CHECKLIST

<table>
<thead>
<tr>
<th>WELL CONSTRUCTION PERMIT</th>
<th>PUMP INSTALLATION PERMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELL NAME or LOCATION:</td>
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<tr>
<td>MAKUU 1</td>
<td>ISLAND: Hawaii</td>
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<tr>
<td>WELL NUMBER: 3585-01</td>
<td>Tax Map Key: 1-5-10:33</td>
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<tr>
<td>OWNER/OPERATOR:</td>
<td>LANDOWNER:</td>
</tr>
<tr>
<td>Firm Name: Intercontental Development</td>
<td>Firm Name:</td>
</tr>
<tr>
<td>Contact Person: Dr. Dudley Seto</td>
<td>Contact Person:</td>
</tr>
<tr>
<td>Address: 1520 Liliha St., Suite 607</td>
<td>Address:</td>
</tr>
<tr>
<td>Honolulu, HI 96817</td>
<td>Phone: 521-8061</td>
</tr>
<tr>
<td>Date application received:</td>
<td>July, 19, 1991</td>
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<td>Date filing fee deposited:</td>
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<tr>
<td>Dept. of Hawn Home Lands 8/14/91</td>
<td>Comments received</td>
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<tr>
<td>Dept. of Health 8/12/91</td>
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<td>Office of Hawn. Affairs 8/14/91</td>
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<td>State Hist Pres Div 8/12/91</td>
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<td>Dept/Bd of Water Supply 8/12/91</td>
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<td>Sierra Club L. D. F. 8/12/91</td>
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<td>Keolauloa NB #28 (Cahu)</td>
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<td>Dept.Pub. Wrks (Hawaii) 8/12/91</td>
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<td>Additional List (Molokai)</td>
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<td>Date application approved or disapproved:</td>
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<td>Date applicant notified of decision:</td>
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<tr>
<td>REMARKS:</td>
<td>dug well</td>
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</tbody>
</table>
February 28, 1996

MEMO TO THE FILE

FROM: Neal Fujii

SUBJECT: Makuu Well 1 (3585-01)

In a telephone conversation with Mr. Craig Emberson of Makuu Aquafarms, I asked him if he was aware that monthly ground water use reports were required from their wells. He said that he was aware of this but the wells have no flow meters (Well 1 has a flow rate meter, however) and he was not sending in reports. He stated that on the average, he pumps Well 1 for three hours a day at 200 gpm. This gives an average withdrawal of about 0.036 mgd. I didn’t ask for the withdrawal from Well 2 (salt-water).

I told Mr. Emberson that I would send him the monthly water use report form and that he report his monthly water use from now on. In addition, I asked him to estimate his water use in the past and note it on the report form.

Makuu Aquafarms
HCR 2 Box 10011
Keaau, HI 96749

(808) 982-5777 (voice and FAX)
MONTHLY GROUND WATER USE REPORT

Month of ___________ , 19__

( Month / Day / Year ) to ( Month / Day / Year )

INSTRUCTIONS: Complete this form to report total monthly ground water use from each of your well sources, and mail to: Division of Water Resource Management, P.O. Box 373, Honolulu HI 96809. A separate form is available for reporting of surface water use.

Water User: ________________________________ Island: __________

Water Use Quantity reported in ____________________________ (Units of Measurement)

<table>
<thead>
<tr>
<th>Well Name</th>
<th>State Well No.</th>
<th>Water Use Quantity</th>
<th>Method of Measurement</th>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Additional information: (Water level, chlorides, temperature, pump condition, change in use, etc.)

Submitted by (print) ____________________________  Title ____________________________
Signature ____________________________  Date ____________________________
# Monthly Ground Water Use Report for

**Makuu Aquafarms**  
HCR 2 Box 10011  
Keaau, HI 96749

**Month of:** 19

**Instructions:** Please type or print clearly. Complete this form to report total monthly ground water use, and, if required, other information from each of your well sources. Mail to: Commission on Water Resource Management, P.O. Box 821, Honolulu HI 96809. For assistance, please call 587-0265 (Oahu only) or 1-800-468-4644 (neighbor islands).

<table>
<thead>
<tr>
<th>State Well No.</th>
<th>Well Name</th>
<th>Measurement End Date (mm/dd/yyyy)</th>
<th>Quantity Pumped (gallons)</th>
<th>Method of Measurement*</th>
<th>Chloride (mg/l)**</th>
<th>Temp. (°F)</th>
<th>Lowest Pumping Water Level m. Above MNL</th>
<th>Highest Non-pumping*** Water Level ft. Above MNL</th>
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</thead>
<tbody>
<tr>
<td>3585-01</td>
<td>Makuu 1</td>
<td></td>
<td></td>
<td>estimated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3585-02</td>
<td>Makuu 2 (salt-water)</td>
<td></td>
<td></td>
<td>estimated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* - flow meter, electrical consumption, weir of flume, not metered (estimated)  
** - indicate how long pump was on or off when chloride sample taken  
*** - minimum time between pump/well turned off and water level measurement must be at least 24 hours; if pumping schedule did not allow for at least 24 hour rest during the month please indicate amount of hours pump was off before this measurement.

Other comments or additional information (e.g., date and method of chloride measurement; how pumpage amounts are estimated; etc.):

Submitted by (print):  
Title:  
Signature:  
Date:  

---
Intercontinental Development
1520 Liliha Street, Suite 607
Honolulu, HI 96817

Gentlemen:

Makuu Fresh Water Well (Well No. 3585-01)

Thank you for sending us the proposed permanent pump information. We have reviewed your well completion report and the results of the pumping test and hereby approve the proposed pump as described.

Attached is the Monthly Ground Water Use Report form for your use in providing us with your water usage on a monthly basis as per Condition 5 of your well construction/pump installation permit.

We appreciate your cooperation in this matter. If you have any questions, please call Ms. Rae M. Loui, Deputy Director, at 587-0214.

Very truly yours,

WILLIAM W. PATY

Enc.
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: [Signature] DATE: 4/13 FILE IN: 

TO: INIT: PLEASE: REMARKS:

G. Matsumoto 
E. Sakoda 
Y. Shiroma 
E. Hirano 
S. Samuels 
G. Bauer 
R. Rozeboom 
R. Hardy 

See Me 
Call 
Review & Comment 
Take Action 
Investigate & Report 
Draft Reply 
Acknowledge Receipt 
Type Draft 
Type Final 
Xerox ___ copies 

FOR YOUR:

M. TAGOMORI 
L. Nanbu 

Approval 
Signature 
Information
Mr. William Paty,
Chairperson,
Commission of Water Resource Management,
Dept. Land & Natural Resources,
P.O. Box 621,
Honolulu, Hawaii, 96809.

7 April 1992

Dear Mr. Paty,

In accordance to the conditions set forth in Well Permit - Makuu Fresh Water No. 3585-01, issued on October, 27, 1991 we are submitting a request for the permanent installation of a submersible Turbine Pump at our site.

The attached spec. sheet for a Red Jacket 6-inch Pump, Model No. 6-D6-330 with 5 HP motor (220 v) would be capable of supplying the farm with 200 GPM at a TDH of 30 ft.

We anticipate that HELCO will be installing the poles and power line to our farm within the next couple of weeks.

Please would you advise us whether the Department finds this installation satisfactory, and when we might be able to commence pumping?

Thank you.

Yours sincerely,

Craig Emberson
Manager, Makuu Aquafarms.

cc. Mr. Ed Sakoda, DWRM

Dr. Dudley Seto.
SUBMERSIBLE TURBINE PUMPS

Sizes for Industry, Irrigation & Municipalities
5" 6" 7" 8"

Big pumping power on a small power budget.
Capacities to 1200 GPM; heads to 2000 feet. Economical.
The wire to water efficiency of the Red Jacket submersible turbine is as much as 15% higher than that of line shaft turbines. This saves energy (and money) because there is no water friction loss in or around spider bearings, drive shafts and shaft couplings; and no mechanical losses in the shaft drive.

The Red Jacket submersible turbine takes energy efficiency another notch higher. An exclusive Red Jacket design combines the discharge case and the bowl assembly into one piece. This technical breakthrough permits uninterrupted flow passages at the critical point of discharge. Friction losses are even less; efficiencies greater.

Simple to install and easy to maintain.
Fewer components means simple installation and a long, trouble-free life. Installed vertically, horizontally or on an incline, up front costs are lower than line shaft pumps of comparable horsepower. Submersible installation time is as little as 1/3 that of line shaft turbines. With a Red Jacket turbine, there are no critical shaft height adjustments and no line shafting, lubricating devices or packing glands. No costly maintenance bills with a Red Jacket submersible turbine. Totally submerged in a natural coolant, the motor runs quietly and efficiently.

Off-the-shelf availability tailored to exacting specifications.
These turbines can be easily sized to exactly match the water needs that are specified, yet shipping lead times are three days or less.
Red Jacket turbines are being built at two key locations: Dallas, Texas and West Sacramento, California. This cuts enroute time and shipping costs, and assures that your pump will be there when you need it; not weeks from then.
The Red Jacket one-piece bowl and discharge case reduces the overall weight of comparable stage pumps by as much as 25%, providing even greater savings in freight and handling costs. The lighter weight makes installation easier. Please refer to the turbine curves in the Red Jacket catalog for detailed performance and dimension data.
Bronze Discharge Case Bearing (SAE 660 bronze) is lubricated for long life by a large grease chamber above the bearing. It contains sanitation approved bearing grease.

416 Stainless Steel Pump Shaft is polished and precision straightened for efficient and smooth transmission of power.

Bowl Castings (ASTM A48 CL30) are heavy duty, close-grained cast iron for top efficiency and corrosion resistance.

Intermediate Bearing accurately centers the stainless steel pump shaft. Available in SAE 660 bronze or cutless rubber.

Enclosed Bronze Impellers (ASTM B584-836 bronze) are individually polished and balanced for maximum efficiency.

Pump Motor Coupling is 416 stainless steel. Floating coupling acts as a mini-universal to reduce pump/motor misalignment.

Cast Iron Discharge Case (ASTM A48 CL30) is incorporated with the top bowl to improve pumping efficiencies and reduce overall weight. The discharge case cap, cast in with the discharge case, protects the pump shaft end from cascading abrasives in pumped liquid when the power is off.

Tapered Impeller Collet securely locks the impeller to the pump shaft. It is split to simplify installation and provide a positive lock.

430 Stainless Steel Cable Guard protects motor leads.

Bronze Suction Case Bearing (SAE 660 bronze) stabilizes lower end of pump shaft and provides accurate impeller alignment. Bronze collars seal out abrasives.

Cast Suction Case (ASTM A48 CL30 cast iron) incorporates the 6" NEMA motor mount. Case is vaned and flared to guide water intake and minimize shock and entrance losses for optimum efficiency.

304 Stainless Steel Strainer effectively blocks out solids without restricting pump flow.

RED JACKET® PUMPS
A Marley Pump Company
5000 Fourside Drive, Mission, Kansas 66202

DALLAS 13360 Distribution Way
Farmer's Branch, TX 75234

WEST SACRAMENTO 3665 Seaport Boulevard
W. Sacramento, CA 95691

PRECISION-BUILT AT:
MARLEY®
THE MARLEY PUMP COMPANY
TKO SUBMERSIBLE TURBINE MODEL: 6D330
NOMINAL MULTI-STAGE PER STAGE DATA
3450 RPM; 60 Hz
Minimum Well Size — 6"  Maximum Stages — 15

<table>
<thead>
<tr>
<th>Trim</th>
<th>Min. Req'd. HP</th>
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<tbody>
<tr>
<td>A</td>
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</tr>
<tr>
<td>B</td>
<td>4.4</td>
</tr>
<tr>
<td>C</td>
<td>3.6</td>
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NOTE: Efficiencies reflect glass lined cast iron bowls and bronze impellers.
BOWL TYPE: Threaded
IMPELLER TYPE: Enclosed
K FACTOR = 3.5

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<tr>
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<td>15-7/16</td>
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<tr>
<td>B — Additional Stage Length (in.)</td>
<td>5-1/4</td>
<td>5-1/2</td>
</tr>
<tr>
<td>C — Max. Bowl Diameter (in.)</td>
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<td>5-1/2</td>
</tr>
<tr>
<td>D — Max. Pump Diameter (in.)</td>
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</tr>
<tr>
<td>E — Min. Submergence (in.)</td>
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</tr>
<tr>
<td>Additional Weight Per Stage</td>
<td>14</td>
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</tr>
</tbody>
</table>

Pumps available with BRONZE or RUBBER bearings.
*Consult MPC Applications for SINGLE STAGE DATA.
Mr. William Paty,
Chairperson,
Commission of Water Resource Management,
Dept. Land & Natural Resources,
P.O. Box 621,
Honolulu, Hawaii, 96809.

7 April 1992

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Craig Emberson
Manager, Makuu Aquafarms.

cc. Mr. Ed Sakoda, DWRM
Dr. Dudley Seto.
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**TECHNICALLY A KNOCKOUT and BUILT TOUGH**

**Bronze Discharge Case Bearing** (SAE 660 bronze) is lubricated for long life by a large grease chamber above the bearing. It contains sanitation approved bearing grease.

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**Bowl Castings** (ASTM A48 CL30) are heavy duty, close-grained cast iron for top efficiency and corrosion resistance.

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**304 Stainless Steel Strainer** effectively blocks out solids without restricting pump flow.
TKO SUBMERSIBLE TURBINE MODEL: 6D330
NOMINAL MULTI-STAGE PER STAGE DATA*
3450 RPM; 60 Hz
Minimum Well Size — 6’  Maximum Stages — 15

NOTE: Efficiencies reflect glass lined cast iron bowls and bronze impellers.
BOWL TYPE: Threaded
IMPELLER TYPE: Enclosed
K FACTOR = 3.5

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<td>4.4</td>
</tr>
<tr>
<td>C</td>
<td>3.6</td>
</tr>
</tbody>
</table>

*Consult MPC Applications for SINGLE STAGE DATA.

Pumps available with BRONZE or RUBBER bearings.
CLIENT: MAKUU FARMS  
HCR 6461  
Keaau, Hawaii 96749  

SAMPLE LOCATION:  
Date/Time Sampled: 01/27/92 @ ---  
Date/Time Received: 02/03/92 @ 0945  

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<th>ANALYSIS</th>
<th>RESULT mg/l</th>
<th>Analysis Date</th>
<th>METHOD NUMBER</th>
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<tbody>
<tr>
<td>Chlorides</td>
<td>340</td>
<td>02/05/92</td>
<td>325.3</td>
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</tbody>
</table>

ATTN: CRAIG EMBERSON  
JOB NUMBER: 6320  
DATE: FEB. 06, 1992  

Matrix: POTABLE WATER  
SAMPLE #: #1  

LABORATORY ANALYSIS REPORT  
Environmental Laboratories Division  

BREWER ENVIRONMENTAL LABORATORIES  
P.O. BOX 555  
PAPAIKOU, HI 96781  
PHONE (808) 964-5522  
FAX (808) 964-5309  

Approved by: [Signature]
The Honorable William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

Well Construction and Pump Installation Applications

Thank you for the opportunity to comment on the following permit applications:

Kilauea-KPGI Well (1225-02)
Waialae Nui 1 Well (1746-04)
Makuu Wells 1 & 2 (3585-01,02)

The first two projects do not affect Hawaiian home lands, and we have no comment, except to note irregularities in the specifications for the Kilauea Well (i.e. casing elevation, open hole diameter).

The Makuu Wells are immediately makai of Hawaiian home lands, and will impact groundwater of the Hawaiian Homes Commission Trust. The amounts and purpose of the use seem reasonable, but we are not comfortable with the proposed freshwater well construction.

Drawing your attention to its specification of a six-foot diameter open hole, protected by 3/4-inch plywood, we question whether the proposed method complies with wellhead protection standards. Our confidence is not reassured by the sound of the contracting firm's name (Budd's Bulldozing Service). We note that the saltwater well will be contracted to a regular well-drilling firm, and shows specifications more consistent with our expectations of wellhead protection.
Under the circumstances, we cannot look favorably upon the application for Well 3585-01, the freshwater well, and request it be denied.

Warmest aloha,

Hawaiian Homes Commission

Hawaiian Homes Commission
Mr. Fujimura commented that even if this particular well is not in the OWP, the development of the Waimea Sector is in the Plan up to 6 mgd. He then asked if the Bishop Estate projects are different projects or just that the timetables are different. Mr. Sakoda replied that demands for Bishop Estate would have been taken care of by the BWS in the normal development process but because Bishop is a large developer they have been given the option to speed things up to develop their own sources and then turn it over to the Board.

Mr. Nakata asked for clarification if it was an authorized planned use. Mr. Sakoda replied that as far as zoning, etc. they have to go through all the same formalities.

Dr. Lewin commented that the numbers still need to be worked on because some of the authorized uses that are in the 3.3 mgd. is not really there.

Unanimously approved (Fujimura/Lewin).

ITEM 4
KAUAI PROFESSIONAL GROUP I, APPLICATION FOR A WELL CONSTRUCTION PERMIT, KILAUEA-KPG1 WELL, KILAUEA, KAUAI

Dr. Lewin asked for a description of Koloa Volcanic Series. Mr. Sakoda replied that it was a later lava flow that blanketed a previous flow. It is difficult to develop water in this series because of its unpredictability, whereas the Waimea Volcanic Series is fairly predictable as being a good producing basal aquifer.

Unanimously approved Lewin/Nakata.

ITEM 5
INTERCONTINENTAL DEVELOPMENT, APPLICATION FOR A WELL CONSTRUCTION/PUMP INSTALLATION PERMIT, MAKUU 1 FRESH WATER WELL AND MAKUU 2 SALT WATER WELL, MAKUU, PUNA, HAWAII

Mr. Sakoda spoke to the applicant regarding DHHL's concern on the open diameter hole design of the well. The applicant is aware of DHHL’s concerns and submitted to staff a modified construction report that shows the well will be secured and that a three-foot diameter casing would be gravel packed in the pit and the rest filled in. A fencing will be built around the pit and any type of contamination, if it occurred, would not affect DHHL because flow would be downstream instead of upstream; therefore did not warrant denial of the application.

Dr. Lewin stated it might be wise to meet their concerns, that the permit would be revoked if there was a water quality issue and until it could be clarified. He asked Mr. Sakoda if staff had addressed the problems with the changes that staff recommends. Mr. Sakoda believed that the problems had been addressed.

Dr. Lewin's other concern was in regards to future adjacent users of the aquifer and maintaining the quality of the process by which the aquifer is protected. He would be satisfied if staff could assure that the process would be inspected and report back to the Commission. Mr. Cox asked staff to watch the construction of the well.

Dr. Dudley Seto, representing the applicant, said he is aware of the Commission's concern in regards to protection of the aquifer.

NHAC provided comments (see attached). NHAC was concerned not so much with the type of well, but rather with the water quality issues for the aquifer as well as the ocean. Mr. Penn asked what would happen to the
effluent from the aquaculture project and if approvals have been received from DOH on the injection wells. Dr. Seto replied that the project is a combination of agriculture and aquaculture development. The waste of the aquaculture portion would be utilized as fertilizer for the agriculture portion and a percolation area is being planned to insure that nothing permeates into the ocean.

Dr. Lewin asked if the applicant had gone through a permit process with DOH in regards to the aquaculture project. Dr. Seto said the use of the area is zoned agriculture, of which aquaculture is a permitted use.

Unanimously approved as amended by the modified construction report and to have staff inspect the construction and report back to the Commission (Lewin/Nakata).

**ITEM 6**

**POTOMAC INVESTMENT ASSOCIATES, APPLICATION FOR WELL CONSTRUCTION PERMIT, KAUPULEHU – PIA WELL 3, KAUPULEHU, NORTH KONA, HAWAII**

Dr. Lewin asked that DOH's eight conditions for irrigation be included in that conditions for the permit.

Mr. Tom Nance said the golf course is already under construction.

Although there may be some redundancy, Dr. Lewin stated it's important that the conditions be included should non-point source pollution issues arise in the future which could become expensive and problematic. The smartest approach would be to have the conditions incorporated into the CWRM permits so it is clearly stated.

Mr. Cox recalled some of the conditions weren't necessarily a part of the Commission and a better way would be to state that the applicant inquire with the DOH. Dr. Lewin agreed that would be fine, as long as there is way to insure the conditions are met where applicable. Mr. Nance asked for clarification that they should apply to DOH. Mr. Sakoda stated there is a condition whereby the applicant contacts DOH to get an approval letter.

Mr. Steve Bowles of Wai'anae Water Services commended the initiative of Mr. Tagomori, by direction of the Commission, in bringing together the Hualalai Water Users Group which discuss similar issues in trying to resolve disputes before they begin.

NHAC asked what the approved and planned extractions rates were for the area. Mr. Sakoda said the numbers are not solid for proposed extractions because the uses are changing so rapidly. As mentioned by Mr. Bowles, staff is working with the landowners in the area.

Dr. Lewin said even if the numbers are not solid, the Commission has stated that they would like to know what numbers exist with every application to be able to make determinations about proposed uses.

Unanimously approved with the addition of the condition that the applicant contact DOH with regards to their golf course conditions (Lewin/Nakata).

**ITEM 7**

**WAIKOLOA RESORT UTILITIES, APPLICATION FOR WELL CONSTRUCTION PERMITS, WAIKOLOA RESORT IRRIGATION WELLS 4 & 5, WAIKOLOA, HAWAII**

Mr. Cox asked if this permit should also include the DOH conditions for golf course irrigation. Dr. Lewin agreed it should be included also.

Mr. Steve Hicks stated there will be a water delivery agreement between the Waikoloa Resort Utilities and the owner and operator of the golf course. He
**WELL COMPLETION REPORT**

**INSTRUCTIONS:** Please print or type and submit completed report within 30 days of well completion to the Division of Water Resource Management. An as-built drawing of the well and chemical analysis, if available, should also be submitted. If necessary, phone 548-7543, Hydrology, Codex Section for assistance.

**A. STATE WELL NO.** 3585-01  
**B. WELL NAME** MAKUWU 1, FRESHWATER, HAWAII

**C. WELL OWNER** DR. DUDLEY SEED

**D. DRILLING OR PUMP INSTALLATION CONTRACTOR** FEED PAGE DRILLING INTERNATIONAL

**E. TYPE OF RIG** ROMNEY - CP  
**F. DATE OF WELL COMPLETION** 27 DECEMBER 1991  
**G. DATE OF PUMP INSTALLATION**

**H. TOTAL DEPTH OF WELL BELOW GROUND** 30 FT

**I. HOLE SIZE:**
- Depth to 17 ft. below ground
- Depth from 0 ft. to 30 ft. below ground

**J. CASING INSTALLED:**
- 8 in. I.D. x 5 ft.6 in. well solid section to 20 ft. below ground
- 8 in. I.D. x 3 ft. well perforated section to 20 ft. below ground

**K. ANNULUS:**
- Grouted from 0 ft. to 17 ft. below ground
- Gravel packed from 17 ft. to 30 ft. below ground

**L. PERMANENT PUMP INSTALLATION:**
- Pump model, make, serial No., Capacity 200 gpm
- Motor type, H.P., voltage, r.p.m.
- Depth of pump intake setting:
  - 11 ft. below which elevation is 11 ft.
  - 11 ft. below which elevation is 11 ft.

**M. DATE OF PUMP INSTALLATION**

**N. INITIAL WATER LEVEL** 158 ft. below ground.

**O. INITIAL CHLORIDE** 3/5 ppm.

**P. PUMPING TESTS:** Reference point (R.P.) used:
- Pumping water level: 20 ft. below ground.
- Date and time of sampling: 11/4/91 1:07 pm
- Date and time of measurement: 11/4/91 1:07 pm
- Start well water level:
  - 158 ft. below R.P.
  - 158 ft. below R.P.
- End well water level:
  - 158 ft. below R.P.
  - 158 ft. below R.P.
- Depth of well:
  - 158 ft. below R.P.
  - 158 ft. below R.P.

**Q. DRILLER'S LOG**

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
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</thead>
<tbody>
<tr>
<td>0 to 3</td>
<td>MEDIUM HAYD. GREY</td>
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</tr>
<tr>
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<td>MEDIUM HAYD. GREY</td>
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<tr>
<td>3 1/2 to 10</td>
<td>MEDIUM HAYD. GREY LX</td>
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<tr>
<td>10 to 14</td>
<td>MEDIUM BEIGE</td>
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<tr>
<td>29 to 30</td>
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</table>

**REMARKS:**

Submitted by (print) CECIL EMMERSON  
**Title** MANAGER  
**Date** 1/1/92

FOR DRILLER'S USE  
Job Name .........................................................  
Job No. ..........................................................  

**FOR OFFICIAL USE**  
Latitude 19° 35' 31"  
Longitude 154° 55' 54"  
Well No. 3585-01
Briefly describe the proposed work:

PROPOSED SECTION OF WELL

Elevation at top of casing: 20'6" ft., msl.

Cement Grout: 17 ft.

Hole Diameter: 12 in.

Total Depth: 30 ft.

Rock Packing: ft.

Ground Elevation: ft., msl

Solid Casing:
- Material __________________________
- Length __________________________ ft.
- Diameter __________________________ in.
- Wall thickness __________________________ in.

Casing: □ Perforated □ Screen
- Material __________________________
- Length __________________________ ft.
- Diameter __________________________ in.
- Wall thickness __________________________ in.
- Openings __________________________ sq. in./L.F.

Open Hole:
- Length __________________________
- Diameter __________________________ in.

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
CLIENT: MAKUU AQUAFARM  
HCR 6461,  
KEAAU, HAWAII 96749  

SAMPLE LOCATION: MAKUU, PUNA, HAWAII  
FRESHWATER WELL # 3605-01  

Date/Time Sampled: 01/23/92 @ 1300  
Date/Time Received: 01/23/92 @ 1435  

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<tr>
<th>ANALYSIS</th>
<th>RESULT mg/l</th>
<th>Reporting limits mg/l</th>
<th>Analysis Date</th>
<th>METHOD NUMBER</th>
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<td>ARSENIC</td>
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ND = NOT DETECTED

Approved by: [Signature]
**LABORATORY ANALYSIS REPORT**

CLIENT: MAKUU AQUAFARM  
HCR 6461  
Keaau, Hawaii 96749

ATTN: Craig Emberson  
JOB NUMBER: 6037

DATE: 1/8/92  
Lab #N1-N2

Matrix: WATER  
Sample #:  

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<th>Results mg/l</th>
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</table>

APPROVED BY: [Signature]  
Environmental Services Division
Chloride levels at various flow rates from Makun FW Well - 1/23/92

![Graph showing chloride levels and flow rates over time.](image-url)
MAKUU AQUAFARM
SITE PLAN FOR PILOT PROJECT
SCALE 1IN=135 FT

BEACH ROAD 349.0'
351.0'
SW Well
BOUNDARY
CONSERVATION ZONE
351.0'
HIGHWATER LINE
BOUNDARY LINE
OCEAN
OCEAN
OCEAN
NORTH
DIVISION OF WATER RESOURCE MANAGEMENT

FROM: TO: INITIAL: PLEASE: REMARKS:

G. AKITA L. Nanbu __ See Me ___ Take Action By______
E. Sakoda G. Matsumoto __ Route to Your Branch
G. Lau E. Sakoda L. Chang Y. Shiroma __ Review & Comment
G. Matsumoto E. Sakoda L. Chang Y. Shiroma __ Draft Reply____
G. Lau G. Matsumoto E. Sakoda L. Chang Y. Shiroma __ Acknowledge Receipt
L. Chang G. Matsumoto E. Sakoda L. Chang Y. Shiroma __ Xerox ____ copies
Y. Shiroma G. Matsumoto E. Sakoda L. Chang Y. Shiroma __ File
E. Sakoda G. Matsumoto E. Sakoda L. Chang Y. Shiroma __ Mail
G. Matsumoto E. Sakoda L. Chang Y. Shiroma

FOR YOUR:

__ Approval __ Signature
__ Information

Well construction problems.

DATE: 5/8/02 FILE IN: Makara Wells 147

Rev. 11/90

G. AKITA
L. Nanbu
E. Sakoda
G. Matsumoto
G. Lau
E. Sakoda
L. Chang
Y. Shiroma
G. Matsumoto
E. Sakoda
L. Chang
Y. Shiroma
G. Matsumoto
E. Sakoda
L. Chang
Y. Shiroma
G. Matsumoto
E. Sakoda
L. Chang
Y. Shiroma
M. TAGOMORI
S. Kokubun

213/92

permit
period
January 30, 1992

Mr. Fred J. Page
President
Fred Page Drilling International
P.O. Box 1930
Kea'au, HI 96749

Dear Mr. Page:

I received the FAX dated January 30, 1992 of your decision not to proceed with our project. I am advising you that you're breaching the contract agreement that we both signed. As I told you on the telephone over one week ago when you called to ask for more money, we had agreed to a specified amount for drilling the freshwater and saltwater well. Any problems that you encounter in drilling the wells should be handled by you. We have retained you to do a job and we expected it to be done. As I said to you, I made an assumption that your experience was adequate in being able to perform the task, but it would appear that I was wrong. For you to leave the job site is a definite breach of contract and an indication that you do not complete what you agree to do. I have always worked with people that are reliable and able to complete the work within an agreed upon cost and time. You are the first person and company, that I experienced, that has walked off the job and created a disturbance in doing so. You also are trying to discredit me by implying that we have you follow improper procedure. This is not what both Mr. Emberson and I discussed with you. We have made sincere efforts to have you comply with your agreed upon contact while you have continued to employ methods to extract money from us. You have verbally threatened to walk off the job if we do not pay you more for the work.

At the time that you encountered the problem with the drilling in the soft gravel bed, your only concern was the increase cost to yourself. Your failure to extract further money from me is the reason you breached our contract. Your reputation as a driller cannot be good if the present situation is any indication of it. I am also reporting you to the Department of Commerce and Consumer Affairs which granted you your license.
I do not take breach of contract lightly and will allow you a period of seven (7) days from the date of this letter and FAX to return to the job site and complete the job. Beyond that point we can only pursue legal methods in resolving this issue.

Very truly yours,

Dudley S.J. Seto, M.D.
Chairman and C.E.O.

DSJS:ccu

cc: Mr. Craig Emberson
    Mr. Ed Sakoda
    Mr. John Mink
    Department of Commerce and Consumer Affairs
Mr. William W. Paty, Chairperson,
State of Hawaii,
Dept. Land & Natural Resources,
Commission On Water Resource Management,
P.O. Box 621,
Honolulu, Hawaii, 96809.

12 February 1992

Dear Mr. Paty,

In accordance with item No. 6 of the Well Construction/Pump Installation Permit for Makuu 1 Freshwater Well No. 3585-01 I should like to submit the following information and results:

a) A well completion report describing the pump test which was performed Jan. 24-25, 1992.

b) As built sectional drawing of the well.

c) Plot plan and map showing exact location of well.

d) Pump test record showing times, pumping rate, drawdown, and chloride content.

e) Water quality analysis data as performed by Brewer Environmental Industries in Hilo.

I have been in contact with Mr. Ed Sakoda who was present for the pump test and will forward copies of these results to him. If there is any further information that you require please let us know. Thank you for all your assistance with this matter.

Yours sincerely,

Craig Emberson
Manager, Makuu Aquafarms

cc. Mr. Ed Sakoda
    Dr. Dudley Seto
    Mr. John Mink
Division of Water Resource Management,
P.O. Box 373,
Honolulu, Hi., 96809

11 December 1991

Dear Sirs,

This letter is to inform your office that Dr. Dudley Seto has awarded a job contract to drill 2 wells at Makuu (Well Nos. 3585-01,02) to Fred Page Drilling International.

In accordance with the permit conditions we are notifying you that Mr. Page will be mobilizing his equipment to the site in the next few days. He is expected to commence drilling the wells the week of December 16-20, 1991.

In order to utilize the drilling equipment both wells will now be drilled and developed in a similar manner with a 12 inch bore and fitted with 8 inch PVC casing. The location of the freshwater well will be approximately 75 ft from Beach Road next to the existing trail leading into the property.

As instructed, a well completion report on both wells will be submitted when the work is finished.

Thank you for your assistance and guidance on this project.

Yours sincerely,

Craig Emberson.

cc. Mr. Ed Sakoda, DWRM
Dr. Dudley Seto.
WELL CONSTRUCTION/PUMP INSTALLATION PERMIT

for

Makuu 1 Fresh Water Well
Well No. 3585-01
Makuu, Puna, Hawaii

TO: Intercontinental Development
1520 Liliha Street, Suite 607
Honolulu, HI 96817

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your application to construct, test, and install up to a 200 gallons per minute pump in Makuu 1 Fresh Water Well (Well No. 3585-01) for aquaculture use, is approved subject to the following conditions:

1. The Division of Water Resource Management (DWRM), P.O. Box 373, Honolulu, HI 96809, shall be notified, in writing, before any work covered by this permit commences.

2. The well shall be constructed to prevent accidental contamination of the aquifer by surface debris and infiltration. A pit approximately 3 ft. in diameter which bottoms at 3 to 5 ft. below sea level shall be excavated. A 10 inch diameter PVC casing shall be inserted with its lower 5 ft. perforated to the bottom of the pit. The perforated length shall be surrounded with coarse gravel and the remainder of the excavation shall be filled with rocks. A concrete pad over a layer of sand and gravel shall be placed at the surface.

3. The proposed well construction and pump installation shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct and pump water from a well shall not constitute a determination of correlative water rights. The permittee is notified and by this provision understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the pump capacity permitted here or even some lesser amount is guaranteed in the future.
4. The permit shall be for construction, testing, and installation of up to a 200 gpm capacity pump in the well, as determined by the pumping test results. The applicant shall submit to DWRM the test results and proposed permanent pump information, based on the test, for approval by the Chairperson. No permanent pump may be installed and no water used from the well without the Chairperson's approval.

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

6. The following shall be submitted to DWRM within 30 days after completion of the work:
   
a. Well Completion Report.
   
b. As-built sectional drawing of the well.
   
c. Plot plan and map showing the exact location of the well.
   
d. Complete pumping test record; including time, pumping rate, drawdown, chloride content, and water quality data.

7. The applicant shall comply with all applicable laws, rules, and ordinances.

8. This permit may be revoked if work is not started within six months of the date of issuance or if work is suspended or abandoned for six months. The work proposed in the permit application shall be completed within 24 months from the date of permit issuance.

WILLIAM W. PATY, Chairperson

Date of Issuance

OCT 27 1991

cc: USGS
    Department of Health
    Safe Drinking Water Branch
    Ground Water Protection Program
    Hawaii Department of Water Supply
Groundwater Development for Aquaculture
Makuu, Hawaii
Fresh-Brackish and Salt Water Wells

Mink and Yuen, Inc.
October 1, 1991

Both fresh-brackish and salt water are easily developable in the Makuu property. The site of the proposed Aquafarm is in the Pahoa Aquifer System on the inactive east flank of Kilauea where the subsurface geology consists of extremely permeable basaltic lavas. The volume flux of groundwater in the basal aquifer amounts to about 66 mgd per mile of coastline, which is second in outflow in the entire State only to the Hilo and Keaau Aquifer Systems. The small quantity of fresh to brackish water required by the project is trivial compared to the unit flux. Salt water lying below the basal lens is inexhaustible.

The basal lens freely drains at the coast over a narrow width. The groundwater gradient averages about 4 ft/mile between the coast and one mile inland but is steepest near the coast and gentler inland. At the Aquafarm site the groundwater velocity is 50 to 100 ft/day, which is exceptionally rapid for groundwater. This great a velocity is required to maintain equilibrium in the lens.

Tidal efficiency in the aquifer is very high and
promotes mixing of initially fresh water in the lens with underlying salt water. The probability of the lens having a core of developable low salinity water increases with distance inland. Where the Aquafarm is located about 600 feet inland of the coast the tidal efficiency exceeds 75 percent, which ordinarily would lead to a salinized lens. However, the great velocity of the groundwater inhibits the process of mixing induced by the tide and suppresses vertical dispersion into the core of the lens.

Head in the lens at a distance of 600 feet as calculated from gradients derived from head data elsewhere in the Aquifer System is approximately 1.5 feet. Tidal data obtained at a pond 100 feet inland of the coast suggests that head falls between 1.5 and 2.0 feet. At the the Aquafarm site the average head is likely to be closer to 1.5 than to 2.0 feet. A basal lens with a head of 1.5 feet theoretically will yield fresh water at a rate of 40 gpm to a well that penetrates 10 feet or less below the water table.

Groundwater Development

Fresh-brackish and salt groundwater can be developed at Makuu by simple means. The freshest water will be more brackish than the recommended salinity limit for potable water, 250 mg/l chloride, however. Water with less than 1000
mg/l chloride (1.75 ppt total salinity) should be available if the extraction rate is held to 20 to 50 gpm. At rates of 50 to 100 gpm salinity will exceed 1000 mg/l chloride but probably will be less than 3000 mg/l chloride (5.25 ppt total salinity).

To maximize freshness of the water, extraction should take place as far inland as is practicable. If surface elevation permits, a pit of about 3 feet diameter could be excavated to several feet below the water table to yield up to 50 gpm. Several pits about 50 feet apart would allow for substantial production.

The extraction unit should be constructed to prevent accidental contamination by surface debris and infiltration. The simplest design is to insert a 10 inch diameter PVC casing with its lower 5 feet perforated to the bottom of the pit, then to surrounded the perforated length with coarse gravel and to fill the remainder of the excavation with rocks. A soil or clay blanket on top of fine gravel should be placed on the surface. Grout should seal the annular space where the casing emerges from the ground.

The freshest groundwater occurs at the most inland boundary of the property where the ground elevation is 25 feet and the head about 2.0 feet. A well drilled to 10 feet below sea level (total depth 35 feet) and equipped with a 20
to 50 gpm pump may yield potable water. The location is marginal for truly fresh water, however.

To obtain salt water a drilled well will be required. The well will have to penetrate to about 250 feet below sea level to prevent the dilution of salt water with fresh-brackish water in the lens. For a head of 2.0 feet, depth to the middle of the transition zone is 80 feet, and depth to salt water will be 160 feet.

The well can be simply constructed according to these specifications:
1. Boring: 12 inch diameter, or large enough to hold an 8 inch diameter PVC casing. Total depth 265 feet with allowance for two additional increments of 50 feet each.
2. Casing: 8 inch diameter, length 215 feet.
3. Open hole: length 50 feet.
5. Pump test: 100 gpm for 1 hr; 200 gpm for 1 hour; 300 gpm for 10 hours. Total 12 hours.
6. Pump setting: 5 feet above the bottom of the casing.

The diameter of the casing will be large enough to hold a pump of up to 1000 gpm capacity, but the installed pump capacity will be just 200 gpm. Salt water wells can be drilled anywhere in the property.

The cost of a 200 gpm well based on informal quotes from
The total cost of a well for drilling, testing and fitting with a pump will be about $100,000. Not included in this cost are the power supply arrangements, controls and connections.

Recommendations

A pit approximately 3 feet in diameter which bottoms at 3 to 5 feet below sea level should be excavated to provide a source of fresh-brackish water. From a surface elevation the pit will have to be as much as 20 feet deep. If such an excavation is not possible, a shallow well will have to be drilled. The pit or well will yield up to 50 gpm of water containing 2 ppt or less salinity.

To obtain salt water a well at least 250 feet deep must be drilled. An option should be agreed upon to add up to 100 feet of extra drilling at the same unit price. Although the diameter of the casing (8 inches) will be large enough to
allow a capacity as great as 1000 gpm, the installed pump will have a capacity of 200 gpm. The cost of the well and pump will be approximately $100,000.
Subject: Well Construction and Pump Installation Permit

Application Makuu Well Nos. 1 (freshwater) and 2 (saltwater) State Well Nos. (3585-01 and -02) Makuu, Hawaii

Dear Mr. Arizumi:

The following are replies to your comments made by you to Mr. Manabu Tagomori regarding our application to drill wells stated above.

1. Makuu Well 2 will be a saltwater well used for saltwater aquaculture.

2. Makuu Well 1 will not be used or serve over 24 individuals. It will be used for aquaculture purposes.

3. The wells are not to be used for public water system.

4. The wells will be designed and constructed following the recommendations of well development to prevent the possibility of ground water contamination.

5. We have discovered that the Makuu-Dangora (state well no. 3485-01) and the Makuu-Silverstein well (state well no. 3485-02) have not been drilled. It would appear that our wells will be drilled and constructed first.

Thank you very much for your comments.

Sincerely yours,

Dudley S. J. Seto, M.D.
Chairman and C.E.O.

DSJS:ccu

cc: Mr. Manabu Tagomori
MEMORANDUM

TO: Manabu Tagomori, Deputy Director
Commission on Water Resource Management

FROM: Don Hibbard, Administrator
State Historic Preservation Division

SUBJECT: Well Construction and Pump Installation Permit -- Excavation of Two Freshwater Wells for Aquacultural Purposes (Seto) Makuu, Puna, Hawaii TMK: 1-5-10: 33

HISTORIC PRESERVATION PROGRAM CONCERNS:

In response to our initial review of this application (Memo. Hibbard to Tagomori, Aug. 21, 1991), Dr. Seto has submitted project plans and a letter indicating that the proposed wells will be confined to that portion of the parcel which was approved for clearing under a Hawaii County Grubbing Permit. If this is the case, we believe that excavation and use of these wells will have "no effect" on historic sites.

If you have any questions about this review, please call Holly McElDowney at 587-0008.

cc: Dr. Dudley Seto, applicant
MEMORANDUM

TO: Manabu Tagomori, Deputy Director
Commission on Water Resource Management

FROM: Don Hibbard, Administrator
State Historic Preservation Division

SUBJECT: Well Construction and Pump Installation Permit -- Excavation of Two Fresh Water Wells for Aquacultural Purposes (Seto)
Makuu, Puna, Hawaii
TMK: 1-5-10: 33

HISTORIC PRESERVATION PROGRAM CONCERNS:

We need to know the exact location of the two proposed wells before we can determine that construction activities will have "no adverse effect" on historic sites. To meet conditions of a Hawaii County grading and grubbing permit, the applicant has already conducted an archaeological inventory and reconnaissance survey of the entire parcel and numerous significant historic sites were identified. We need to know if these proposed wells are located near any of these historic sites. Please ask the applicant to submit for our review a map showing the location of the proposed wells and any construction corridors in relation to the historic sites identified during the inventory survey. We also need to know if all construction activities associated with the wells will be confined to the eight acre portion of the property which has been granted a Hawaii County Grading and Grubbing Permit.

We ask that the well permit not be issued until we have determined that construction activities will have "no effect" on historic sites.

cc. Dr. Dudley Seto
Mr. Norman Hayashi, Director, Hawaii County Planning Department
Mr. Manabu Tagomori, Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Tagomori:

SUBJECT: WELL CONSTRUCTION AND PUMP INSTALLATION PERMIT APPLICATION
MAKUU WELL NOS. 1 (Freshwater) AND 2 (Saltwater)
STATE WELL NOS. (3585-01 AND -02)
MAKUU, HAWAII

Thank you for the opportunity to review and comment on the subject documents. We have examined the applications and have the following comments to offer:

1. The application for Makuu Well 2 states that it will be a saltwater well for the "hatchery and growout of marine organisms." Thus, the Department's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems," are not applicable. However, in the event that the proposed use were to change, the Safe Drinking Water Branch must be notified.

2. The application for Makuu Well 1 indicates that it will be a freshwater well for aquacultural use. Please note that if the well is to serve 25 or more individuals at least 60 days per year or will have a minimum of 15 service connections, the applicant will be required to comply with the Department's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems."

3. Section 11-20-29 of Chapter 20 requires that a new source of potable water serving a public water system be approved by the Director of Health prior to its use. Such an approval is based primarily upon the submission of a satisfactory engineering report which addresses the requirements set in Section 11-20-29.

4. The proposed wells are situated above the Underground Injection Control (UIC) line. Land areas above the UIC line are considered to contain underground sources of drinking water. Thus, it is essential that each
well be designed and constructed to prevent the possibility of groundwater contamination. For example, each well should have a concrete well pad and full grouting to prevent seepage or floodwaters from migrating down the well shaft.

5. The operation of the wells should not be allowed to adversely affect the water quality of nearby drinking water wells. The map accompanying the application indicates that the proposed well will be located within 2,500 feet of the Makuu-Dangora (state well no. 3485-01) and the Makuu-Silverstein Well (state well no. 3485-02).

If you should have any questions, please contact the Safe Drinking Water Branch at 543-8258.

Sincerely,

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

c: Dr. Dudley Seto
Intercontinental Development
1520 Liliha Street, Suite 607
Honolulu, HI 96817
August 26, 1991

Don Hibbard, M.D.
Administrator
State Historic Preservation Division
33 South King Street, 6th Floor
Honolulu, Hawaii 96813

Dear Dr. Hibbard:

Pertaining to your memorandum to Mr. Manabu Tagomori asking the location of the proposed wells, I have enclosed a map locating the wells as well as the construction corridors. Please note that the location of the wells are confined to the eight acre portion which was cleared. The construction corridor will be located along the existing road which is within the cleared areas as you can see on the map.

We do not intend to drill any wells or locate any activity in the areas that has not been cleared.

Very truly yours,

Dudley S. J. Seto, M.D.
Chairman & CEO

Enclosure

cc. Mr. Manabu Tagomori, Deputy Director, Commission on Water Resource Management
   Mr. Norman Hayashi, Director, Hawaii County Planning Department
Dear Mr. Sakoda,

Please find enclosed the maps showing well locations on Dr. Fehl's property at Makua, Hawaii.

Thank you,

[Signature]

Craig Emerson

HCR 6461
Kona, HI 96740

Tel. 960-6704

20 Aug 1991

31 Aug 22 A-8:26

Received
MAKUU AQUAFARM
SITE PLAN
FOR PILOT PROJECT

SCALE 1IN-135 FT

Agriculture

Tanks
Aquaculture
Agriculture

Tanks
Aquaculture

Tank
Aquaculture

House
Well

BOUNOY
CONSERVATION ZONE

SMR BOUNDARY LINE

351.0'

JEFP Trail

WALL

349.0'

BEACH ROAD

NORTH

782.1'

CONSERVATION ZONE

HIGHWATER LINE

OCEAN
August 15, 1991

MR MANABU TAGOMORI
DEPUTY DIRECTOR
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P O BOX 621
HONOLULU HI 96809

SUBJECT: WELL CONSTRUCTION PERMIT APPLICATION

We have reviewed the subject permit applications and have no objections to the following proposed wells being constructed.

1. Makuu 1, Well No. 3585-01
   TMK: 1-5-10:33

2. Makuu 2, Well No. 3585-02
   TMK: 1-5-10:33

ROBERT K. YANABU, Division Chief
Engineering Division

GR:thk
Honorable Hoaliku L. Drake  
Director  
Department of Hawaiian Home Lands  
State of Hawaii  
P.O. Box 1879  
Honolulu, Hawaii 96805  

Dear Mrs. Drake:  

Well Construction and Pump Installation Permit Application(s)  

Transmitted for your review and comment is a copy of the following permit application(s):  

<table>
<thead>
<tr>
<th>Island</th>
<th>Well Name</th>
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<th>Application Type</th>
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<tr>
<td>Kauai</td>
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</tr>
<tr>
<td>Oahu</td>
<td>Waialae Nui 1</td>
<td>1746-04</td>
<td>Well Construction</td>
</tr>
<tr>
<td>Hawaii</td>
<td>Makuu 1</td>
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</tr>
<tr>
<td>Hawaii</td>
<td>Makuu 2</td>
<td>3585-02</td>
<td>Well and Pump</td>
</tr>
</tbody>
</table>

Please review the application(s) pursuant to your area of concern and submit your comments to us, orally or in writing, ten (10) working days from date of this letter.  

Should you have any questions, please contact Manabu Tagomori, Deputy Director at 548-7533.  

Very truly yours,  

WILLIAM W. PATY  

Enc.
Mr. Clayton H. W. Hee  
Chairman & Trustee At Large  
Office of Hawaiian Affairs  
1600 Kapiolani Blvd., Suite 1500  
Honolulu, Hawaii 96814

Attn: Ms. Linda Delaney, Land & Natural Resources Division

Dear Mr. Hee:

Well Construction and Pump Installation Permit Application(s)

Transmitted for your review and comment is a copy of the following permit application(s):

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Please review the application(s) pursuant to your area of concern and submit your comments to us, orally or in writing, ten (10) working days from date of this letter.

Should you have any questions, please contact Manabu Tagomori, Deputy Director at 548-7533.

Very truly yours,

WILLIAM W. PATY

Enc.
Dr. Dudley Seto  
Intercontinental Development  
1520 Liliha Street, Suite 607  
Honolulu, Hawaii 96817  

Dear Dr. Seto:  

We have received your applications and filing fees for permits to construct and install a pump in two wells (Well Nos. 3585-01,02) at Makuu, Hawaii, (TMK 1-5-10:33). We are reviewing the applications for completeness. For the purpose of accurately locating the proposed well construction sites, please send us a USGS map (scale 1"=2000') and a property tax map showing the locations referenced to established property boundaries. The maps may be mailed to the following address: State of Hawaii, Department of Land and Natural Resources, Division of Water Resource Management, P.O. Box 373, Honolulu, Hawaii 96809, Attention: Mr. Ed Sakoda.  

Should you have questions, please call the Regulation Branch of the Division of Water Resource Management at 548-7541.  

Sincerely,  

[Signature]  
MANABU TAGOMORI  
Deputy Director  

NF:bm
Mr. William Sewake, Manager  
Department of Water Supply  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720

Dear Mr. Sewake:

Well Construction and Pump Installation Permit Application(s)

Transmitted for your review and comment is a copy of the following permit application(s):

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Please review the application(s) pursuant to your area of concern and submit your comments to us, orally or in writing, ten (10) working days from date of this letter.

Should you have any questions, please contact our Regulation Branch at 548-7541.

Sincerely,

[Signature]

MANABU TAGOMORI  
Deputy Director

NF:bm
Enc.
Mr. Bruce C. McClure  
Chief Engineer  
Department of Public Works  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720

Dear Mr. McClure:

**Well Construction and Pump Installation Permit Application(s)**

Transmitted for your review and comment is a copy of the following permit application(s):

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Please review the application(s) pursuant to your area of concern and submit your comments to us, orally or in writing, ten (10) working days from date of this letter.

Should you have any questions, please contact our Regulation Branch at 548-7541.

Sincerely,

[Signature]

MANABU TAGOMORI  
Deputy Director

NF:bm  
Enc.
MEMORANDUM

TO: Don Hibbard, Director
   Historic Preservation Program

FROM: Manabu Tagomori, Deputy Director
      Commission on Water Resource Management

SUBJECT: Well Construction and Pump Installation Permit Application(s)

Transmitted for your review and comment is a copy of the following permit application(s):

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Please review the application(s) pursuant to your area of concern and submit your comments to us, orally or in writing, ten (10) working days from date of this memo.

Should you have any questions, please contact our Regulation Branch at 548-7541.

Enc.
Ms. Marjorie Ziegler  
Sierra Club Legal Defense Fund, Inc.  
212 Merchant Street, Room 202  
Honolulu, Hawaii  96813

Dear Ms. Ziegler:

Well Construction and Pump Installation Permit Application(s)

Transmitted for your information are copies of recent well permit application(s):

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Should you have questions, please contact our Regulation Branch at 548-7541.

Sincerely,

[Signature]

MANABU TAGOMORI  
Deputy Director

NF:bm  
Enc.
Mr. Thomas Arizumi, Chief
Environmental Management Division
State Department of Health
Five Waterfront Plaza
500 Ala Moana Blvd., Suite 250
Honolulu, Hawaii  96813

Attn: Mr. William Wong

Dear Mr. Arizumi:

Well Construction and Pump Installation Permit Application

Transmitted for your review and comment is a copy of the following permit application(s):

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Please review the application(s) pursuant to your area of concern and submit your comments to us, orally or in writing, ten (10) working days from date of this letter.

Should you have any questions, please contact our Regulation Branch, at 548-7541.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director
July 16, 1991

Div. of Water Resources Management
P.O. Box 373
Honolulu, Hawaii 96809

Gentlemen:

Enclosed you will find the two applications that I am submitting to obtain a well permit on my property located in Makuu, Hawaii. If there are any questions, please contact me directly.

Very truly yours,

Dudley S.J. Seto, M.D.
Chairman and C.E.O.

DSJS:ccu

Enclosure
APPLICATION FOR: □ Well Construction or □ Pump Installation PERMIT

Instructions: Please print or type and send completed application with attachments to the Div. of Water Resource Management, P.O. Box 373, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Dept. of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 348-7643, Hydrology/Geology Section for assistance.

MAKUU I

1. WELL LOCATION/NAME: MAKUU, PUNA - FRESHWATER WELL Island HAWAI'I

Address BEACH ROAD BETWEEN MAKUU DRIVE AND HAW. BEACHES. Tax Map Key 1-5-10:33

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

2. (a) WELL OWNER:

Firm Name INTERCONTINENTAL DEVELOPMENT
Contact Person DR. DUDLEY SETO
Address 1520 LILIHA ST., SUITE 607
HONOLULU, HI 96817 Ph. 521-8061

(b) LANDOWNER:

Firm Name INTERCONTINENTAL DEVELOPMENT
Contact Person DR. DUDLEY SETO
Address 1520 LILIHA ST., SUITE 607
HONOLULU, HI 96817 Ph. 521-8061

3. PROPOSED CONTRACTOR:

Name BUDD'S BULLDOZING SERVICE Contractor's License No. 
Address MOUNTAIN VIEW, HAWAII Ph: 

4. PROPOSED WORK: □ Drill New Well □ Deepen □ Redrill
□ Alter □ Seal □ Abandon
□ Install New Pump □ Replace Pump □ Modify Pump

(Briefly describe the proposed work and fill in the diagram on the back of this form.)

5. PROPOSED USE:

□ Municipal (including hotels, stores, etc.) □ Military
□ Domestic (individual, noncommercial water sys.) □ Industrial
□ Irrigation (specify) □ Other (specify) AQUACULTURE

6. PROPOSED AMOUNT OF WITHDRAWAL: 144,000 gallons per day

7. PROPOSED PUMP INFORMATION:

Pump Type: □ Vertical Turbine □ Diesel
□ Submersible □ Gas
□ Centrifugal □ Electric, at a rated horsepower of 

Rated Pump Capacity: Gallons per minute 200

Well Owner (print) DR. DUDLEY SETO Landowner (print) DR. DUDLEY SETO

Signature ___________________________ Signature ___________________________
Date 7-16-71 Date 7-16-91

For Official Use Only:
Field Checked By ___________________________ Latitude ___________________________
Date ___________________________ Longitude ___________________________
Hydrologic Unit ___________________________
State Well No. 3585-01
Quad Map No. H-72
Briefly describe the proposed work:

OPEN HOLE APPROX. 6 FT DIAM. DUG WITH BACK-HOE OUTFitted WITH
OF 25 FT TO OBTAIN FRESHWATER FOR USE ON AQUACULTURE PROJECT.
WITH 3/4" PLYWOOD AND SURROUNDING LOFT IN AREA FENCED AND CLE.

PROPOSED SECTION OF WELL

- Elevation at top of casing: 16 ft., msl.
- Cement Grout: ______ ft.
- Hole Diameter: 1-4 in.
- Total Depth: 25 ft.
- Rock Packing: ______ ft.

Ground Elevation: 14.5 ft., msl*

- Solid Casing:
  - Material: NONE
  - Length: ______ ft.
  - Diameter: ______ in.
  - Wall thickness: ______ in.

- Casing: Perforated Screen
  - Material: NONE
  - Length: ______ ft.
  - Diameter: ______ in.
  - Wall thickness: ______ in.
  - Openings: ______ sq. in./L.F.

- Open Hole:
  - Length: 25 FT.
  - Diameter: ______ in.

*Approximate elevation at time of filing application. Final elevation (msl) by
a surveyor licensed by the State must be submitted at start of construction.
**INTERCONTINENTAL MEDICAL SERVICES, INC.**

1520 LILIHA STREET, SUITE 607
HONOLULU, HAWAII 96817
808-521-8061

**First Hawaiian Bank**

KAPIOLANI BOULEVARD BRANCH
1680 KAPIOLANI BOULEVARD
HONOLULU, HAWAII 96814

July 16, 1991

**PAY**

<table>
<thead>
<tr>
<th>TO THE ORDER OF</th>
<th>DOLLARS $25.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Land and Natural Resources</td>
<td></td>
</tr>
<tr>
<td>Division of Water Resources Management</td>
<td></td>
</tr>
</tbody>
</table>

DETACH AND RETAIN THIS STATEMENT

THE ATTACHED CHECK IS IN PAYMENT OF ITEMS DESCRIBED BELOW.

IF NOT CORRECT, PLEASE NOTIFY US PROMPTLY. NO RECEIPT DESIRED.

**DELUXE FORM WVC-3**

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<thead>
<tr>
<th>INVOICE</th>
<th>DESCRIPTION</th>
<th>TOTAL AMOUNT</th>
<th>DEDUCTIONS</th>
<th>FREIGHT</th>
<th>NET AMOUNT</th>
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</thead>
<tbody>
<tr>
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<td>(Well No. 3505-61)</td>
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<td>Well Location</td>
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<td>Makuu, Puna - Saltwater Well</td>
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<td>Beach Road between Makuu and Hawaiian Beaches</td>
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