No data</td>
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<tr>
<td>Kamehameha Schools</td>
<td>2052-07, 11</td>
<td>2 Dom.</td>
<td>1.728</td>
<td>0.189</td>
<td>Dom.</td>
<td>1.728</td>
<td>68.98</td>
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<tr>
<td>Kawainahu Church</td>
<td>1851-09</td>
<td>1 Irr.</td>
<td>0.100</td>
<td>No data</td>
<td>Irr.</td>
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<tr>
<td>Kukio Kogro</td>
<td>1749-19</td>
<td>1 Dom.</td>
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<td>0.336</td>
<td>Dom.</td>
<td>0.576</td>
<td>122.64</td>
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<tr>
<td>Love's Ukermy</td>
<td>1749-18</td>
<td>1 Ind.</td>
<td>No data</td>
<td>0.043</td>
<td>Ind.</td>
<td>No data</td>
<td>15.70</td>
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<tr>
<td>MTL, Inc.</td>
<td>1851-20</td>
<td>1 Ind.</td>
<td>No data</td>
<td>No data</td>
<td>Ind.</td>
<td>No data</td>
<td>7.30</td>
</tr>
<tr>
<td>Paradise Hotel</td>
<td>1750-09</td>
<td>1 Oth.</td>
<td>No data</td>
<td>No data</td>
<td>Oth.</td>
<td>No data</td>
<td>7.30</td>
</tr>
<tr>
<td>Pacific Club</td>
<td>1851-07</td>
<td>1 Dom.</td>
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<td>Dom.</td>
<td>0.043</td>
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<td>Pacific Laundry</td>
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<td>Ind.</td>
<td>0.576</td>
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<td>Palama Sulliment</td>
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<td>Oth.</td>
<td>No data</td>
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<td>Punalau School</td>
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<td>Dom.</td>
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<td>Queen's Med. Ctr.</td>
<td>1851-54</td>
<td>1 Dom.</td>
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<td>0.237</td>
<td>Dom.</td>
<td>1.080</td>
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<tr>
<td>S. M. Damm Estate</td>
<td>2153-02</td>
<td>1 Oth.</td>
<td>0.144</td>
<td>0.021</td>
<td>Oth.</td>
<td>0.144</td>
<td>7.66</td>
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**Subtotal (Private Users):** 27

27.808 8.017 85.625 2,955.55 8.297

**TOTAL - Moanalua-Kaimuki Subarea:** 61

121.774 41.027 114.832 15,266.85 41.027

## WAIKAHULI-HAWAII KAI Subarea

### Board of Water Supply

<table>
<thead>
<tr>
<th>User</th>
<th>State Well No.</th>
<th>Total Wells Use</th>
<th>Source Capacity (mgd)</th>
<th>5-yr. Ave Withdrawal (mgd) Use</th>
<th>Maximum Daily Use (mgd)</th>
<th>Total Annual Use (mgd)</th>
<th>Average Daily Use (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alii Koa</td>
<td>1746-01</td>
<td>1 Mun.</td>
<td>0.504</td>
<td>0.40</td>
<td>Mun.</td>
<td>0.504</td>
<td>45.00</td>
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<tr>
<td>Waialua Iki Station</td>
<td>1746-02</td>
<td>1 Mun.</td>
<td>0.504</td>
<td>0.10</td>
<td>Mun.</td>
<td>0.504</td>
<td>60.35</td>
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<tr>
<td>Waialua Shaft</td>
<td>1747-02</td>
<td>1 Mun.</td>
<td>2.880</td>
<td>0.24</td>
<td>Mun.</td>
<td>0.69</td>
<td>87.60</td>
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</table>

**Subtotal (UWS Wells):** 3

3.988 0.82 1.626 302.95 0.82

**Private User**

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<tr>
<th>User</th>
<th>State Well No.</th>
<th>Total Wells Use</th>
<th>Source Capacity (mgd)</th>
<th>5-yr. Ave Withdrawal (mgd) Use</th>
<th>Maximum Daily Use (mgd)</th>
<th>Total Annual Use (mgd)</th>
<th>Average Daily Use (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waialua Country Club</td>
<td>1646-01</td>
<td>1 Irr.</td>
<td>0.264</td>
<td>0.167</td>
<td>Irr.</td>
<td>0.264</td>
<td>98.55</td>
</tr>
</tbody>
</table>

**TOTAL - Waialua-Hawaii Kai Subarea:** 4

4.752 1.100 2.562 401.50 1.100

B9
WATER USE PERMIT NO. 150

This report has been prepared in accordance with 13-171-22(b) of the Hawaii Revised Statutes requiring a 20-year review of issued water use permits to determine permit compliance. Following is a summary of permit information, site characteristics, methodology, findings, and recommendations for this State permit file.

**Permit Information**

<table>
<thead>
<tr>
<th>Permit Information</th>
<th>Details</th>
</tr>
</thead>
</table>
| Water User:        | Waialae Country Club  
|                    | 4997 Kahala Ave.  
|                    | Honolulu, HI 96816 |
| Landowner of Source: | Bishop Estate  
|                    | 4997 Kahala Ave.  
|                    | Honolulu, HI 96816 |
| Permitted Withdrawal Rate: | 0.460 mgd (Based upon a 12-month moving average) |
| Water Management Area: | Waialae-West |
| Island: | Oahu |
| Aquifer Sector/System: | Honolulu/Waialae-West |
| System Sustainable Yield: | 4 mgd |
| Water Type: | Unknown |
| Original CWRM Date: | September 11th, 1981 |
| Standard Conditions: | None |
| Special Conditions: | 51-57 |

**Water Source**

<table>
<thead>
<tr>
<th>Water Source Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Well Number(s):</td>
</tr>
<tr>
<td>Well Name:</td>
</tr>
<tr>
<td>Water Source TMK Number(s):</td>
</tr>
<tr>
<td>State Land Use Classification(s):</td>
</tr>
<tr>
<td>County Zoning Classification(s):</td>
</tr>
</tbody>
</table>
| Geographical Coordinates: | Latitude 21° 16' 33.0" North  
| | Longitude 157° 46' 45.0" West |

**End Use**

<table>
<thead>
<tr>
<th>End Use Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Use TMK Number(s):</td>
</tr>
<tr>
<td>State Land Use Classification(s):</td>
</tr>
<tr>
<td>County Zoning Classification(s):</td>
</tr>
<tr>
<td>Beneficial Use Explanation:</td>
</tr>
</tbody>
</table>
Background Information

Waialae Country Club has been the sole permittee of this water source. Although Water Use Permit 150 was initially issued in the early 1980's, the permittee has advised that the Country Club has been in existence since late 1920's/early 1930's and has most likely been drawing water from the aquifer prior to the original 1981 approval date. Consistent water use reporting records are available beginning in 2005 with mildly consistent recording prior to that. The permittee's 12-month moving average has not exceeded the permitted amount of 0.460 mgd since that time. There are no salinity records on file for State Well No. 1646-01. Reference the permit file for additional information on reporting history.

Water Use Permit 150 was approved during the September 11th, 1981 Commission on Water Resource Management meeting for withdrawal of 0.270 mgd. Approval for additional water use was granted during the June 6th, 1985 CWRM meeting bringing the permitted total withdrawal to 0.460 mgd. This water source has been in use for at least 25 years by the Waialae Country Club. Special conditions 51-57 are the governing conditions for this water use permit. A complete list of all standard and special conditions is given in the final summary report to the Legislature for the 20-year Water Use Permit Review.

Field Investigation Information

Contact: Dave Nakama
Site Address: 4997 Kahala Ave.
Honolulu, HI 96816

Brown and Caldwell conducted a field investigation on January 15th, 2008 from 8:45 a.m. until 9:30 a.m. with a representative of Mr. Dave Nakama. During this time, type of water usage was verified, GPS coordinates of well head(s) were recorded, flow meter installation and functionality were documented, and property TMK information was verified. The wellhead, its related appurtenances, and water usage area were visually inspected to assess compliance with permit conditions. Visual inspection of water loss/waste was limited to outdoor areas within the usage boundary. The physical location of the site is at the Waialae Country Club & Golf Course. Reference the TMK and GIS maps for a visual representation of the project site and well head location.

Summary of Findings for Water Use Permit No. 150

Water is currently being drawn from State Well No. 1646-01 and is being used for irrigation of approximately 145 acres of golf course and two acres of water feature on TMK parcel 3-5-
The geographical coordinates of the well head are 21° 16' 33.0" N, 157° 46' 45.0" W, with real time accuracy of ±15-feet. The water is drawn from the well and is sent through underground piping to a 2-acre water feature that doubles as a holding tank. The water feature is equipped with a level sensor that regulates pump operation. Both the influent pipe and the level sensor are located on the eastern side of the water feature. On the opposite end of the water feature, a pump house draws water from the pond and feeds it into the central golf course irrigation system. Reference the Appendix for photographs of the previously described system components.

A flow meter is installed near the well head to record water use, but it has been broken for approximately six months. The permittee has advised that a new flow meter has been on back order for several months and will be promptly installed upon arrival. Until that time, water use is being estimated and monthly reports are being sent to the Commission on Water Resource Management. Aside from the faulty flow meter, visual inspection indicates that all system components are in good working order. The water is not being used outside of the permitted TMK boundaries and there appears to be no wasting of water or water loss.

Although no salinity records are being submitted to the Commission, WUP 150 does not include a condition that mandates such salinity reporting. As such, no violation has occurred and the permittee has achieved full permit compliance.

Recommendations

- Address the following discrepancies between the Commission's electronic database and actual field investigation findings:
  - New permittee is the Waialae Country Club
  - Water source and end use TMK parcel numbers
  - State land use and county zoning classifications
- No disciplinary action required for this WUP since the permittee is in compliance with all standard and special conditions.
20-Year Water Use Permit Review
Water Use Permit No. 150

APPENDIX

Field Investigation Photographs
Figure 1 – State Well No. 1646-01

Figure 2 – Pump Controls for State Well No. 1646-01
Figure 3 - Flowmeter (Installed, Broken)

Figure 4 - Water Feature/Holding Pond
Figure 5 – Irrigation System Pump House & Controls

Figure 6 – Water Use Area (Typ.)
Water Use Permit Survey
(Please complete one survey form for each WUP)

WUP Number: ___________ Well Number(s): ___________

Contact Information (of the person who will be present at site visit):
Name: Dave Nakama
Phone (for phone interview): 734-2151 ext 262 Fax: 734-4791
Email: nakamad@yahoo.com (cell) 223-9311
Best time to reach for phone interview: Mornings M - F

Property Information (of the water use/well location):
Address: 4997 Kahala Avenue
City: Honolulu, HI Zip: 96816
Well Location TMK (list all if multiple wells present): 3-5-023-001-0000
Water Use TMK (list all if used on multiple lots):

Water Use/Well Information:
Is the water source currently in use? Yes ☑ No ☐
If no, please explain: ____________________________

What are you currently using the water for? (example: "Use for 45 acres of diversified agriculture and 3 residences"):
Irrigation

Is a flow meter installed and working properly? Yes ☐ No ☑
If no, please explain: Meter is installed but not working. New meter is on back order.

Do you submit monthly water use reports to the State? Yes ☑ No ☐
If no, please explain: ____________________________

Field Investigations:
A representative from Brown and Caldwell will be visiting wells in your area over the next several months between the times of 9:00 am and 5:00 pm. Each site investigation will take approximately 1-2 hours. Please indicate up to three potential days of the week and availability times for an on-site inspection of the well location and verification of water use compliance. The permit holder must provide Brown and Caldwell with at least five (5) working days notice of the need to reschedule.

Option #1 Date (M-F): Monday Time: 9:00 am ☑ 12:00 pm ☐ 3:00 pm ☐
Option #2 Date (M-F): Tuesday Time: 9:00 am ☑ 12:00 pm ☐ 3:00 pm ☐
Option #3 Date (M-F): Thursday Time: 9:00 am ☑ 12:00 pm ☐ 3:00 pm ☐

Once this survey is returned, a Brown and Caldwell representative will be contacting you to conduct a phone interview and finalize the exact date and time of your field investigation. Please fax/mail completed surveys by December 12th, 2007 and direct any questions related to this survey to Mr. Milo Smith of Brown and Caldwell at:
1099 Alakea Street, Suite #2400
Honolulu, HI 96813
Tel: (808) 203-2661 Fax: (808) 533-0226
mcsmith@brwncald.com

For Official Use Only
Received: __/__/___ Information Updated: __/__/___ Phone Interview Complete: __/__/___
Notes/Comments:
Phone Interview

WUP Number: 150  Well Number(s): 1646-01

Contact Name: Dave Nakama  Phone Number: (808) 734-2151 (x262)

Attempt #1: Date/Time: 1/16/06 - 9:25am  Result: Reached
Attempt #2: Date/Time:  

Well Location TMK(s): 3-5-023:001
Water Use TMK(s): 3-5-023:001

Water Source Address: 44a7 Kahala Ave.
City: Honolulu  Zip Code: 96816

Currently using water source? Yes ☒ No ☐

How often is the water source being used?  Daily ☒ Monthly ☐

How long have you been using this water source?:  Years (Early 30's?)

Has there been any rezoning of the water source/water use properties? Yes ☐ No ☒

Have you reported the rezoning to the State? Yes ☐ No ☐ N/A ☒

If no, explain:  N/A

Scheduled field investigation day/time: 1/16/06 @ 9:00 a.m.

Notes (Special directions, site conditions, potential hazards, general notes, etc.):

- Security Desk
- Parking lot on Ocean Side
Comments To Make:

- Although we prefer that you do not change your scheduled field investigation time, if you require a reschedule, you must provide Brown and Caldwell with at least five (5) working days notice of the need to reschedule.
- A representative from Brown & Caldwell will be making a reminder phone call to you sometime during the week prior to your scheduled field investigation.
- It is very important that you provide access to the site at the day and time agreed upon. Due to a very tight schedule, if you fail to provide access at the agreed upon time and/or do not reschedule with at least a five (5) working day notice, a makeup date will not be allowed.
- If for some reason you don't know where your well head is located, it would be a good idea to locate it prior to your field investigation to help make the visit go quickly and smoothly.
- Other

- Waralae CC or Bishop estate is permittee?
- Was there a previous permittee?
Field Investigation Checklist

WUP Number: 150
Well Number(s): 1646-01

Water Source
Well Location TMK(s): 3-5-023:001
Well Head GPS Coordinates: Latitude: 21° 16.550' N Longitude: 117° 40.751' W
Well Type: Pump
Currently using water source? Yes ☑ No ☐

Is there a flow meter installed? Yes ☑ No ☐
Is the flow meter operational? Yes ☐ No ☑

Water Use
Water Use TMK(s): 3-5-023:001
What is the water being used for? Drawn from well via pump. Sent to
holding pond/water feature (2 acres), pumped out of pond
via pump/pipe to the irrigation system.

Is the water being used within the permitted boundaries? Yes ☑ No ☐
If no, explain _________________________

Is there any observed wasting of water or water loss? Yes ☐ No ☑
If no, explain _________________________

Are the permit conditions being complied with? Yes ☐ No ☑
If no, explain: No flow meter (working) installed. A replacement
flow meter for the facility is on back order.

Other
Photographs of: Water Source ☑ Water Meter ☑ Usage Area ☑ Pump/Motor ☑

General Notes/Comments: met w/ Marvin, not Dave.

Investigated By: M.B. Date: 1/15/08 Time: 8:45 AM
Standard Conditions List

1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization, which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)

2. The right to use ground water is a shared use right.

3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:
   a. Can be accommodated with the available water source;
   b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
   c. Will not interfere with any existing legal use of water;
   d. Is consistent with the public interest;
   e. Is consistent with State and County general plans and land use designations;
   f. Is consistent with County land use plans and policies; and
   g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in Section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).

4. The ground-water use here must not interfere with surface or other ground-water rights or reservations.

5. The ground-water use here must not interfere with interim or permanent instream flow standards. If it does, then:
   a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
   b. The interim or permanent instream flow standard, as applicable, must be amended.

6. The water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.

7. The water use permit application and submittal, as amended, approved by the Commission at its <Insert Date> meeting are incorporated into this permit by reference.

8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.

Variations of Standard Condition (8) are as follows:
   i. Modification of any permit condition shall be approved by the Commission. Modification of any permit condition without notification may result in the revocation of the water use permit.
9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. Protect the water sources (quantity or quality);
   b. Meet other legal obligations including other correlative rights;
   c. Insure adequate conservation measures;
   d. Require efficiency of water uses;
   e. Reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. Meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. Carry out such other necessary and proper exercise of the State’s and the Commission’s police powers under law as may be required.

Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard.

10. An approved flowmeter(s) must be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a monthly basis (attached).

Variations of Standard Condition (10) are as follows:
   i. The applicant shall keep monthly pumpage estimates to be submitted annually to the Commission.
   ii. An approved flowmeter(s) need not be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a yearly basis (attached).
   iii. An approved flowmeter(s) must be installed to measure withdrawals and a monthly record of withdrawals, water-levels, salinity, and temperature must be kept and reported to the Commission on a monthly basis in accordance with the Commission's September 16, 1992 action on reporting requirements.
   iv. Approved flowmeters must be installed to measure monthly withdrawals and a monthly record of withdrawals must be kept and reported to the Commission on Water Resource Management on a monthly basis.
   v. An approved flowmeter(s) must be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a quarterly/yearly basis (attached).
   vi. An approved flowmeter shall be installed to measure water withdrawals.
   vii. An approved flowmeter(s) must be installed to measure withdrawals; and a record of the withdrawals must be kept and reported to the Department of
Land and Natural Resources, Division of Water and Land Development, P.O. Box 373, Honolulu, HI 96809, on a monthly basis.

viii. Although not stated as a condition of the permit §13-168-7 HAR requires you to keep a record of your monthly total pumpage, water level, salinity, and water temperature. This information must be submitted to the Commission on a regular monthly basis using the enclosed water use report form.

ix. An approved flowmeter shall be installed and the withdrawal from Well 1851-73 shall be recorded and reported to DLNR on a monthly basis by the owner and/or operator of the well.

x. The withdrawals from these wells shall be recorded and reported to the DLNR on a monthly basis by the BWS.

xi. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting water usage on a monthly basis.

xii. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage. Water usage shall be measured on a monthly basis and reported to the Commission.

xiii. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage. Water usage shall be measured on a monthly basis and reported to the Commission along with water level and salinity measurements.

11. This permit shall be subject to the Commission’s periodic review of the <Aquifer> Aquifer System’s sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the <Aquifer> Aquifer System, or relevant modified aquifer(s), is reduced.

12. A permit may be transferred, in whole or in part, from the permittee to another, if:
   a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of use, remain the same; and
   b. The Commission is informed of the transfer within ninety days.

   Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer, which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.

13. The uses(s) authorized by law and by this permit do not constitute ownership rights.

14. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances that will affect the permittee’s water use.

15. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservations, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter
into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period or forfeiture.

16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the <Aquifer>Ground-Water Management Area.

17. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.

18. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.

19. Special conditions in the attached cover transmittal letter or attached exhibits are incorporated herein by reference.

20. If the ground-water source does not presently exist, the new well shall be completed, i.e. able to withdraw water for the proposed use on a regular basis, within twenty-four (24) months from the date the water use permit is approved.

Variations of Standard Condition (20) are as follows:
   i. The 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 two years from the date of permit issuance.

21. This permit may not be transferred or the use rights granted by this permit sold or in any other way alienated. Pursuant to HRS § 174C-59 and the requirements of Chapter 174C, the Commission on Water Resource Management has the authority to allow the transfer of the permit and the use rights granted by this permit in a manner consistent with HRS § 174C-59. Any such transfer shall only occur with the Commission's prior express written approval. Any sale, assignment, lease, alienation, or other transfer of any interest in this permit shall be void.

22. The water use permit granted shall be an interim water use permit, pursuant to HRS § 174C-50. The final determination of the water use quantity shall be made within five (5) years of the filing of the application to continue the existing use.

23. The water use permit shall be issued only after agricultural review.

24. That scheduled adjustments to Oahu Sugar Co. permitted use shall be initiated upon discontinuance of agricultural uses.
25. The issuance of this permit was approved by the Commission on Water Resource Management at its meeting on <Insert Date>.

26. The permit shall be subject to the review by the Attorney General.

27. The permit holder may be required to relinquish this permit at any time or specified time after issuance to the Board of Land and Natural Resources in accordance with Chapter 166 of Title 13.

28. The applicant shall obtain the necessary land acquisition documents from the Hawaii Housing Authority.
Special Conditions List

1. Should an alternate permanent source of water be found for this use, then the Commission reserves the right to revoke this permit, after a hearing.

2. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

3. The applicant shall contact the Environmental Management Division, State Department of Health, at 586-4304, concerning “GUIDELINES APPLICABLE TO GOLF COURSES IN HAWAII” date <Insert Date & Version #>.

4. Standard Condition 10 is emphasized, to report consumption on a regular basis.

5. The applicant may continue this existing use of ground water within the limits approved by the Commission, and the actual issuance of the interim permit shall not be a reason to interrupt this existing use.

6. This interim water use permit shall cease to become interim and shall be subject to HRS § 174C-55 upon administrative review of the quantity within five (5) years, provided that all conditions of the use (including the review of the quantity which shall not be greater than the amount initially granted) remain the same. Enforcement of the allocation limit shall be stayed pending staff’s review and issuance of a permanent water use permit.

7. As-built drawings of the well and pump, and a complete pumping test record shall be submitted within sixty (60) days.

8. In the event the pump tests show that aquifer boundary conditions do not support the requested withdrawals, the Commission reserves the right to amend this permit, after a hearing, to a level that is supported by the pump tests.

9. The existing use may be continued within the levels approved by the Commission, and the actual issuance of the permit document shall not be a reason to interrupt the approved level of use.

10. The filing of an application by Kukui, Inc. for a new or modified water use permit for the Kualapuu Aquifer in excess of 2.0 mgd (total system withdrawal) shall be just cause for re-consideration of this interim permit by the Commission.

11. Upon completion of a new transmission line for the transport of water use by Well #17, the permit shall be modified to reduce the allocation amount by the additional 79,220 gallons per day allocated for use of the Molokai Irrigation System.

12. Within six (6) months from the date of approval of a water use permit for the well, the applicant shall conduct a feasibility study and submit a report describing
alternative sources of nonpotable water for irrigation uses at the resort area. It is suggested that the developer consider use of dual lines in the subdivisions so that effluent may be used in the existing reuse system. Another consideration is the development of brackish water wells in the Kaluakoi Aquifer system for mixing with the effluent generated at the resort.

13. Within six (6) months from the date of approval of a water use permit for the well, the application shall evaluate the filter back discharges into Kakaako Gulch to determine if excessive preventable waste is occurring and identify possible measures to eliminate or reduce such waste. The evaluation shall be conducted in cooperation with the Commission staff and staff of the Department of Health’s Safe Drinking Water Branch, which regulates the drinking water system.

14. Within six (6) months from the date of approval of a water use permit for the well, the applicant shall 1) implement a leakage control and detection system and compete repairs to prevent such leakage and 2) implement use of xeriscaping and low-flow fixtures.

15. Action on the future use portion of the water use permit application for Well #17 (Well No. 0901-01) is deferred pending the establishment of existing uses in the aquifer. Kukui Inc.’s application for uses in excess of those uses existing on July 15, 1992 will be considered “new” uses and will be taken up by the Commission as soon as other existing use applications have been decided. In the interim,
   a. The Commission shall recognize that there is disagreement between the applicant’s staff calculations of reasonable-beneficial existing use
   b. The Applicant will have the burden of proof to show within six (6) months reasonable-beneficial existing use calculations that support the applicant’s request as opposed to staff’s calculations.
   c. The Commission’s enforcement of the approved existing use allocation will be suspended for six (6) months.

16. The permittee shall submit a notice of intent and written request to continue the use at least ninety (90) days prior to the expiration of the interim five-year permit.

17. The Commission shall delegate to Maui Department of Water Supply the authority to allocate the use of water for municipal purposes, as provided in §174C-48(b).

18. Maui Department of Water Supply shall be exempt from the requirements for permit modifications, as provided in§174C-57(c).

19. The permittee must meter water use and monitor chloride concentrations on a monthly basis and submit monthly reports of water use and chloride concentrations to the Commission.

20. Standard Condition 16 is waived for saltwater wells.

21. The permit will be revoked if (1) stream monitoring shows that pumping the well reduces stream flow, or (2) the electromagnetic resistivity survey indicates that the
well was drilled into a dike compartment, unless the applicant submits a petition for an amendment to the interim instream flow standard with the well completion report. However, no use of the water may be made without a Pump Installation Permit, which cannot be issued during consideration of the amendment of the interim instream flow standard.

22. The applicant shall present the results of the electromagnetic resistivity survey, pump tests, and stream monitoring to a community meeting as well as to the Commission.

23. A final determination of water use quantity shall be made within five (5) years of the filing date of the application (<Insert Date>) to continue existing use.

24. The applicant shall implement, by December 31, 1995, a biological and hydraulic monitoring program for a minimum 2-year period that: 1) documents the existing operating procedure, 2) seeks to identify the impacts of all operating alternatives on Waikolu Stream, and 3) seeks to identify the effectiveness of weir modifications (Dam No. 1). This program shall incorporate the three new wells, Wells #4-6 (Well Nos. 0855-06, -05, &-04, respectively), which may be pumped within the approved limits, for monitoring and testing purposes only. Further, semi-annual reports summarizing data and preliminary findings shall be submitted to the Commission. It is suggested that the Department of Agriculture work with the State Division of Aquatic Resources and other affected agencies to prepare the monitoring program in light of the difficult technical questions raised by this application. A particular concern is the coordination of this monitoring program with the ongoing National Park Service study by Anne Brasher. A draft of this plan shall be submitted to the Commission staff within ninety (90) days for technical review and comment. Results of the monitoring program shall be used to make recommendations to the Commission on any additional use of the wells, and shall be made readily available to all interested parties.

25. That the Commission approves the well construction permit for the Kamiloloa-Waiola Well (Well No. 0759-01), subject to the standard well construction conditions and the special conditions for the pumping well for the aquifer tests.

26. That the Commission authorizes the Chairperson to approve and issue a pump installation permit upon acceptance of adequate pump test result, subject to the standard pump installation conditions.

27. Should the well be used for back-up domestic supply, applicant is advised to contact DOH or otherwise ensure safe drinking water quality is maintained.

28. The applicant shall follow the agreed monitoring plan.

29. If pesticides used by the applicant are found in ground or surface water and can be traced to the applicant's use, the CWRM may revoke the permit immediately upon such finding.
30. Issuance of the interim permit shall be withheld until the reservation of water for DHHL is set by rule. Applicant may continue this existing use within the approved limits.

31. The applicant shall submit well modification and pump installation permit applications for administrative approval by chairperson prior to beginning any work required to complete well.

32. Should any stream flow impacts result from use, petition to amend interim instream flow standards shall be submitted.

33. Should any dewatering result from use, pumping shall cease immediately.

34. Shall submit accurate schematic diagram of distribution system for the battery of 5 wells.

35. Shall be subject to a 6-month independent audit & monitoring.

36. Final pump capacity shall be determined from pump test results & approved administratively by signature of chair.

37. The permittee shall seek and submit to the Commission within ninety (90) days written confirmation from the Department of Land Utilization of the non-conforming use.

38. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride, unless a variance from the chloride limit has been granted. The authority to approve future variance requests is delegated to the chairperson.

39. The duration of the interim permit shall be:
   a. To July 1, 2006, or
   b. Until treated wastewater is available and acceptable for use, or
   c. Until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

40. Action on any interim permit may be initiated by the Commission or any permittee upon letter request or pursuant to §174C-57 Haw. Rev. Stat. (Modification of permit terms).

41. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.

42. Require adherence to the chloride sampling protocol and the submittal of weekly chloride data. The authority to approve variances from the weekly reporting requirement is delegated to the Chairperson.

43. Require adherence to the Conservation Conditions.
44. In the event a water shortage is declared by the Commission, permittees in the <Insert Aquifer System> shall comply with the <Insert Aquifer System> water shortage plan adopted by the Commission.

45. The permittee shall contact the Department of Health, Clean Water Branch and obtain the necessary discharge permit(s).

46. Permit shall be interim and replaces existing WUP for 2051-07 & 11.

47. Applicant shall submit an acceptable archaeological inventory survey report to DHP. If historic sites affected, a plan to mitigate these affects must be accepted by DHP and completed by applicant.

48. Should the well be used for back-up domestic supply, applicant is advised to contact DOH or otherwise ensure safe drinking water quality is maintained.

49. (The permittee) may report monthly pumpage on yearly basis.

50. Prior to issuance of any permits, must submit filing fee for after-the-fact pump installation permit.

51. The term of this permit shall be twenty years from the date of issuance of the permit with a five-year Board review to determine compliance with the provisions of the permit.

52. The amount of water to be withdrawn under this permit shall be 0.19 mgd, averaged annually, for irrigation use. This permitted use of 0.19 mgd when added to a preserved use of 0.27 mgd amounts to a total of 0.46 mgd, averaged annually, which may be withdrawn from well 1646-01.

53. The use authorized by the permit must not interfere substantially and materially with existing individual household uses and existing uses.

54. The use of this well shall be subject to the shortage and emergency powers of the Board of Land and Natural Resources (BLNR).

55. This permit may be suspended or revoked, in accordance with Chapter 166.

56. The permit holder may be required to relinquish this permit to BLNR, in accordance with Chapter 166.

57. The withdrawal from Well 1646-10 shall be recorded and reported to DLNR on a monthly basis by the permittee.

58. In the event that emergency water use occurs, the permittee shall notify the Commission in writing within one (1) day of pumping, to inform the Commission as to the nature of the emergency and the expected duration of the emergency. A water
use report shall also be filed pursuant to Standard Condition 10 and Administrative Rule 13-168-7.

59. Note DOH’s requirements related to non-potable water systems (attached to original permit).

60. Standard Condition 16 requiring the submittal of a water shortage plan is waived.

61. All non-potable spigots and piping shall be clearly labeled as “DO NOT DRINK, NON-POTABLE” to prevent direct human consumption.

62. Standard Condition 10 is modified. Due to the inability to take water level measurements, the requirement to measure monthly water levels is waived. In addition, as long as the U.S. Geological Survey is collecting and analyzing the chloride content of the well water, the requirement for the permittee to measure and report chlorides is also waived.

63. Well elevation components must be surveyed by a licensed surveyor and this information must be submitted to commission prior to issuance of permanent permit.

64. The permittee shall obtain approvals from the Department of Health and the U.S. Environmental Protection Agency prior to use of the water.

65. This water use permit, WUP No. <Insert #>, shall supersede WUP No. <Insert #>.

66. WUP No. <Insert #> is revoked

67. Standard Condition 17 is waived.

68. Standard Condition 22 for interim water use permits shall not apply.

69. To supplement our records, we request that you provide a map of the Galbraith Est. lands west of Wahiawa (2100 ac+-) and the associated TMK’s for use area.

70. Deferred action on portion requested for golf course irrigation pending further refinement of irrigation requirement and a feasibility study for utilization of surface water sources, including Wahiawa Reservoir.

71. Written justification be provided for any 'cushion' of 0.5 mgd.

72. The water use permit shall be an interim permit. The duration of the interim permit shall be until treated wastewater is available and acceptable for use. The permittee shall continue discussions with Honolulu Board of Water Supply regarding the use of reclaimed water.

73. The permittee is put on notice that this is a qualified approval in that this permit may be modified or revoked prior to the expiration of the interim permit if the
Commission decides that the use of additional basal ground water for dust control and landscape irrigation is not reasonable-beneficial use.

74. The permittee encouraged to use drought-tolerant landscaping to conserve water.

75. Should the applicant provide written evidence that the county DHCD approves a 201E exemption for the elderly affordable housing project then the applicant may modify a corresponding portion of their existing aquacultural use to be used by the exemption approved project within the Commission approved water use permit limits under recommendation 5.

76. The applicant shall obtain a water lease/permit from Land Division prior to actual use of the well water.

77. Require the permittee to sign a contract by May 14, 1998 with the City Department of Wastewater Management to buy and use 0.400 mgd of R-1 water for a corresponding reduction in allocation for Well Nos. 1900-02, 17 to 20, and 1901-03.

78. Standard Condition 9 is waived.

79. Standard Condition 10 is modified to exempt the permittee from monthly measurements of salinity and temperature.

80. Standard Condition 10 is waived.

81. Applicant must seek a determination from BLNR and Land Mgt Div as to whether water license required. If required, license must be obtained prior to issuance of permit. If not, permit will be issued w/out further action.

82. Commission defers action on use in excess of 452,000 gpd pending additional info from BWS and further staff analysis.

83. The permit shall be subject to the Commission’s sustainable yield review by December 1990.

84. The Commission shall delegate to the Honolulu Board of Water Supply the authority to allocate the use of water for municipal purposes, in accordance with §174C-48(b) HRS.

85. Honolulu Board of Water Supply shall be exempt from the requirements of permit modifications as provided in §174C-57.

86. BWS must participate in discussions, to be coordinated by Commission Staff, regarding a monitoring program to address impacts to Kaneohe Bay water quality, prior to any action on applications for future municipal uses.

87. A pump installation permit application must be made and approved prior to the installation of a permanent pump.
88. The water withdrawn shall be 0.7 mgd for municipal use.

89. The installed pump capacity of the well shall not be more than 700 gpm or 1.01 mgd.

90. The term of permit shall automatically expire twelve months from the date of issuance.

91. The Honolulu Board of Water Supply may continue to submit monthly water data on their own form, provided that the data are submitted in a format that is acceptable to the Commission staff.

92. Standard Condition 7 shall not apply.

93. Standard Condition 22 shall not apply.

94. Standard Condition 10 is modified to exempt the permittee from monthly measurements of salinity and temperature.

95. This permit shall be subject to conditions providing for stream restoration if the Commission determines that additional water should be returned to the streams.

96. HECO 1 mgd for industrial use

97. Campbell Estate 1 mgd for municipal use through BWS, by separate agreement with HECO

98. BWS 1 mgd for municipal use.

99. The permit shall be subject to the Commission's sustainable yield review by <Insert Date>.

100. The applicant shall obtain the current version of the Department of Health's Guidelines Applicable to Golf Courses in Hawaii. Where relevant and viable, items of the guidelines should be implemented and sustained appropriately. To obtain the current version, contact the Safe Drinking Water Branch, Environmental Management Division at 808-586-4258 (Honolulu).

101. The future use portion of the application shall be deferred until existing uses in the Koolauloa area are established.

102. The water to be withdrawn under this permit shall be a total of 0.03 mgd (0.02 mgd preserved plus an additional 0.01 mgd permitted use), averaged annually, for domestic and irrigation use

103. Existing well 1851-09 shall be properly sealed by a licensed drilling contractor. A well modification permit application, enclosed, shall be submitted to the Department for approval of the well sealing. A filing fee for sealing the well will not be required.
104. The permittee is required to test the source using a certified private laboratory and submit the test results to the Commission within three (3) months. The Commission will then forward the results to the Department of Health for their review. The Department of Health recommends that the well be routinely tested for microbiological and chemical parameters thereafter.

105. The permittee is required to submit a completed Registration of Well and Declaration of Water use by <Insert Date>.

106. The permittee shall contact the Department of Health for a written determination on the status of their water system and comply with any Department of Health requirements for monitoring and testing.

107. In the event that the original spring source decontaminates, the new well authorized will be shut down.

108. That within each aquifer the total permitted use shall not exceed the sustainable yield.

109. That any water available for allocation shall be for in-district use.

110. That scheduled reductions to Oahu Sugar Co. permitted use shall be initiated upon final termination of an Osco lease or sub-lease, whichever occurs later.

111. That permits for water use issued in accordance with the proposed schedule shall be interim permits subject to review and adjustment by 1995.

112. That the permit shall be an interim permit for a new use which is afforded to existing users as specified in §13-171-20.

113. That the original allocation of 0.200 mgd shall be taken to hearing for possible revocation at a later date to complete the transfer of the water use permit entirely to Well No. 3407-02. This revocation would reduce the current allocation afforded to the Kunihiro Well (Well No. 3406-06) to zero.

114. This allocation incorporates the unspecified domestic needs of the applicant and therefore necessitates a single meter be installed at the well.

115. Should any impacts to nearby wells or streams be established by the use of this well, the applicant shall address these issues to the satisfaction of the Commission.

116. If an economically feasible nonpotable source is identified, the applicant shall convert to the alternative nonpotable source.

117. The permit shall be subject to the Chairperson's approval of a water use plan recommending possible measures to prevent or minimize saltwater contamination and establish courses of action to follow should the aquifer become to saline to use.
118. Permittee shall provide the necessary end-use information on the 10th residence to allow regulation of the use under Chapter 174C.

119. Standard Conditions 10 & 18 shall not apply.

120. Standard Condition 10 is modified to exempt the permittee from the requirement to install a flowmeter. Salt water withdrawals may instead be estimated based on pumping capacity and run time.

121. The applicant shall review the existing year long period of pumpage and streamflow data and provide analysis on ground and surface water interaction. Deadline is January 25, 1994.

122. The water use permit for Well Nos. 2301-27 to -32 for 0.75 mgd (WUP No. 419) shall be revoked upon issuance of a pump installation permit for the well.

123. The permittee shall use mulching to decrease evaporative losses and manage irrigation scheduling to minimize water demand.

124. The permittee shall submit a detailed agricultural plan to support any future water use permit application for increased agricultural use at this parcel.

125. If not already obtained, the permittee shall seek and obtain any necessary permits from the Department of Health for the proposed discharge to Malaekahana Stream.

126. Standard Condition 10 is modified to waive the requirement for installing a water meter on Well Nos. 2358-21, 22, and 29. The permittee shall install a water meter on Well No. 2358-26 to measure total monthly flow through the discharge line. This quantity should then be assumed to be the rate of natural flow from the other three wells for monthly reporting purposes.

127. The permit shall be effective upon submittal of documentation by Navy that it has met the DOH requirements for a public system.

128. This WUP shall be subject to Army's application for a WUP to reduce the permitted use of the Army's Schofield Shaft (2901-02 to 04, 10) by 0.208 mgd to a new total of 5.648 mgd. The Army's application shall be submitted within 60 days after the approval of this WUP or this WUP shall be void. Approval of the modification request shall be obtained from the CWRM prior to use of Well No. 3100-02 and issuance of this WUP.

129. Navy shall submit an after-the-fact PIPA, and approval of the permit shall be obtained prior to use of the well.

130. The well shall not be used for drinking water purposes unless it is properly tested and treated.
131. This permit is approved subject to reclaimed water becoming a practical alternative and provided that the Department of Health approves the reuse application.

132. Should any opae ula be recovered in the well water, the permittee shall notify the Division of Aquatic Resources and provide specimens to the Division of Aquatic Resources for analysis.

133. If a single meter at the well is used, the Commission shall allow an additional 1,000 gallons per day to the water use permit amount for the domestic needs of two residences, although a permit for individual domestic consumption is not required. Otherwise, the applicant must provide a meter to separately measure the irrigation consumption.

134. This permit is approved under the requirement that conversion to either: 1) treated wastewater becoming available for reuse as an alternative supply source, provided that Department of Health concerns over the use of treated effluent over the potable water aquifer have been addressed; and/or 2) other nonpotable source becoming available will occur in a timely manner.

135. These permits shall be subject to a review of actual use within four years for possible modification of the permitted amount.

136. The permit shall be reviewed in two (2) years for possible additional revocation due to nonuse.

137. The allocation is based on the projects listed in Exhibit 5 (of Item 10 of the May 20, 1998 Staff Submittal), except for the Queen’s Beach GC (TMK 139-11-2,3), Lot 9 (TMK 139-17-51), and Varsity Place (TMK 128-24-35).

138. Kamehameha Schools Bishop Estate/Honolulu Board of Water Supply shall transfer the water use permit within ninety (90) days of the effective date of the transfer of the pump station to the Honolulu Board of Water Supply, pursuant to §174C-59 Hawaii Revised Statutes.

139. The permittee shall ensure that the water is recycled by either directing it into the Waiahole Ditch for use by downstream farmers (subject to the approval of the Agribusiness Development Corporation’s Board) or into Waikele Farm’s existing irrigation system.

140. The permittee shall file a completed application to modify WUP No. 758 to reduce the allocation by 0.100 mgd within 60 days. If a completed water use permit modification application is not received within 60 days from this submittal’s date, then the subject water use permit application (WUPA No. 767) shall be deemed denied without prejudice without the need for another hearing.

141. The water withdrawn shall be for municipal use. No improvements to the existing sources are required as the existing source capacities are greater than the increase.
142. Water license must be determined through LM.

143. Proposed other uses will be considered at a later date.

12 Month Moving Average

MGD

Friday, September 07, 2007
HONOLULU GROUND WATER CONTROL AREA
WATER WITHDRAWAL and USE PERMIT
for
Waialae Country Club Well No. 1646-01
Honolulu, Oahu

TO: Waialae Country Club
4997 Kahala Ave.
Honolulu, Hawaii 96816

Permission is hereby granted to Waialae Country Club to withdraw and use water from Well No. 1646-01 located in the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water Control Area, Oahu, subject to all requirements of Chapter 177, HRS, Chapter 166, Title 13, the administrative rules of the Department of Land and Natural Resources (DLNR) and the following additional conditions:

1. The term of this permit shall be twenty years from the date of issuance of the permit with a five-year Board review to determine compliance with the provisions of the permit.

2. The amount of water to be withdrawn under this permit shall be 0.19 mgd (million gallons per day), averaged annually, for irrigation use. (This permitted use of 0.19 mgd when added to a preserved use of 0.27 mgd amounts to a total of 0.46 mgd, averaged annually, which may be withdrawn from Well 1646-01.)

3. The use authorized by the permit must not interfere substantially and materially with existing individual household uses and existing preserved uses.

4. The use of this well shall be subject to the shortage and emergency powers of the Board of Land and Natural Resources (BLNR).

5. This permit may be suspended or revoked, in accordance with Chapter 166.

6. The permit holder may be required to relinquish this permit to BLNR, in accordance with Chapter 166.
7. The withdrawal from Well 1646-01 shall be recorded and reported to DLNR on a monthly basis by the permittee.

The Board of Land and Natural Resources may declare this permit null and void if it determines that the conditions of this permit are not being met or if the development of the ground water source is not completed within 24 months from the date the permit is issued.

SUSUMU ONO, Chairperson of the Board

Date of issuance

cc: USGS
Honolulu BWS
Dept. of Health
Mr. Fred Rodrigues
Chairperson and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Waialae Country Club Water Use Permit Application,
Honolulu Ground Water Control Area, Waialae-Hawaii Kai Subarea

Waialae Country Club has submitted a Water Use Permit Application
to withdraw an additional 0.190 million gallons per day for irrigation use
from the Waialae-Hawaii Kai Subarea of the Honolulu Ground Water
Control Area.

Waialae Country Club presently irrigates directly from an existing
well (State No. 1646-01) which has a preserved use of 0.270 million
gallons per day. A proposed new irrigation system which includes a
water storage pond on the golf course requires an additional average
annual amount of 0.190 million gallons per day over the presently
preserved use of 0.270 million gallons per day, for a total of 0.460
million gallons per day.

Tabulated below is the current status of withdrawals for the
Waialae-Hawaii Kai Subarea:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Yield</td>
<td>5.00 mgd</td>
</tr>
<tr>
<td>Preserved Use</td>
<td>1.10 mgd</td>
</tr>
<tr>
<td>Water Use Permits Issued by BLNR</td>
<td>0.70 &quot;</td>
</tr>
<tr>
<td>Total Uses Authorized</td>
<td>1.80 &quot;</td>
</tr>
<tr>
<td>Water Available</td>
<td>3.20 mgd</td>
</tr>
</tbody>
</table>

Analysis of the application indicates that the well is down gradient
from three Board of Water Supply wells in the subarea and should not
affect them. The additional water requested is based on a calculated
amount of irrigation required per acre of golf course.

RECOMMENDATION:

That the Board approve the issuance of a Water Withdrawal and Use
Permit to Waialae Country Club for an additional 0.190 million gallons per
day for irrigation use above their preserved use of 0.270 million gallons
per day for a total of 0.460 million gallons per day. The applicant shall
be required to submit monthly pumpage data to the Board to determine
the actual amount of water used versus the calculated amount. The term
of the permit shall be 20 years with a five-year Board review to
determine compliance with the provisions of the permit. The applicant
shall be subject to any special conditions and applicable laws and rules.

Respectfully submitted,

MANABU TAGOMORI
Manager-Chief Engineer

APPROVED FOR SUBMITTAL:

SUSUMU ONO, Chairperson

Approved by the Board of Land & Natural Resources at the meeting held on
5-24-85

ITEM D-1